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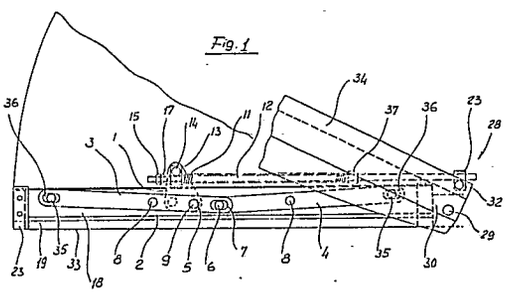
(71) Applicant: **Riva, Carlo**
Via Sabotino, 3
I-20092 Cinisello Balsamo (Milano) (IT)

(72) Inventor: **Riva, Carlo**
Via Sabotino, 3
I-20092 Cinisello Balsamo (Milano) (IT)

(74) Representative: **Cicogna, Franco**
Ufficio Internazionale Brevetti Dott.Prof. Franco Cicogna
Via Visconti di Modrone, 14/A
I-20122 Milano (IT)

(54) Improved pressing device for cutters and ream cutters.

(57) The present invention relates to an improved pressing mechanism or device for cutters and in particular ream cutters, comprising a lever system for height adjusting the device and resilient means for continuously adjusting the locking pressure on the paper ream to be cut.



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Description

IMPROVED PRESSING DEVICE FOR CUTTERS AND REAM CUTTERS

BACKGROUND OF THE INVENTION

The present invention relates to an improved mechanism or device to be applied to outters in general and, in particular, to paper ream cutters.

As is known ream cutters are frequently used for cutting paper stacks including several paper sheets, and a drawback of these known cutters is that they comprise rather complex devices for adjusting the manual cutting force depending on the pressure which is necessary for firmly retaining the sheets to be cut.

Another drawback of known paper sheet cutters is that they include a comparatively high number of expensive component parts susceptible to wear and requiring an extensive maintenance..

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing an improved pressing device which can be quickly and easily adjusted depending on the ream thickness.

Within that aim, a main object of the present invention is to provide such a pressing device which is very simple construction-wise.

Another object of the present invention is to provide such a pressing device which can be fitted to different cut spans, both in the width and in the length direction.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an improved pressing device, for cutters in general and, in particular, for ream cutters, characterized in that said pressing device comprises a lever system for adjusting the operating height of said device and resilient means for continuously adjusting the locking pressure on the paper sheet ream to be cut.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the in vention will become more apparent from the following detailed description of a preferred embodiment thereof, which is illustrated, by way of an indicative but not limitative example, in the accompanying drawings, in which:

figure 1 is a frontal partially cross-seotioned view of the pressing device according to the present invention with the cutting blade and pressing member proper shown in a completely raised condition;

figure 2 shows the pressing device according to the invention with the cutting blade and pressing member thereof illustrated in a completely lowered condition;

figure 3 shows the pressing device applied to a cutter with the cutting blade and pressing member in a completely raised condition; and

figure 4 shows the subject pressing device applied to a cutter with the cutting blade and pressing member in a completely raised condition.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the improved pressing mechanism or device according to the present invention comprises a lever system, including an articulation member 1, pivoted on the cross member 2 of the cutter frame, and two like length levers 3 and 4, coupled to one another, the first 3 of which is pivoted by a pawl 9 in a slot 5 formed through the articulation member 1.

The first and second levers 3 and 4 are coupled through a pin 6 and a slot 7 respectively associated with said levers according to a possible embodiment; alternatively, the pin 6 and slot 7 can be respectively formed on the lever 4 and lever 3.

As shown, said levers 3 and 4 are pivoted on central pins 8, which are affixed to the cross member of the cutter frame 2, and have a length which depends on the size of the articulation member 1, so as to cause the pressing member proper 18 to be lowered before the lowering of the cutting blade 25 or 30.

The lever system further comprises pressure adjusting resilient means consisting of a coil spring 11, coiled on a supporting rod member 12 and provided, at one end thereof, with a stop member. The adjusting and size of the coil spring 12 will depend on the size of the levers 3 and 4 and articulation member 1, and will be so selected as to hold the pressing member 18 properly pressed on the ream to be cut.

