

# CAVELIER

ABOGADOS

www.cavelier.com  
cavelier@cavelier.com

EDIFICIO SISKI  
CARRERA 4 No. 72 - 35  
BOGOTÁ 8, COLOMBIA

Teléfono: (57-1) 347 3611  
Telefax: (57-1) 211 8650  
(57-1) 540 0860  
Fax in U.S.A. + (1-305) 381 9660

Señora Jefe de la  
DIVISION DE NUEVAS CREACIONES  
Superintendencia de Industria y C  
E. S. D.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 07-040921- -00002-0000

Fecha: 2007-08-24 17:21:56 Dep. 2020 NUECREACIONE  
Tra 2 PATENTES Eve 1 REGDEPOSITO  
Act. 444 RESPUESTAREQUE Folios: 67

Trámite : 002  
Evento : 001  
Actuación : 444

Referencia : Expediente No. 07040921  
Asunto : Solicitud de Patente para MONTAJE DE  
DESGASTE  
Solicitante : **ESCO CORPORATION**  
Fecha Solicitud : 24 de abril de 2007

1. Yo, Emilio FERRERO, obrando como apoderado del solicitante en el asunto antes identificado, me refiero al Oficio N° 9155, notificado por fijación en lista de 02 de agosto de 2007.

2. Mediante el Oficio N° 9155 se puso en conocimiento del solicitante el informe que contiene las observaciones hechas por ese Despacho sobre la presente solicitud de patente. Atiendo a las observaciones de la manera siguiente:

2.1. **Cesión:** Presento junto con este escrito el documento en que consta la cesión del derecho a la patente de los inventores James E. BEARDEN, Severn D. DURAND, Michael A. SEVERSON y Christopher M. CARPENTER a favor de la sociedad **ESCO CORPORATION**, debidamente notariado y legalizado por

74

Apostilla, junto con su respectiva traducción oficial al español.

3. Igualmente presento dentro del término legal la copia certificada de las solicitudes norteamericanas 60/794,815 y 60/838,313 de las cuales se reivindica prioridad en la presente solicitud de patente.

4. Puesto que se han atendido a cabalidad las observaciones hechas por ese Despacho sobre la presente solicitud de patente de invención, atentamente solicito que se continúe su tramitación y se ordene la publicación en la Gaceta de la Propiedad Industrial.

Bogotá,  
Señora Jefe,



EMILIO FERRERO  
T.P.A. No. 31.929

**APOSTILLE**

*(Convention de La Haye du 5 octobre 1961)*

1. Country: *United States of America*
2. This public document  
has been signed by JAMES P RICHARDS
3. acting in the capacity of Notary Public
4. bears the seal/stamp of the said notary

5. Salem, Oregon Certified

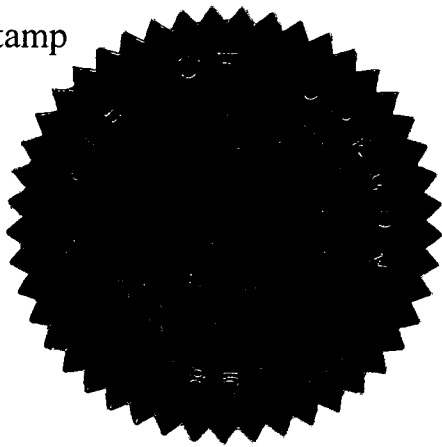
on Tuesday, April 24, 2007

7. by: *Assistant to Secretary of State*

8. No. HC2007-3395

10. Signature

9. Seal/Stamp



  
Susan Marie Kreft  
Assistant to Secretary of State

26

**APOSTILLE**

*(Convention de La Haye du 5 octobre 1961)*

1. Country: *United States of America*

2. This public document  
has been signed by ELIZABETH J ABEL

3. acting in the capacity of Notary Public

4. bears the seal/stamp of the said notary

5. Salem, Oregon Certified

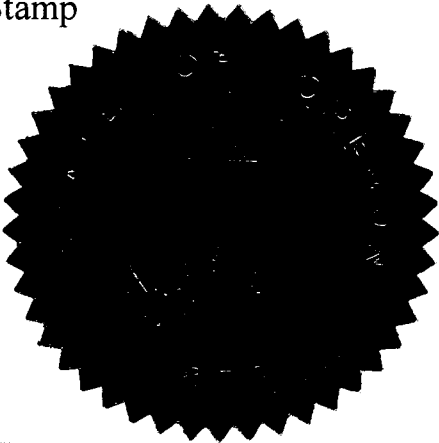
on Tuesday, April 24, 2007

7. by: *Assistant to Secretary of State*

8. No. HC2007-3397

10. Signature

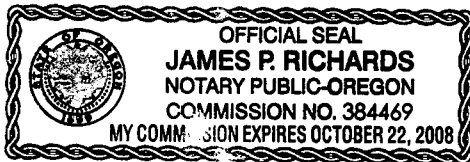
9. Seal/Stamp



  
\_\_\_\_\_  
Susan Marie Kreft  
Assistant to Secretary of State

STATE OF OREGON  
COUNTY OF MULTNOMAH

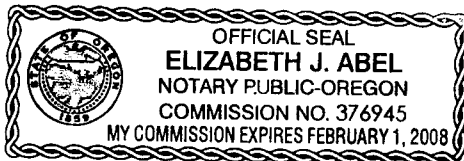
On this 13th day of April, 2007, before me a Notary Public in and for the County and State aforesaid, personally appeared James E. Bearden, Severn D. Durand and Michael A. Severson, to me known to be the persons of that name, who signed and sealed the foregoing instrument, and acknowledged the same to be their free act and deed.



*James P. Richards*  
Notary Public - State of Oregon  
My Commission expires: 10-22-08

STATE OF OREGON  
COUNTY OF MULTNOMAH

On this 17<sup>th</sup> day of April, 2007, before me a Notary Public in and for the County and State aforesaid, personally appeared Christopher M. Carpenter, to me known to be the person of that name, who signed and sealed the foregoing instrument, and acknowledged the same to be his free act and deed.



*Elizabeth J. Abel*  
Notary Public - State of Oregon  
My Commission expires: 02-01-08

**CAVELIER**

**ABOGADOS**

EDIFICIO SISKI

CARRERA 4a N° 72-35  
BOGOTA, 8 - COLOMBIA

374

**CESION**

Yo, (nosotros) abajo firmado (s)

domiciliado(s)

en

declaro(amos) bajo juramento ser único(s) y verdadero(s)  
inventor(es)

de la

invención:

declaro(amos) así mismo que cedo(emos) y transfiero(erimos),  
sin

limitación, a favor de la

sociedad

constituida y existente de conformidad con las leyes de

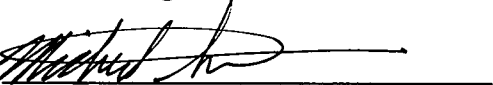
domiciliada en

todos los derechos inherentes a dicha invención y que la  
citada Compañía queda facultada para solicitar en su nombre  
la patente de invención correspondiente en la República de  
Colombia.

Dated this 13<sup>th</sup> day of April, 2007

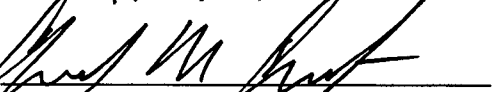


James E. Bearden  
13520 SW Weir Road  
Beaverton, Oregon 97008



Michael A. Severson  
18232 SW Smokette Lane  
Aloha, Oregon 97006

Dated this 17<sup>th</sup> day of April, 2007



Christopher M. Carpenter  
19047 SW Chesapeake Drive  
Tualatin, Oregon 97062

**ASSIGNMENT**

We, the undersigned

James E. Bearden, Severn D. Durand,  
Michael A. Severson and Christopher M. Carpenter

all US citizens

state under oath to be sole and true inventors of the invention:

**WEAR ASSEMBLY**

state as well, that assign, without reservations or limitations in  
favour

of ESCO Corporation

a corporation constituted and existing in conformity with the laws  
of the State of Oregon

domiciled at 2141 NW 25<sup>th</sup> Avenue  
Portland, Oregon 97210-2578

all rights inherent to said invention and that the above mentioned  
company hereby is enabled to apply, in its name, for the  
corresponding patent invention, in the Republic of Colombia



Severn D. Durand  
5736 N Maryland Avenue  
Portland, Oregon 97217

3 79

TRADUCCIÓN OFICIAL 108/2007 DE UN DOCUMENTO EN INGLÉS Y EN ESPAÑOL, REALIZADA POR EDUARDO CALADO NOGUERA, TRADUCTOR OFICIAL AUTORIZADO POR RESOLUCIÓN 541 DEL 27 DE FEBRERO DE 1976 POR EL MINISTERIO DE JUSTICIA Y DEBIDAMENTE REGISTRADO ANTE EL MINISTERIO DE RELACIONES EXTERIORES DE COLOMBIA. DE ACUERDO CON DICHO DOCUMENTO JAMES E. BEARDEN, SEVERN D. DURAND, MICHAEL A. SEVERSON Y CHRISTOPHER M CARPENTER, TODOS CIUDADANOS ESTADOUNIDENSES DECLARAN BAJO JURAMENTO SER LOS INVENTORES ÚNICOS Y VERDADEROS DE LA INVENCION **MONTAJE DE DESGASTE**. ADEMÁS QUE LA CEDEN SIN RESERVAS NI LIMITACIONES EN FAVOR DE ESCO CORPORATION, UNA SOCIEDAD CONSTITUIDA Y EXISTENTE DE CONFORMIDAD CON LAS LEYES DEL ESTADO DE OREGON, DOMICILIADA EN 2141 NW 25TH AVENUE, PORTLAND OREGON 97210-2578, TODOS LOS DERECHOS INHERENTES A DICHA INVENCION Y QUE LA CITADA COMPAÑIA QUEDA FACULTADA PARA SOLICITAR EN SU NOMBRE LA PATENTE CORRESPONDIENTE EN LA REPUBLICA DE COLOMBIA. DADO Y FIRMADO HOY 13 DE ABRIL DE 2007.

FIRMADO: JAMES E. BEARDEN, 13530 SW WEIR ROAD, BEAVERTON, OREGON 97008

FIRMADO: SEVERN D. DURAND, 5736 N MARYLAND AVENUE, PORTLAND OREGON 97217. FIRMADO: MICHAEL A. SEVERSON, 18232 SW SMOKETTE LANE, ALOHA, OREGON 97006. FECHADO HOY 17 DE ABRIL DE 2007. FIRMADO: CHRISTOPHER M. CARPENTER, 19047 SW CHESAPEAKE DRIVE, TUALATIN, OREGON 97062.

ESTADO DE OREGON, CONDADO DE MULTINOMAH

Hoy 13 de abril de 2007, ante mí notario público para el condado y estado arriba nombrados, compareció personalmente JAMES E. BEARDEN, SEVERN D. DURAND y MICHAEL A. SEVERSON, conocidos como las personas que firmaron y sellaron el documento precedente y reconocieron que lo hicieron por su propia y libre voluntad.

Firmado: J. R. RICHARDS, notario público, estado de Oregon

Mi cargo vence el 22 de octubre de 2008

SELO: SELLO OFICIAL, JAMES P. RICHARDS, NOTARIO PÚBLICO DE OREGON. MI CARGO VENCE EL 22 DE OCTUBRE DE 2008. NOMBRAMIENTO 384469.

CARPENTER, 19047 SW CHESAPEAKE DRIVE, TUALATIN, OREGON 97062.

ESTADO DE OREGON, CONDADO DE MULTINOMAH

Hoy 17 de abril de 2007, ante mí notario público para el condado y estado arriba nombrados, compareció personalmente CHRISTOPHER M. CARPENTER, conocidos como las personas que firmaron y sellaron el documento precedente y reconocieron que lo hicieron por su propia y libre voluntad.

Firmado: ELIZABETH J ABEL, notario público, estado de Oregon

Mi cargo vence el 1 de febrero de 2008.

#### APOSTILLA

(CONVENCIÓN DE LA HAYA DEL 5 DE OCTUBRE DE 1961)

1. PAÍS: ESTADOS UNIDOS DE AMÉRICA

Este documento público

2. ha sido firmado por ELIZABETH J ABEL

3. quien actúa en su calidad de NOTARIO PÚBLICO

4. lleva el sello/estampilla de DICHO NOTARIO

#### CERTIFICADO

5. en Seattle, Oregon. 6. el martes 24 de abril de 2007

7. por el asistente del secretario de estado

8. No. HC2007-3397

9. Sello/estampilla: ESTADO DE OREGÓN, 1859

10. Firma: SUSAN MARIE KREFT, ASISTENTE DEL SECRETARIO DE ESTADO.

#### APOSTILLA

(CONVENCIÓN DE LA HAYA DEL 5 DE OCTUBRE DE 1961)

1. PAÍS: ESTADOS UNIDOS DE AMÉRICA

Este documento público

2. ha sido firmado por JAMES P RICHARDS

3. quien actúa en su calidad de NOTARIO PÚBLICO

4. lleva el sello/estampilla DE DICHO NOTARIO

*Eduardo Calado N.*



COMANDO EN JEFE FUERZA ARMADA COLOMBIANA  
COMANDO EN JEFE FUERZA ARMADA COLOMBIANA

*Eduardo Calado Noguera*

COMANDO EN JEFE FUERZA ARMADA COLOMBIANA  
COMANDO EN JEFE FUERZA ARMADA COLOMBIANA  
SANTAFÉ DE BOGOTÁ, BOGOTÁ, D.C.  
15 MAY 2007



MINISTERIO DE DEFENSA  
COMANDO EN JEFE FUERZA ARMADA COLOMBIANA

2007 MAY 15 P 12:12

*RCM*  
RECEIVED TELECOMUNICACIONES  
BOGOTÁ, D.C.

MINISTERIO DE DEFENSA  
COMANDO EN JEFE FUERZA ARMADA COLOMBIANA

852349

*Eduardo Calado*  
COMANDO EN JEFE FUERZA ARMADA COLOMBIANA  
SANTAFÉ DE BOGOTÁ, BOGOTÁ, D.C.

## CERTIFICADO

5. en SALEM, OREGON 6. el martes 24 de abril de 2007

7. por el asistente del secretario de estado

8. HC2007-3395

9. Sello/estampilla: ESTADO DE OREGON, 1859

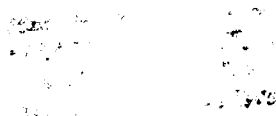
10. Firma: SUSAN MARIE KREFT, asistente del secretario de estado

COLO-1195-801-005-7

WPCL002G ID. 8826

Bogotá, 14 de mayo de 2007.

*Eduardo Calado H.*

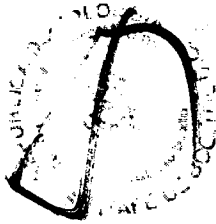


COMO... NO SE...  
... AGO... ...

*Eduardo Calado Noguera*

RECIBIDA POR

15 MAY 2007



NO ASUME  
RESPONSABILIDAD  
DEL TEXTO

2007 MAY 15 P 12:10

*Bam*

JEFE DE LEGALIZACIONES  
BOGOTA D.C.

MINISTERIO DE  
RELACIONES  
EXTERIORES

852347

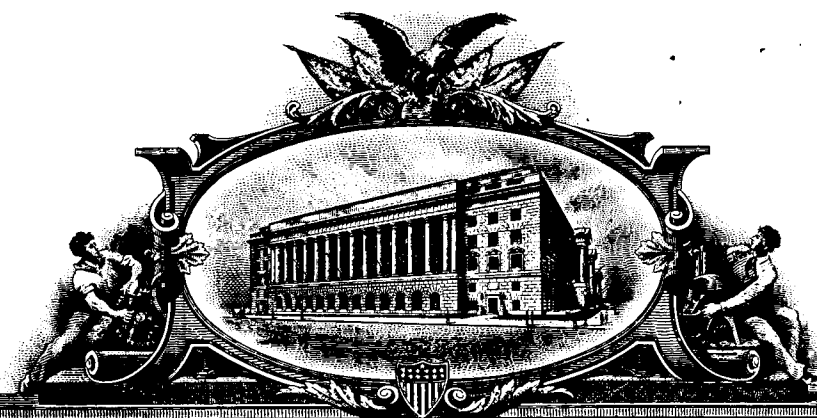
*Eduardo Calado*

COYACATEPEC, PUEBLA, MEXICO  
BOGOTA D.C.  
LEGACION COYACATEPEC

1625

gr

PA 7060929



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

April 03, 2007

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

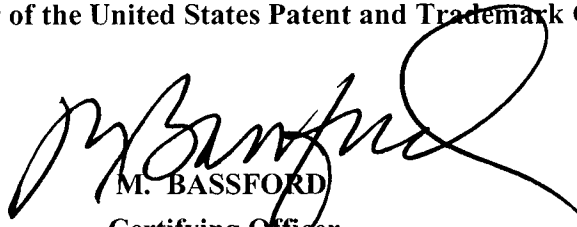
APPLICATION NUMBER: 60/794,815

FILING DATE: April 24, 2006

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS US60/794,815

By Authority of the  
Under Secretary of Commerce for Intellectual Property  
and Director of the United States Patent and Trademark Office



  
M. BASSFORD  
Certifying Officer

93

22713 U.S. PTO  
042406

PTO/SB/18 (12-04)  
Approved for use through 07/31/2006. OMB 0651-0032  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. EQ 287107564 US

| INVENTOR(S)                                                                                                                                                                                                                                            |  |                        |                        |                                                         |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|------------------------|---------------------------------------------------------|--|
| Given Name (first and middle [if any])                                                                                                                                                                                                                 |  | Family Name or Surname |                        | Residence<br>(City and either State or Foreign Country) |  |
| James E.                                                                                                                                                                                                                                               |  | Bearden                |                        | Portland, Oregon                                        |  |
| <input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto                                                                                                                                  |  |                        |                        |                                                         |  |
| TITLE OF THE INVENTION (500 characters max)                                                                                                                                                                                                            |  |                        |                        |                                                         |  |
| WEAR ASSEMBLY                                                                                                                                                                                                                                          |  |                        |                        |                                                         |  |
| Direct all correspondence to:                                                                                                                                                                                                                          |  |                        | CORRESPONDENCE ADDRESS |                                                         |  |
| <input checked="" type="checkbox"/> Customer Number                                                                                                                                                                                                    |  |                        | 54327                  |                                                         |  |
| OR                                                                                                                                                                                                                                                     |  |                        |                        |                                                         |  |
| <input type="checkbox"/> Firm or Individual Name                                                                                                                                                                                                       |  |                        |                        |                                                         |  |
| Address                                                                                                                                                                                                                                                |  |                        |                        |                                                         |  |
| Address                                                                                                                                                                                                                                                |  |                        |                        |                                                         |  |
| City                                                                                                                                                                                                                                                   |  | State                  |                        | ZIP                                                     |  |
| Country                                                                                                                                                                                                                                                |  | Telephone              |                        | Fax                                                     |  |
| ENCLOSED APPLICATION PARTS (check all that apply)                                                                                                                                                                                                      |  |                        |                        |                                                         |  |
| <input checked="" type="checkbox"/> Specification Number of Pages                                                                                                                                                                                      |  | 10                     |                        | <input type="checkbox"/> CD(s), Number _____            |  |
| <input checked="" type="checkbox"/> Drawing(s) Number of Sheets                                                                                                                                                                                        |  | 13                     |                        | <input type="checkbox"/> Other (specify) _____          |  |
| <input checked="" type="checkbox"/> Application Data Sheet. See 37 CFR 1.76                                                                                                                                                                            |  |                        |                        |                                                         |  |
| Application Size Fee: If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 C.F.R. 1.16(s). |  |                        |                        |                                                         |  |
| METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT                                                                                                                                                                           |  |                        |                        |                                                         |  |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.                                                                                                                                                                        |  |                        |                        | TOTAL FEE<br>Amount (\$)<br><br>200.00                  |  |
| <input type="checkbox"/> A check or money order is enclosed to cover the filing fees                                                                                                                                                                   |  |                        |                        |                                                         |  |
| <input checked="" type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 50-3585                                                                                               |  |                        |                        |                                                         |  |
| <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.                                                                                                                                                                            |  |                        |                        |                                                         |  |
| The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.                                                                                                                |  |                        |                        |                                                         |  |
| <input checked="" type="checkbox"/> No.                                                                                                                                                                                                                |  |                        |                        |                                                         |  |
| <input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____                                                                                                                                     |  |                        |                        |                                                         |  |

112948 U.S. PTO  
60/7948-15

042406

Respectfully submitted,  
SIGNATURE Steven P. Schad  
TYPED or PRINTED NAME Steven P. Schad  
TELEPHONE 503.788.6225

Date April 24, 2006  
REGISTRATION NO. 32,550  
(if appropriate)  
Docket Number: 355-PROV

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT  
This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



22713 U.S. PTO  
042406

PTO/SB/16 (12-04)  
Approved for use through 07/31/2006. OMB 0651-0032  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

## PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. EQ 287107564 US

| INVENTOR(S)                                                                                                                                                                                                                                            |                        |                                                         |                                                |     |                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------|------------------------------------------------|-----|----------------------------------------|
| Given Name (first and middle (if any))                                                                                                                                                                                                                 | Family Name or Surname | Residence<br>(City and either State or Foreign Country) |                                                |     |                                        |
| James E.                                                                                                                                                                                                                                               | Bearden                | Portland, Oregon                                        |                                                |     |                                        |
| <input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto                                                                                                                                  |                        |                                                         |                                                |     |                                        |
| TITLE OF THE INVENTION (500 characters max)                                                                                                                                                                                                            |                        |                                                         |                                                |     |                                        |
| WEAR ASSEMBLY                                                                                                                                                                                                                                          |                        |                                                         |                                                |     |                                        |
| Direct all correspondence to:                                                                                                                                                                                                                          |                        | CORRESPONDENCE ADDRESS                                  |                                                |     |                                        |
| <input checked="" type="checkbox"/> Customer Number                                                                                                                                                                                                    |                        | 54327                                                   |                                                |     |                                        |
| OR                                                                                                                                                                                                                                                     |                        |                                                         |                                                |     |                                        |
| <input type="checkbox"/> Firm or Individual Name                                                                                                                                                                                                       |                        |                                                         |                                                |     |                                        |
| Address                                                                                                                                                                                                                                                |                        |                                                         |                                                |     |                                        |
| Address                                                                                                                                                                                                                                                |                        |                                                         |                                                |     |                                        |
| City                                                                                                                                                                                                                                                   |                        | State                                                   |                                                | ZIP |                                        |
| Country                                                                                                                                                                                                                                                |                        | Telephone                                               |                                                | Fax |                                        |
| ENCLOSED APPLICATION PARTS (check all that apply)                                                                                                                                                                                                      |                        |                                                         |                                                |     |                                        |
| <input checked="" type="checkbox"/> Specification Number of Pages                                                                                                                                                                                      |                        | 10                                                      | <input type="checkbox"/> CD(s), Number _____   |     |                                        |
| <input checked="" type="checkbox"/> Drawing(s) Number of Sheets                                                                                                                                                                                        |                        | 13                                                      | <input type="checkbox"/> Other (specify) _____ |     |                                        |
| <input checked="" type="checkbox"/> Application Data Sheet. See 37 CFR 1.76                                                                                                                                                                            |                        |                                                         |                                                |     |                                        |
| Application Size Fee: If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 C.F.R. 1.16(s). |                        |                                                         |                                                |     |                                        |
| METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT                                                                                                                                                                           |                        |                                                         |                                                |     |                                        |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.                                                                                                                                                                        |                        |                                                         |                                                |     | TOTAL FEE<br>Amount (\$)<br><br>200.00 |
| <input type="checkbox"/> A check or money order is enclosed to cover the filing fees                                                                                                                                                                   |                        |                                                         |                                                |     |                                        |
| <input checked="" type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 50-3585                                                                                               |                        |                                                         |                                                |     |                                        |
| <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.                                                                                                                                                                            |                        |                                                         |                                                |     |                                        |
| The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.                                                                                                                |                        |                                                         |                                                |     |                                        |
| <input checked="" type="checkbox"/> No.                                                                                                                                                                                                                |                        |                                                         |                                                |     |                                        |
| <input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____                                                                                                                                     |                        |                                                         |                                                |     |                                        |

Respectfully submitted,  
SIGNATURE

*Steven P. Schad*

Date April 24, 2006

TYPED or PRINTED NAME Steven P. Schad

REGISTRATION NO. 32,550  
(if appropriate)

TELEPHONE 503.788.6225

Docket Number: 355-PROV

### USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Effective on 12/08/2004.

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

**FEE TRANSMITTAL  
for FY 2005**

Complete if Known

|                      |                  |
|----------------------|------------------|
| Application Number   | TBD              |
| Filing Date          | April 24, 2006   |
| First Named Inventor | James E. Bearden |
| Examiner Name        |                  |
| Art Unit             |                  |
| Attorney Docket No.  | 355-PROV         |

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 200.00)

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify) : \_\_\_\_\_☒ Deposit Account Deposit Account Number: 50-3585 Deposit Account Name: ESCO Corporation

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee☒ Charge any additional fee(s) or underpayments of fee(s) ☒ Credit any overpayments

Under 37 CFR 1.16 and 1.17

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

**FEE CALCULATION****BASIC FILING, SEARCH, AND EXAMINATION FEES**

| Application Type | FILING FEES |                      | SEARCH FEES |                      | EXAMINATION FEES |                      | Fees Paid (\$) |
|------------------|-------------|----------------------|-------------|----------------------|------------------|----------------------|----------------|
|                  | Fee (\$)    | Small Entity Fee(\$) | Fee(\$)     | Small Entity Fee(\$) | Fee(\$)          | Small Entity Fee(\$) |                |
| Utility          | 300         | 150                  | 500         | 250                  | 200              | 100                  | _____          |
| Design           | 200         | 100                  | 100         | 50                   | 130              | 65                   | _____          |
| Plant            | 200         | 100                  | 300         | 150                  | 160              | 80                   | _____          |
| Reissue          | 300         | 150                  | 500         | 250                  | 600              | 300                  | _____          |
| Provisional      | 200         | 100                  | 0           | 0                    | 0                | 0                    | 200.00         |

**2. EXCESS CLAIM FEES****Fee Description**

Each claim over 20 (including Reissues)

Each independent claim over 3 (including Reissues)

Multiple dependent claims

|                     |                     |                |                      |
|---------------------|---------------------|----------------|----------------------|
| <b>Total Claims</b> | <b>Extra Claims</b> | <b>Fee(\$)</b> | <b>Fee Paid (\$)</b> |
|---------------------|---------------------|----------------|----------------------|

| Small Entity              |               |
|---------------------------|---------------|
| Fee (\$)                  | Fee (\$)      |
| 50                        | 25            |
| 200                       | 100           |
| 360                       | 180           |
| Multiple Dependent Claims |               |
| Fee (\$)                  | Fee Paid (\$) |
| _____                     | _____         |

HP = highest number of total claims paid for, if greater than 20.

|                      |                     |                |                      |
|----------------------|---------------------|----------------|----------------------|
| <b>Indep. Claims</b> | <b>Extra Claims</b> | <b>Fee(\$)</b> | <b>Fee Paid (\$)</b> |
|----------------------|---------------------|----------------|----------------------|

HP = highest number of independent claims paid for, if greater than 3.

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

|                     |                     |                                                         |                 |                      |
|---------------------|---------------------|---------------------------------------------------------|-----------------|----------------------|
| <b>Total Sheets</b> | <b>Extra Sheets</b> | <b>Number of each additional 50 or fraction thereof</b> | <b>Fee (\$)</b> | <b>Fee Paid (\$)</b> |
|---------------------|---------------------|---------------------------------------------------------|-----------------|----------------------|

- 100 = \_\_\_\_\_ / 50 = \_\_\_\_\_ (round up to a whole number) x \_\_\_\_\_ = \_\_\_\_\_

**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge) : \_\_\_\_\_

**SUBMITTED BY**

|                   |                                                                                     |                                      |                |           |              |
|-------------------|-------------------------------------------------------------------------------------|--------------------------------------|----------------|-----------|--------------|
| Signature         |  | Registration No.<br>(Attorney/Agent) | 32,550         | Telephone | 503.778.6225 |
| Name (Print/Type) | Steven P. Schad                                                                     | Date                                 | April 24, 2006 |           |              |

This collection of information is required by 37 CFR 1.138. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Communications Section, P.O. Box 4228, Alexandria, VA 22304-4228.

95

## **Application Data Sheet**

### **Application Information**

|                                  |               |
|----------------------------------|---------------|
| Application number::             |               |
| Filing Date::                    | 04/24/06      |
| Application Type::               | Provisional   |
| Subject Matter::                 | Utility       |
| Suggested classification::       |               |
| Suggested Group Art Unit::       |               |
| CD-ROM or CD-R?::                | None          |
| Number of CD disks::             |               |
| Number of copies of CDs::        |               |
| Sequence submission?::           |               |
| Computer Readable Form (CRF)?::  |               |
| Number of copies of CRF::        |               |
| Title::                          | Wear Assembly |
| Attorney Docket Number::         | 355-PROV      |
| Request for Early Publication?:: | NO            |
| Request for Non-Publication?::   | NO            |
| Suggested Drawing Figure::       |               |
| Total Drawing Sheets::           | 13            |
| Small Entity?::                  | NO            |
| Latin name::                     |               |
| Variety denomination name::      |               |
| Petition included?::             | NO            |
| Petition Type::                  |               |
| Licensed US Govt. Agency::       |               |
| Contract or Grant Numbers::      |               |
| Secrecy Order in Parent Appl.?:: | NO            |



96

## Applicant Information

Applicant Authority Type:: Inventor  
 Primary Citizenship Country::  
 Status:: Full Capacity  
 Given Name:: James  
 Middle Name:: E.  
 Family Name:: Bearden  
 Name Suffix::  
 City of Residence:: Portland  
 State or Province of Residence:: Oregon  
 Country of Residence:: USA  
 Street of mailing address:: 2141 NW 25<sup>th</sup> Avenue  
 City of mailing address:: Portland  
 State or Province of mailing address:: Oregon  
 Country of mailing address:: USA  
 Postal or Zip Code of mailing address:: 97210

## Correspondence Information

Correspondence Customer Number:: 54327

## Representative Information

Representative Customer Number:: 54327

## Domestic Priority Information

| Application:: | Continuity Type:: | Parent Application:: | Parent Filing Date:: |
|---------------|-------------------|----------------------|----------------------|
|               |                   |                      |                      |
|               |                   |                      |                      |

87

### Foreign Priority Information

| Country:: | Application number:: | Filing Date:: | Priority Claimed:: |
|-----------|----------------------|---------------|--------------------|
|           |                      |               |                    |
|           |                      |               |                    |

### Assignee Information

Assignee name:: ESCO Corporation  
Street of mailing address:: 2141 NW 25<sup>th</sup> Avenue  
City of mailing address:: Portland  
State or Province of mailing address:: Oregon  
Country of mailing address:: USA  
Postal or Zip Code of mailing address:: 97210

y8

## WEAR ASSEMBLY

### Field of the Invention

[01] The present invention pertains to a wear assembly for securing a wear member to excavating equipment.

### Background of the Invention

[02] Wear parts are commonly attached along the digging edge of excavating equipment, such as excavating buckets or cutterheads, to protect the equipment from wear and to enhance the digging operation. The wear parts may be excavating teeth, shrouds, etc. Such wear parts typically include a base, a wear member, and a lock to releasably hold the wear member to the base.

[03] Ordinarily, the base is fixed to the digging edge of the excavating equipment (e.g., a lip of a bucket). The base may be formed as an integral part of the digging edge, or as one or more adapters that are fixed to the digging edge by welding or mechanical attachment. The wear member fits over the base. The assembled base and wear member cooperatively define an opening into which the lock is received to releasably hold the wear member to the base.

[04] Wear members for excavators are commonly subjected to harsh conditions and heavy loading. Accordingly, it is desirable for the locking arrangement to be strong to effectively retain the wear member to the equipment, and also easily manipulated to permit removal and replacement of the wear member in the field. Many different lock arrangements have been designed in an effort to enhance their strength, stability, safety, and ease of use with varying degrees of success.

24

### Summary of the Invention

[05] The present invention pertains to an improved wear assembly for excavating equipment, wherein the wear member is secured by a locking arrangement having improved stability, strength, safety, and ease of use.

[06] In accordance with one aspect of the invention, a lock is coupled to the wear member to form a single, integral component. In this way, a wear assembly can be formed with as few as two components: (1) a base component fixed to the excavating equipment and (2) a combined wear part/lock component to mount on the base. This reduction of parts results in lower shipping costs, reduced storage needs, and less inventory concerns. This assembly ensures the availability of a lock to secure a replacement wear member to the equipment. Since a new lock is included with every new wear member, the risks associated with reusing a damaged or weakened lock are eliminated. In addition, the risk of dropping or losing a lock during installation is eliminated. As a result, the lock is easy to use for installation and replacement of wear parts.

[07] In another aspect of the invention, the lock is fit into a through-hole in the wear member for engagement with the base, and moved about a pivot support spaced from the through-hole. The lock cooperates with the pivot support so that the lock swings between its hold and release positions in an easy to use manner. Further, with this construction, the pivotal connection for the lock is largely shielded from high loads during use.

[08] In another aspect of the invention, the lock is driven into and retained in a locked condition by a threaded member. The threaded member offers secure fixing of the lock in a digging operation as well as sure advancement to overcome any

90

frictional resistance. The use of the threaded member is intuitive to the operator and easy to use.

[09] In a further aspect of the invention, the threaded member is anchored only to the wear part without involvement with the base. As a result, there are no alignment difficulties or any need to create additional holes in the base. Moreover, the lock is easily combined with the wear member for shipping, storage and installation. In one preferred construction, the wear member is formed with a through-hole for passage of the lock to the base, and a support to anchor the threaded member to the wear member. The reliance solely on the wear member to anchor and move the lock results in an efficient, reliable, and easy system to use.

[10] In another aspect of the invention, the base is formed with only a small groove or shoulder to engage the lock and thereby hold the wear member to the equipment. In this way, the base remains largely in tact without loss of material for receipt of the lock for a stronger and more durable construction. In one preferred example, the groove is defined along the rear end of a forwardly projecting nose.

[11] In another aspect of the invention, the lock is operable between release and hold positions without the need for a hammer for easier use and greater safety.

#### Brief Description of the Drawings

[12] Figure 1 is a partial perspective view of a wear assembly in accordance with the present invention, i.e., with the mounting portion of the base omitted.

[13] Figure 2 is a partial perspective view of the wear assembly similar to Figure 1 except that the lock is moved to its release position.

[14] Figure 3 is a cross-sectional view taken along lines 3-3 in Figure 1.

91

- [15] Figure 4 is a cross-sectional view taken along lines 4-4 in Figure 2.
- [16] Figure 5 is a perspective view of a base for the wear assembly.
- [17] Figure 6 is a side view of the base.
- [18] Figure 7 is a top view of the lock.
- [19] Figure 8 is an inner side view of the lock.
- [20] Figure 9 is a front view of the lock.
- [21] Figure 10 is an outer side view of the lock.
- [22] Figure 11 is a perspective view of the lock.
- [23] Figure 12 is a partial perspective view of the wear member.
- [24] Figure 13 is a partial, rear perspective view of the wear member.

#### Detailed Description of the Preferred Embodiments

[25] The present invention pertains to a wear assembly 10 for releasably attaching a wear member 12 to excavating equipment (not shown). In this application, wear member 12 is described in terms of a point for an excavating tooth that is attached to a lip of an excavating bucket. However, the wear member could be in the form of other kinds of wear parts (e.g., shrouds) or attached to other excavating equipment (e.g., dredge cutterheads). Moreover, relative terms such as forward, rearward, up or down are used for convenience of explanation with reference to Figure 1; other orientations are possible.

[26] In one embodiment, the wear member or point 12 is adapted to fit on a nose 14 (Figs. 1-4). The nose is the front portion of a base 16 (Figs. 5 and 6) that is fixed to a bucket (not shown) or other equipment. The rear mounting portion 17 of base 16 can be fixed to the bucket in a number of common ways. In the illustrated example, base 16 includes rearward legs 19, 21 that extend over and are welded to

the lip of the bucket. Nevertheless, the base may be mechanically fixed to the bucket lip, such as by a Whisler-style lock. Additionally, the base could be formed with only one leg or as an integral portion of the lip (not shown), such as by being cast with the lip. When the base is secured to the lip by welding or a locking mechanism, the base is typically called an adapter. The base can also consist of a plurality of interconnected adapters. Although wear member 12 includes a socket 18 to receive nose 14 in order to minimize the material to be discarded when the wear member needs to be replaced, the nose and socket could be switched so that the base defines a socket for receiving a nose of the wear member. In either case, wear member 12 is releasably secured to nose 14 by a lock 20.

[27] In one preferred embodiment, the nose and socket are generally as described in co-pending U.S. Patent Application Serial No. 60/774,401 filed February 17, 2006, which is hereby incorporated by reference; i.e., the nose and socket constructions are the same except for the formations associated with the locking arrangement. In general, nose 14 includes a front stabilizing end 22 and a body 24 having stabilizing recesses 26, 28 (Figs. 5 and 6). Wear member 12 includes a socket 18 adapted to matingly receive nose 14 (Figs. 12 and 13). Accordingly, socket 18 has a complementary front stabilizing end 32 and a main portion 34 provided with stabilizing projections 36, 38 to fit in recesses 26, 28. Nevertheless, other nose and socket formations could be used with the locking concepts of the present invention.

[28] Lock 20 includes a body 40 and a threaded member 42 (Figs. 7-11). In one preferred construction, body 40 is generally U-shaped with a pivot member 44 at one end, a retention member 46 at the opposite end, and a central opening 48 for

43

receiving and cooperating with the threaded member 42. In general, lock 20 swings about pivot member 44 between a hold position that retains wear member 12 to nose 14, and a release position which permits installation and removal of the wear member to and from the nose.

[29] Wear member 12 includes converging walls 50 and sidewalls 52 (figs. 1-2 and 12-13). In a preferred construction, at least one of the sidewalls includes an opening 53 for receiving lock 20. An opening could be included in both sidewalls to enable reversing of the wear member on the nose and/or to permit the use of two locks; however, only a single lock on one side is needed to secure the wear member to the nose. Alternatively, reversible mounting could be achieved by providing two openings in the nose. Mounting the lock in a sidewall enables a secure attachment for the wear member in a location that is more protected from wear. Nevertheless, opening 53 could, in the same way, be formed in one or both of the converging walls 50 instead of sidewalls 52.

[30] Opening 53 includes a pivot support 54, preferably at a front end of the opening, to cooperate with pivot member 44 of lock 20 (Figs. 12 and 13). Pivot support 54 is preferably in the form of a recess 56 defined by a first recessed wall 58 that is spaced inward of the outer wear surface 60 of wear member 12, a second recessed wall 62 that is spaced outward of the interior surface 64 of socket 18, and a lateral base wall 66. First and second recessed walls 58, 62 are laterally offset to define a space for receiving pivot member 44, and axially offset (although they may overlap) to define a gap 68 between a front wall 70 of opening 53 and base wall 66. Pivot member 44 is defined by a lug 74 that extends forward from a front leg 76 of body 40 (Figs. 7-11). Lug 74 is set into recess 56 by feeding the free end 78 of lug



9M

74 through gap 68 and rotating lock 20 toward sidewall 52 to set the lug forward of base wall 66, and between recessed walls 58, 62. Lug 74 is longer than gap 68 to prevent removal of lock 20 from recess 56 without rotating the lock in the reverse motion. During use, threaded member 42 prevents over-swinging of the lock and thereby retains the lock to the wear member. To maximize strength in the wear member, opening 53 narrows toward front wall 70. Of course, other pivoting constructions could be used.

[31] Opening 53 further includes a through-hole 80 at its rear end for passage of the retention member 46 through sidewall 52 to engage nose 14 (Figs. 12 and 13). In the illustrated embodiment, through-hole 80 has a widened generally rectangular configuration. In this way, retention member 46 has a wide abutment surface 82 to oppose the rear wall 84 of opening 53 (Figs. 7-11). In addition, in the preferred nose and socket design, the cooperating recess 28 and projection 38 provide rear wall 84 with an increased depth (i.e., inward toward nose 14) for additional surface area to engage abutment surface 82. Since the engagement of abutment surface 82 and rear wall 84 resists removal of wear member 12 from nose 14, a larger surface area reduces stress in the components and increases the life of the locking arrangement.

[32] A medial wall 86 is provided in opening 53 between recess 56 and through-hole 80 to cooperate with threaded member 42 (Figs. 12 and 13). Medial wall 86 is preferably depressed relative to outer wear surface 60 to enable lock 20 to be fit within opening 53 to eliminate obstructions to the flow of material around the wear member and to partially protect the lock from wear during use. In the preferred construction, threaded member 42 includes a bolt 88 with a threaded shank 90 and

95

head 92, and a nut 94 to engage shank 90 (Figs. 7-11). Medial wall 86 includes a bore 96 through which shank 90 extends. A cavity 98 is formed on the interior side of medial wall 86 to receive and prevent nut 94 from rotating. Though cavity 98 is shown as hexagonal to receive hexagonal nut 94, other shapes are possible. In use, lock 20 is secured to wear member 12 prior to installation on nose 14. In this way, nut 94 can be held from within socket 18 for engagement with shank 90. Nevertheless, other arrangements could be used. For example, nut 94 could be secured within cavity 98 by an adhesive, welding or other means for later attachment to shank 90. Alternatively, bore 96 could be threaded instead of using nut 94.

