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(54) Device to apply paraffin for two-for-one twisters.

(57) A paraffining device (10) located upstream from the winding means (13) for a two-for-one twister head (14) comprising support means (64) for carrying a paraffin disk (35), means (38) for bearing against the end of the paraffin disk (35) against said support means (64), spring means (36) for urging said support means (64) against said bearing means (38) and shaft means (20-31) for rotating the paraffin disk (35), all carried by a fixed supporting structure (18), characterized by the fact that said support means (64) consists of a hollow drum (34) provided terminally with a seating (61) for the paraffin disk (35), snugly mounted on the outside of a cyclindrical supporting structure (18) rotatingly internally carrying an externally driven shaft means (20-31) extending centrally through said supporting structure (18) and drum (34) and projecting out of said seating (61) for engaging the paraffin disk (35), there being provided internally to said drum (34) compression spring means (36) urging said drum (34) axially away from said supporting structure (18).

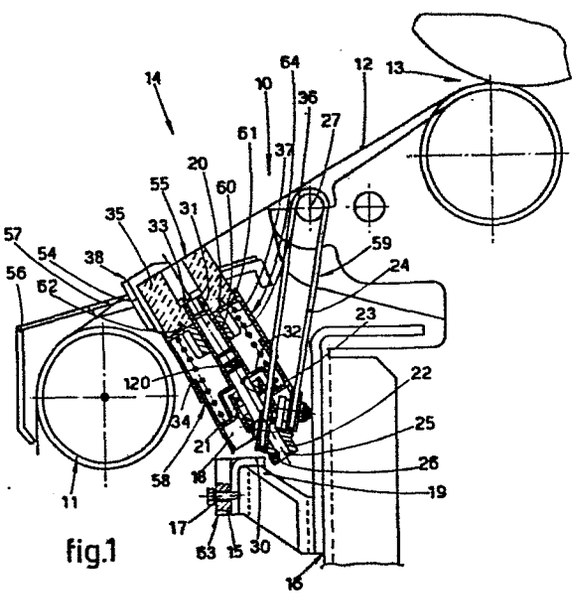

fig.1

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Description of the invention entitled:
"Device to apply paraffin for two-for-one twisters"
in the name of OFFICINE SAVIO S.p.A. at Pordenone

This invention concerns a device to apply paraffin for two-for-one twisters which enables paraffin to be applied continuously to double-twist yarn during the normal twisting cycle and substantially before said yarn is wound.

It is envisaged in the known art that the application of paraffin to twisted yarn can be carried out after the twisting phase, and an extra winding operation is performed for this purpose.

The use of devices to apply paraffin which are fitted directly to the twisters and consist of a head holding a disk of paraffin and of an opposed head, said heads cooperating with each other, is also envisaged in the known art as described in DE-OS 2316452, CH 378750 and US 3,358,641.

The disk of paraffin is pressed by said holding head against suitable means that press the yarn, and against suitable opposing face means which can be positioned axially and are comprised in said opposed head as particularly disclosed in CH 378750 and US 3,358,641.

Said known devices to apply paraffin are costly and structurally complex; moreover, they do not permit easy handling

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of the disk of paraffin because of the particular action applied to said disk by said head and said opposed head.

A purpose of the invention is to embody an improved device for applying paraffin in two-for-one twisters whereby said device can work advantageously on the double-twist yarn substantially before the latter is wound and spooled.

Another purpose of the invention is to permit simple and fast working when fitting and removing the disk of paraffin and when inserting the double-twist yarn in the device in question that applies the paraffin.

Yet another purpose of the invention is to be able to regulate the axial position of said disk of paraffin with adjustable presser means so as to obtain constant application of paraffin to the double-twist yarn.

Furthermore, said presser means are anchored very near to the device applying paraffin and can easily removed sideway, and this enables the size of the whole device applying paraffin to be substantially and advantageously reduced.

The device applying paraffin according to the invention can also be readily stopped from processing the twisted yarn.

Moreover, the device in question for applying paraffin has been conceived in such a way that it does not permit a build-up of impurities within or outside itself.

