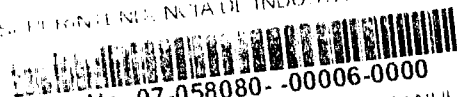


Clarke, Modet & Co

COLOMBIA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 07-058080-00006-0000

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ACT 58 PULICION Folios 2

As. 3069/PCT.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES
E. S. D.

Ref.: Expediente No. **07.058.080**
Solicitud de Patente a nombre de
BAYER SCHERING PHARMA AG

Yo, **JIMENA ESCOBAR URIBE**, identificada como aparece al pie de mi firma, domiciliada en Bogotá, en la Carrera 11 No. 86-53, piso 6, obrando como apoderada de la sociedad **BAYER SCHERING PHARMA AG**, con domicilio en Berlin, Alemania, solicitante de la patente de la referencia, pido a usted que se proceda a examinar si la invención, cuya patente se tramita en el expediente de la referencia, es patentable.

Adjunto al presente memorial el recibo No. 08-91,333, por la suma de \$420.000.00, con lo cual queda cubierta la tasa oficial correspondiente a dicho estudio.

Señor Superintendente,


JIMENA ESCOBAR URIBE
C.C. 39.779.452 de Usaquén
T.P. 68228

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 08 - 91,333
FECHA : NOVIEMBRE 24 DE 2008

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
No. 07-058080- -00006-0000
DEPARTAMENTO DE PATENTES Y MARCAS DE LA INDUSTRIA Y COMERCIO
AUTOR PLECIÓN Folios 2

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO DE BOGOTA	062754387	95149655	24/11/2008	60,625,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	
		85 EXAMEN DE PATENTABILIDAD DE INVEN	420,000.00
		TOTAL :	\$ 420,000.00

SON: CUATROCIENTOS VEINTE MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 07-58080

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION**

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No **596** DE

FECHA **30 DE SEPTIEMBRE DE 2008** EL TÉRMINO HÁBIL SEÑALADO POR

LA LEY EXPIRA EL **30 DE DICIEMBRE DE 2008**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X

United States Patent [19]

Ristimäki et al.

[11] Patent Number: 4,920,727

[45] Date of Patent: May 1, 1990

[54] CASSETTE SYSTEM AND APPARATUS FOR MANUFACTURING AN ACTIVE AGENT LIBERATING CAPSULE FOR SUBCUTANEOUS USE

[75] Inventors: Mikko V. Ristimäki, Nouioinen; Matti J. Lehtinen, Kaarina; Krister J. Lindstrom; Rolf R. Hartzell, both of Turku, all of Finland

[73] Assignee: Huhtamäki Oy, Finland

[21] Appl. No.: 289,711

[22] Filed: Dec. 27, 1988

[30] Foreign Application Priority Data

Dec. 30, 1987 [FI] Finland 875762

[51] Int. Cl.⁵ B65B 1/04; B29C 39/18

[52] U.S. Cl. 53/252; 29/433; 53/236; 425/90; 425/110; 425/164; 425/512

[58] Field of Search 53/296, 500, 266 R, 53/522, 558, 512, 252, 236, 500, 558; 29/231, 433, 467; 425/110, 289, 90, 97, 445, 446, 506, 508, 510, 517, 512, 142, 115, 163, 164

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Primary Examiner—Willard Hoag
Attorney, Agent, or Firm—Lalos & Keegan

[57] ABSTRACT

The invention relates to a cassette system for inserting a rod inside a tubular basic element. The system consists of at least two elongated plate-shaped cassettes provided with transverse channels as well as of a shank whereby the rods placed in channels of one cassette can be pushed into the tubular basic elements placed in channels of the other cassette after placing the cassettes in alignment with each other. The invention relates also to an apparatus for manufacturing a subcutaneous prophylactic capsule, comprising a tubular basic element and a hormone rod placed therein. The apparatus comprises a first conveyor for carrying an empty cassette one step forward in cooperation with a tube advancing and cutting means, a second conveyor for carrying a filled tube cassette to a swelling bath and then to a hormone rod insertion spot, a third conveyor for carrying hormone capsule alongside tube cassette to insertion spot as well as a pusher means whose shanks insert the hormone rods into the tubes placed in channels of tube cassette, a fourth conveyor for carrying tube cassette to drying, a capsule switching station for advancing the capsules to a glueing capsule so that the ends of said capsules project on either side of a cassette, said ends being glued and sealed in a glueing assembly as well as a cutting means for cutting the capsule.

