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(71) Applicant: **F.lli FERRARO S.r.l.**
Via Busto Arsizio, 120
Lonate Pozzolo (Varese) (IT)

(72) Inventor: **Ferraro, Giancarlo**
Via Busto Arsizio 120
Lonate Pozzolo Varese (IT)

Ferraro, Gianfranco
Via Volturno 15
Olgiate Olona (Varese) (IT)

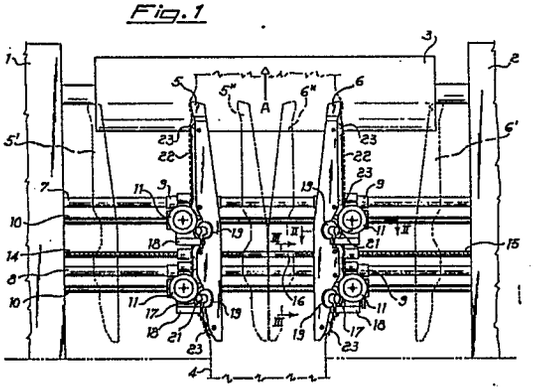
Milanese, Renzo
Via Dante 8
Marano Ticino Novara (IT)

(74) Representative: **Mercurio, Franco et al**
c/o Società Italiana Brevetti S.p.A. Via Carduzzi, 8
I-20123 Milano (IT)

(54)

(57) This invention relates to a tubular knitted fabric stretcher including two separate stretcher arms (5,6) carrying pulleys (23) engaging with belts for fabric transport, driven by control wheels (11) mounted on supports adapted to slide horizontally in opposite directions and bearing parts of angled axis support rolls (19), each pair supporting from opposite sides a particularly shaped ring, freely rotatable on each arm and in engagement with each control wheel no intervening member being provided between the stretcher arms and within the tubular fabric.

Fig. 1



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Description

"STRETCHER IN CALENDERS FOR TUBULAR KNITTED FABRIC"

It is an object of this invention to provide a tubular knitted fabric stretcher, for application in particular in calenders or in other tubular knitted fabric handling machines.

As it is known, during tubular knitted fabric finishing operations, stretchers are used to spread out and stretch the tubular element, in order to enhance the finishing operations. Thus in calendering, it is necessary to use a stretcher in order to achieve a uniform vaporization and to adjust the height of the tubular element to the desired value.

Stretchers or expanders are known which are provided with means placed between the stretcher arms, such as for instance pantograph devices or telescoping tubes.

Said stretchers are provided in two or more sizes, corresponding to the various heights of the tubular fabric. For instance, a first size is for heights ranging from 30 to 55 cm., and a second size is for heights ranging from 45 to 70 cm. In those condition , a drawback arises in that, in order to go from a height range to another, it is necessary to perform a replacement of the stretchers, which operation requires a machine shut down to fit a new stretcher in, and the relevant unstitching and re-sewing of the tubular knit fabric portions.

Another drawback is due to the risk that the stretcher device is dragged between the fabric feeding pulleys whenever fabric tearing takes places along the stretcher arms.

The techinal problem, and the main object of this invention is to be able to support the stretcher arms without said intervening means, in order to do away with the aforementioned drawbacks, so that a stretcher is provided having the following advantages:
it allows all the required tubular fabric height to be obtained without a need for parts replacement or fitting whereby any machine shut down is eliminated, and only a simple operation of the closing or opening displacement of the stretcher arms is needed.

A further object of this invention is to provide an extremely accurate stretcher having a high operational reliability, inexpensive to manufacture, and which does not require frequent maintenance.

This and further objects are all achieved through the subject stretcher including two stretcher arms horizontally moving in mutually opposite directions, each arm being provided with pulleys wherein at least one engages with a control wheel for tubular fabric transportation, and wherein a support device which is in turn supported by the mounting of the control wheel, holds a shaped ring freely rotatable on each stretcher arm and engaging with a control wheel, making said mounting integral with the stretcher arm.

The features and advantages of this invention will become apparent from the following detailed description of a preferred but non exclusive embodiment and with no meaning of limitation, in the attached drawing, where:

- Figure 1 is a front view of the stretcher,
- Figure 2 is a partial horizontal section of the stret cher along line II-II of Figure 1, and
- Figure 3 is a partial vertical sectional view of the stretcher along line III-III of Figure 1.