In particular, said device applying paraffin comprises a stationary supporting structure anchored to a carrying bar, which also acts as an anchorage for the other devices applying paraffin on the same twister.

Said structure rotatingly upholds a spindle and a drum with a seating for holding a disk of paraffin, whereby said spindle and said drum rotate and are reciprocally engaged by means of the paraffin disk rotated by the spindle which disk is pressed against its seating in the drum, and whereby said.

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drum can also slide coaxially on said structure so as to enable the position of said disk of paraffin to be adjusted axially.

Said rotating spindle is revolved by means consisting of a belt and pulleys or gear wheel means, deriving its motion in a known manner from a common drive shaft disposed lengthwise along the twister.

The device thus constituted for applying paraffin is located substantially upstream from the winding means comprised in the twisting head with which said device cooperates, and processes yarn which has already been twisted.

The invention is therefore emboded in paraffin device located upstream from the winding means for a two-for-one twister head comprising support means for carrying a paraffin disk, means for bearing against the end of the paraffin disk against said support means, spring means for urging said support means against said bearing means and shaft means for rotating the paraffin disk, all carried by a fixed supporting structure, characterized by the fact that said support means consists of a hollow drum provided terminally with a seating for the paraffin disk, snugly mounted on the outside of a cylindrical supporting structure rotatingly, and internally carrying an externally driven shaft means extending centrally through said supporting structure and drum and projecting out of said seating for engaging the paraffin disk, there being provided internally to said drum compression spring means urging said drum axially away from said supporting structure.

A preferential embodiment of this invention will be described hereinafter as a non-restrictive example and reference will be made to the attached tables, wherein:

Fig. 1 shows a side view of the device applying paraffin in question;

Fig. 2 gives a diagram of a view from above of a detail of the device shown in Fig. 1;

Fig. 3 shows a front view of the presser means employed in the device in question;

Fig. 4 shows diagrammatically a three-dimensional view of the means which rotate the means holding the disk of paraffin;

Fig. 5 shows diagrammatically a three-dimensional view of a detail of the presser means employed in the device apllying paraffin in question.

The same parts or parts performing the same functions bear the same reference numbers in the figures.

The device to apply paraffin 10 which is the subject of the invention is located substantially between the overfeed roll 11 for the double-twist yarn 12 and the winding means 13 of the twister head 14.

In particular, the device 10 to apply paraffin may co-operate with only one twister head 14 and, for this purpose, be solidly fixed and fitted to anchorage means 63 which in this instance consist of a lengthwise carrying bar 15 shaped blade-wise and solidly connected 17 to the frame 16 of the twister itself.

Said carrying bar 15 bears at least part of the devices 10 applying paraffin which are comprised in one and the same twister, and is disposed knife-wise with its shorter edges substantially upright so as to prevent a build-up of impurities of the double-twist yarn 12 running towards the winding means 13.

The device 10 applying paraffin comprises rotating means 64 which hold a disk of paraffin 35.

Said means 64 are upheld by supporting means 58, which comprise a carrying structure 18 that is anchored at 19 to the bar 15 and that includes a through seating 23 within

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which there can revolve freely a spindle 20, which is part of the rotating means 64 and is suitably supported by bearing means 21.

Said spindle 20 is made to rotate by entraining means 59 consisting of a belt or chain 24 that cooperates with a pulley 22 solidly keyed with a dowel 26 to the lower axial end 25 of said spindle 20.

Said belt 24 takes its motion from transmission means 27 arranged lengthwise and able to drive at least part of the devices applying paraffin comprised in said twister.

Said belt 24 cooperates with a pair of pulleys 28-29 in transmitting rotation from the means 27, which has its axis substantially horizontal, to the spindle 20, which has its axis sloped diversely in relation to the horizontal (Fig. 4).

Said pulleys 28-29 are revolvably anchored to a suitable carrying arm 30, which in this instance is solidly secured to the bar 15.

A hollow sleeve 31 having a polygonal section, which is square in our example, and at least partially flanged at its lower end 32 is arranged to slidingly receive the upper end of the spindle 20.

