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(54) **Apparatus for loading and replacing piece goods, effective to be coupled to spreading machines.**

(57) The apparatus comprises a vertically extending magazine, of the carousel type (1), bearing the piece goods (9) to be supplied, as supported on suitable mandrels (8), and which piece goods are discharged, according to a programmable sequence, on a provided loading device.

The latter comprises a first carriage pair (14) which, by firmly engaging the ends of the piece bearing mandrels (8), transfer the piece goods (9), in a co-ordinated way, from the mentioned magazine (1) to the spreading machine turret.

A further carriage pair (15), on the other hand, is effective to displace the mandrels (8) discharged by the spreading machine to the vertical magazine (1).

The apparatus according to the invention, in particular, is able of finding, selecting and preparing the piece good (9) on the vertical magazine (1), for loading the piece (9) on the spreading machine and, moreover, it is effective to load the piece and discharge the mandrel from the spreading machine, according to the order in which the piece had been previously loaded on the vertically extending magazine.

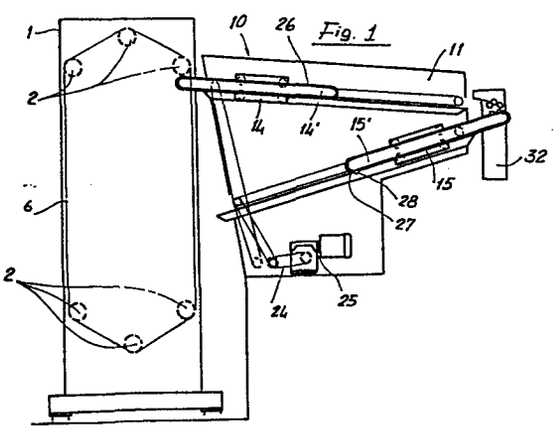

Fig. 1

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BACKGROUND OF THE INVENTION

The present invention relates to an apparatus for loading and replacing piece goods, or fabric pieces, effective to be associated with spreading machines of the type used in the clothes field.

As it is known, in the clothes industry the fabrics are spread, before the cutting, in superimposed layers, in such a way as to form the so-called mattress.

In order to carry out that preliminary operation, suitable spreading machines are presently used, comprising an equipped turret effective to longitudinally slide along a table and bearing the piece to be spread.

Presently the replacing of the piece goods which are present on the movable turret is carried out manually and requires several tedious operations, and long operating times, thereby negatively affecting the cost of the manufactured fabric articles.

While recently devices have been constructed for semiautomatically carrying out the thereinabove mentioned piece replacing operations, these devices, on the other hand, are not fully satisfactory for the intended processing.

SUMMARY OF THE INVENTION

Accordingly, the task of the present invention is that of overcoming the thereinabove mentioned drawbacks by providing an apparatus for loading and replacing piece goods, effective to be associated with spreading machines, and able of carrying out the mentioned piece loading and replacing operations in a fully automatic way, that is without any manual processings.

Within the above task, it is a main object of the present invention to provide an apparatus for loading and replacing piece goods, effective to be associated with piece spreading machines, which is able of finding, selecting and preparing the piece to be loaded on the spreading machine, while the latter is operating.

Yet another object of the present invention is to provide an apparatus for loading and replacing

piece goods which is effective to discharge the empty mandrel from the spreading machine and load a new piece according to a predetermined program.

Yet another object of the present invention is to provide an apparatus for loading and replacing piece goods which is effective to be associated with any spreading machine presently available.

According to one aspect of the present invention, the thereinabove mentioned task and objects, as well as yet other objects which will become more apparent hereinafter, are achieved by an apparatus for loading and replacing piece goods, effective to be associated with spreading machines, characterized in that it comprises a vertically extending rotating magazine or carousel provided with balance supporting members, effective to support the single pieces to be spread, located on a side of a loading device, including two shoulders, said shoulders bearing two motorized carriage pairs driven by synchronized reciprocating movements along respective converging paths, said carriages bearing an arm member on the

periphery thereof a chain is able of sliding, said chain being provided with two adjoining projecting small plates for receiving therebetween either the mandrel of the pieces to be loaded on the spreading machine or the mandrel to be discharged on said carousel.