[33] Body 40 of lock 20 also includes a bore 48 that generally aligns with bore 96 in medial wall 86. Bore 48 is, of course, oversized relative to shank 90 to permit the pivotal motion of body about pivot support 54. A pocket 103 is provided about bore 101 to receive head 92 and permit the attachment of a tool (e.g., a socket wrench) for turning of bolt 88. The free end 107 of bolt 88 may be deformed to prevent release of bolt 88 from nut 92. A small hub 109 is preferably formed around bore 96 on inner side 111 of body 40 for receipt within a counter bore 113 in medial wall 86. Hub 109 and counter bore 113 are to allow the bolt head to be set deeper into the assembly to resist wear, while still retaining the strength of the point and medial wall.

[34] In use, lock 20 is attached to wear member 12 by inserting pivot member 44 into recess 56. Bolt 88 is fed through bore 96 and threaded to nut 94 in cavity 98. Retention member 46 is received into through-hole 80. In an extended position of lock 20 (Figs. 2 and 4), i.e., the release position, retention member 46 sets within through-hole 80 but does not extend into socket 18. This position is

96

preferably manually set by the operator. Nonetheless, an elastomer or other spring means (not shown) could be fit between medial wall 86 and lock body 40 to bias lock 20 to its release position.

[35] Lock 20, once secured, forms a single, integral component with wear member 12. The lock and wear member can, then, be shipped as a single unit and stored by a dealer or end user without fear of losing the lock. Also, since fewer parts are required to be shipped and stored, shipping costs and inventory concerns are reduced. Additionally, since lock 20 remains secured to wear member 12 in the release and hold positions, the wear member can be installed with the lock to reduce the number of components needed for assembly and virtually eliminate the problems associated with dropped and/or lost locks in the field.

[36] Once the wear member 12 has been fit onto nose 14, threaded member 44 can be rotated to drive lock body 40 in an arc about pivot support 54 and move retention member 46 into socket 18 to engage nose 14 (Figs. 1 and 3). Nose 14 preferably includes a groove 115 to receive the free end 117 of retention member 46 (Figs. 3-6). The retention member is then sandwiched between rear wall 84 of wear member 12 and front face 118 of groove 115 (Fig. 3). As a result, the loads are carried by retention member 46, which is formed as a rigid block (preferably of steel) to accommodate heavy loading. In this way, the loads are not transmitted forward to threaded member 46 or pivot member 44. Hence, these parts of the lock do not need reinforcement. In addition, there is no deformation of shank 90 or pivot member 44 during use to impede the movement of the lock to the release position.

97

[37] Groove 115 is preferably a narrow channel in a side 120 of nose 114 (Figs. 5 and 6). The top and bottom ends of groove 115 are preferably closed to retain, as much as possible, the strength and continuity of nose 14 despite the engagement with lock 20. Nevertheless, groove 115 could have other constructions. For example, groove 115 may extend across the entire side 120 and be open at its top and bottom. Also, groove 115 may be open rearwardly so that groove is essentially a shoulder with a rearwardly facing abutting surface.

[38] When wear member 12 needs to be replaced, threaded member 44 is loosened so that head 92 backs outward away from nose 14 (Figs. 2 and 4). Once loosened, the lock can be rotated to its release position with just the operator's hands or via a pry tool. A pry slot 121 in body 40 is provided to facilitate the use of a pry tool in rotating lock 20 from the hold position to the release position (Figs. 1-4 and 10). If an elastomer or other spring is used, it may provide sufficient force to automatically rotate lock 20 outward. In addition, a fixed flange (not shown) on shank 90 could be provided between medial wall 86 and body 40 to push lock 20 to its release position when bolt 88 is loosened.

[39] In an alternative construction, threaded member 46 could be omitted and replaced by a latch (not shown) that holds lock 20 in a hold position. As examples only, the latch could be formed as disclosed in co-pending U.S. Patent Application Serial No. 60/787,268 filed March 30, 2006, and identified by docket number 348-Prov, or as in U.S. Patent No. 5,088,214, both of which are herein incorporated by reference. The latch would preferably be biased by an elastomer into a latched condition. A relief could be provided to enable release of the latch.

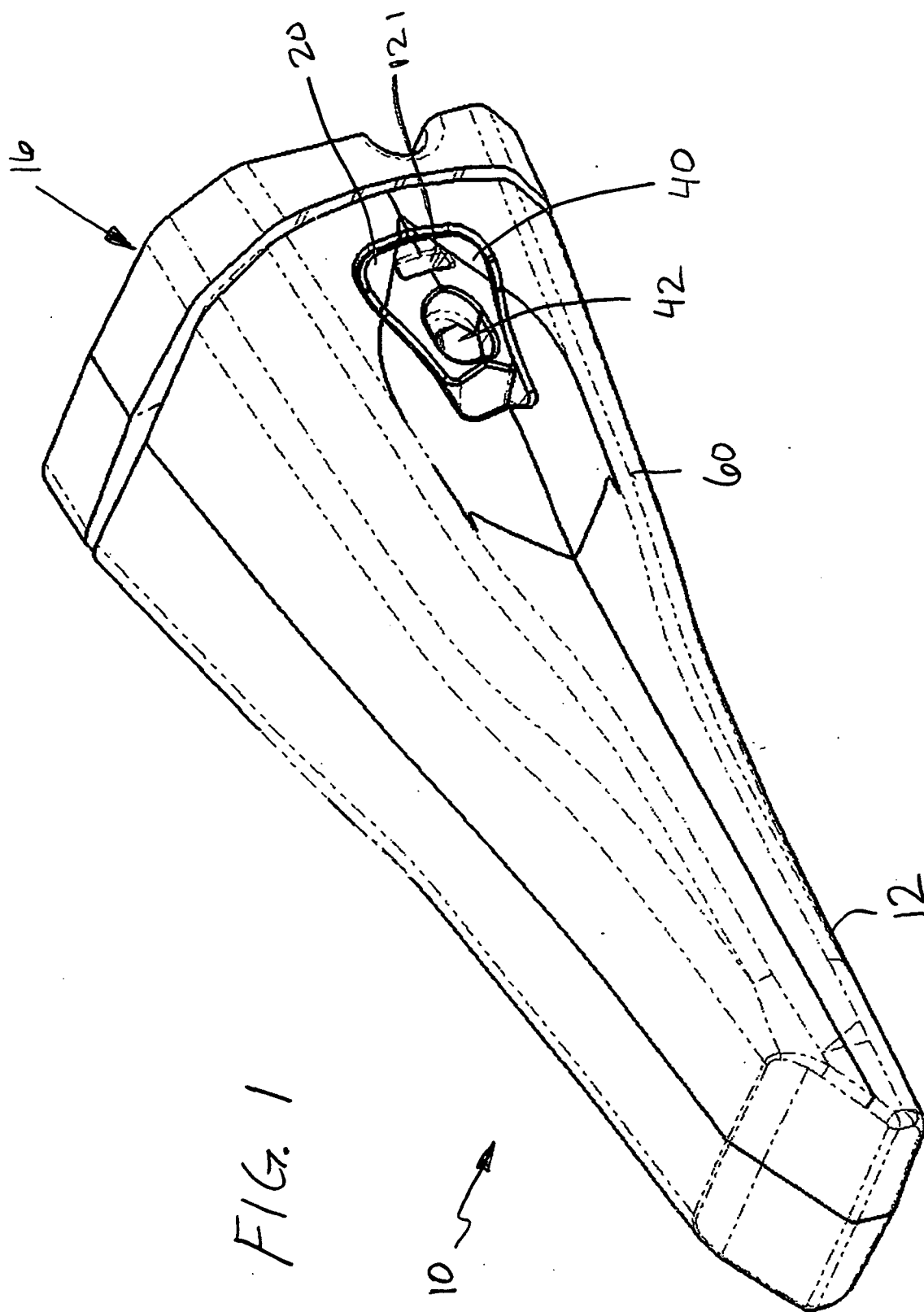


FIG. 1

BEST AVAILABLE COPY

69

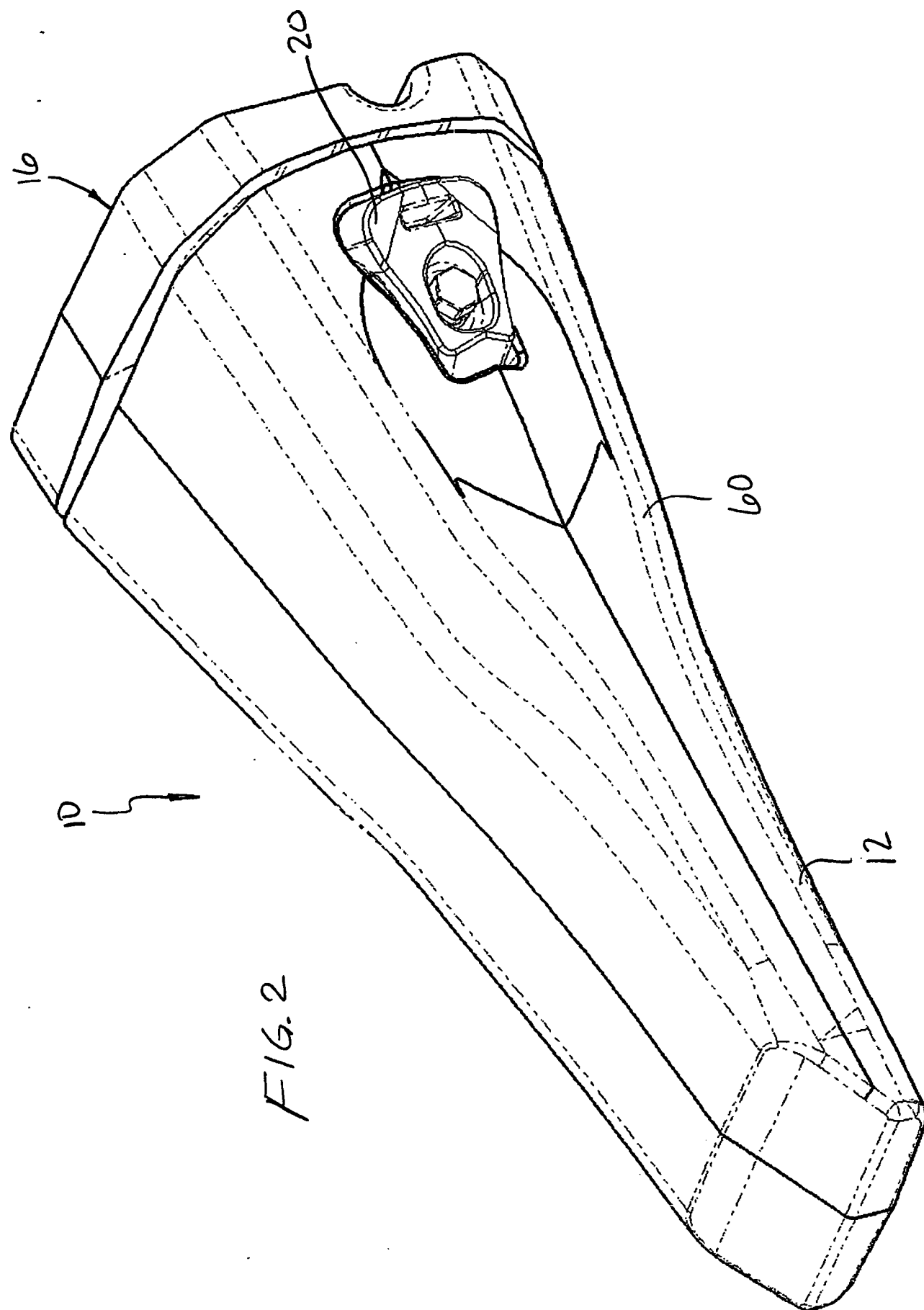
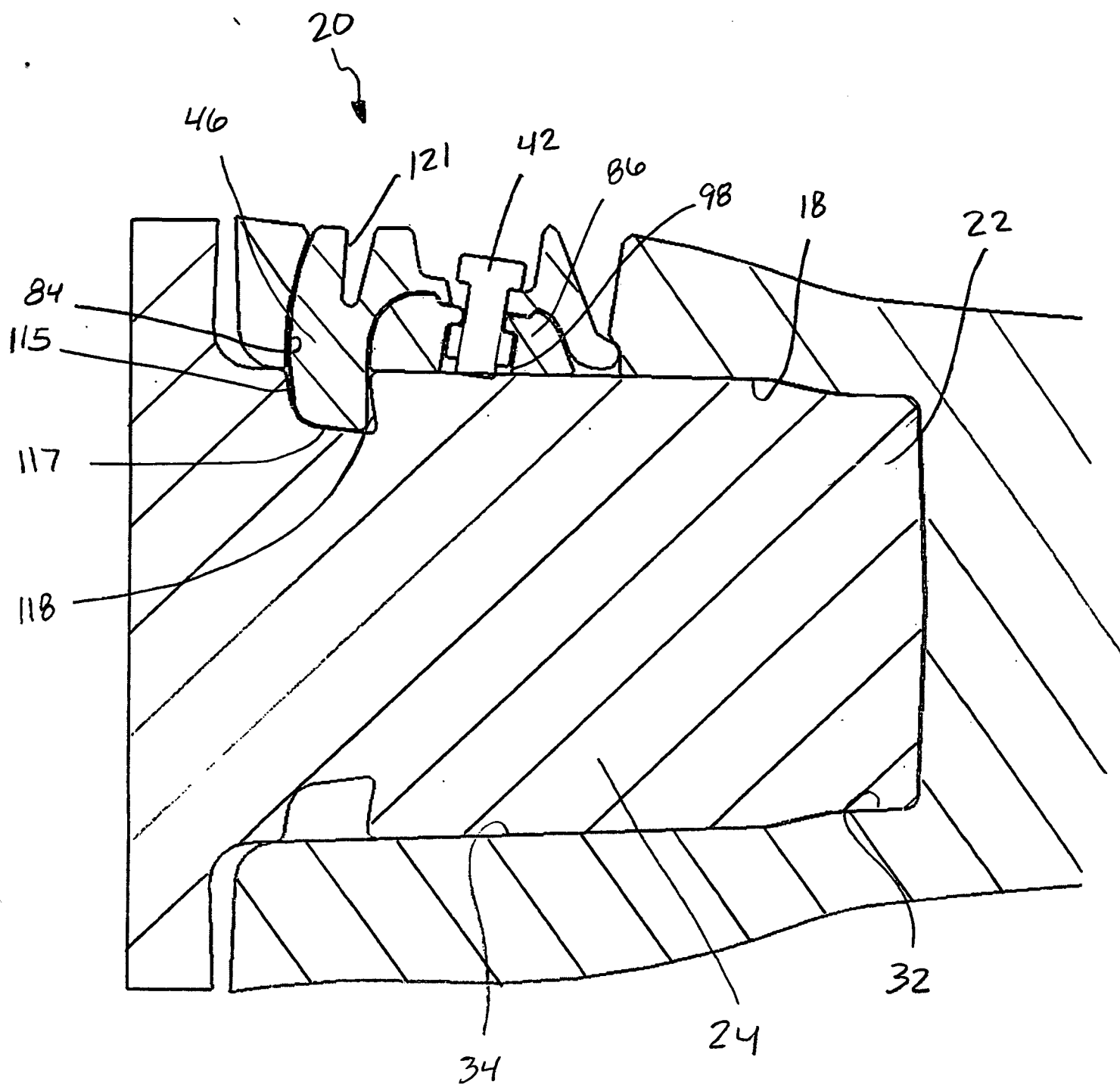
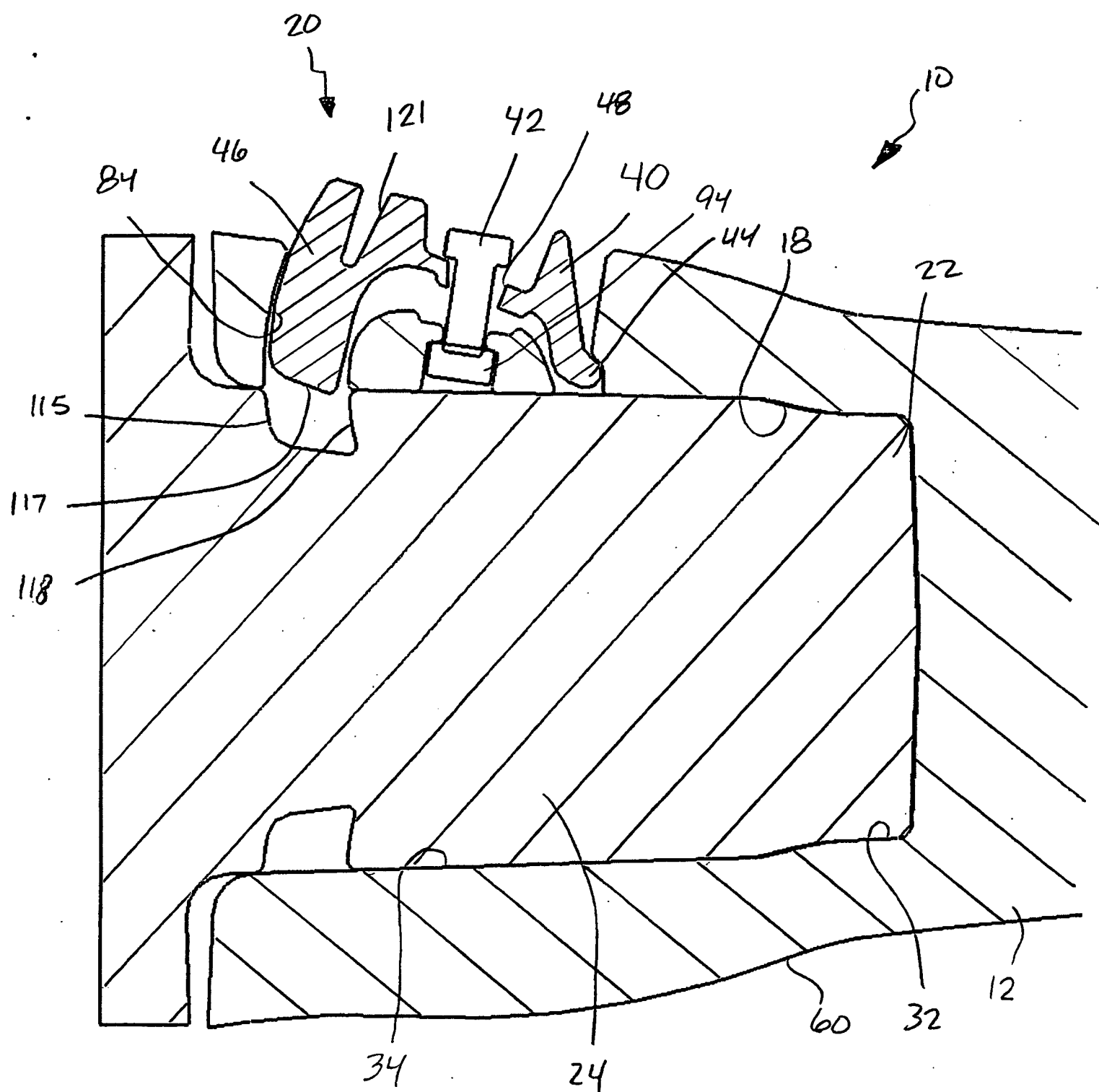