7 Claims, 4 Drawing Sheets

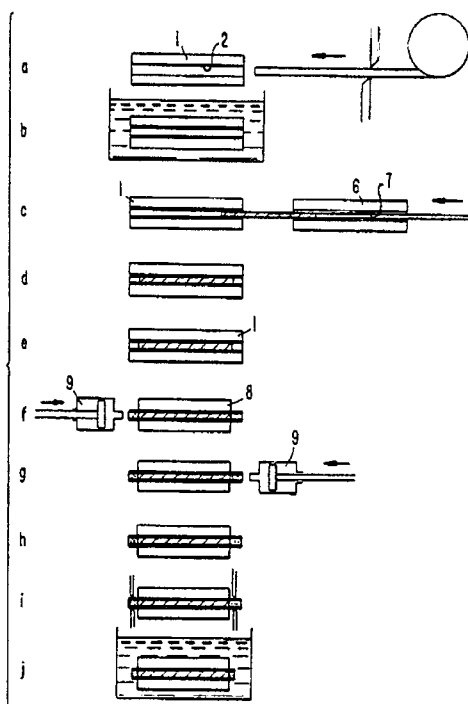


FIG. 1.

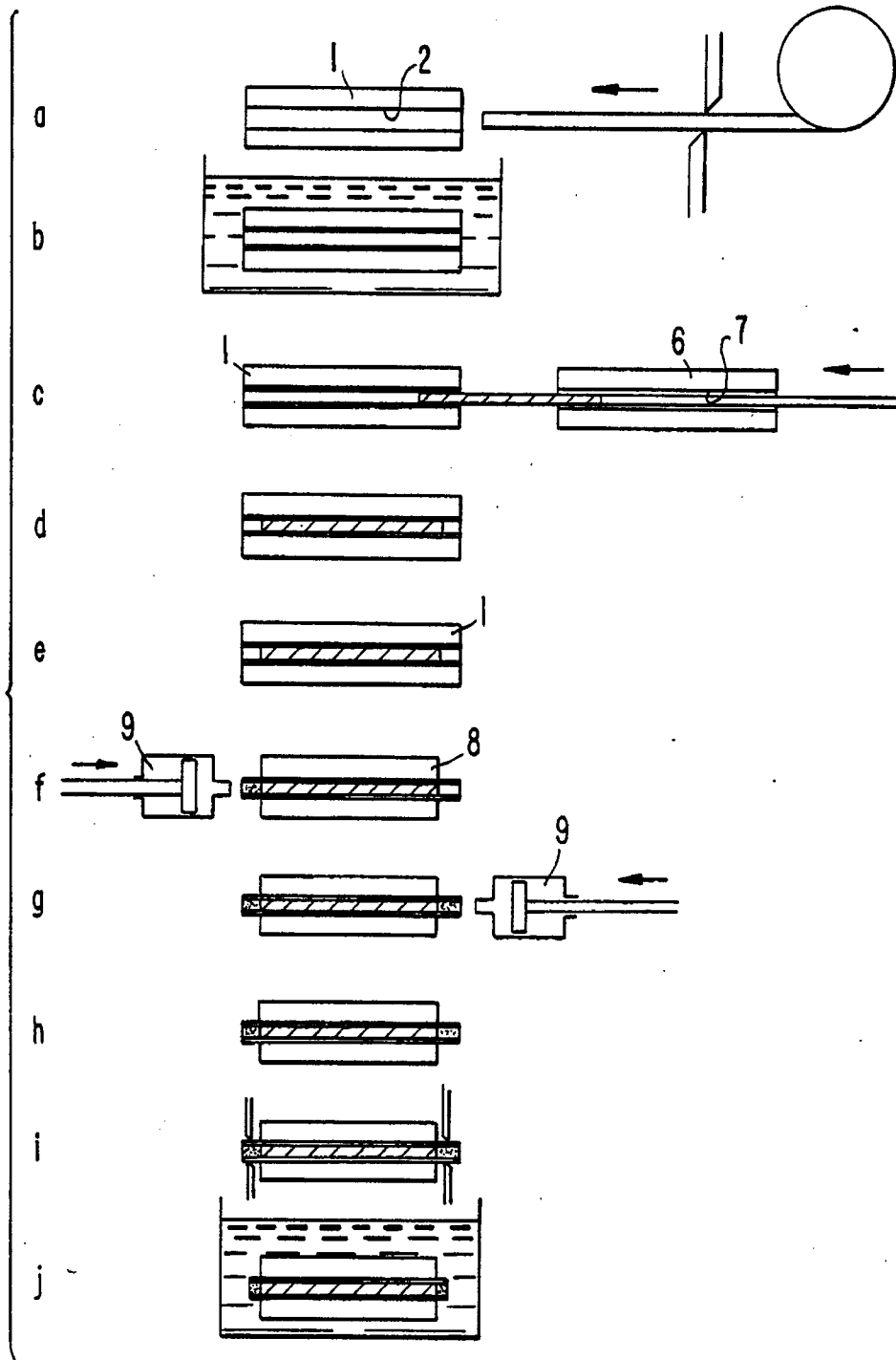
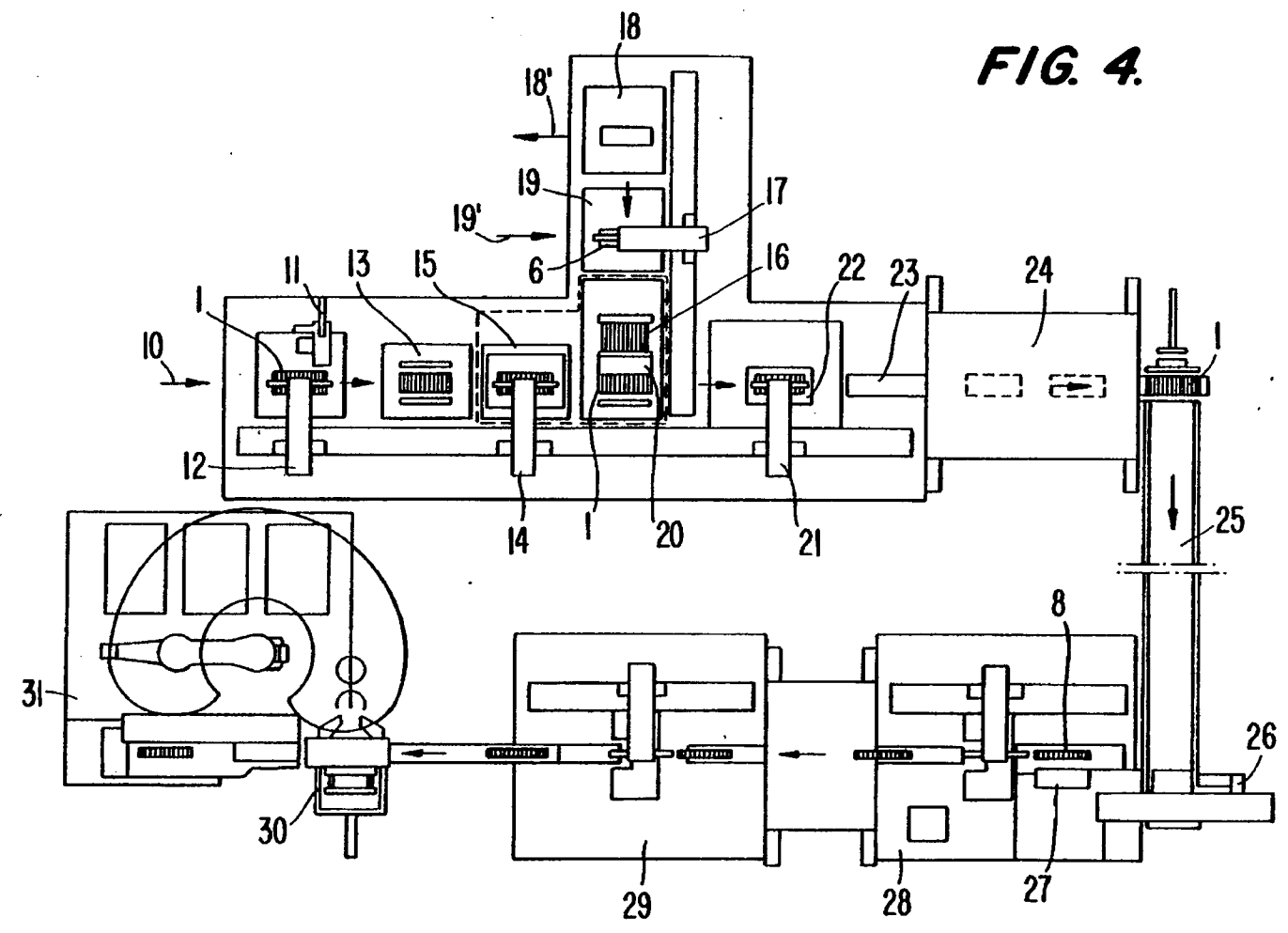