Advantageously the movements of the piece bearing carousel and of said carriages are controlled by programming means effective to preset the movements of the piece goods to be supplied, by causing said pieces to be displaced to the loading carriage end of stroke position.

Moreover, after having located the piece on that carriage, the carousel is driven in such a way as to bring the piece being spread balance supporting member to the proximity of the end of stroke position of the discharging carriage.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the apparatus for loading and replacing piece goods, effective to be associated with piece spreading machines, according to the present invention,

will become more apparent hereinafter from the following detailed description of a preferred embodiment thereof, being illustrated, by way of an indicative example, in the accompanying drawings, where:

fig.1 is a schematic view of the apparatus according to the present invention, as taken at one of the two shoulders of the carousel and of the piece loading device;

fig.2 is a front view of the carousel;

fig.3 is a front view of the piece loading device;

fig.4 is a partial perspective view of one shoulder of those same carousel and piece loading device;

fig.5 is a detail view of the mentioned carousel;

fig.6 illustrates the driving gears for driving one of the shoulders of the piece loading device;

and

fig.7 illustrates, by a detail view, the

carousel for discharging the mandrel, or piece rendering mandrel, at a position for receiving said mandrel from the turret of the piece spreading machine.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the apparatus for automatically loading and replacing piece goods, effective to be associated with piece spreading machines, according to the present invention, comprises a vertically extending magazine or carousel 1, formed by two shoulders at the top and bottom portions thereof there are provided rotating gear wheel sets or assemblies 2, driven by a geared motor 3 through a driveshaft 4 and suitable transmission gear pairs 5.

The mentioned gear wheel sets are engaged with corresponding chain members 6 bearing, at even spacings, balance supporting members 7, effective to support the mandrel 8 in turn supporting the piece goods 9.

On one side of the mentioned carousel 1 there is located a piece loading device 10, comprising

two shaped shoulders 11, thereon there are provided two guide pairs 12 and 12', 13 and 13' respectively, which guides are differently slanted with respect to the horizontal direction and converging toward said shoulder edge opposite to said carousel.

Along the mentioned guide pairs corresponding carriages 14 and 15 are able of sliding as driven by chain members indicated respectively at 16 and 17, which extend between end gear wheel pairs 18 and 18', 19 and 19'.

More specifically, the gear wheel pairs 18 and 19 are driven, through chain members 20 and 21, by pignon pairs 22 and 23, coupled by transmission or driving shafts which latter are in turn driven through respective chain members 24 by corresponding geared motor sets 25.

The mentioned carriages 14 and 15 are provided with an elongated arm member, indicated respectively at 14' and 15', along one edge thereof a chain 26 is, able of sliding being affixed, at an intermediate point, 27, to a small bracket 28 rigid with one of the mentioned guides 12 and 13.

Said chain 26, in particular, bears two adjoining projecting small plates 29 which define an intermediate seat or housing 30 effective to receive one of the ends of the mandrels 6 bearing the piece goods.

Said small plates, owing to the chains being arrixed at 27, are able of moving, jointly to the carriages 14 and 15, from one end to the other of the carriage arm members 14' and 15'.

By that approach, the mentioned small plates 29 are able of alternatively approaching one of the balance supporting members 7 of the carousel, and suitable supporting members 31 comprising roller pairs, one thereof is controlled for laterally moving, said rollers being supported by the movable turret or slide of a known piece spreading machine.

In actual practice, after having programmed the spreading sequence of the piece goods supported by the carousel, as the apparatus is started the mandrel of the first piece is located at the upper

guides or the piece loading device, whereas the carriage 14 locates its arm provided with the small plates 29 in such a position as to be able or receiving said mandrel.

Then, after having engaged the piece, supplied by gravity, the carriage 14 is driven in such a way as to bring said small plates to the opposite end or its arm, thereby discharging the piece on the turret or the piece spreading machine.