FIG. 2







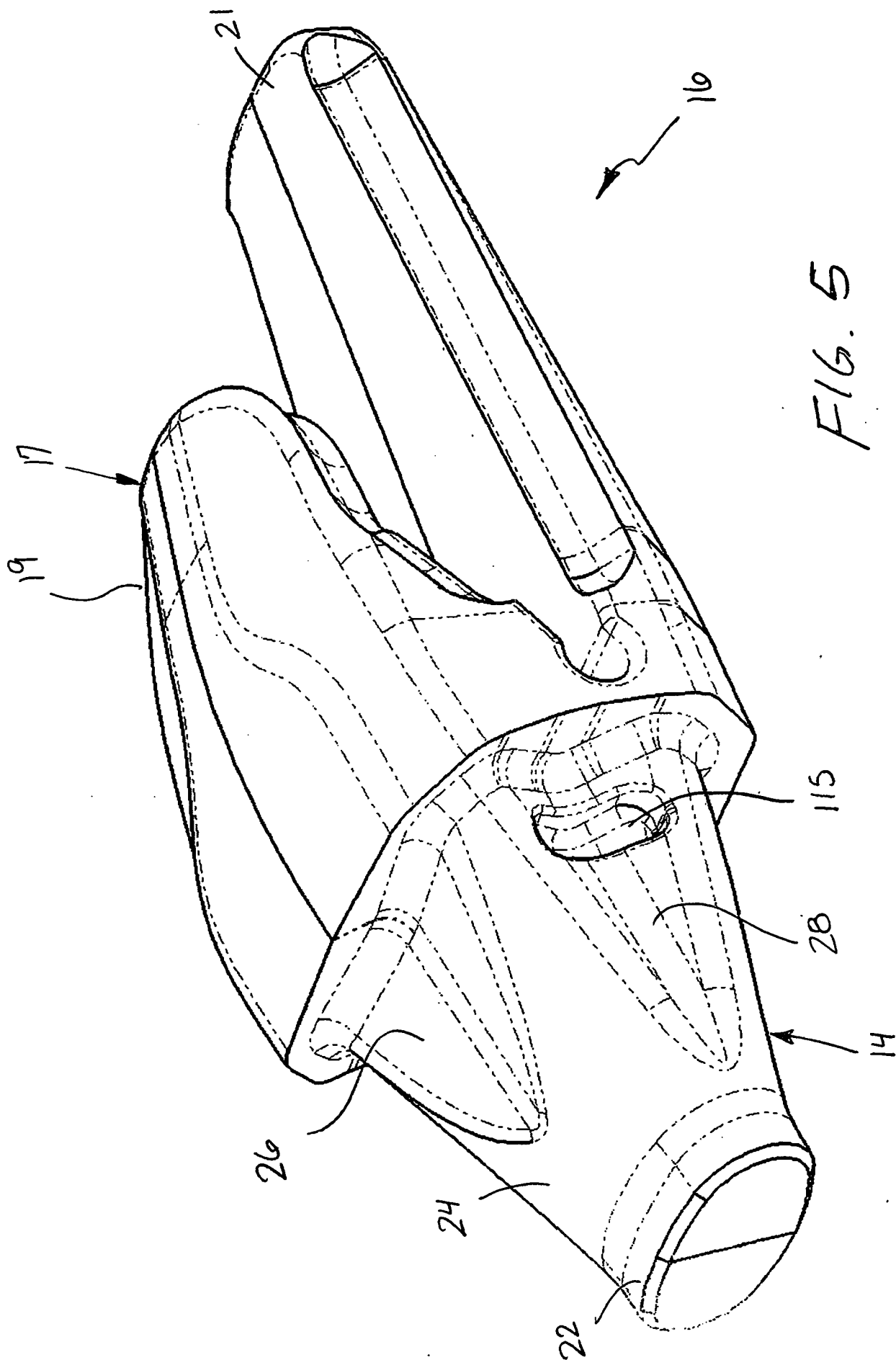


FIG. 5

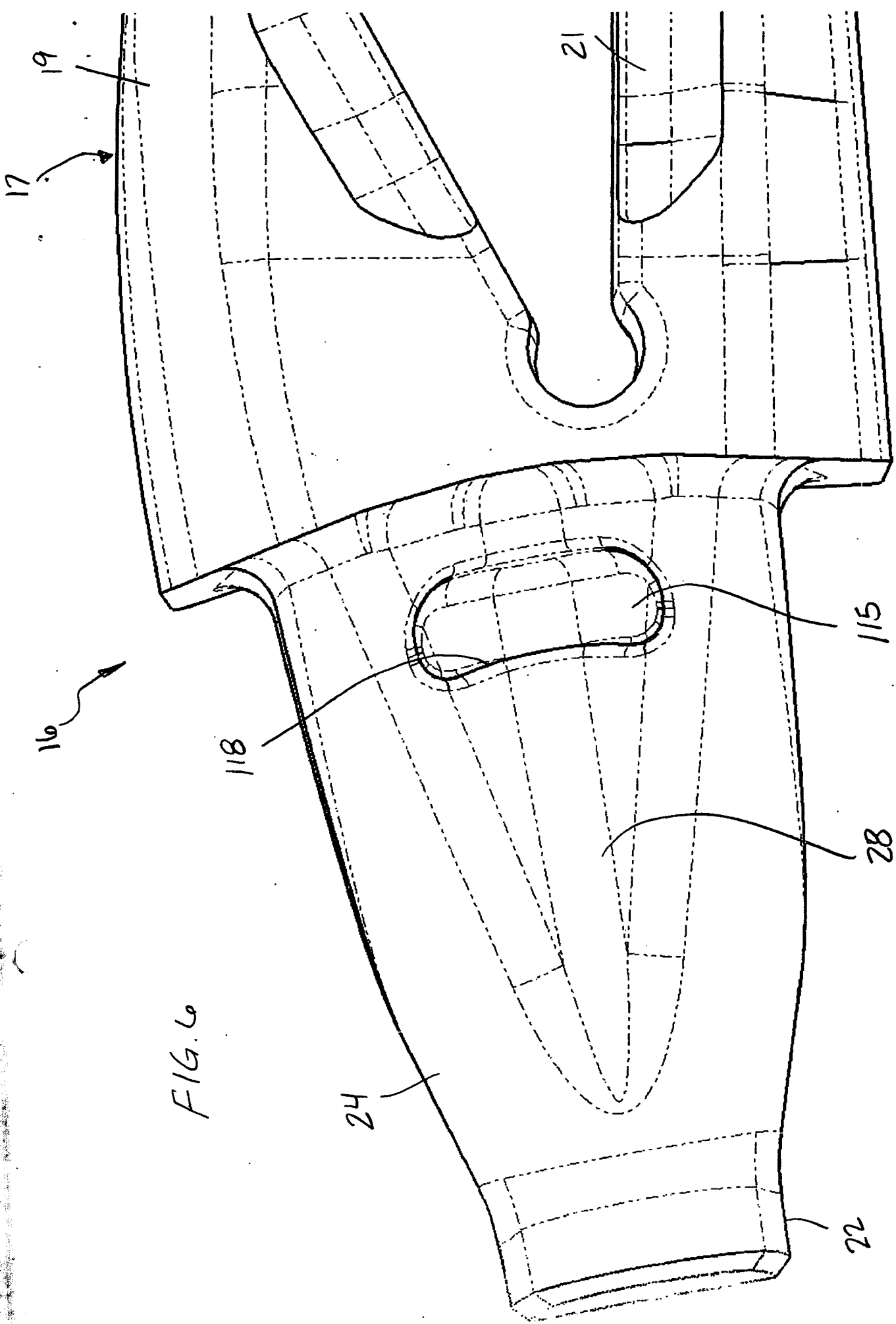
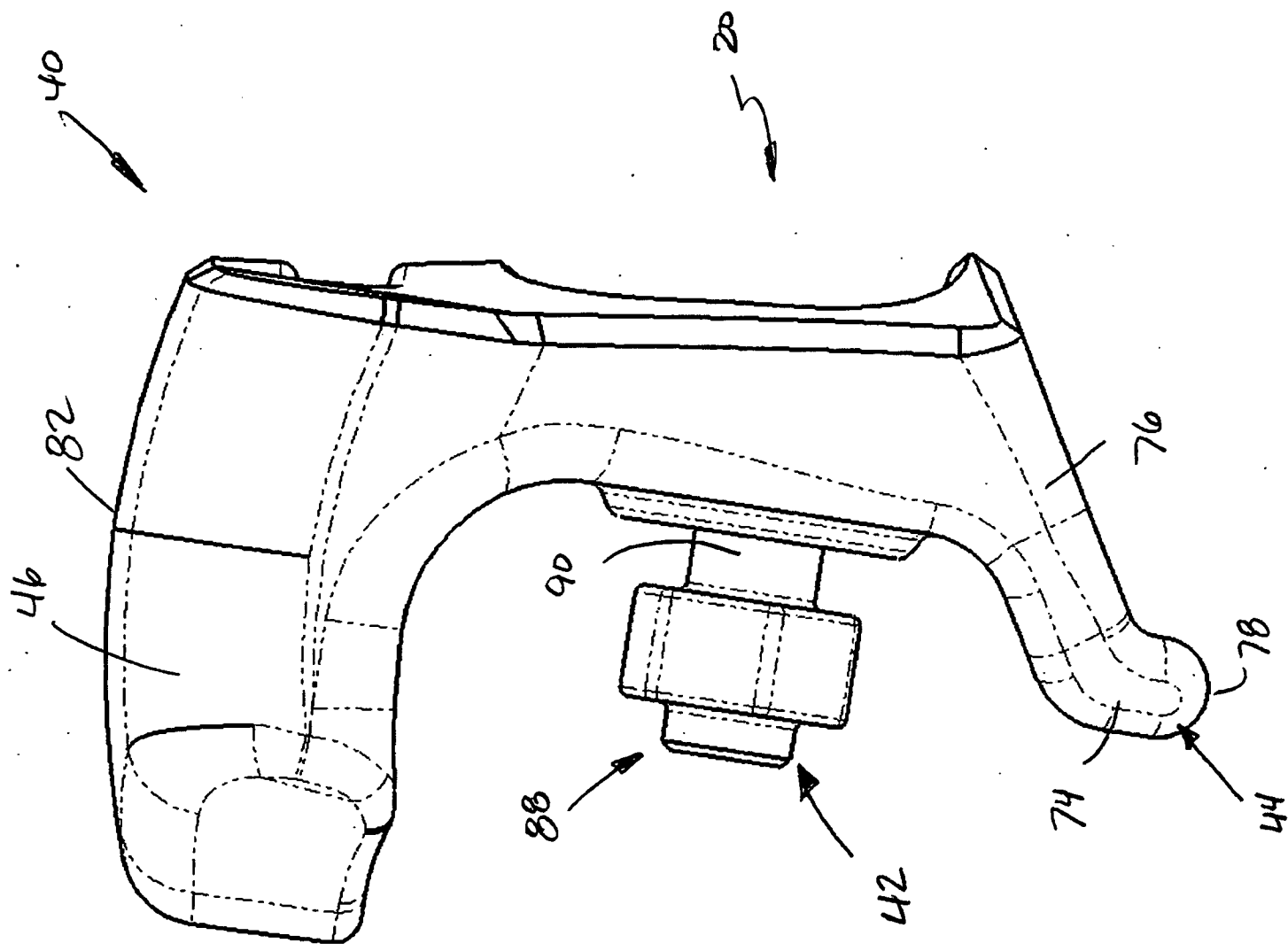


FIG. 6

FIG. 7



105

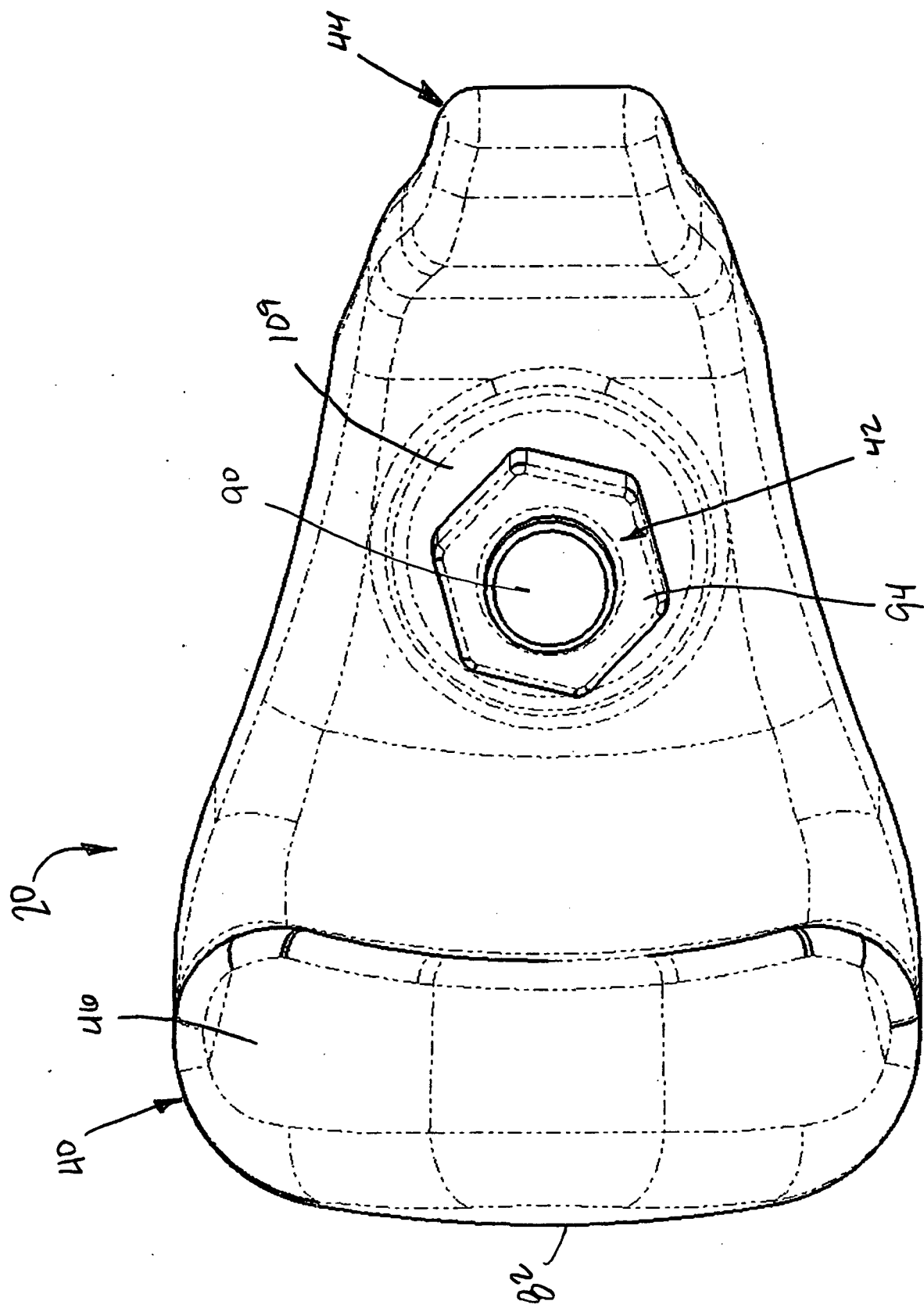


FIG. 8

FIG. 9

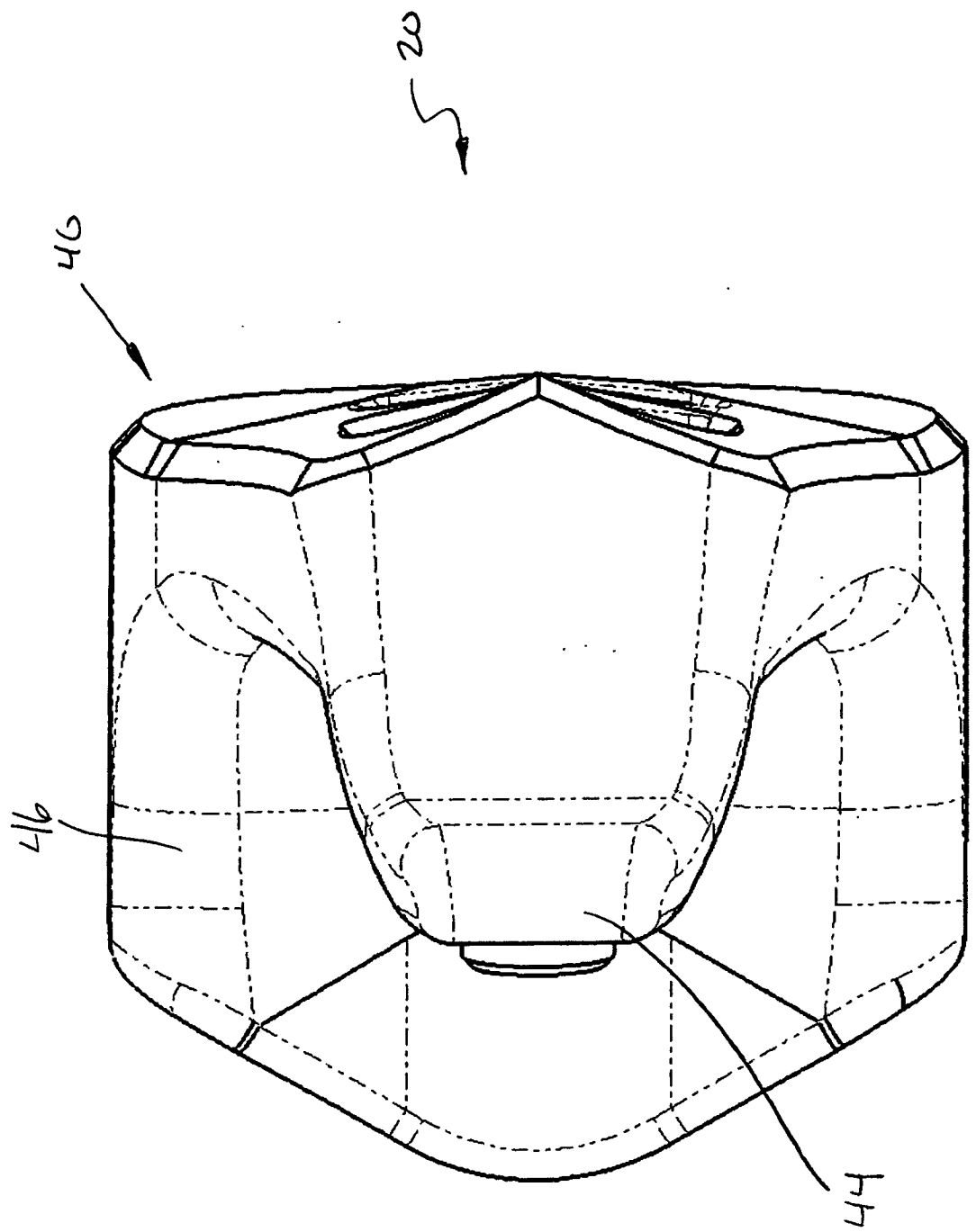
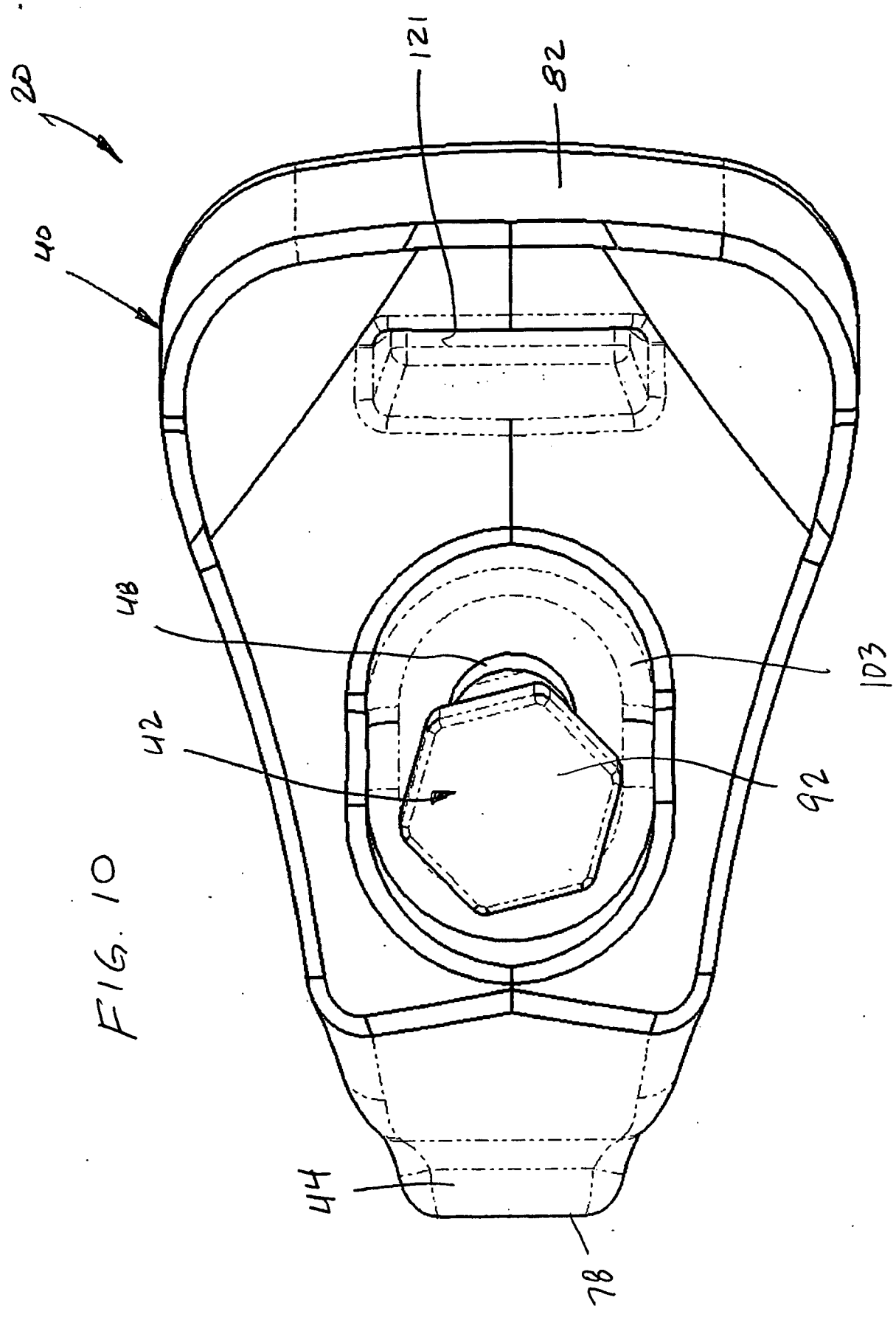