FIG. 4.



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mones and the prophylactic use are just examples of utilizing the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows the operating principle for cassettes of the invention,

FIG. 2 shows a tubing cassette employed in the invention,

FIG. 3 shows a medicine cassette according to the invention, and

FIG. 4 shows an apparatus of the invention for manufacturing a hormone capsule.

FIG. 1 shows the operating principle for a cassette system of the invention and FIGS. 2 and 3 show the cassettes employed.

FIG. 2 shows a so-called tubing cassette, comprising a plate element 1 provided with parallel channels 2 extending transversely of the longitudinal direction of a cassette. The top portion of these channels 2 is provided with grooves 3, having inclined walls and running parallel to the channels and extending from the top surface of a cassette to the top surface of a channel 2. This provides an open channel 2. In each groove 3, within the central area of a cassette, the wall surface is provided with a hole-like recess 4 for a retaining means. Along the short side of a cassette, adjacent to its end, there are two holes 5 for a catching means.

FIG. 3 shows a cassette assembly intended for cooperation with a tubing cassette shown in FIG. 2. A cassette, or a hormone capsule, shown in FIG. 3 comprises a capsule similar to that shown in FIG. 2 but the hormone capsule is only provided with channels 7 extending through the cassette as well as with pairs of holes 5 intended for a catching means and positioned along the short sides of a cassette 6, adjacent to its edge.

Employed in the invention is still a third cassette whose structure in principle is similar to a hormone capsule shown in FIG. 3 except that this third cassette is narrower than the hormone capsule so that the ends of said hormone capsule on either side remain outside the cassette for glueing the ends.

FIG. 1 shows in principle the use of capsules of the invention. A supply roller is used to advance a polymer tubing to a cutting means for cutting the polymer tubings into suitable lengths. These severed tube lengths are inserted into a first channel 2 in cassette 1. As an alternative, it is of course possible to insert the tubing into first channel 2 and to cut it as it is in position. Thereafter, cassette 1 advances a step and another length of tubing is inserted into the next channel 2. When all channels 2 are filled with tubings, cassette 1 advances from a first handling step (a) to a next handling step (b) which comprises a swelling path. The conveyor carries cassette 1 with its polymer tubing to point (b) and dips the cassette in a swelling bath followed by withdrawing the cassette from the bath, whereafter the swelling fluid is drained out and the cassette carried to a next working station (c) for bringing alongside cassette 1 a hormone capsule 6 carrying as many hormone capsule rods as polymer tube cassette 1 as polymer tubings in channels 2. The channels 7 of a hormone cassette are positioned exactly so as to match the positions of channels 2 in cassette 1. The cassettes are aligned alongside each other and shanks are inserted into each channel 7 from outside said hormone capsule 6. Thus, the hormone rods placed in channels 7 eject out of capsule 6 and directly into the polymer tubings placed in channels 2 of cassette 1. After the polymer

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tubing is filled with hormone rods, said cassette 1 is predried at step (d). A step (e) comprises final drying. Thereafter, cassette 1 together with its filled tubings is shifted alongside a glueing cassette 8 and both cassettes 1 and 8 are aligned so that their channels will be in register with each other. Then, a tubing with its hormone rod is pushed out of a tube cassette into a glueing cassette so that a portion of both ends of the capsule remains outside cassette 8. The ends are glued at steps (f) and (g). In FIG. 1, the glueing is effected in two steps but obviously it can also be effected in a single step, i.e. both ends of a cassette are glued in the same step. Since the hormone rod inserted in a polymer tubing is shorter than the polymer tubing itself, there will be a small empty space remaining at the ends of a tubing. This empty space is filled with glue by means of adhesive-supply pumps 9. Following the adhesive supply, a glued capsule is dried at a step (h), whereafter the excessive ends of a capsule are removed by cutting. This is followed by washing and rinsing a capsule and cassette at a step (j). According to the figure, this is effected by dipping cassette 1 in rinsing fluid. In principle, rinsing and washing can be effected in several steps and for example in a manner that the capsules have been removed from a cassette. Rinsing can also be supplemented by a sterilization step.