Said sleeve 31, which can slide on spindle 20, is rotatingly engaged by said spindle 20 by means of splines 120 provided on the outside of the spindle cooperating with suitable longitudinal slots provided inside sleeve 31.

The sleeve 31 is received in a hole 60 of similare form provided in the seating 61.

Said drum 34 can slide coaxially with respect to the supporting structure 18 and on the outside thereof and is normally kept in working position by thrust spring means 36, which is coaxial with the sleeve 31 and is kept compressed between the supporting structure 18 and the end wall 37 of the seating of said drum 34; said drum 34 can revolve togheter

with said spindle 20 and is lodged, by means of its engagement with sleeve 31 extending through hole 60 which has a polygonal section.

The disk 35 of paraffin can be inserted axially in the seating 61 on the outside of said drum 34 and be kept in a pre-set axial working position by suitable bearing means 38.

Said bearing means 38 can press axially on the disk of paraffin 35 and, substantially, on the drum 34 and their action is opposed by the action of the thrust spring 36.

The bearing means 38 comprises a stem 39, which can be positioned axially within a slide-way 40 and be clamped there in with screw fixture means 41, which can be inserted into and cooperate with a seating or groove 51 located at least partially lengthwise on the outer surface of said stem 39, as shown in Fig. 3.

Furthermore, the axial position of said stem 39 can be finely adjusted with reference to a graduated scale 42 located thereon, by means of a fixed index consisting here of the upper edge of the slide-way 40.

A presser element 43 is coaxially keyed to the top of said stem 39 and comprises a positionable cylinder 44 provided with a radial prong 45 which can be located so as to press on the disk 35 of paraffin.

Said presser cylinder 44 can, be provided at its lower end with at least one recess 46, which can be engaged in the working position by an axially extending tooth 47 located on a circular ring 48 making part of the stem 39, as shown in Figs. 3 and 5.

The presser element 43 stays in said lower engaged position as it is pressed by a spring 49 located coaxially between an end flange 50 fixed to the stem 39 and an inner circular shoulder 52, which provides a lower bearing surface and is comprised in the cylinder 44; said springe 49 is pos-

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itioned in an anular interspace located betwen said cylinder 44 and said stem 39 and closed externally by the end flange 50 fixed terminally to the stem.

To stop the presser means 38 working, it is enough to raise the element 43 in such a way as to free it from the stem 39, and then to revolve it so as to disengage the prong 45 from the disk of paraffin 35 and to keep it disengaged therefrom for the time desired.

In this way the disk of paraffin 35 on the drum 34 can then be replaced or inserted once again if required.

It is also possible to stop the working of the device 10 applying paraffin by pressing said drum 34 against the supporting structure 18 coaxially with said structure 18 and by clamping the stem 39 in its lower position within the slideway 40.

The path of the yarn to be wound is determined not only by the rotation of the winding means 13 but also at least partially by a crosswise guide 54 for the yarn 12, said guide 54 being located upstream from the device applying paraffin 10 and anchored (53) to the stem 39, as shown in Figs. 1, 2 and 3.

Said crosswise guide 54 prevents the yarn 12 from leaving the edges of the upper working surface 55 of the disk of paraffin 35.

The uniformity of application of paraffin to the yarn 12 is determined substantially by the axial position which the rotating disk of paraffin 35 is made to take up when acting on said yarn 12 running over it.

If the working of the device applying paraffin 10 is stopped in the way described in the foregoing, the yarn 12 stays in contact and cooperation only with the overfeed roll 11 and the winding means 13.

The use can be envisaged of a protective cover 56 which

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includes a specially shaped hole 57 and which may possibly be equipped with guides for insertion of the yarn 12; the upper part of the device applying paraffin 10 can protrude through said cover.

We have described here a preferential embodiment of the invention, but variants are possible for a technician in this field.

Thus the shapes and sizes can be changed and it can be envisaged that the upper, outer surface 61 of the drum 34 comprises spike means 62 for better fixture of the disk of paraffin 35.