FIG. 10



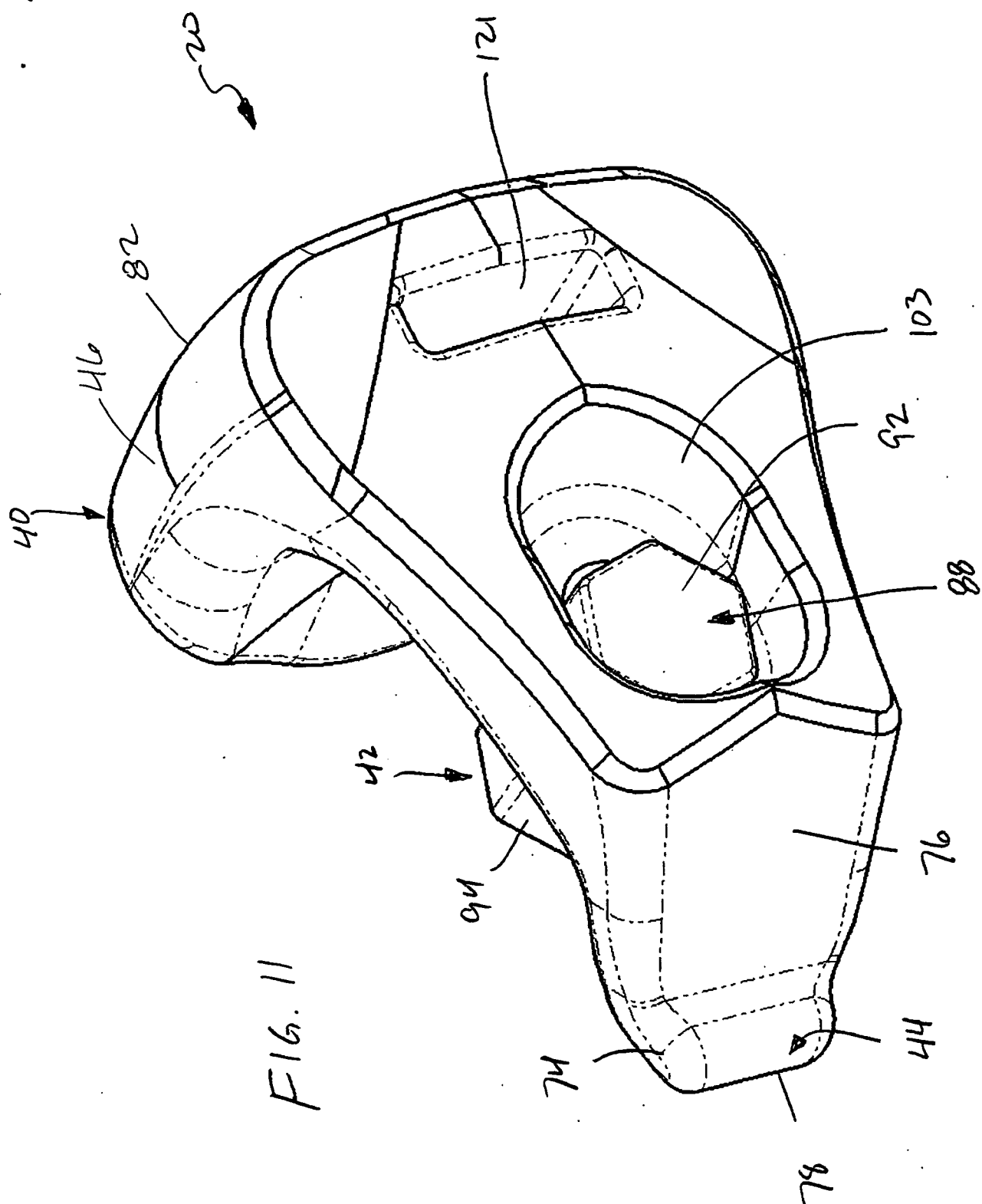
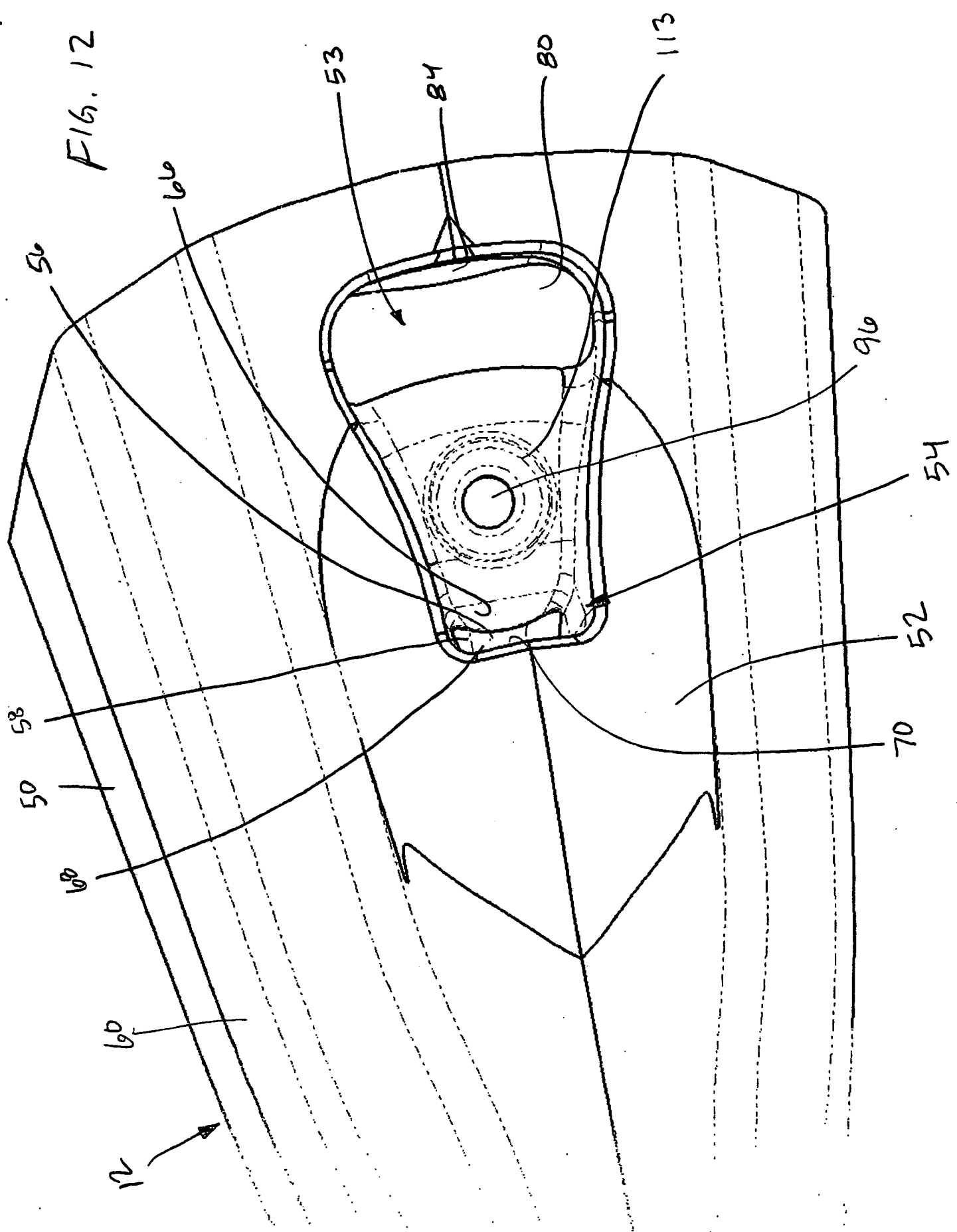


FIG. 11

FIG. 12





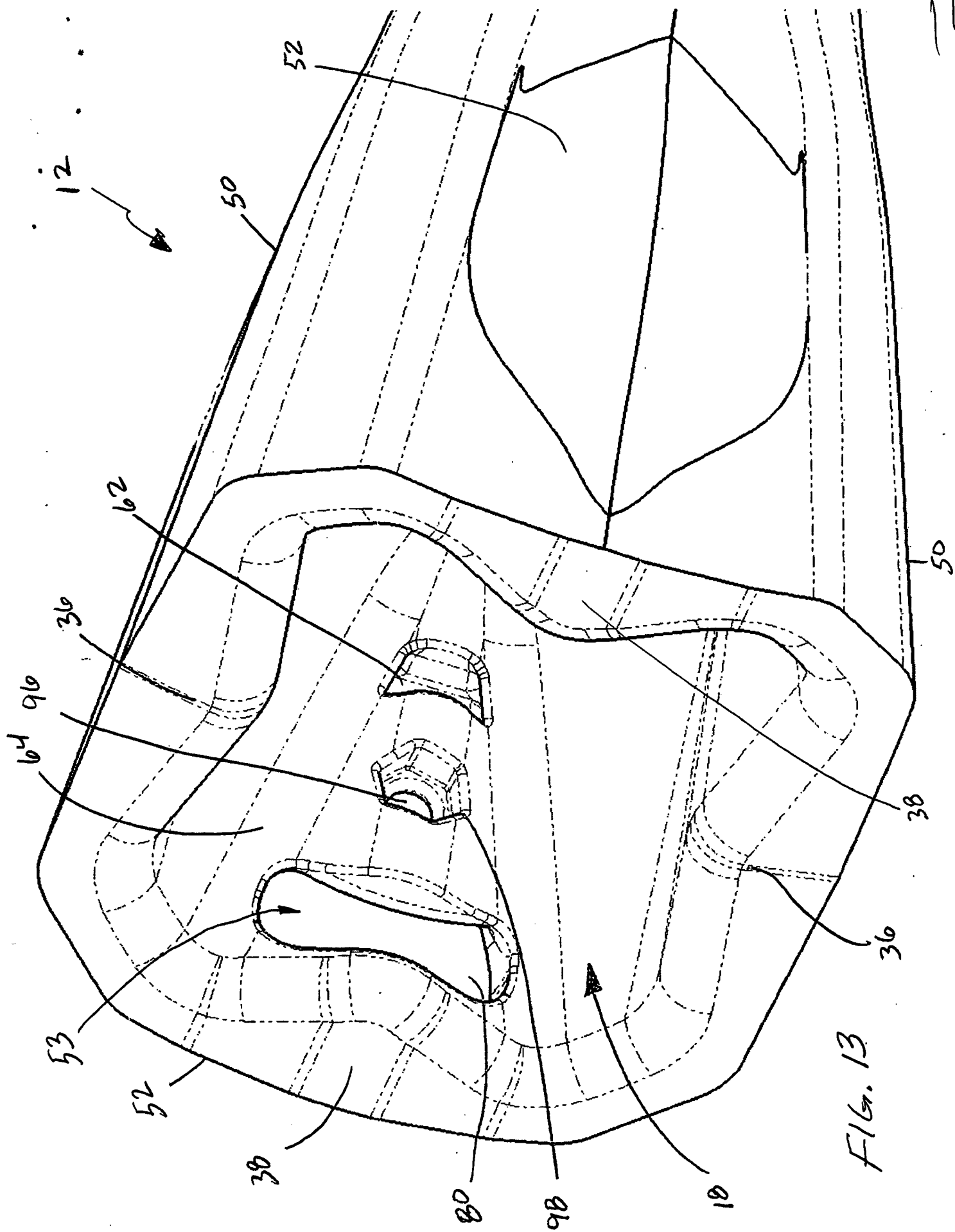


FIG. 13

1625

TRADUCCIÓN No. 11/05.07 preparada por María Elvira Martelo, Traductora Oficial debidamente aprobada por el Ministerio de Justicia mediante Resolución 2879 de 1995 y reconocida por el Ministerio de Relaciones Exteriores.

---

**LOS ESTADOS UNIDOS DE AMÉRICA**  
**A TODOS A QUIENES LOS PRESENTES LLEGAREN:**  
**DEPARTAMENTO DE COMERCIO DE ESTADOS UNIDOS**  
Oficina de Marcas y Patentes de Estados Unidos

03 de abril de 2007

POR EL PRESENTE SE CERTIFICA QUE LA ADJUNTA ES UNA COPIA FIEL TOMADA DE AQUELLOS DOCUMENTOS DE LA SOLICITUD DE PATENTE QUE SE IDENTIFICA A CONTINUACIÓN Y QUE CUMPLIERON LOS REQUISITOS PARA QUE FUERA OTORGADA UNA FECHA DE PRESENTACIÓN BAJO 35 USC 111, DOCUMENTOS QUE REPOSAN EN LOS REGISTROS DE LA OFICINA DE MARCAS Y PATENTES DE ESTADOS UNIDOS:

SOLICITUD DE MARCA: 60/794,815

FECHA DE PRESENTACIÓN: 24 de abril de 2006

EL CÓDIGO DE PAÍS Y EL NÚMERO DE SOLICITUD PRIORITARIA QUE DEBE USAR PARA EFECTUAR PRESENTACIONES EN EL EXTERIOR BAJO LA CONVENCIÓN DE PARÍS ES US60/794,815.

Por autorización del:

Subsecretario de Comercio para Propiedad Intelectual

y Director de la Oficina de Marcas y Patentes de Estados Unidos

(Firma ilegible)

M. BASSFORD

Funcionario de Autenticaciones.

(Sello de oblea dorado) Oficina de Marcas y Patentes, Estados Unidos de América

---

Es traducción fiel y completa de la cual se deje copia para su confrontación

COLO 01195-801-005-7

WPCL 1195 – ID 154

MAY 08/07

*María Elvira Martelo*  
TRADUCCION No.: 11/05.07  
MARIA ELVIRA MARTELO  
Traductora e Interprete Oficial  
Inglés - Español - Inglés  
Res. No. 2879 Min. Justicia

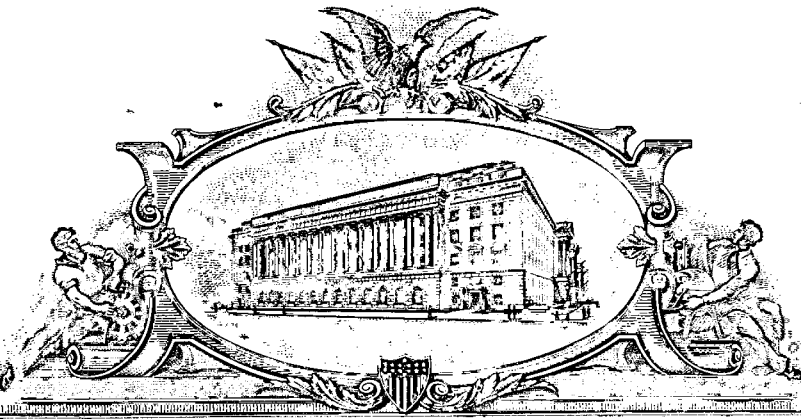
28

COMO NOTARIO SANTO DE BOGOTA  
BOGOTA. HAGO CONSTAR QUE

*Urbes Plena*  
*el 10 de Mayo*

COINCIDE CON LA FIRMA REGISTRADA POR  
EL SELLO EN ESTA NOTARIA  
SANTO DE BOGOTA

*18*



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

April 03, 2007

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 60/838,313

FILING DATE: August 16, 2006

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS US60/838,313

By Authority of the  
Under Secretary of Commerce for Intellectual Property  
and Director of the United States Patent and Trademark Office



*M. Bassford*  
M. BASSFORD  
Certifying Officer

081606

14230 U.S. PTO

PTO/SB/16 (12-04)

Approved for use through 07/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PROVISIONAL APPLICATION FOR PATENT COVER SHEET**

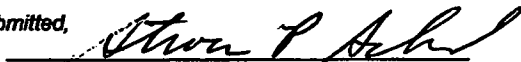
This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. EQ 287107683 US

| INVENTOR(S)                                                                                                                                                                                                                                                   |                        |                                                         |                                                |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------|------------------------------------------------|--|
| Given Name (first and middle [if any])                                                                                                                                                                                                                        | Family Name or Surname | Residence<br>(City and either State or Foreign Country) |                                                |  |
| James E.                                                                                                                                                                                                                                                      | Bearden                | Beaverton, Oregon                                       |                                                |  |
| Michael A.                                                                                                                                                                                                                                                    | Severson               | Aloha, Oregon                                           |                                                |  |
| <input type="checkbox"/> Additional inventors are being named on the _____ separately numbered sheets attached hereto                                                                                                                                         |                        |                                                         |                                                |  |
| TITLE OF THE INVENTION (500 characters max)                                                                                                                                                                                                                   |                        |                                                         |                                                |  |
| WEAR ASSEMBLY                                                                                                                                                                                                                                                 |                        |                                                         |                                                |  |
| Direct all correspondence to:                                                                                                                                                                                                                                 |                        | CORRESPONDENCE ADDRESS                                  |                                                |  |
| <input checked="" type="checkbox"/> Customer Number                                                                                                                                                                                                           |                        | 54327                                                   |                                                |  |
| OR                                                                                                                                                                                                                                                            |                        |                                                         |                                                |  |
| <input type="checkbox"/> Firm or Individual Name                                                                                                                                                                                                              |                        |                                                         |                                                |  |
| Address                                                                                                                                                                                                                                                       |                        |                                                         |                                                |  |
| Address                                                                                                                                                                                                                                                       |                        |                                                         |                                                |  |
| City                                                                                                                                                                                                                                                          | State                  | ZIP                                                     |                                                |  |
| Country                                                                                                                                                                                                                                                       | Telephone              | Fax                                                     |                                                |  |
| ENCLOSED APPLICATION PARTS (check all that apply)                                                                                                                                                                                                             |                        |                                                         |                                                |  |
| <input checked="" type="checkbox"/> Specification Number of Pages                                                                                                                                                                                             |                        | 13                                                      | <input type="checkbox"/> CD(s), Number _____   |  |
| <input checked="" type="checkbox"/> Drawing(s) Number of Sheets                                                                                                                                                                                               |                        | 8                                                       | <input type="checkbox"/> Other (specify) _____ |  |
| <input checked="" type="checkbox"/> Application Data Sheet. See 37 CFR 1.76                                                                                                                                                                                   |                        |                                                         |                                                |  |
| <b>Application Size Fee:</b> If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 C.F.R. 1.16(s). |                        |                                                         |                                                |  |
| METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT                                                                                                                                                                                  |                        |                                                         |                                                |  |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.                                                                                                                                                                               |                        |                                                         |                                                |  |
| <input type="checkbox"/> A check or money order is enclosed to cover the filing fees                                                                                                                                                                          |                        |                                                         |                                                |  |
| <input checked="" type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:                                                                                                              |                        | 50-3585                                                 | TOTAL FEE Amount (\$)                          |  |
| <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.                                                                                                                                                                                   |                        |                                                         | 200.00                                         |  |
| The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.                                                                                                                       |                        |                                                         |                                                |  |
| <input checked="" type="checkbox"/> No.                                                                                                                                                                                                                       |                        |                                                         |                                                |  |
| <input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____                                                                                                                                            |                        |                                                         |                                                |  |

Respectfully submitted,

SIGNATURE



Date

August 16, 2006

TYPED or PRINTED NAME

Steven P. Schad

REGISTRATION NO.

32,550

(if appropriate)

TELEPHONE

503.778.6225

Docket Number:

365-PROV

**USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT**

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Effective on 12/08/2004.  
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).**FEE TRANSMITTAL  
for FY 2005**

Complete If Known

|                      |                         |
|----------------------|-------------------------|
| Application Number   | TBD                     |
| Filing Date          | August 16, 2006         |
| First Named Inventor | James E. Bearden et al. |
| Examiner Name        |                         |
| Art Unit             |                         |
| Attorney Docket No.  | 365-PROV                |

Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 200.00)

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify) : \_\_\_\_\_☒ Deposit Account Deposit Account Number: **50-3585** Deposit Account Name: **ESCO Corporation**

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee  
☒ Charge any additional fee(s) or underpayments of fee(s) ☒ Credit any overpayments  
 Under 37 CFR 1.16 and 1.17

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

**FEE CALCULATION****ASIC FILING, SEARCH, AND EXAMINATION FEES**

| Application Type | FILING FEES |                      | SEARCH FEES |                      | EXAMINATION FEES |                      | Fees Paid (\$) |
|------------------|-------------|----------------------|-------------|----------------------|------------------|----------------------|----------------|
|                  | Fee (\$)    | Small Entity Fee(\$) | Fee(\$)     | Small Entity Fee(\$) | Fee(\$)          | Small Entity Fee(\$) |                |
| Utility          | 300         | 150                  | 500         | 250                  | 200              | 100                  | _____          |
| Design           | 200         | 100                  | 100         | 50                   | 130              | 65                   | _____          |
| Plant            | 200         | 100                  | 300         | 150                  | 160              | 80                   | _____          |
| Reissue          | 300         | 150                  | 500         | 250                  | 600              | 300                  | _____          |
| Provisional      | 200         | 100                  | 0           | 0                    | 0                | 0                    | 200.00         |

**2. EXCESS CLAIM FEES****Fee Description**

Each claim over 20 (including Reissues)

Each independent claim over 3 (including Reissues)

Multiple dependent claims

**Small Entity**

Fee (\$) Fee (\$)

50 25

200 100

360 180

**Total Claims** **Extra Claims** **Fee(\$)** **Fee Paid (\$)****Multiple Dependent Claims**

Fee (\$) Fee Paid (\$)

\_\_\_\_\_ - 20 or HP= \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of total claims paid for, if greater than 20.