Thus, FIG. 1 illustrates in principle the operation of a cassette system of the invention.

FIG. 4 shows an apparatus of the invention for manufacturing a capsule containing a hormone medicine and consisting of polymer tubing by using a cassette system of the invention.

At an arrow indicated by numeral 10, the forward end of an apparatus is supplied with cassettes 1 shown in the canted FIG. 2. This cassette supply at the forward end of an apparatus is fitted with a lift mechanism which takes a pile of cassettes upward bringing the top cassette 1 to flush with the top level of the apparatus. In this position, a conveyor 12 catches the cassette by means of gripper-like catching members and catching holes 5 provided in the cassette to carry cassette 1 to a starting position. A supply reel 11 unwinds polymer tubing working its way into a first channel 2 in cassette 1. The polymer tubing consists of silicone tubing, preferably dimethyl siloxane. After inserting it into first channel 2, the tubing is severed with a cutting means and conveyor 12 carries cassette 1 one step forward whereby the next channel 2 positions itself in front of a tube supply mechanism and the next length of tubing is advanced into the empty channel 2. This operation continues until all channels 2 in cassette 1 are filled with tubes. Thereafter, conveyor 12 carries a filled cassette 1 to a leveling station 13 and leaves it there. Conveyor 12 returns to the starting position and catches a cassette 1 on top of the pile of cassettes and its filling proceeds as described above.

Towards the longitudinal edges of a cassette 1 at leveling station 13 are urged levelling means, whereby the lengths of tubing possibly projecting from a cassette are pushed in and the tubes are leveled in cassette 1. To a leveled or trimmed cassette 1 is now brought a conveyor 14 which engages this cassette with catching means. Conveyor 14 is further fitted with a comb means consisting of a row of shanks between the catching means. These shanks penetrate into holes 4 in cassette 1 in contact with the tubings placed in channels 2. Cassette 1 is carried away from leveling station 13, said conveyor 14 at the same time turning the cassette from



US005230207A

United States Patent [19]
Hartzell et al.

[11] **Patent Number:** **5,230,207**
[45] **Date of Patent:** **Jul. 27, 1993**

[54] **EQUIPMENT FOR MANUFACTURING OF SUBCUTANEOUS CAPSULES**
[76] **Inventors:** **Rolf Hartzell**, Loukkaantie 16, SF-20300 Turku; **Timo Helle**, Talinkorventie 9 A, SF-20310 Turku; **Pekka Lankinen**, Pyynkatu 12, SF-20600 Turku; **Pekka Nieminen**, Hanhijoentie 18, SF-21540 Preitilä, all of Finland

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Primary Examiner—Horace M. Culver
Attorney, Agent, or Firm—Wolf, Greenfield & Sacks, P.C.

[21] **Appl. No.:** **721,457**
[22] **PCT Filed:** **Mar. 28, 1991**
[86] **PCT No.:** **PCT/FI91/00090**
§ 371 **Date:** **Jul. 3, 1991**
§ 102(e) **Date:** **Jul. 3, 1991**
[87] **PCT Pub. No.:** **WO92/17148**
PCT Pub. Date: **Oct. 15, 1992**
[51] **Int. Cl.⁵** **B65B 1/02; B65B 1/12; A61J 3/07**
[52] **U.S. Cl.** **53/547; 53/560; 53/567; 53/900**
[58] **Field of Search** **53/560, 547, 567, 900, 53/454, 459, 471**