Meanwhile, the carousel will have brought the second piece to be spread (as per program) to such a position effective to supply the piece loading device.

The carriage 14, after having discharged the first piece, returns for taking up the second and is driven to the intermediate position or the guides 12,12', whereas the carriage 15 is driven to such a position as to be able or receiving, between said small plates 29 or the arm thereof, the mandrel which is to be discharged by the turret of the piece spreading machine.

Contemporaneously, the carousel rotates to

bring the balance supporting member 7 supporting the piece being spread to the guides 13 and 13'.

As the mandrel, or piece rendering mandrel, has been discharged from the turret of the piece spreading machine on the carriage 15, the latter is driven as far as to reach the related balance supporting member, whereas the carriage 14 supplies the second piece to be spread to the turret.

After the discharging of the first mandrel from the support therefor, the carousel brings the subsequent piece to be spread at the guides 12,12' in such a way as to load the carriage 14 again, which, afterwards, will wait for the discharging of the second mandrel from the turret of the piece spreading machine.

Contemporaneously the carousel rotates in such a way to locate said second mandrel balance supporting member at said guides 13 and 13' and so on.

From the above disclosure and the figures

of the accompanying drawings, there are self-evident the great functionality and use facility characterizing the apparatus for loading and replacing piece goods, effective to be associated with piece spreading machines, according to the present invention.

It should obviously be noted that the apparatus and making procedure therefor have been thereinabove described and illustrated only by way of an indicative example and only to demonstrate the main characteristics of the invention.

Accordingly modifications and variations can be brought in the disclosed apparatus, without departing from the scope of the invention as it is defined in the appended claims.

C L A I M S

1- An apparatus for loading and replacing piece goods, effective to be associated with spreading machines, characterized in that it comprises a vertically extending rotating magazine or carousel provided with balance supporting members, effective to support the single pieces to be spread, located on a side of a loading device, including two shoulders, said shoulders bearing two motorized carriage pairs driven by synchronized reciprocating movements along respective converging paths, said carriages bearing an arm member on the periphery thereof a chain is able of sliding, said chain being provided with two adjoining projecting small plates for receiving therebetween either the mandrel or the pieces to be loaded on the spreading machine or the mandrel to be discharged on said carousel.

2- An apparatus according to the preceding claim, characterized in that said vertically extending rotating magazine or carousel consists of two shoulders at the top and bottom thereof there are provided rotating gear wheel assemblies driven by a geared motor through a driveshart and transmission

gear pairs, said gear wheel assemblies or sets being engaged with respective chain members bearing, at equal distances, balance supporting members for supporting said piece good mandrels.

3- An apparatus, according to the preceding claims, characterized in that said carousel is located on a side of a loading device, including two shaped shoulders thereon there are provided two guide pairs, said guides being differently slanted with respect to the vertical direction and converging toward the edge of said shoulders opposite to said carousel along said guides being provided corresponding sliding carriages driven by chain members as caused to pass through gear wheel pairs.

4- An apparatus according to the preceding claims, characterized in that said gear wheel pairs are driven, through respective chain members, by pignon pairs as coupled by transmission shafts which latter are in turn driven, by means of further chain members, by corresponding geared motor sets.

5- An apparatus, according to the preceding claims, characterized in that said carriages support an elongated arm member, along one edge thereof a

chain may slide, said chain being affixed, at an intermediate point thereof, to a bracket member rigid with one of said guides, said chain bearing two adjoining projecting small plates effective to define an intermediate housing or seat provided for receiving one end of said piece good bearing mandrels.

6- An apparatus according to the preceding claims, characterized in that it comprises programming means effective to preset the movement sequence of said piece goods on said carousel, in such a way as to cause said piece goods to be displaced to the end of stroke position of one of said carriages and effective to cause said carousel to be displaced, after the loading of the piece on said carriage, in such a way as to bring the balance supporting member of the piece being spread on said spreading machine to the proximity of the end of stroke position of the other said carriage.