**Indep. Claims** **Extra Claims** **Fee(\$)** **Fee Paid (\$)**

\_\_\_\_\_ - 3 or HP= \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

HP = highest number of independent claims paid for, if greater than 3.

**APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

| Total Sheets        | Extra Sheets | Number of each additional 50 or fraction thereof | Fee (\$) | Fee Paid (\$) |
|---------------------|--------------|--------------------------------------------------|----------|---------------|
| _____ - 100 = _____ | / 50 = _____ | (round up to a whole number) x                   |          |               |

**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge) : \_\_\_\_\_

**Fees Paid (\$)****SUBMITTED BY**

|                   |                        |                                      |                 |           |              |
|-------------------|------------------------|--------------------------------------|-----------------|-----------|--------------|
| Signature         | <i>Steven P. Schad</i> | Registration No.<br>(Attorney/Agent) | 32,550          | Telephone | 503.778.6225 |
| Name (Print/Type) | Steven P. Schad        | Date                                 | August 16, 2006 |           |              |

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 4450, Alexandria, VA 22304-4450.

115

## Application Data Sheet

### Application Information

Application number::  
Filing Date:: 08/16/06  
Application Type:: Provisional  
Subject Matter:: Utility  
Suggested classification::  
Suggested Group Art Unit::  
CD-ROM or CD-R?:: None  
Number of CD disks::  
Number of copies of CDs::  
Sequence submission?::  
Computer Readable Form (CRF)?::  
Number of copies of CRF::  
Title:: WEAR ASSEMBLY  
Attorney Docket Number:: 365-PROV  
Request for Early Publication?:: NO  
Request for Non-Publication?:: NO  
Suggested Drawing Figure::  
Total Drawing Sheets:: 8  
Small Entity?:: NO  
Latin name::  
Variety denomination name::  
Petition included?:: NO  
Petition Type::  
Licensed US Govt. Agency::  
Contract or Grant Numbers::  
Secrecy Order in Parent Appl.?:: NO

## Applicant Information

Applicant Authority Type:: Inventor  
 Primary Citizenship Country::  
 Status:: Full Capacity  
 Given Name:: James  
 Middle Name:: E.  
 Family Name:: Bearden  
 Name Suffix::  
 City of Residence:: Beaverton  
 State or Province of Residence:: Oregon  
 Country of Residence:: USA  
 Street of mailing address:: 13520 SW Weir Road  
 City of mailing address:: Beaverton  
 State or Province of mailing address:: Oregon  
 Country of mailing address:: USA  
 Postal or Zip Code of mailing address:: 97008

Applicant Authority Type:: Inventor  
 Primary Citizenship Country::  
 Status:: Full Capacity  
 Given Name:: Michael  
 Middle Name:: A.  
 Family Name:: Severson  
 Name Suffix::  
 City of Residence:: Aloha  
 State or Province of Residence:: Oregon  
 Country of Residence:: USA  
 Street of mailing address:: 18232 SW Smokette Lane  
 City of mailing address:: Aloha  
 State or Province of mailing address:: Oregon  
 Country of mailing address:: USA  
 Postal or Zip Code of mailing address:: 97006



117

### Correspondence Information

Correspondence Customer Number:: 54327

### Representative Information

Representative Customer Number:: 54327

### Domestic Priority Information

| Application:: | Continuity Type:: | Parent Application:: | Parent Filing Date:: |
|---------------|-------------------|----------------------|----------------------|
|               |                   |                      |                      |
|               |                   |                      |                      |
|               |                   |                      |                      |

### Foreign Priority Information

| Country:: | Application number:: | Filing Date:: | Priority Claimed:: |
|-----------|----------------------|---------------|--------------------|
|           |                      |               |                    |
|           |                      |               |                    |
|           |                      |               |                    |

### Assignee Information

Assignee name:: ESCO Corporation  
Street of mailing address:: 2141 NW 25<sup>th</sup> Avenue  
City of mailing address:: Portland  
State or Province of mailing address:: Oregon  
Country of mailing address:: USA  
Postal or Zip Code of mailing address:: 97210

## WEAR ASSEMBLY

### Field of the Invention

[01] The present invention pertains to a wear assembly for securing a wear member to excavating equipment.

### Background of the Invention

[02] Wear parts are commonly attached along the lip of an excavating bucket or the digging edge of other excavating equipment (such as dredge cutterheads) to protect the equipment from wear and enhance the digging operation. The wear parts may be excavating teeth, shrouds, or other wear members. These assemblies typically includes a base, a wear member, and a lock. The base is fixed to the digging edge, and the wear member fits over the base. The assembled base and wear member cooperatively define an opening into which the lock is received to releasably hold the wear member to the base.

[03] Wear members for excavating equipment are commonly subjected to harsh conditions and heavy loading. Accordingly, it is desirable for the locking arrangement to be strong to effectively retain the wear member to the equipment, and also easily manipulated to permit removal and replacement of the wear member in the field. The lock is usually in the form of a pin that is driven into and out of the assembly with a large hammer. Nevertheless, many different lock arrangements have been used in the past to secure wear parts to excavating equipment with varying degrees of success.

Summary of the Invention

[04] The present invention pertains to an improved wear assembly for excavating equipment, wherein the wear member is secured by a locking arrangement having improved stability, strength, durability, safety, and ease of use.

[05] In accordance with one aspect of the invention, the wear member has an opening with angled bearing surfaces to bear against an inserted lock for increased stability and strength, and reduced wear. In one embodiment, the bearing surfaces are inclined forward and away from the longitudinal axis in opposite lateral directions to bear against complementary surfaces in the lock.

[06] In accordance with another aspect of the invention, the wear member has a tapering opening that defines an expanded bearing area and a narrowed anchoring area for the lock. In this construction, the wear member and the lock contact over a large surface area to transfer the applied loads while providing easy manipulation of the lock and minimizing of the overall opening size.

[07] In accordance with another aspect of the invention, the opening in the wear member for receiving the lock is formed with bearing walls and a fulcrum that are generally aligned along the longitudinal axis to provide a stable locking arrangement which is easily manipulated.

[08] In accordance with another aspect of the invention, the wear member has an opening for receiving a hammerless lock to hold the wear member to the base. The use of a hammerless lock increases safety and the ease of using the lock. The opening is provided with at least one shoulder to prevent undue insertion and wedging of the lock into the assembly.

120

- [09] In accordance with another aspect of the invention, the lock generally includes a body formed with two pairs of angled bearing surfaces defining generally a diamond-shaped configuration to cooperate with complementary surfaces on the wear member and the base. This opposed orientation of bearing surfaces provides a highly stable locking arrangement for the wear assembly during use.
- [10] In accordance with another aspect of the invention, the lock includes a curved surface to grip a complementary surface on the base to resist ejection of the lock during use.
- [11] In accordance with another aspect of the invention, the lock is installed into and removed from the wear assembly in a swinging motion about a pivot axis. During removal, the lock moves along a path that causes the lock surfaces to pull away from the walls of the lock-receiving opening to lessen the resistance of impacted fines and ease removal of the lock in the field.
- [12] In accordance with another aspect of the invention, the lock is provided with a main portion and an anchoring portion. The main portion fits between opposed surfaces in the wear member and the base to prevent removal of the wear member. The anchoring portion is offset from the main portion to provide increased stability and resistance to certain loads such as reverse or vertical loads.
- [13] In accordance with another aspect of the invention, the lock includes a main portion fit between the wear member and the base, and a pivot member spaced from the main portion to swing the lock between its hold and release positions for easy use. Further, with this construction, the pivotal connection for the lock is largely shielded from high loads and abrasion during use.

121

[14] In accordance with another aspect of the invention, the lock includes a coordinated latch and removal cavity to ease installation and removal. In one embodiment, the lock includes a cavity adapted to receive a tool to facilitate a hammerless removal of the lock from the assembly. The latch further includes an access opening in general alignment with the removal cavity to enable release of the latch and removal of the lock in a single operation.

[15] In accordance with another aspect of the invention, the latch in the lock is composed of a rigid member and a resilient member. In one embodiment, the rigid and resilient members are mechanically coupled together for ease of manufacturing and/or increased strength of the coupling.

[16] In accordance with another aspect of the invention, the wear member and lock can be coupled together to form a single, integral component for shipping and storage. In such an embodiment, the reduction of parts results in lower shipping costs, reduced storage needs, and less inventory concerns. This assembly ensures the availability of a lock to secure a replacement wear member to the equipment. Also, since a new lock is included with every new wear member, the risks associated with reusing a damaged or weakened lock are eliminated. As a result, the lock is easy to use for installation and replacement of wear parts.

#### Brief Description of the Drawings

[17] Figure 1 is a perspective view of a wear assembly in accordance with the present invention.

[18] Figure 2 is a partial perspective view with the assembly cut along the longitudinal axis of the wear assembly.

122

[19] Figure 3 is a cross-sectional view along line 3-3 in Figure 1, which is off the longitudinal axis.

[20] Figure 4 is a perspective view of the base.

[21] Figure 5 is a cross sectional view along line 5-5 in Figure 4.

[22] Figure 6 is a front view of the wear member.

[23] Figure 7 is a top view of the wear member.

[24] Figure 8 is a cross-sectional view along line 8-8 in Figure 7.

[25] Figure 9 is a partial top view wear member showing the lock-receiving opening.

[26] Figure 10 is a perspective view of the lock.

[27] Figure 11 is side view of the lock.

[28] Figure 12 is cross-sectional view along line 12-12 in Figure 11.

[29] Figure 13 is top view of the lock.

[30] Figure 14 is a rear view of the lock.

[31] Figure 15 is a cross-sectional view along line 15-15 in Figure 14.

[32] Figure 16 is a top view of an alternative latch construction for the lock.

#### Detailed Description of the Preferred Embodiments

[33] The present invention pertains to a wear assembly 10 (Fig. 1) for releasably attaching a wear member 12 to excavating equipment (not shown). In this application, wear member 12 is described in terms of a point or tip for an excavating tooth that is attached to a lip of an excavating bucket. However, the wear member could be in the form of other kinds of wear parts (e.g., shrouds) or attached to other excavating equipment (e.g., dredge cutterheads). Moreover, relative terms such as

forward, rearward, up or down are used for convenience of explanation with reference to Figure 1; other orientations are possible.

**[34]** In one embodiment, the wear member or point 12 is adapted to fit on a nose 14 (Figs. 1-4) of a base member 16, which in this example, is an adapter. Adapter 16 is a medial adapter which includes a rearwardly opening socket 18 to fit onto a nose of a second base (not shown). This second base is fixed to the digging edge of the bucket by welding, mechanical attachment or being integrally cast with the bucket lip. Alternatively, wear member 12 could be mounted directly to the nose of the second or base adapter, i.e., an adapter fixed directly to the lip, without medial adapter 16. In any case, wear member 12 is releasably secured to the nose by a lock 20.

**[35]** In a preferred construction, nose 14 includes a front stabilizing end 21, upper and lower walls 22, 24 converging toward front end 21, and sidewalls 26 (Figs. 2-5). A slot 28 is defined in a central portion of each of the upper and lower walls 22, 24 to define stabilizing surfaces 30, 32. Top and bottom end surfaces 34, 36 of stabilizing end 21 and stabilizing surfaces 30, 32 each preferably extends substantially parallel to the longitudinal axis 38 of adapter 16. Substantially parallel includes surfaces which are parallel or which diverge rearwardly from axis 38 at a small angle (e.g., of about 1-7 degrees) typically for manufacturing purposes. Nevertheless, surfaces 30, 32, 34, 36 could diverge from axis 38 at larger angles for some uses. A recess 40 is formed along each sidewall 26 to receive a lug 42 of point 12 (Fig. 1). Of course, a variety of changes (e.g., omitting recesses 40 lugs 42) could be made to the nose and point.

[36] A cavity 44 is formed in upper stabilizing surface 30 for receiving lock 20 (Figs. 2-5). While the cavity may be formed in lower stabilizing surface 32 or a sidewall 26, it preferably is in upper surface 30 for easier access. As illustrated, cavity 44 is closed, which provides greater nose strength, but could extend completely through nose 14 with one or more openings (not shown) in stabilizing surface 32 for release of fines and/or to accommodate manufacturing. Cavity 44 has a generally pentagonal-shaped inlet 45 with front angled bearing surfaces 46 each inclined to axis 38 at an angle of about 25 to 55 degrees, and most preferably at an angle of 41 degrees. Nevertheless, the angles could be outside the preferred range. While a pentagon shape is used to provide a sufficient opening for lock 20, other shapes are possible. Further, while bearing surfaces 46 are generally straight in a lateral direction, they could also be curved.

[37] Point 12 has a wedge-shaped configuration with upper and lower walls 48, 50 that converge toward a free end 52 for penetrating the ground (Figs. 1-3 and 6-7). A socket 54 generally corresponding to nose 14 opens in a rear end of the point. Upper wall 48 includes an opening 56 through which lock 20 is received. Opening 56 has a pair of rear angled bearing surfaces 58 to engage the lock. Surfaces 58 are preferably at an angle of about 40 to 70 degrees relative to axis 38, and most preferably at an angle of 54 degrees, but could be set outside of the preferred range. The angle at which surfaces 58 are oriented is preferably larger than the angle for surfaces 46, but they could be the same or smaller. A rear end wall 60 preferably connects to the two angled bearing surfaces 58. Side surfaces 62 of opening 56 preferably taper toward front end wall 64 to minimize the overall size of the opening.



129

[38] Each pair of bearing surfaces 46, 58 are angled to generally define a concave V-shape configuration facing the other pair of surfaces. As can be appreciated, the opposed angled surfaces 46, 58 generally define a diamond-shaped configuration such that the angled bearing surfaces direct the applied loads toward the central region of the main portion of lock 20. The diamond shape is a general description that could include additional linear or curved connecting surfaces between the angled bearing surfaces as well as forming strictly a diamond shape.

[39] In an alternative construction, an opening 56 for receiving lock 20 could be included in both converging walls 48, 50 to enable reversing of the wear member on the nose and/or to permit the use of two locks; however, only a single lock on one side is needed to secure the wear member to the nose. Alternatively, reversible mounting could be achieved by providing two openings in the nose or a through-hole accessible from each side. Moreover, opening 56 could be formed in one or both of the sidewalls 51 with a corresponding cavity in the side of nose 14.

[40] Lock 20 includes a main portion or body 66 and an anchoring portion or arm 68 (Figs. 2-3 and 10-15). The free end 70 of arm 68 defines a pivot member 72 about which lock 20 swings between a hold position that retains wear member 12 to nose 14, and a release position which permits installation and removal of the wear member to and from the nose. In the hold position (Figs. 1-3), body 66 is received within opening 56 and cavity 44. When released, lock 20 is withdrawn from cavity 44 and typically from assembly 10.

[41] Body 66 preferably has a generally diamond-shaped cross section with rear angled bearing faces 74 to oppose angled bearing surfaces 58 in opening 56, and front angled bearing faces 76 to oppose angled bearing surfaces 46 in cavity 44

126

(Figs 2-3 and 10-15). Rear bearing faces 74 are set at an angle to correspond to the inclination of bearing surfaces 58, and front bearing faces 76 are angled to correspond to the inclination of bearing surfaces 46. In this way, the loads applied to the lock are directed inward toward a central portion of body 66 generally irrespective of whether the loads have vertical or side components or are reverse loads. This arrangement causes the lock to be gripped securely between the wear member 12 and nose 14 with minimal shifting. As a result, the lock is stable, resists ejection, and reduces wear between the components. Moreover, the use of the angled bearing surfaces tends to result in broad surface contact between the opposed surfaces 58, 74 and 46, 76 for less stress and wear as opposed to narrowing to essentially point contact. In a preferred construction, the contact area between lock 20 and bearing surfaces 46 is larger than the contact area between lock 20 and bearing surfaces 58 to reduce the amount of wear along the nose as compared to the point. Reduced wear in the nose is desired because the nose is intended to mount multiple successive points.

[42] Lock 20 includes a rear face 78 between rear angled bearing faces 74 in opposition to rear wall 60. With new parts, rear face 78 and rear wall 60 may be spaced by a slight gap to ensure bearing pressure between surfaces 58, 74. However, after some use, rear face 78 may abut rear wall 60 under certain loads due to wearing of the components. Moreover, even when new, face 78 and wall 60 could be in abutment. Similarly, front edge 80 between front angled surfaces 76 may be spaced slightly by a gap 81 from the corresponding front portion 82 in cavity 44 to ensure contact between surfaces 46, 76 when the components are new. These surfaces, though, may abut in time, and they could also be formed to abut when new.

Of course, variations in the shape of the lock 20, cavity 44 and opening 56 could be used. For example, surfaces 58, 74 could extend to an edge like surfaces 46, 76, or a connecting wall could be provided between surfaces 46, 76. Connecting walls could also be provided between adjacent surfaces 74, 76 and the corresponding surfaces in cavity 44 and opening 56.

[43] As seen in Figures 2, 3 and 15, front surface 84 of body 66 is concave and curved to complement a convex and curved front surface 86 of cavity 44. The curved front surface 84 includes angled bearing faces 76 and front edge 80. Likewise, front surface 86 includes angled bearing surfaces 46 and front portion 82. This curved, fitting relationship causes lock 20 to grip nose 14 when wear member 12 is pressed forward under loads to resist ejection of the lock from the assembly. While the concave and convex orientations could be reversed, the illustrated assembly is preferred to ease installation and removal of the lock.

[44] Arm 68 extends forward from an upper portion 86 of body 66 so that pivot member 72 sets against fulcrum 88 defined in front end wall 64 of opening 56 (Figs 2 and 3). As seen in Figures 2 and 3, fulcrum 88 preferably has a lip 90 that overlies pivot member 72 to prevent disengagement during use; although other retention structures could be used. Arm 68 also preferably includes a base surface 92 that presses against upper stabilizing surface 34 under certain loading (e.g., vertical or reverse loads on the point) for enhanced support and stability. Arm 68 could also extend laterally or rearwardly relative to body 66 to change the swinging direction of the lock.

[45] Lock 20 includes a latch 94 that fits in slot 95 in body 66 and projects from rear face 78 to cooperate with keeper 98, which in this embodiment is a ledge

129

formed by a channel 99 in rear end wall 60 of opening 56 (Figs 2-3 and 10-15). A ridge 100 preferably fits within channel 99 to limit build up of fines against the latch and under certain conditions to provide additional side support. Latch 94 could alternatively project from other surfaces of lock 20 and cooperate with other kinds of keepers. Moreover, the latch 94 could be placed in wear member 12 with the keeper in lock 20. Other kinds of retaining elements could also be used to hold lock 20 in assembly 10. It is also possible to eliminate arm 68 and rely only upon body 66 so long as a retaining element is provided to adequately secure body 66 in the assembly.

[46] In any event, latch 94 preferably includes a tongue 101 of steel or other rigid material and a resilient element 103 (Figs. 2, 3 and 15). Tongue 101 is preferably wider than channel 99 to ensure latch 94 remains properly seated within slot 95. The resilient element can be formed of foams, polymers or rubbers or even of other kinds of spring elements. Tongue 101 and resilient element 103 can be bonded together (as seen in Figure 2) and/or by mechanical attachment such as by a tongue and groove arrangement (as seen in Figure 16). In this example only, tongue 101 includes a triangular projection 105 that fits in a corresponding triangular groove 107 in elastomer 103. Of course, other arrangements are possible. In any event, resilient element 103 normally biases tongue 101 outward and, in use, beneath ledge 98 to retain lock 20 in assembly 10.

[47] Body 66 preferably includes a removal hole 109 (Figs. 2, 3, 12 and 15) adapted to receive a pry tool (not shown). Latch 94 includes a passage 111 which in the normal position is partially aligned with hole 109. In use, the pry tool is placed into hole 109 and passage 111 via inlet 113. The tool is then manipulated to push

129

latch 94 forward or has sides that expand so as to push latch 94 forward by being inserted farther into removal hole 109. In either case, this forward shifting causes latch 94 to release ledge 98. The pry tool can then be manipulated to pivot lock 20 about fulcrum 88 and out of cavity 44. Removal hole 109 preferably includes a notch 110 to reduce the risk of the pry tool slipping, but could have a wide variety of shapes. Ordinarily, lock 20 will be removed completely from assembly 10. The pry tool can also be used to install lock 20; the lock may also be pushed into opening 56 and cavity 44 with the user's hands. Tongue 101 preferably includes an inclined front face 115 to permit easy insertion. With this lock, then, there is no need to use hammers to remove or install the locks.