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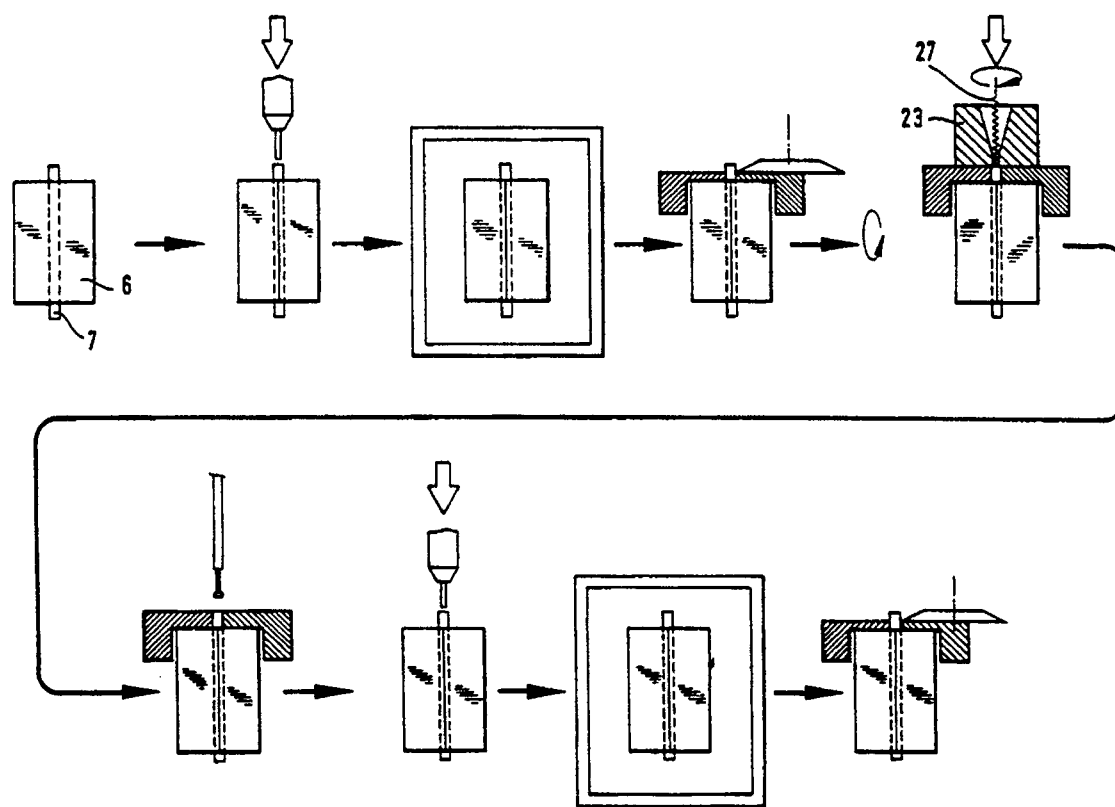
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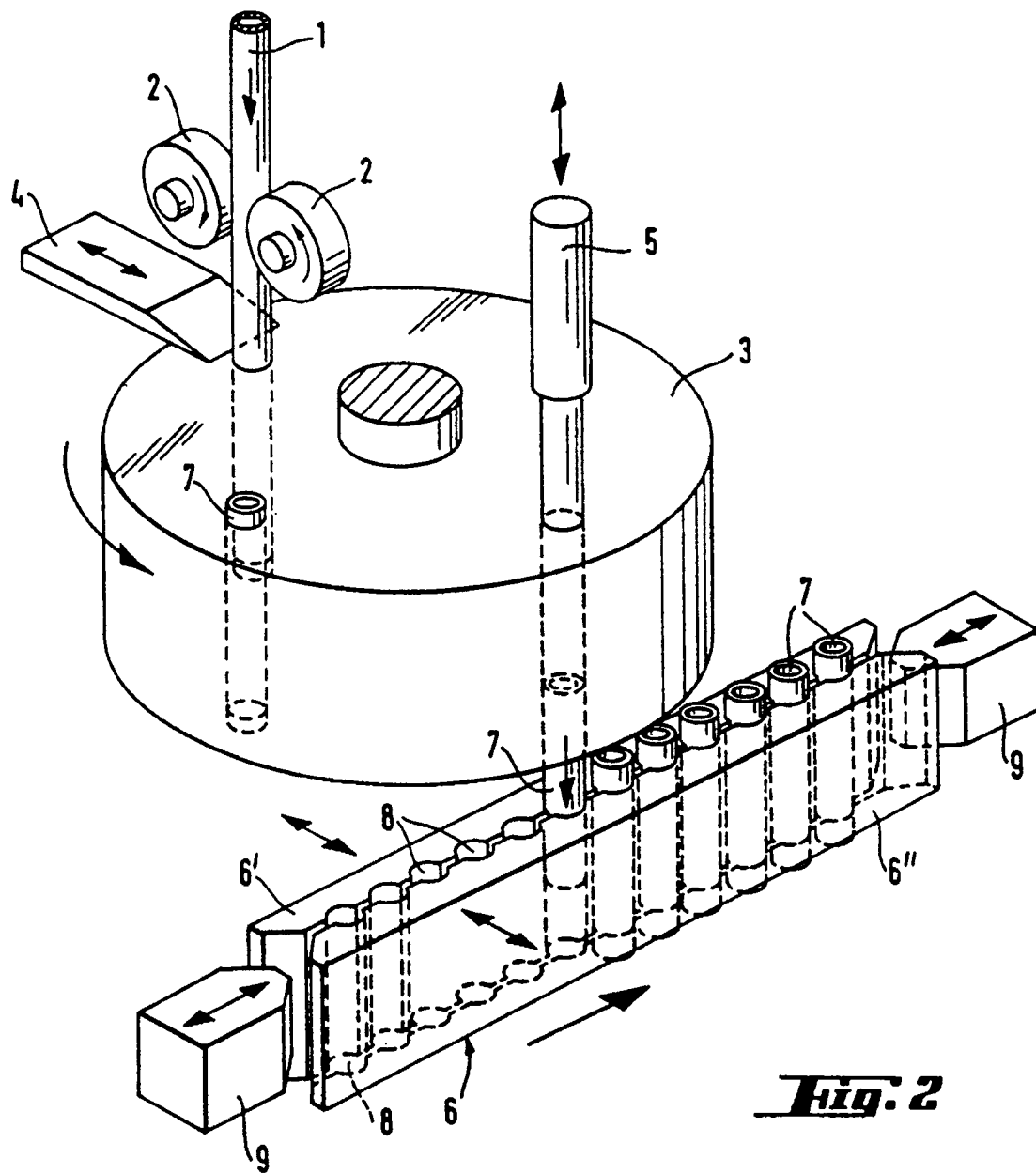
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[57] **ABSTRACT**