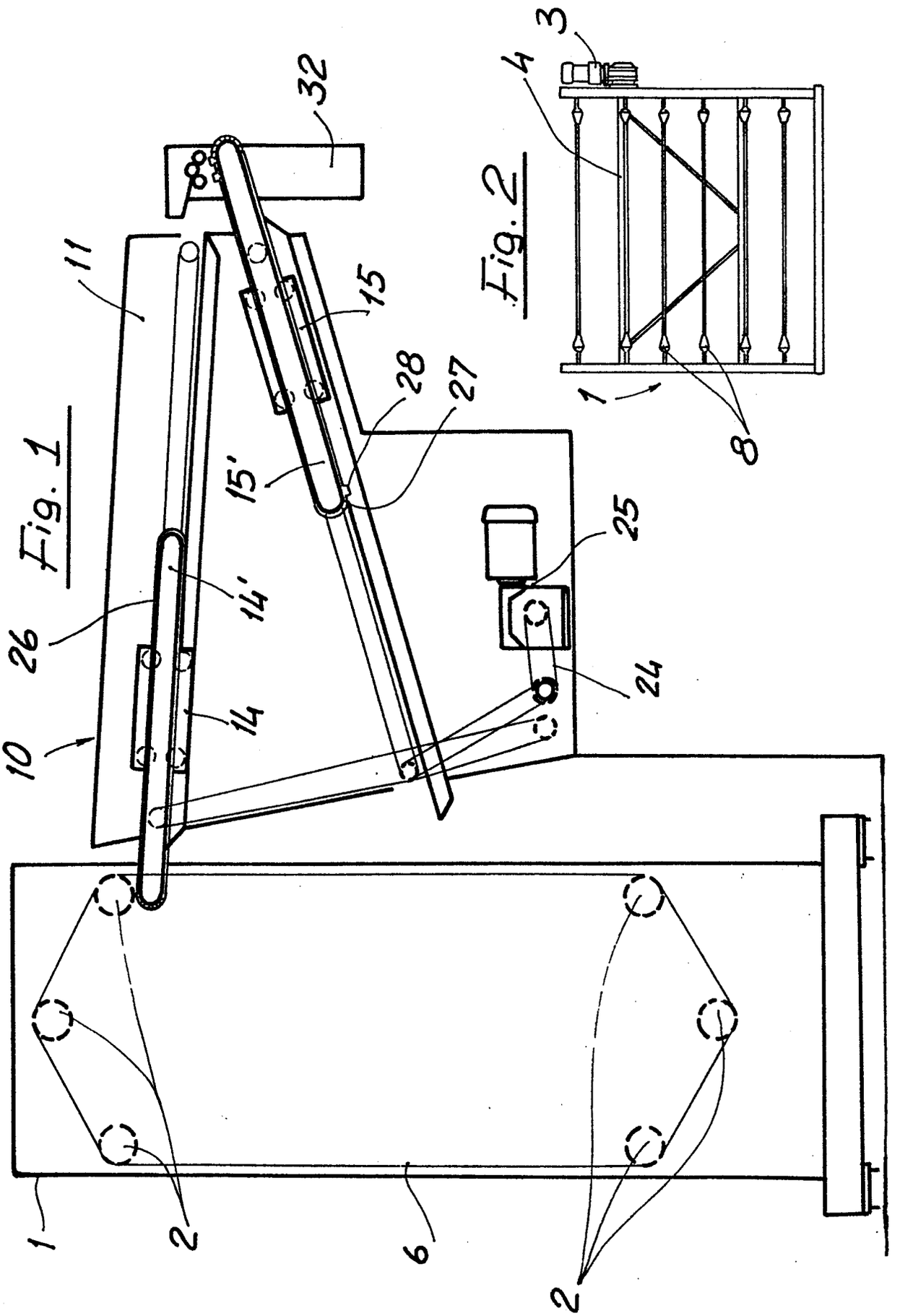


Fig. 1

Fig. 2