[48] In a preferred embodiment, rear surface 78 of body 66 is formed with a convex, curved surface to generally follow the swinging motion of the lock in and out of cavity 44 to minimize the size of opening 56 (Figs. 2 and 3). The rear wall 60 of opening 56 is concave and curved to accommodate the swinging motion of lock 20 and to depress latch 94 to ease installation. In a preferred construction, the curvature of rear wall 60 is broader than the curvature of rear surface 78 so that rear surface 78 pulls away from rear wall 60 as lock 20 is swung out of assembly 10. In this way, impacted fines pose less resistance to removal of the lock.

[49] Opening 56 preferably includes a shoulder 121 along each side 62 to support lock 20 in the hold position (Figs. 7-9). In a preferred arrangement, body 66 includes a groove 123 to receive each shoulder 121. Shoulders 121 prevent lock 20 from falling too far into cavity 44 and becoming wedged into opening 56, thus, making removal difficult. Shoulders 121 could be longer or shorter than shown or arranged in different portions of opening 56.

[50] If the shoulders are lengthened, they could be used to support lock 20 in opening 56 without nose 14 in socket 18. In this arrangement, lock 20 can be secured to wear member 12 to form a single, integral component. The lock and wear member can, then, be shipped as a single unit and stored by a dealer or end user without fear of losing the lock. Since fewer parts are required to be shipped and stored, shipping costs and inventory concerns are reduced. Other arrangements could also be used to secure lock 20 integrally to wear member 12. For example, a different fulcrum could be used to more securely hold the pivot member of the lock from moving vertically in either direction. Also, other kinds of retaining members in addition to or in lieu of shoulders 121 could be used.

[51] While a preferred construction and some variations are disclosed for illustration purposes, many other variations in the nose, point and lock constructions could be made without departing from the spirit of the invention.

FIG. 16

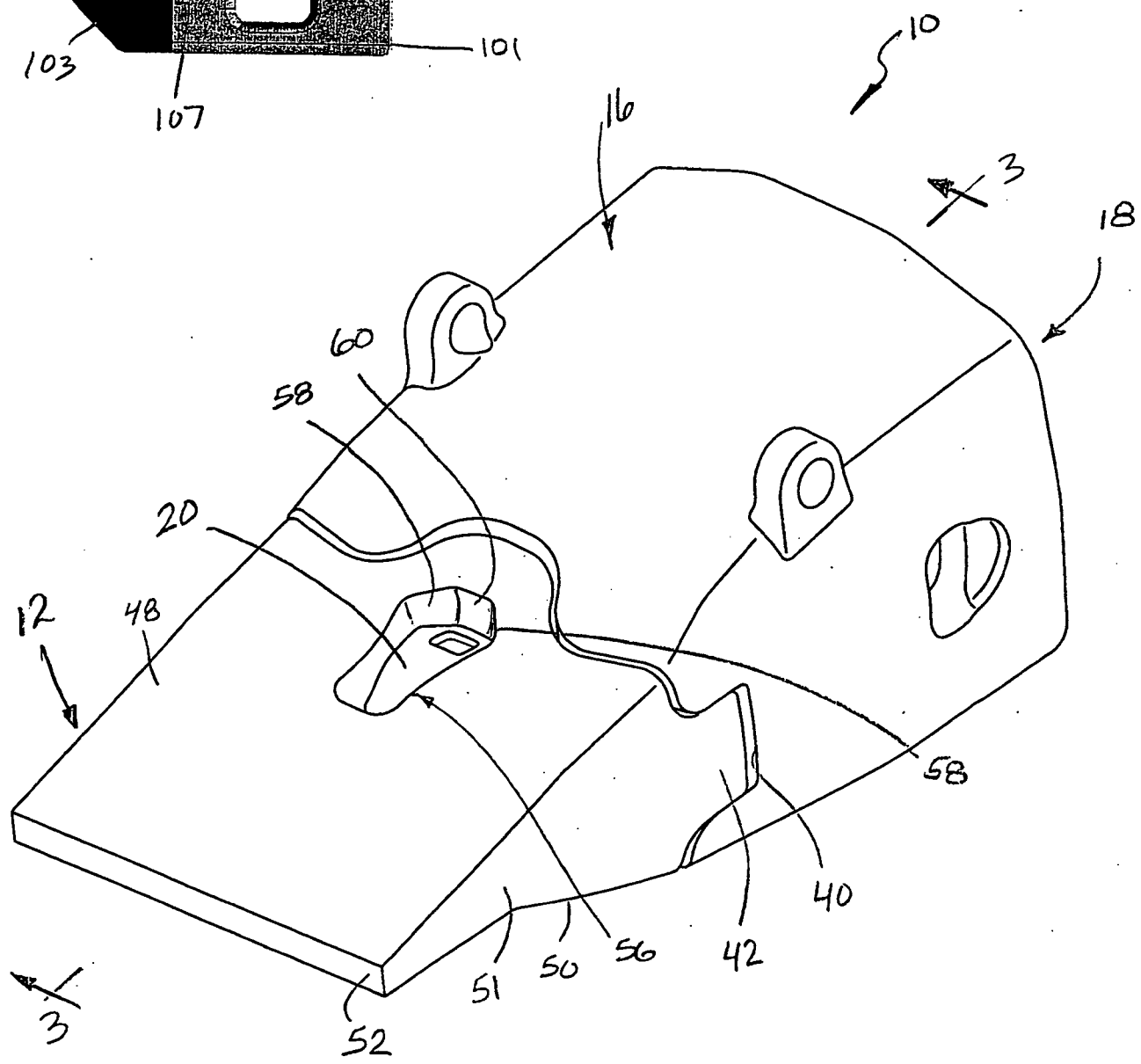
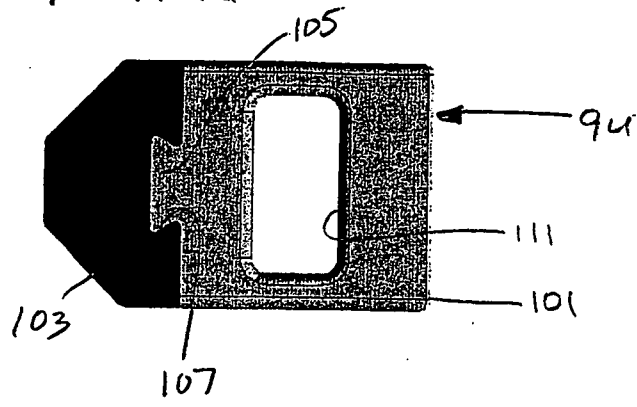


FIG. 1

Best Available Copy

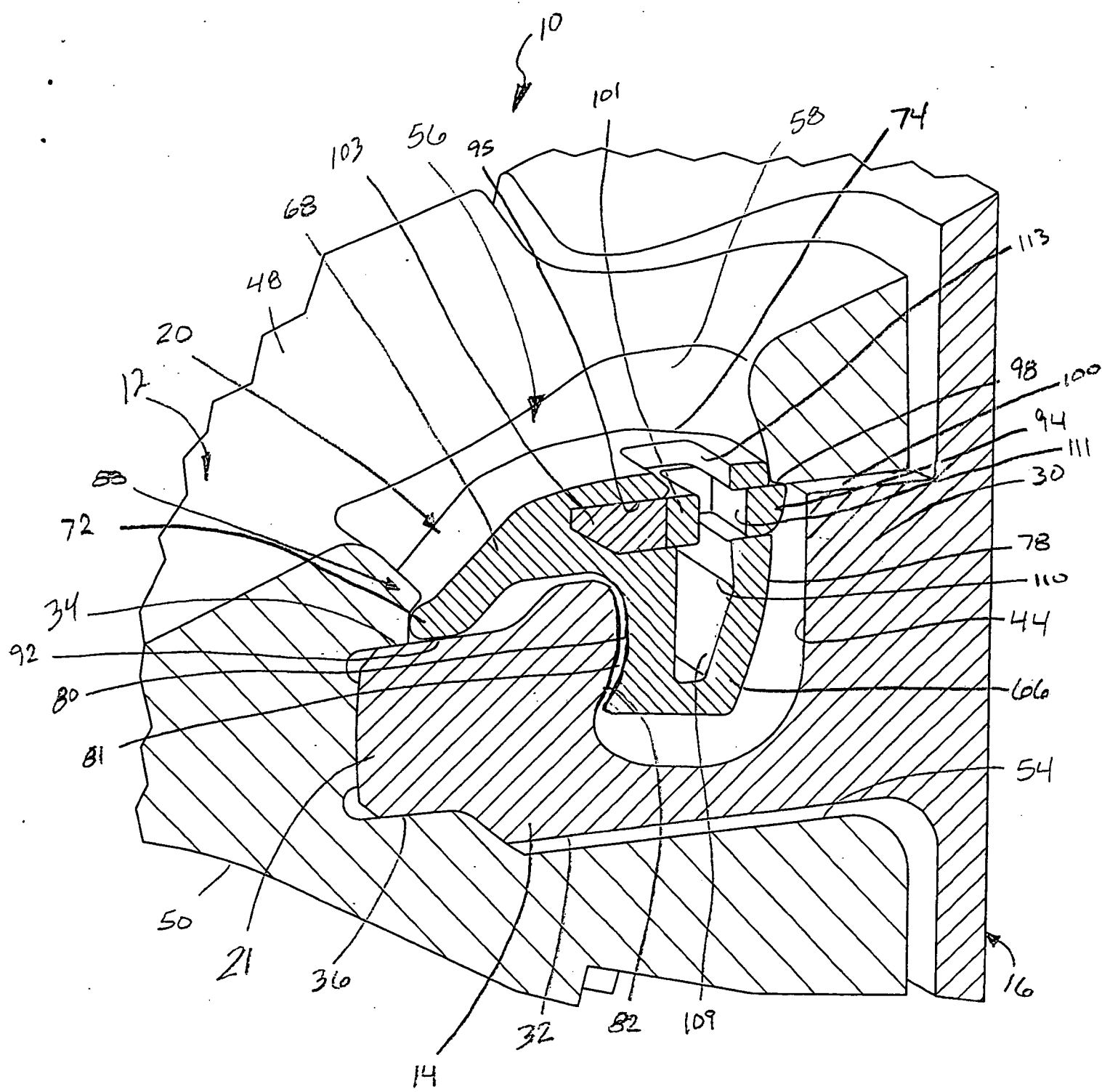


FIG. 2



133

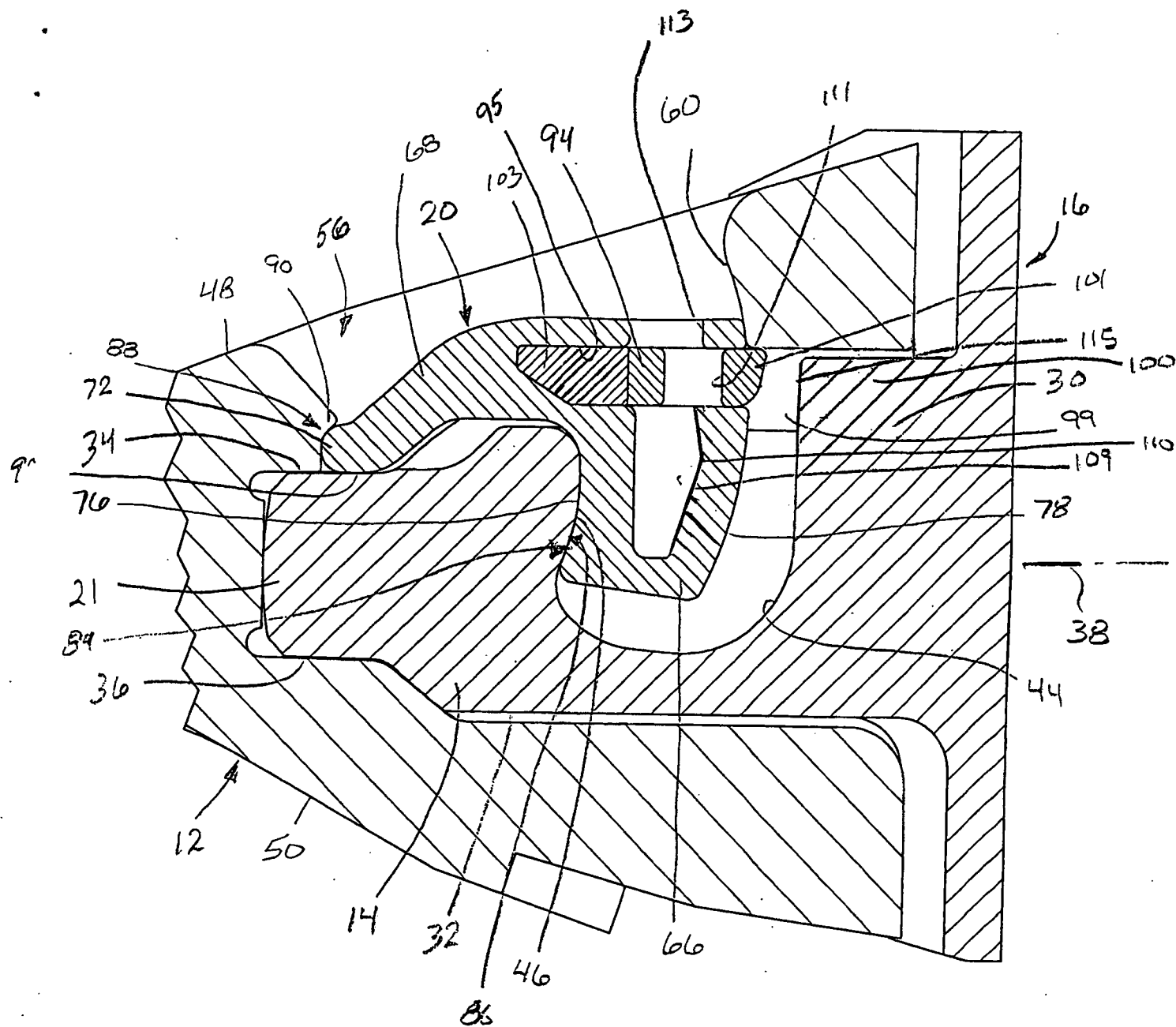
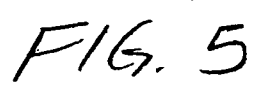
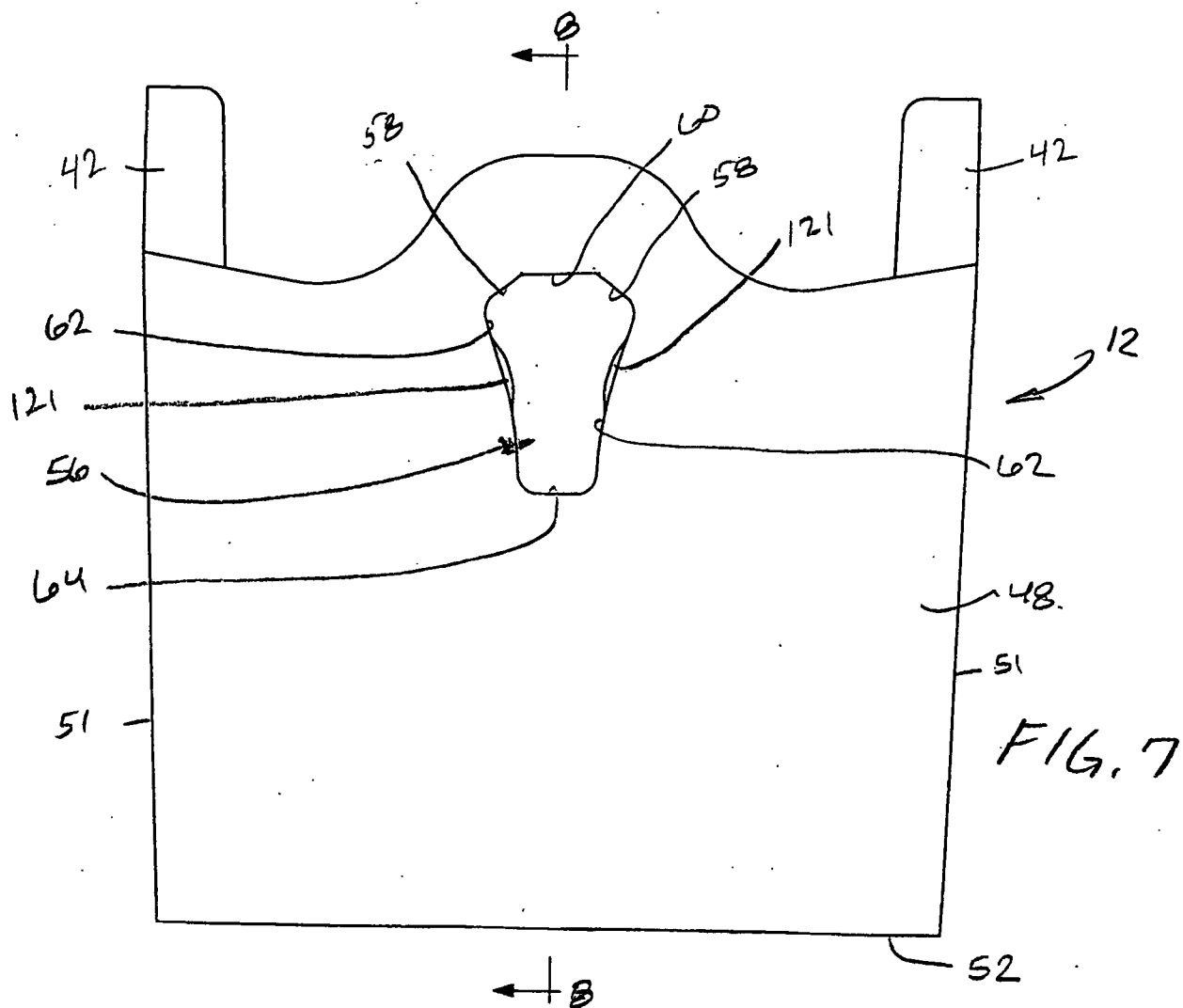
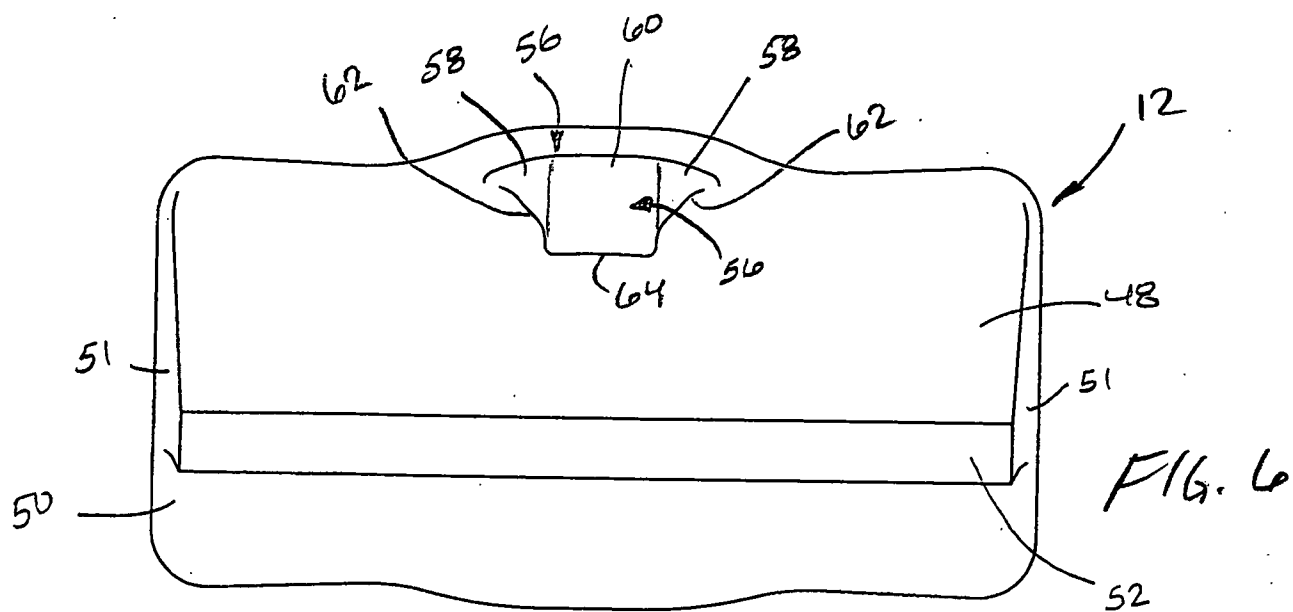