Referring now to the above Figures, the subject calender is comprised of stands 1 and 2, wherein several control and actuating mechanisms for said calender are contained, which are not shown in the drawings. On said stands there is supported a known vaporizer 3, wherethrough the tubular fabric 4 is made to flow after having been passed through the stretcher according to this invention.

Said stretcher is comprised of stretcher arms 5 and 6, supported in turn by support devices described hereinafter.

Bars 7 and 8, fastened to the stands 1 and 2, bear the respective sliding supports 9, each of which provides support to a bevel gear set 9′ which receives actuating motion from a splined bar 10 and transfers it to drive wheels 11. Threaded bushings 12 and 13 are provided integral with sliding supports 9, and they engage with oppositely handed screw threads 14 and 15, provided on actuating shaft 16. Bar 10 and shaft 16 receive their driving motion from known means, not shown in the Figure and enclosed within stands 1 and 2. While said shaft 16 rotates, the two oppositely handed screw threads 14 and 15 determine the displacement of bushing 12 and 13 in opposite directions, and consequently of supports 9 integral therewith.

As it is clearly shown in Figure 2, stretcher arms 5 and 6 carry some suitably shaped and freely rotatable rings 17, in contact with race 11′ provided on drive wheels 11. The latter are in turn provided with a mounting 18 carrying the aforesaid support device comprised of the pair of support rolls 19 and 20 having angled axis 21.

The peripheral regions of said rolls 19 and 20, engaging with the circumferential shapes 17′ of rings 17, support arms 5 and 6 and keep them in parallel alignment. Said parallel alignment is maintained owing to the fact that there is provided two sets of angled axis rolls 19 and 20, each set being engaged with a drive wheel 11 and being located one on each side of actuating shaft 16.

The transport of tubular fabric 4 is performed by means of belts 22 winding around a series of pulleys 23 and along the shaped surfaces of drive wheels 11 and of rings 17.

Operation is as follows: tubular knitted fabric 4, usually comprising several tubualr portions sewn to each other, enters from the bottom, as it is shown in Figure 1, between rolls 19 and 20 and ring 17 provided with the belt 22, and between ring 17 and roll 21 of each arm, and it is thus transferred upwards in the direction of arrow A, owing to the rotation of drive wheels 11 associated with rings 17 and pulleys 23 mounted on arms 5 and 6, which are kept in position and supported by the sets of angled axis rolls 19 and 20 mentioned above. When it is

desired to go to a larger tubular height shaft 16 is rotated, through driving means not shown in the drawings, so that screw threads 14 and 15 make bushings 12 and 13 to move together with arms 5 and 6 towards the predetermined position, corresponding to the desired height of the tubular shape. The maximum height corresponds to the position of arms 5′ and 6′ shown by dotted lines in Figure 1.

When a lower height of the tubular fabric is desired, shaft 16 is rotated in the opposite direction, so that arms 5 and 6 move towards each other, until they reach the minimum distance shown by dotted line positions 5" and 6" in Figure 1.

As it is apparent, the stretcher can take any position from a minimum to a maximum distance, while no replacement of the stretcher is required, no shut down of the machine is necessary, and the tubular fabric does not have to be taken off the stretchers.

Practical or application-oriented variations can be made to the embodimental details of this invention, while not exceeding the scope thereof, as claimed in the following.

Claims

1. A stretcher in a calender for tubular knitted fabric, including the stretcher arms (5, 6) horizontally moving in opposite directions, each arm provided with pulleys (23) at least one of which engaging with a drive wheel (11) for transportation of tubular fabric (4), characterized in that a support device integral with a support (9) of drive wheel (11) supports a shaped ring (17) freely rotatable relative to each stretcher arm (5, 6) and engaging with drive wheel (11), making said support integral with said stretcher arm.

2. The stretcher of claim 1, characterized in that two support devices are located on each side of a drive shaft (16) actuating the motion of supports (9) for drive wheels (11) and thus of the two stretcher arms (5, 6).