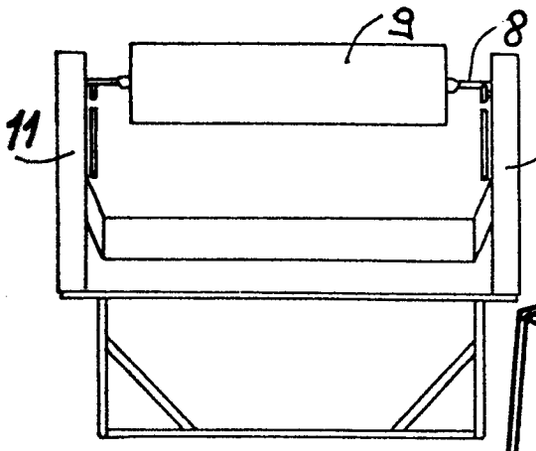


Fig. 3

Fig. 5

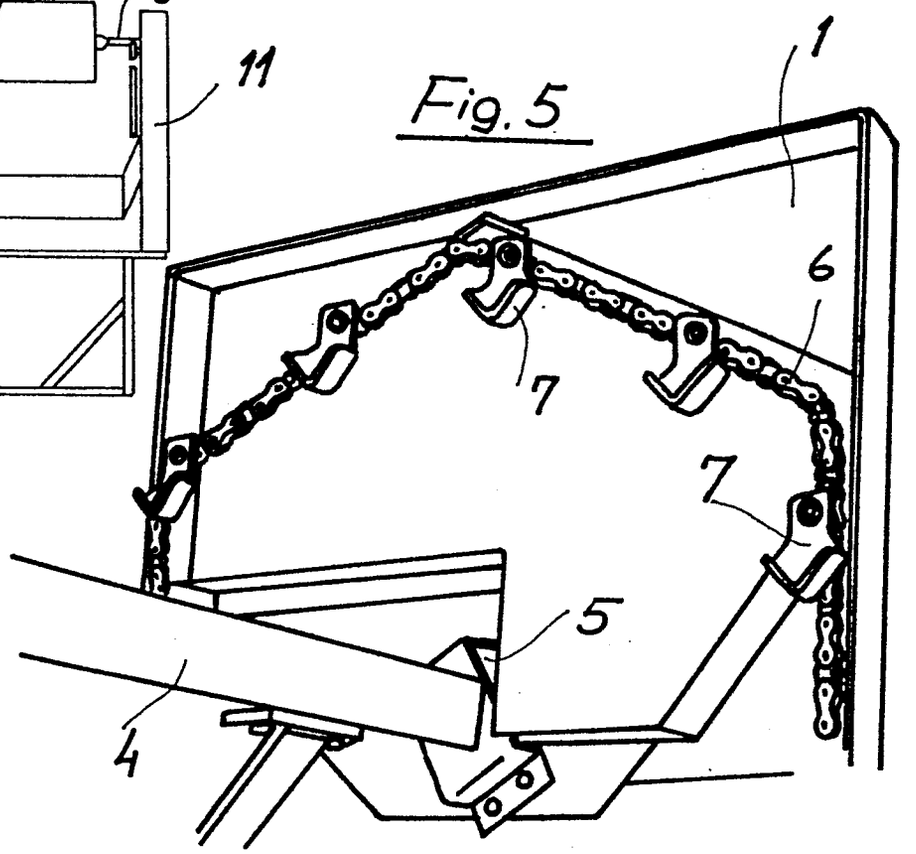


Fig. 4

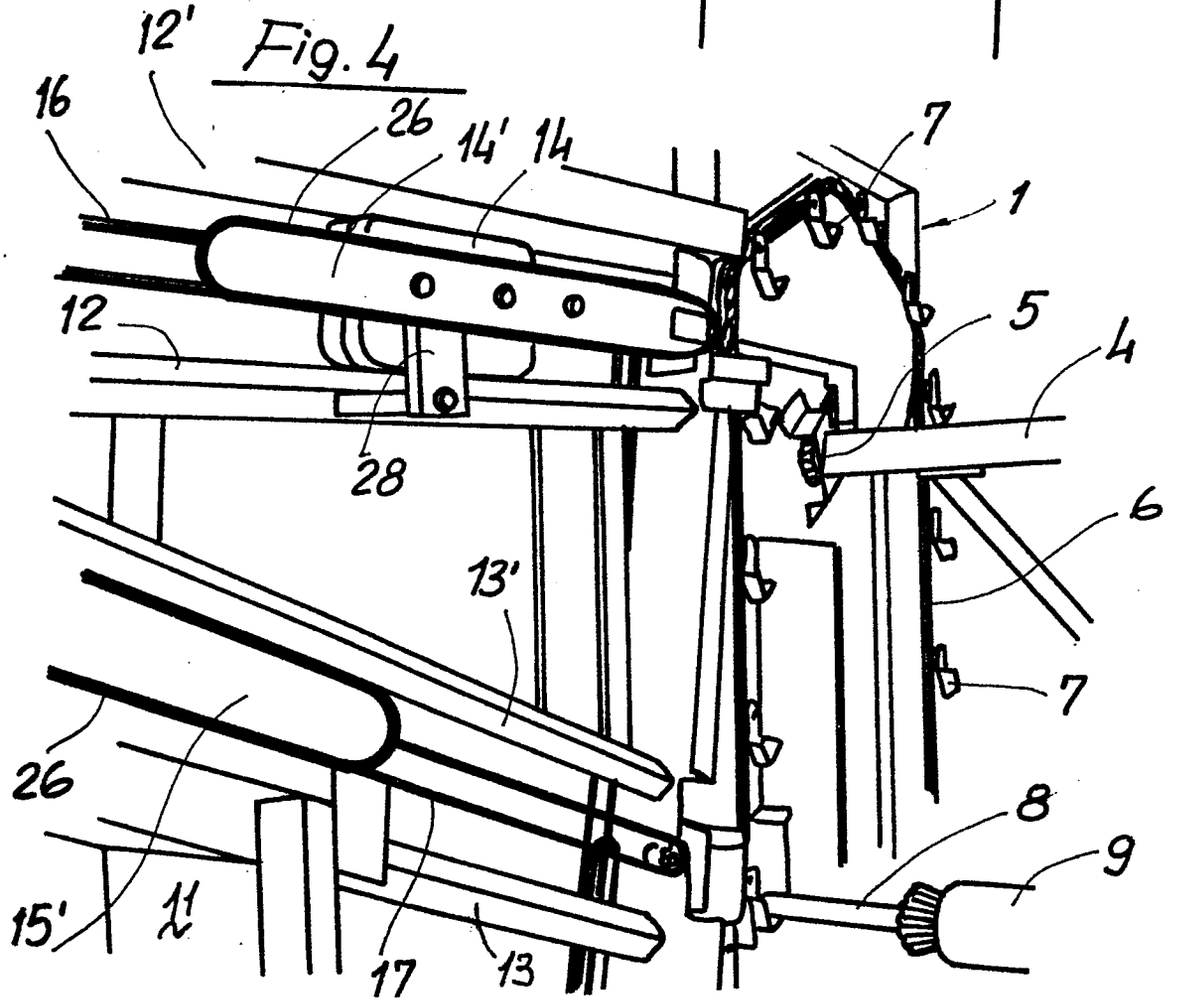