The use can be visualised of gear wheel means to transmit motion to the spindle 20 so as to replace, at least partially, the belt and pulley means described and shown.

It is also possible to envisage a separate motor means for each spindle 20.

Moreover, it can be visualised that the anchorage of the device applying paraffin 10 can be effected directly on the bed or frame 16 of said twister by means of screw connecting means or clamp connecting means or any other means suitable for the purpose.

These and other variants are all possible for a technician in this field within the scope of the idea of the inventive solution.

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CLAIMS

1 - Paraffining device (10) located upstream from the winding means (13) for a two-for-one twister head (14) comprising support means (64) for carrying a paraffin disk (35), means (38) for bearing against the end of the paraffin disk (35) against said support means (64), spring means (36) for urging said support means (64) against said bearing means (38) and shaft means (20-31) for rotating the paraffin disk (35), all carried by a fixed supporting structure (18), characterized by the fact that said support means (64) consists of a hollow drum (34) provided terminally with a seating (61) for the paraffin disk (35), snugly mounted on the outside of a cylindrical supporting structure (18) rotatingly internally carrying an externally driven shaft means (20-31) extending centrally through said supporting structure (18) and drum (34) and projecting out of said seating (61) for engaging the paraffin disk (35), there being provided internally to said drum (34) compression spring means (36) urging said drum (34) axially away from said supporting structure (18).

2 - Paraffining device (10) as in claim 1 characterized by the fact that said shaft means (20-31) for rotating the paraffing disk (35) consists of a spindle (20) provided externally with drive means (59) and rotatingly anchored within said supporting structure (18) and a hollow sleeve (31) having a poligonal cross section and arranged in a central hole (60) of similar section provided through the seating (61) of the drum (34) of which it projects to receive the paraffin disk (35), said sleeve (31) being internally engaged by the spindle (20) by means of spline means (120) which permits the axial displacement of said sleeve (31) relative to the spindle (20).

3 - Paraffining device (10) as in claim 1 or 2 characterized by the fact that the means (38) for bearing against the end

face of the paraffin disk (35) comprises a stem (39) axially displaceable and rotatingly arranged within a slide-way (40) positioned parallel to the axis of spindle (20), a presser element (43) coaxially keyed to the top of said stem (39) and comprising a positionable cylinder (44) provided with a radial prong (45) for pressing the paraffin disk (35) against its seating (61), whereby said presser element (43) is kept in its bearing position by spring means (49) positioned in an anular interspace provided between the internal wall of said cylinder (44) and the external wall of the stem (39), said interspace being externally limited by an end flange (50) terminally fixed to said stem (39).

4 - Paraffininig device (10) as in claim 3 characterized by the fact that the portion of the stem (39) within the slide-way (40) includes a circumferential groove (51) having a certain axial width which is engaged by screw means (41) threaded radially through the wall of the slide-way (40).

5 - Paraffining device (10) as in claim 3 or 4 characterized by the fact that the presser cylinder (44) is provided at its lower end with at least one recess (46) engaged, in the working position, by an axially extending tooth (47) located on a circular ring (48) making part of the stem (39).

6 - Paraffining device (10) as in 1 or any of the preceding claims, characterized by the fact that the seating (61) of drum (34) includes means (62) for fixing the paraffin disk (35).

7 - Paraffining device (10) as in claim 6, characterized by the fact that said means (62) for fixing the paraffin disk (35) are spike means.

8 - Paraffining device (10) as in 1 or any of the preceding claims, characterized by the fact of including anchorage means (63) consisting of a lengthwise bar (15), shaped blade-wise and disposed knife-wise with its shorter edges substan-

tially upright and connected solidly (17) to the frame (16) of the twister.

9 - Paraffining device (10) as in claim 2, characterized by the fact that the drive means (59) comprises gear wheel means.

10 - Paraffining device (10) as in claim 2, characterized by the fact that the drive means (59) comprises revolving clutch means which cooperate with each other.

11 - Paraffining device (10) as in 1 or any of the preceding claims, characterized by the fact of comprising a protective cover (56) provided with a specially shaped hole (57) through which said device (10) juts out at least partially.