The invention relates to an equipment for manufacturing subcutaneous capsules. The capsules are produced by cutting from a silicone tube lengths in excess of the final capsule length. The lengths are arranged into rows including a defined number of them and in these rows they are filled and sealed. One end of the capsules is first sealed by glue dosaged into their openings. The material for the capsules is dosaged by an aperture disc glidable on a plane surface. By sweeping the upper surface of the disc the dosage volume is limited to the volume defined by the aperture. To regulate the packaging density of the material vibration may be used during the filling of the apertures. The dosaged material is conveyed to the capsule via a feeder funnel, through which a rotatable spiral spring, functioning as a filling screw, is inserted into the capsule to be filled.

4 Claims, 7 Drawing Sheets





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station, where the lower surface of the apertures is opened to a receptacle for the material.

In the device according to FIG. 3, the material used for filling the dosage apertures is fed from a storage container 10 by means of a compartment feeder 11, performing a rough dosing, to a trough-like vibrating conveyor 12. This vibrating conveyor transfers the material to be dosed further to a distribution through 13 at a lower level, the open lower part of which is defined by the dosing disc 14. The dosing disc 14 is glidable on the plane surface 15. The number of through apertures in the dosing disc 14 in the described embodiment is half of that of the capsule blanks to be filled in the clamping claw cassette 6. The parts of the device may naturally also be dimensioned so that the number of the apertures and the number of the capsule blanks to be filled are the same. The diameter of the apertures 16 is dimensioned so, taking the thickness of the aperture disc 14 into account, that the apertures, when filled up to the upper surface level of the disc, will define the volume of the dose intended for each capsule, or so that a dosage volume is formed by a multiple of aperture fillings.

In the device described in the drawing FIGS. 3, 4, and 5 the material to be dosed and transported by the vibrating conveyor 12 is spread in the distribution through 13 by means of a device movable by a cylinder-piston device 18. An optical control device 19 is arranged in connection with the through by means of which the surface level in the distribution through 13 of the material to be dosed is monitored, and on the basis of the information of which the number of the operation cycles of the compartment feeder 11, which functions as a rough dosing device, is determined.