FIG. 3

FIG. 4



133



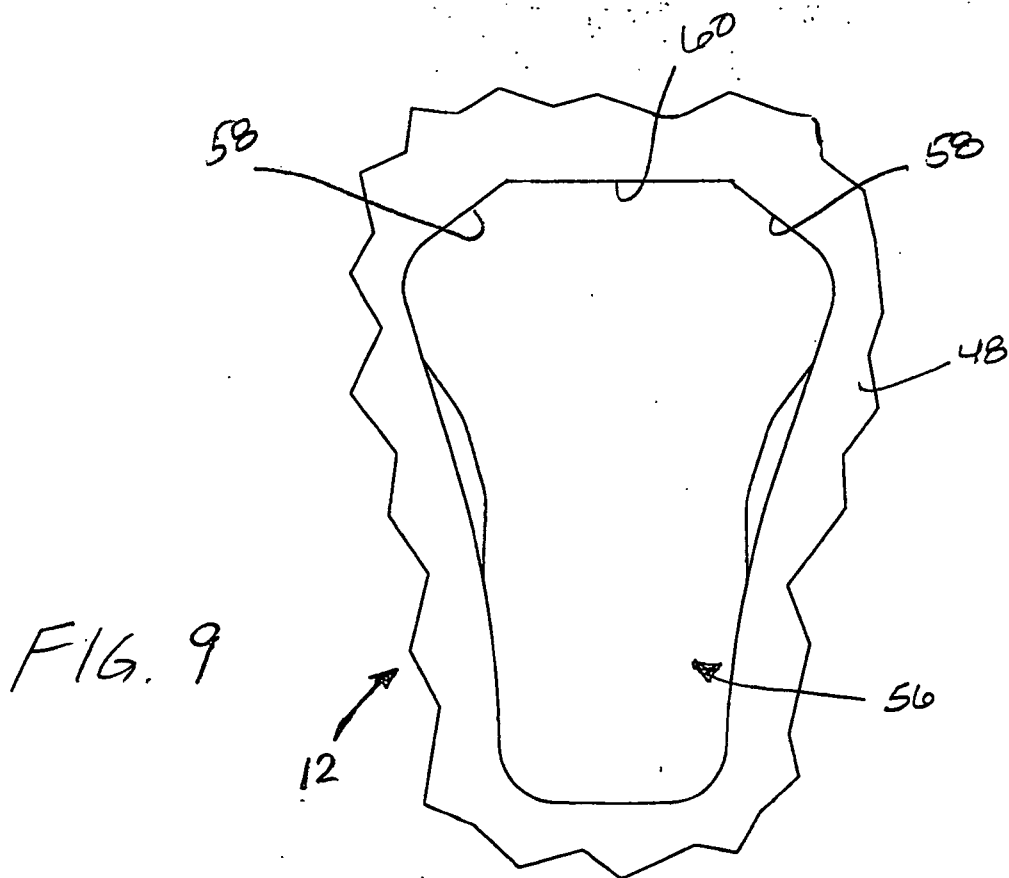
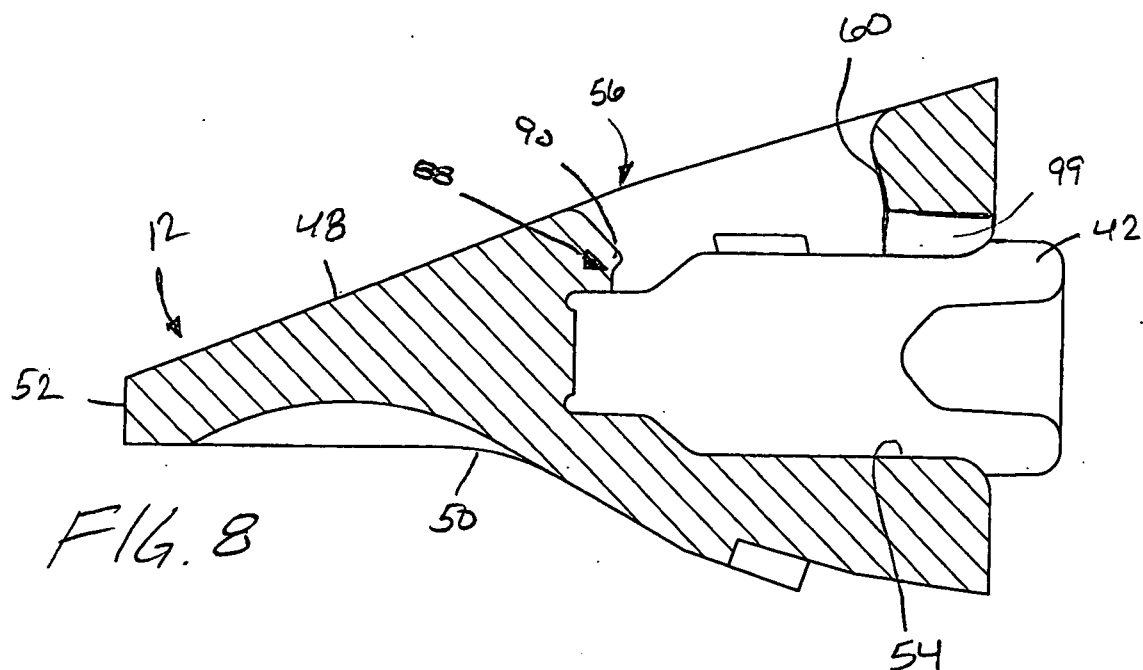


FIG. 10

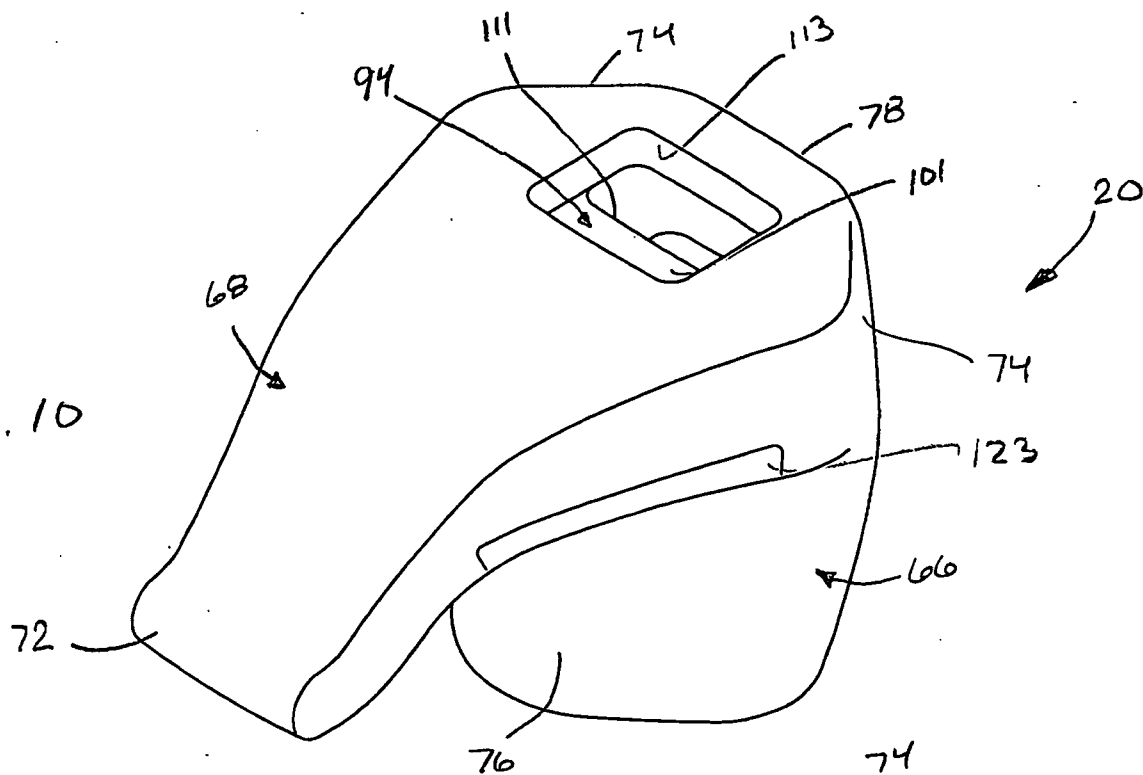


FIG. 11

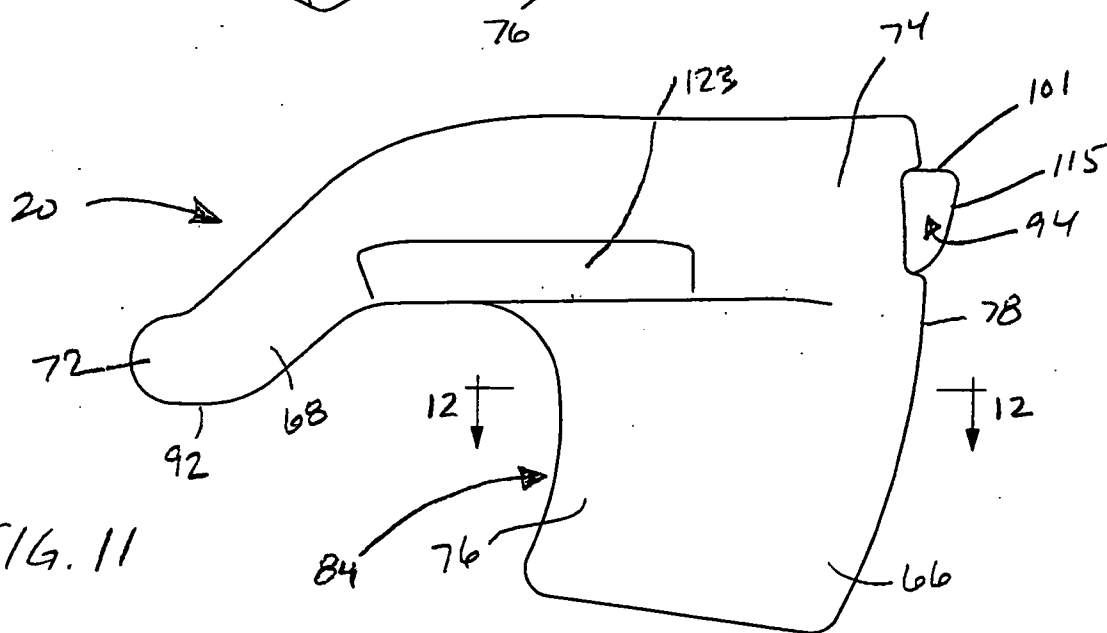
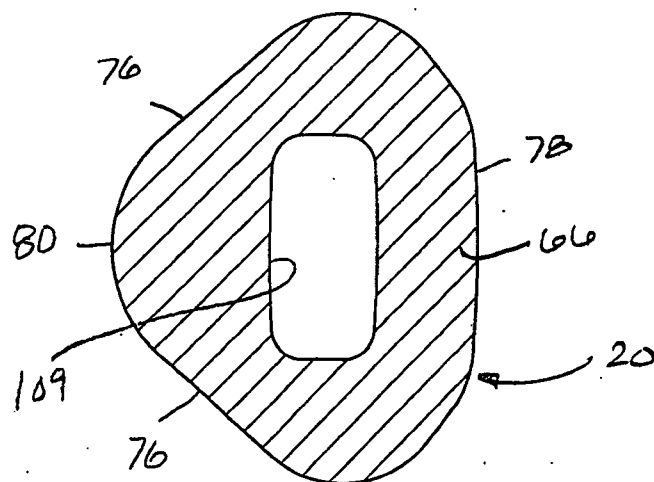
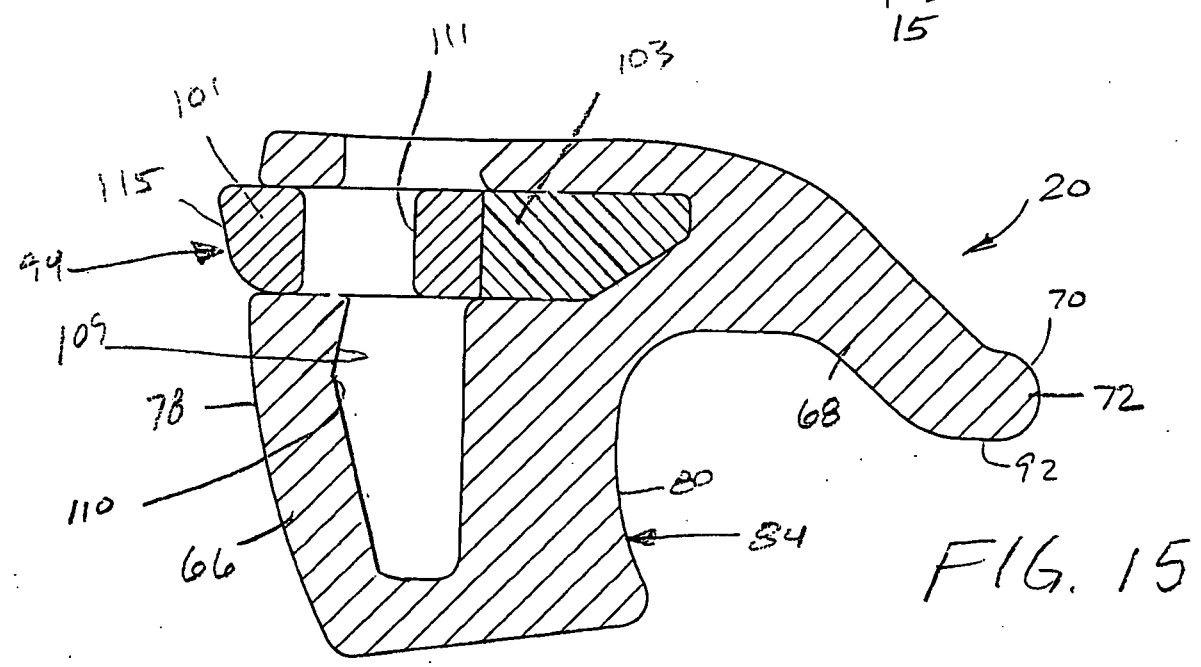
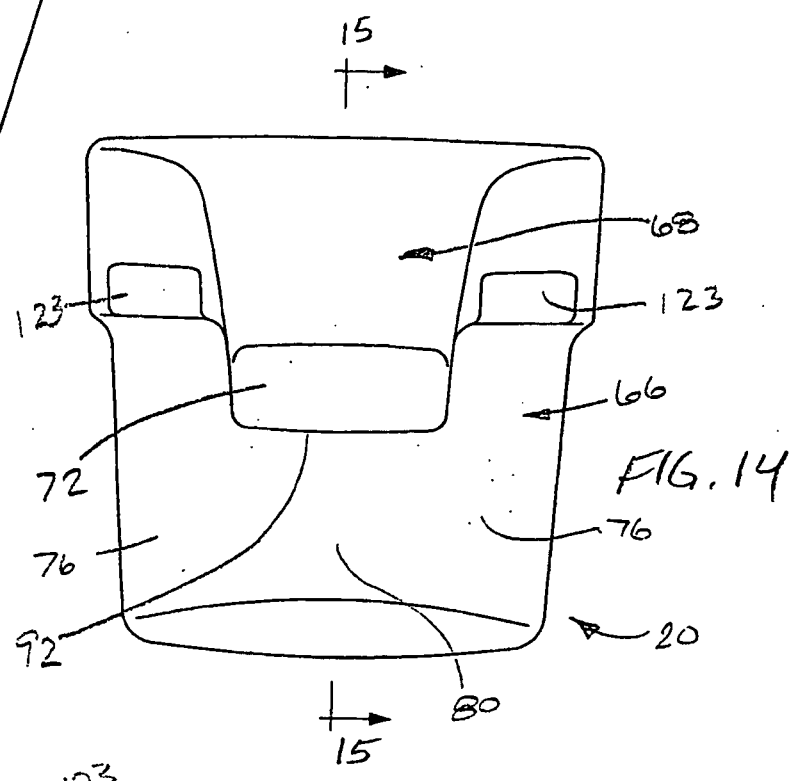
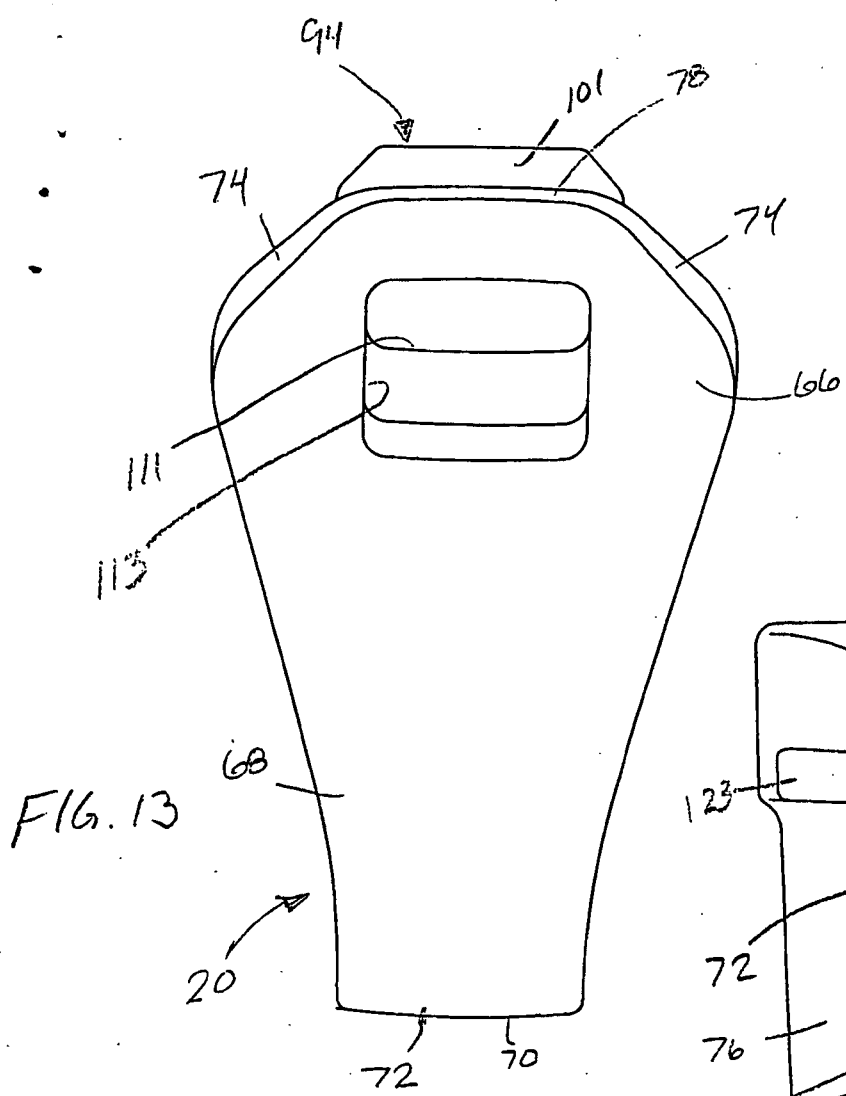


FIG. 12





88 139  
**TRADUCCIÓN No. 12/05.07** preparada por María Elvira Martelo, Traductora Oficial debidamente aprobada por el Ministerio de Justicia mediante Resolución 2879 de 1995 y reconocida por el Ministerio de Relaciones Exteriores.

---

**LOS ESTADOS UNIDOS DE AMÉRICA**  
**A TODOS A QUIENES LOS PRESENTES LLEGAREN:**  
**DEPARTAMENTO DE COMERCIO DE ESTADOS UNIDOS**  
Oficina de Marcas y Patentes de Estados Unidos

03 de abril de 2007

POR EL PRESENTE SE CERTIFICA QUE LA ADJUNTA ES UNA COPIA FIEL TOMADA DE AQUELLOS DOCUMENTOS DE LA SOLICITUD DE PATENTE QUE SE IDENTIFICA A CONTINUACIÓN Y QUE CUMPLIERON LOS REQUISITOS PARA QUE FUERA OTORGADA UNA FECHA DE PRESENTACIÓN BAJO 35 USC 111, DOCUMENTOS QUE REPOSAN EN LOS REGISTROS DE LA OFICINA DE MARCAS Y PATENTES DE ESTADOS UNIDOS:

SOLICITUD DE MARCA: 60/838,313

FECHA DE PRESENTACIÓN: 16 de agosto de 2006

EL CÓDIGO DE PAÍS Y EL NÚMERO DE SOLICITUD PRIORITARIA QUE DEBE USAR PARA EFECTUAR PRESENTACIONES EN EL EXTERIOR BAJO LA CONVENCION DE PARÍS ES US60/838,313.

Por autorización del:

Subsecretario de Comercio para Propiedad Intelectual

y Director de la Oficina de Marcas y Patentes de Estados Unidos

(Firma ilegible)

M. BASSFORD

Funcionario de Autenticaciones.

(Sello de oblea dorado) Oficina de Marcas y Patentes, Estados Unidos de América

---

Es traducción fiel y completa de la cual se deje copia para su confrontación

COLO 01195-801-005-7

WPCL 1195 – ID 154

MAY 08/07

*María E. Martelo*  
**TRADUCCION No.: 12/05.07**  
**MARIA ELVIRA MARTELO**  
Traductora e Interprete Oficial  
Inglés - Español - Inglés  
Res. No. 2879 Min. Justicia

67

COMO NOTARIO SEXTO DEL CIRCULO DE SANTAFÉ DE  
BOGOTÁ, HAGO CONSTAR QUE LA FIRMA  
*[Firma manuscrita]*  
CON LA FIRMA REGISTRADA POR  
EL CÍRCULO EN ESTA NOTARÍA  
SANTAFÉ DE BOGOTÁ, EL 15 DE JULIO DE 1911

*[Firma manuscrita]*