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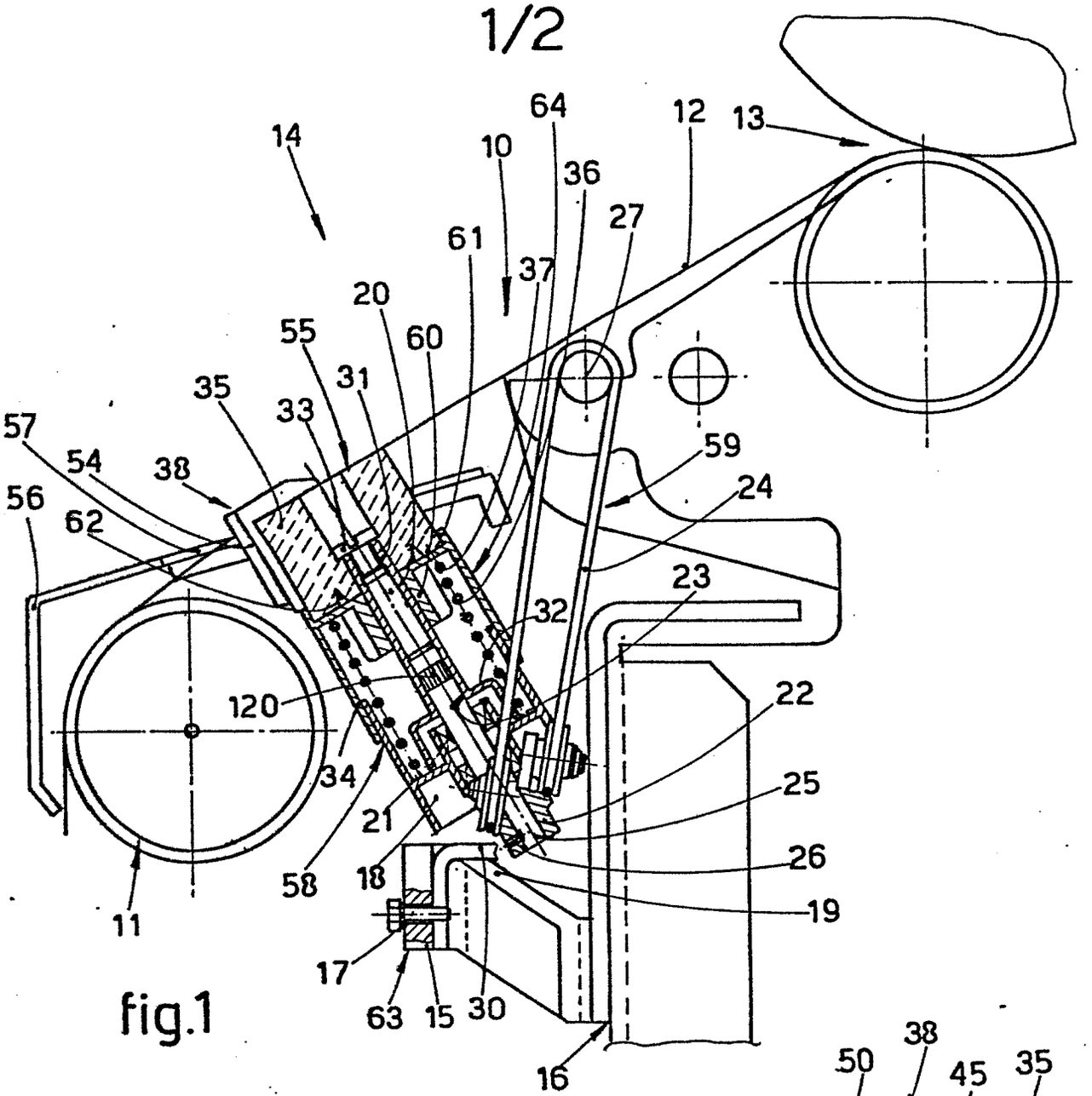