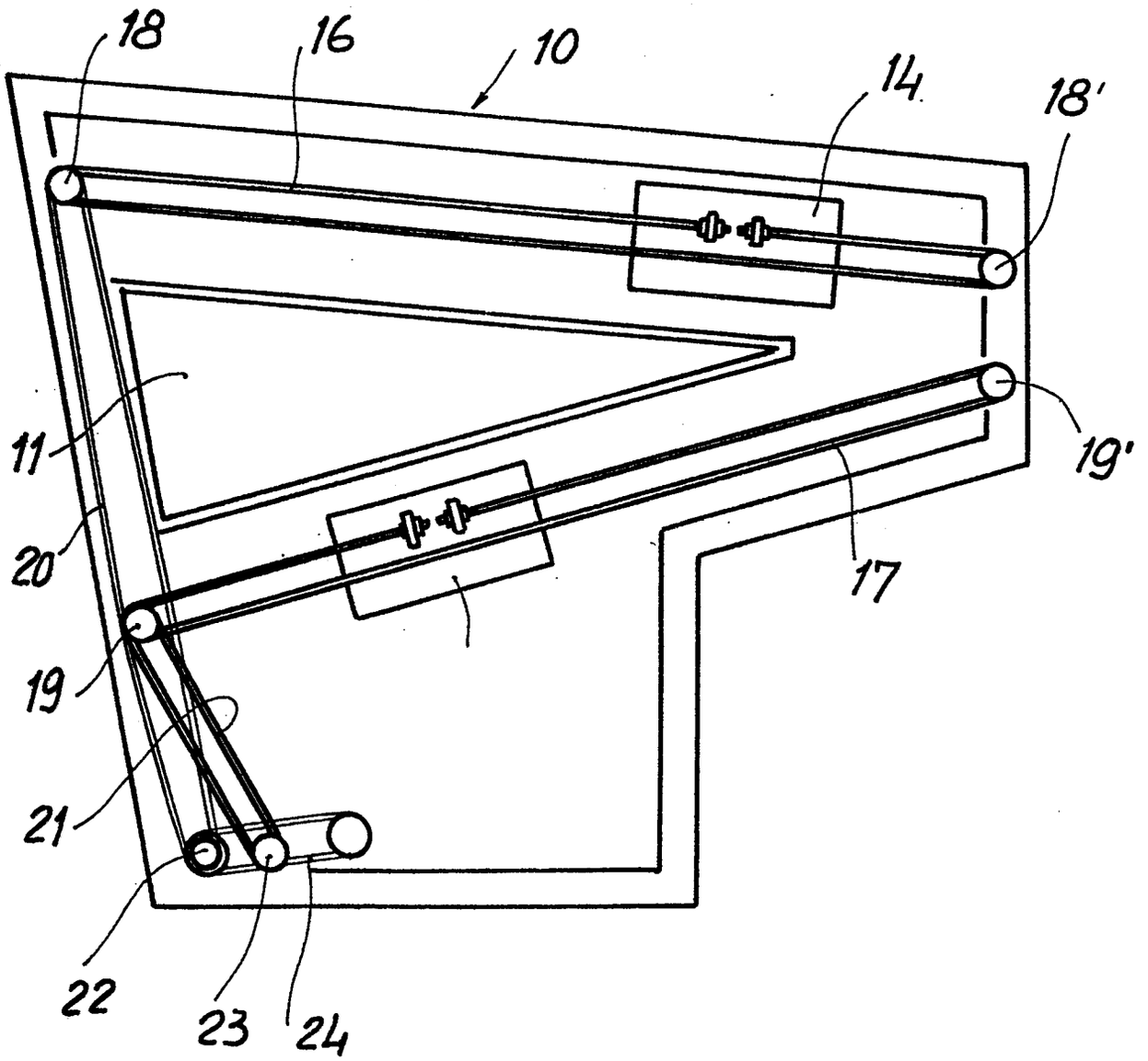