The plane surface 15, on which the dosing aperture disc 14 is glidable and upon which it rests during filling of the dosing apertures, is combined with a suitable vibrating device in order to direct a vibrating effect on the plane surface during the filling stage of the apertures 16. This vibrating effect will act on the packaging density of the material to be filled into the dosing apertures 16. It is possible to regulate the packaging degree by regulating the duration and/or the intensity of the vibration. Another factor influencing the packaging degree is the filling level in the distribution through 13 of the material to be filled monitored by the said optical control device 19.

After filling of the apertures, the dosing disc 14 is pushed along the plane surface 15 to the discharge station of the apertures. The upper surface of the dosing disc 14 is in gliding contact with the lower surface of the distribution through 13 whereby the lower edge of the through levels the dose volumes in the apertures to the upper surface level of the dosing disc 14, whereby the excess material remains in the distribution through 13 closed by the dosing disc 14.

In the level surface 15 there is formed a row of discharge apertures 20 corresponding to the dosing apertures 16, above which row the apertures 16 are glided. Arranged below the discharging apertures 20, there is a vibrating conveyor formed by a groove disc 21. In the groove disc 21 there is the same number of grooves 22 as there are discharging apertures 20, and the grooves and the discharging apertures are aligned so that the material in the dosing apertures can be discharged through the discharging apertures 20 to their respective groove 22 in the groove disc 21. The groove disc 21 is preferably declining and equipped with a vibration

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device, whereby a groove 22 forms a conveyor for a single dosage.

The dosaged material is transferred on the groove disc 21 to filling funnels 23 arranged in a transverse row beneath the fail edge of the groove disc 21. Below these filling funnels there has in turn been transferred a row of capsule blanks 7 carried by the clamping claw cassette 6, the lower ends of the capsule blanks having been sealed and advantageously trimmed according to the measures described above.

The equipment according to the FIGS. 3 to 8 also comprises a filling apparatus 24, comprising a number of feeding devices corresponding to the number of filling funnels 23. Each feeding device comprises a rotating motor 25, a spindle 26, and a feeder screw 27 attached to the lower end of the spindle. To operate the feeder screw 27 within the conditions determined by the small dimensions of the capsules to be filled, the filling screw is formed by a thin spiral spring. For better control of the movements of the spiral spring, a thin straight guiding wire is placed inside the spring, extending substantially along the whole length of the spiral spring.

The feeder screw 27 formed by the spiral spring is directed through each feeding funnel 23 to the capsule blank below it and is made to rotate. The rotative movement is naturally chosen in the feeding direction of the spiral spring. The feeder screw rotating in the capsule blank feeds the material fed into the feeder funnel efficiently into the capsule blank. In order to avoid unnecessary compacting of the material in the capsule blank, the feeder screw is raised as filling is advancing. After the dosed batch has been completely fed, the feeder screw is removed completely from the capsule blank, and the blanks are transferred to be sealed. Before sealing, it is possible to clean the inside of their mouth areas to remove any remaining filling material. Sealing is carried out by glueing in the same way as the sealing of the opposite end of the blank before the filling stage.

After sealing, the ends of the filled capsules can be trimmed by cutting. After trimming, the final capsules will be removed from their respective clamping claw cassettes after which operation they will be processed individually according to prior technology discussed briefly above.

We claim:
1. Equipment for manufacturing a subcutaneous capsule filled with a medical substance, from a tube forming the capsule casing, comprising a cutting device for cutting the capsule blanks into fixed lengths, a means for arranging the capsule blanks cut the tube in a parallel fashion in rows including a specific number of capsule blanks, the said arranging means including a clamping claw cassette means for holding the capsule blanks in the said row through the processing stages following the arranging stage, devices for dosing glue to one end of the capsule blanks, devices for hardening the glue, means for turning the cassette means so that the capsule blanks carried thereby turn to a position with their open ends facing upwards, a dosing device, based on a dosing aperture disc glidable along a plane surface, for dosing the medical substance in individual quantities for each capsule, devices for feeding the individually dosed medicine quantities for a respective capsule blank to a feeder, a feeder included for each capsule blank, a rotatable spiral spring means to be inserted into the capsule blank and extracted therefrom, devices for dosing glue into the open ends of the capsule blanks, and means for hardening the glue.