fig.1

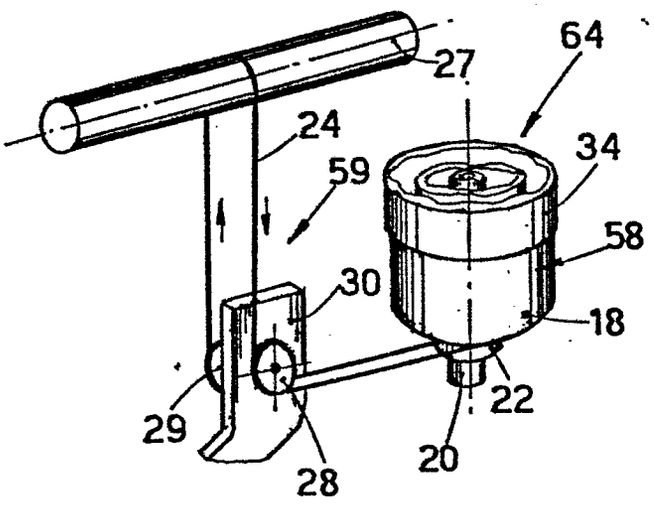

fig.4

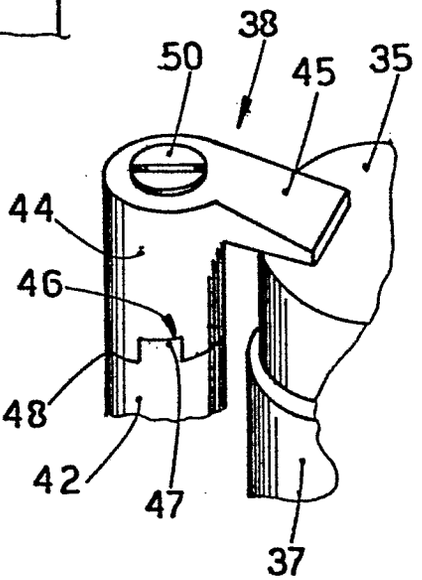

fig. 5

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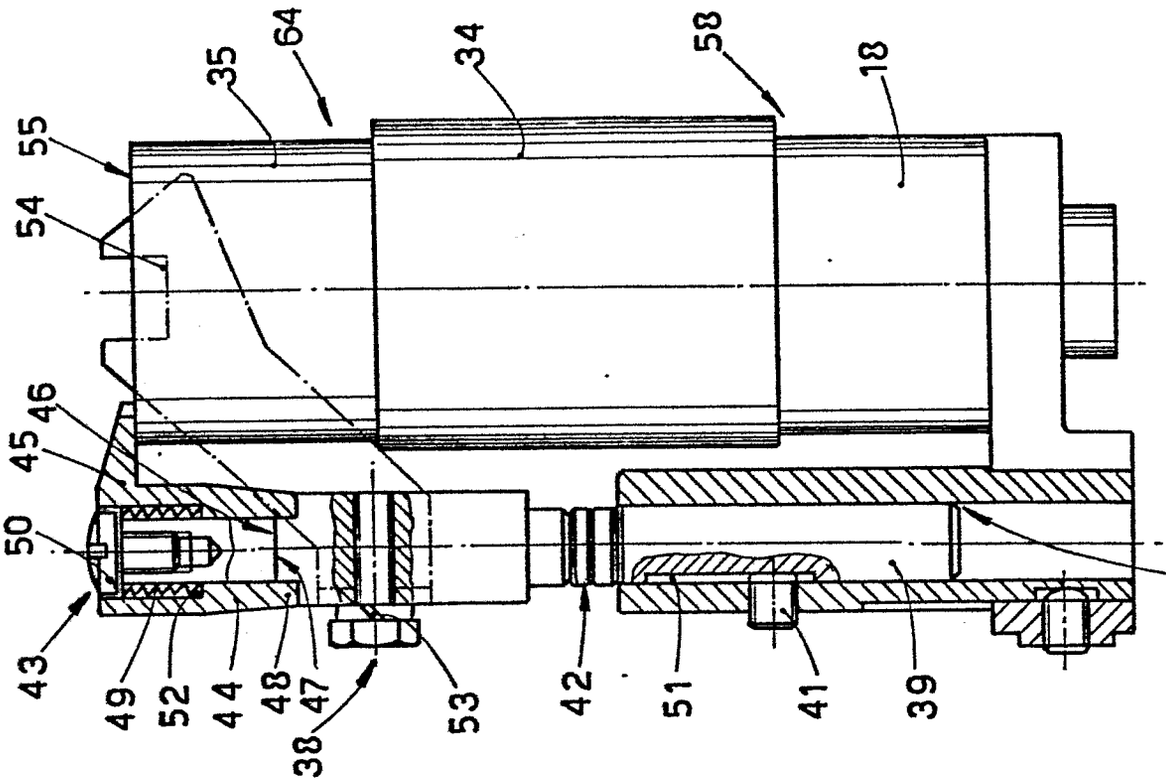