Fig. 6



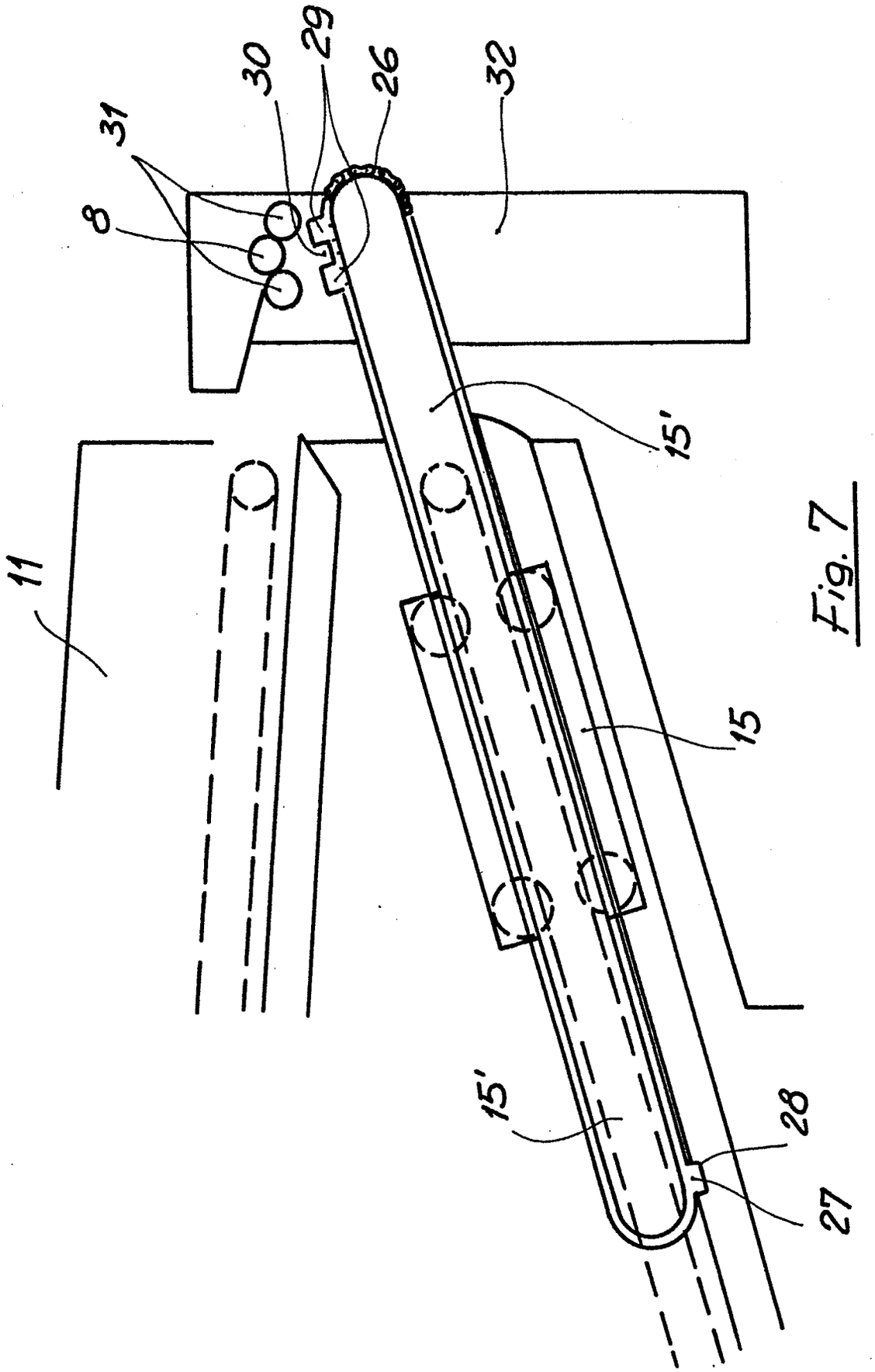


Fig. 7

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EUROPEAN SEARCH REPORT

0094471
Application number

EP 82 83 0133

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)
A	GB-A-2 023 201 (ON APPLICANTS NAME) * page 4, line 126 to page 5, line 75; figure 6 *	1,3	B 65 H 19/04 B 65 H 45/101
A	DE-A-2 825 741 (STUMPF) * page 13, line 12 to page 14, line 10; page 16, line 19 to page 17, line 8; figures *	2,4	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

B 65 H
A 41 H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04-01-1983	LONCKE J.W.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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