

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2020/021753

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl. F16K31/18 (2006.01) i, F16T1/12 (2006.01) i

FI: F16T1/12, F16K31/18D

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl. F16K31/18, F16T1/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922-1996

Published unexamined utility model applications of Japan 1971-2020

Registered utility model specifications of Japan 1996-2020

Published registered utility model applications of Japan 1994-2020

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	JP 56-70192 A (TLV CO., LTD.) 11.06.1981 (1981-06-11), page 1, lower right column, line 4 to page 3, upper left column, line 16, fig. 1-5	1, 8 2-3, 7-10 4-6
Y	JP 3-29678 Y2 (TLV CO., LTD.) 24.06.1991 (1991-06-24), column 1, line 21 to column 2, line 1, column 4, lines 5-11, fig. 1	2-3, 7-10
Y	JP 4-18015 Y2 (TLV CO., LTD.) 22.04.1992 (1992-04-22), column 3, line 16 to column 4, line 39, fig. 1	9-10
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 24768/1989 (Laid-open No. 116071/1990) (OHKURA ELECTRIC CO., LTD.) 17.09.1990 (1990-09-17), entire text	1-10
A	JP 11-153295 A (SPIRAX-SARCO LIMITED.) 08.06.1999 (1999-06-08), entire text	1-10
A	JP 52-55715 Y2 (FUSHIMAN KK) 16.12.1977 (1977-12-16), entire text	1-10



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
19.08.2020Date of mailing of the international search report
01.09.2020Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

Authorized officer

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/JP2020/021753

JP 56-70192 A	11.06.1981	(Family: none)
JP 3-29678 Y2	24.06.1991	(Family: none)
JP 4-18015 Y2	22.04.1992	(Family: none)
JP 2-116071 U1	17.09.1990	(Family: none)
JP 11-153295 A	08.06.1999	EP 903524 A2 entire text US 6174138 B1 GB 2329451 A
JP 52-55715 Y2	16.12.1977	(Family: none)