fig.3

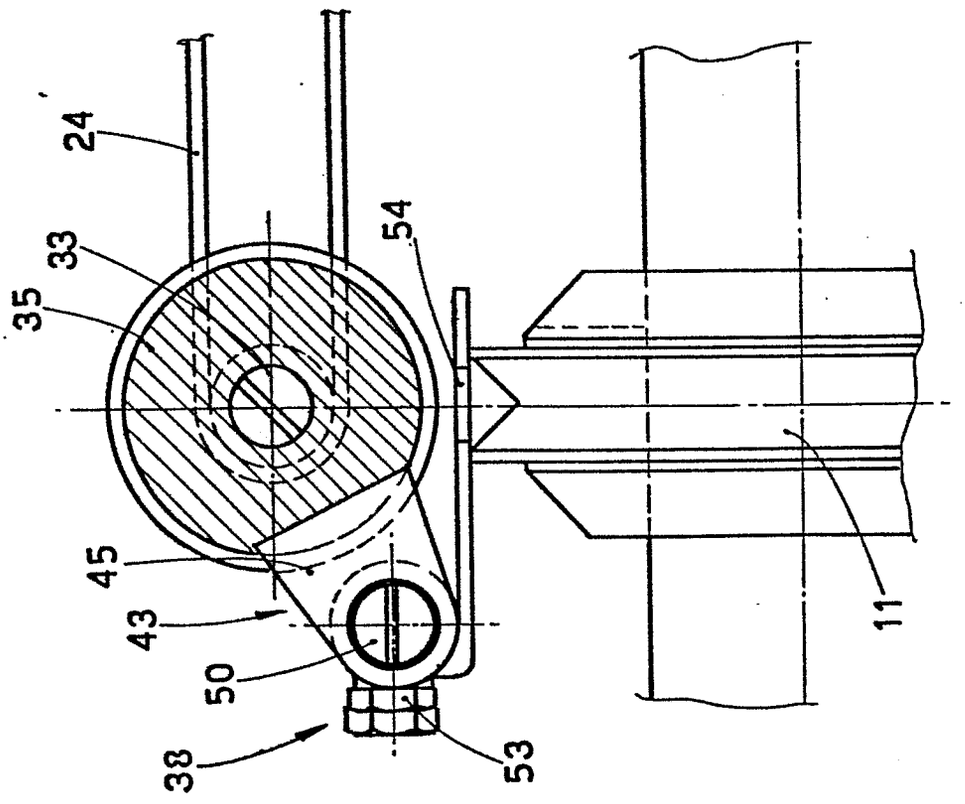

fig.2

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EUROPEAN SEARCH REPORT

0071582

Application number

EP 82 83 0205

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
D,A	CH-A- 378 750 (MASCHINEN FABRIK SCHWEITER)		B 65 H 71/00
D,A	US-A-3 358 641 (R.GFELLER)		
D,A	DE-A-2 316 452 (PALITEX PROJECT COMPANY)		
A	US-A-3 306 253 (J.FRENTZEL-BEYME)		TECHNICAL FIELDS SEARCHED (Int. Cl. ³) B 65 H D 01 H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	10-11-1982	DEPRUN M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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