3. A stretcher according to any of the preceding claims, characterized in that each support device is comprised of a pair of support rolls (19, 20) having an angled axis (21) and engaging with the faces of shaped ring (17).

4. The stretcher of claim 3, characterized in that said faces are provided with circumferential shapes (17′) wherein the peripheral regions of said support rolls (19, 20) are received and engaged.

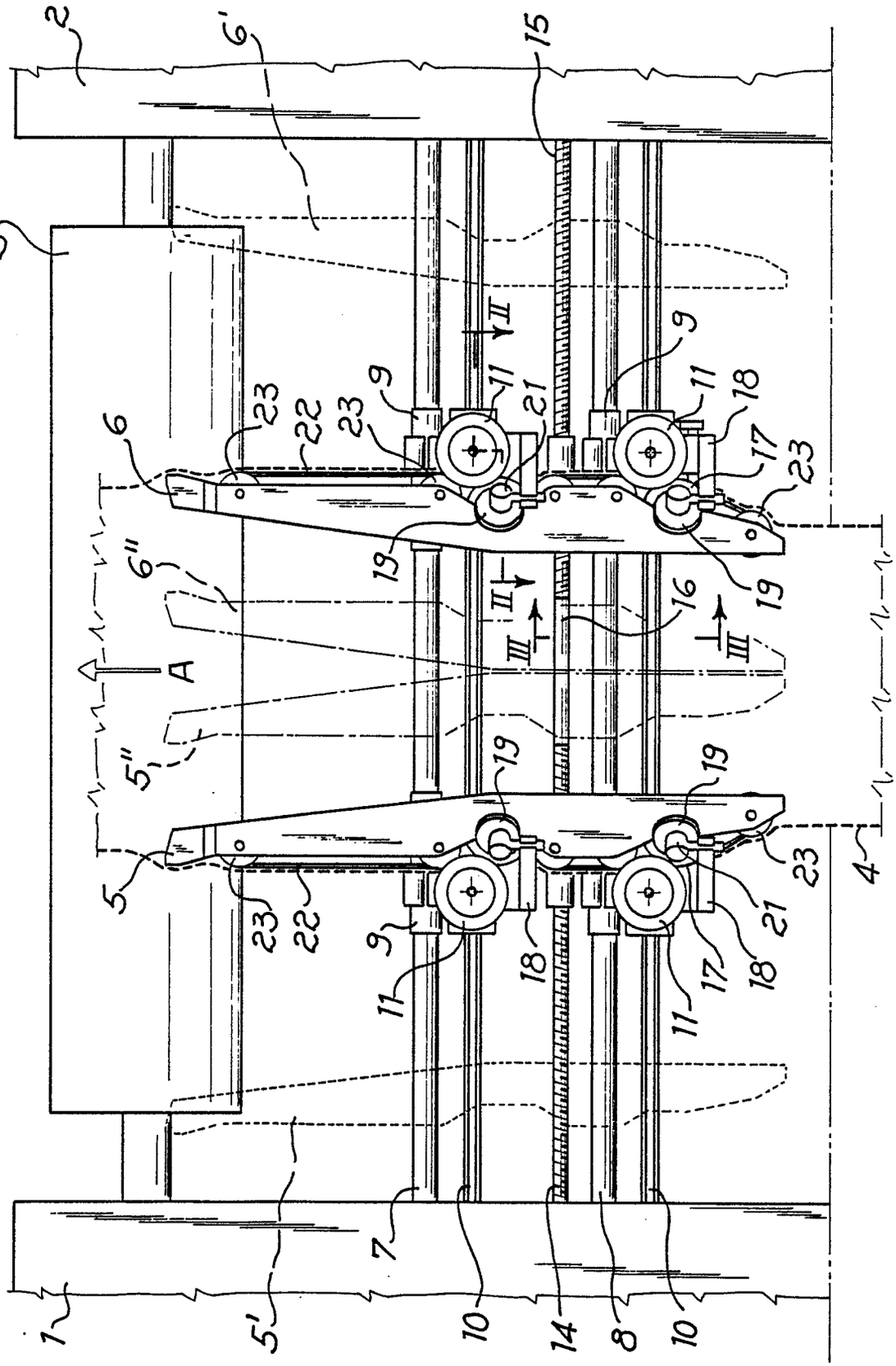


Fig. 1

Fig.2

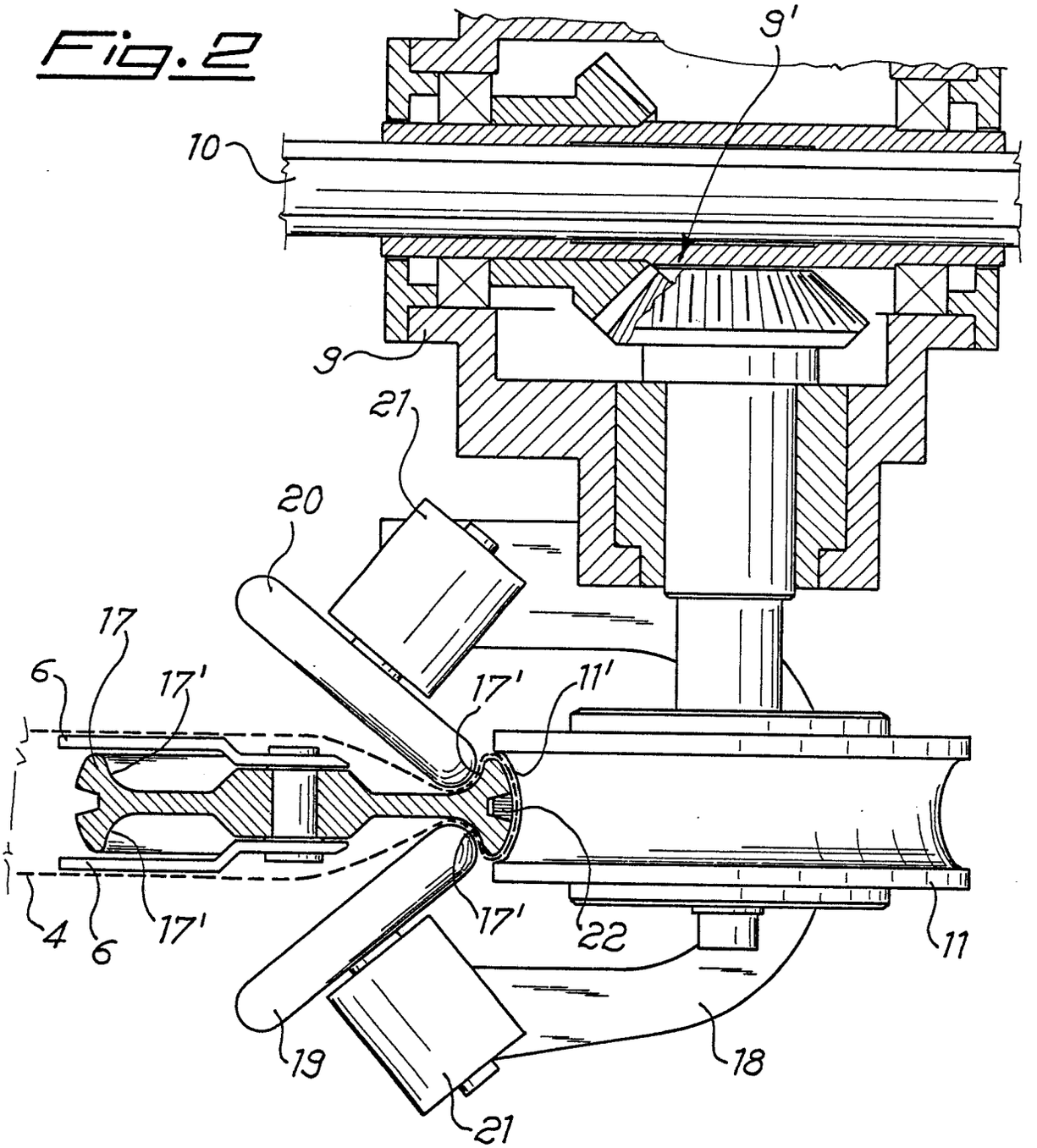
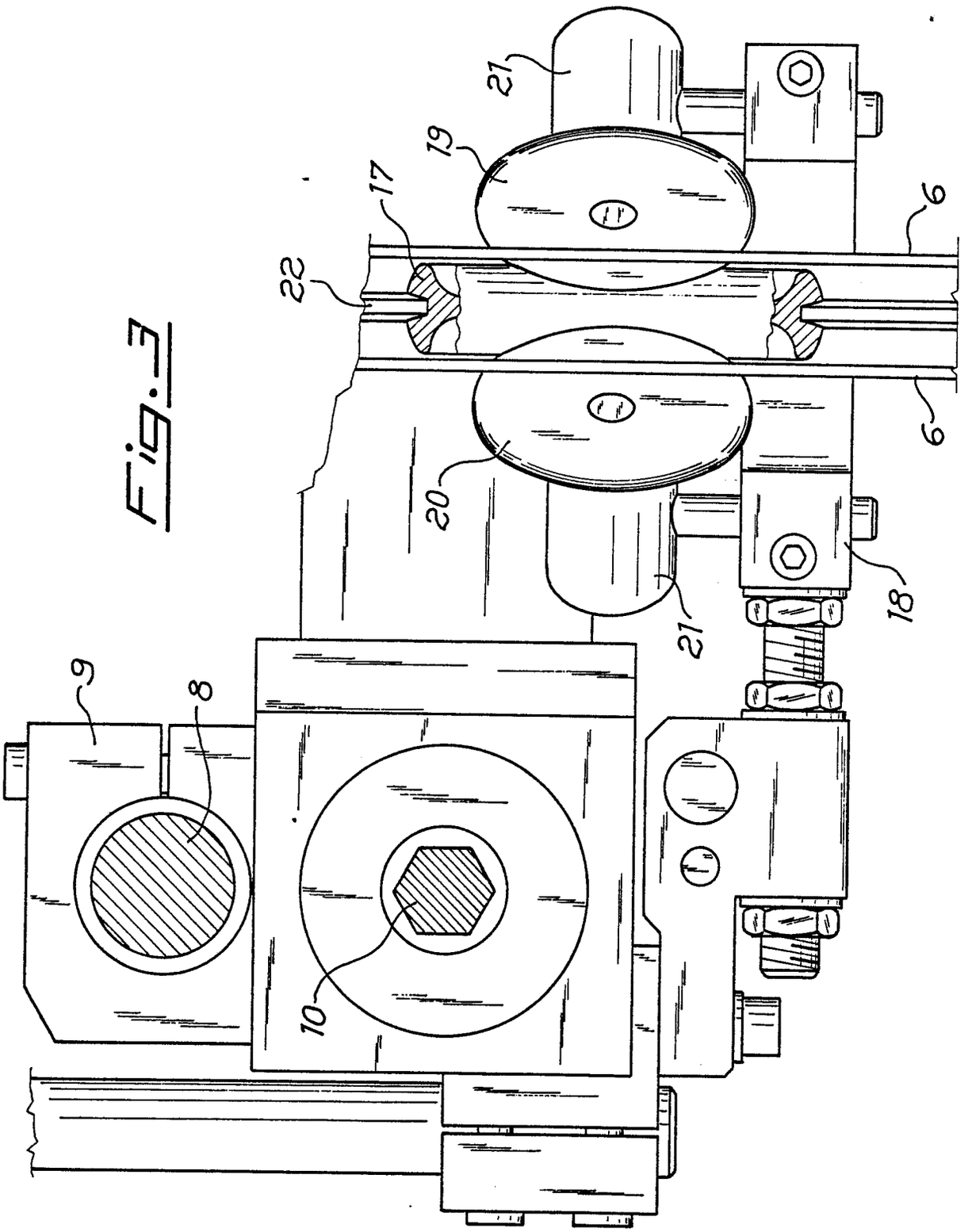


Fig.3



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EUROPEAN SEARCH REPORT

Application Number

EP 87 83 0320

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.4)
X	FR-A-2 278 823 (ARONOFF) * Whole document * ---	1	D 06 C 5/00
X	FR-A-2 361 495 (CONTI) * Whole document * ---	1	
X	FR-A-2 403 412 (SAMCOE HOLDING CORP.) * Whole document * -----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

D 06 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	14-01-1988	PETIT J.P.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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