As shown, at the other end of the rod member 12 there is keyed a perforated coupling 13, which is applied on a pin 14 affixed near the top end portion of the articulation member 1.

The coil spring 11, in particular, abuts against the perforated coupling 13 and the preload on said spring is adjusted by means of a nut 15 which is threaded on the free end of the rod member 12.

In addition to an optional counternut or threaded bush 16, there is moreover provided a spacer member 17 so as to allow for the nut 15 to adjust, as the pressing member 18 is arranged in a completely raised condition, the spacing to the working surface 39 of the abutment 19 formed at the bottom portion of said pressing member 18.

In a ream cutter 20, between the bottom portion 21 of the operating arm 22, which is pivoted to the guiding uprights 23 of the pressing member 18, through a driving articulated coupling 24 therewith

said pressing member is rigid, and the cutting blade 25, there is arranged a pushing lever 26.

This pushing lever 26 has an angled contour and is pivoted at one end thereof on an adjusting block 27 which is applied on the top of a blade holder 34 and, at the other end portion thereof, in said driving articulated coupling 24.

In a cutter 28, instead of the pushing lever 26, there is provided a suitable interspacing between the pivot point 29 of the cutting blade 30, affixed on the attachement block 31 of said cutting blade 30 to the cutter frame, and the pivot pin 32 of the coupling 33 at the end of the rod member 12 (supporting the coil spring 11) affixed to the cutting blade holder 34.

As shown, the pressing member is provided, at the end portions thereof, with two pins 35 adapted to slide in slots 36 each formed at the free end portion of the two levers 3 and 4, so as to cause the abutment 19 to be precisely lowered with an accurate parallel relationship to the operating surface 39. According to another possible embodiment, the pressing member can be provided with the slots 36 and the levers 3 and 4 with the pins 35.

The end stop member for the coil spring can consist of a small block 37, either of the fixed or of the adjustable type, said small block being slidingly engaged on the rod member 12.

From the above disclosure it should be apparent that the lever system according to the present invention affords the possibility of adjustably lowering the pressing member 18 before the lowering of the rectilinear cutting blade of the cutter 20 or the curved cutting blade 30 of the cutter 28, whilst the disclosed resilient means are effective to continuously adjust the ream holding pressure.

As it should be apparent, the lowering movement of the cutting blade 25 is controlled by two pairs of guides 38, associated with the guiding uprights 23 of the pressing member 18, whereas the lowering movement of the cutting blade 30 is controlled by the relating movement of the pivot pin 29 and pivot pin 32.

From the above disclosure it should be apparent that the invention fully achieves the intended ail and objects.

In particular the fact is to be pointed out that, owing to the connections of the pin 6 and slot 7 and of the pins 35 and slots 36, possible machining tolerance errors can be safely eliminated.

While the invention has been disclosed and illustrated with reference to some embodiments thereof, it should be apparent that the disclosed embodiments are susceptible to several modifications and variations all of which will come within the scope and spirit of the appended claims.

Claims

1- An improved pressing device, for cutters in general and ream cutters in particular, characterized in that said pressing device comprises a lever system for adjusting the operating height of said device and resilient means for continuously adjusting the locking pressure on the paper sheet ream to be cut.

2- A pressing device according to claim 1, characterized in that said lever system comprises at least an articulation member, pivoted on a cross member of the cutter frame, and at least two levers, of like length, coupled to one another and the first of which is pivoted in a slot formed through said articulation member.

3- A pressing device according to the preceding claims, characterized in that said levers are coupled by means of a pin and slot arrangement, being pivoted on central pins affixed to said cross member of the cutter frame and have a length depending on the size of said articulation member and so designed as to cause a ream pressing member to be lowered before the lowering of the cutting blade.

4- A pressing device, according to one or more of the preceding claims, characterized in that said resilient means consist of a coil spring coiled on a supporting rod member and provided, at one end thereof, with a stop member and abutting, at the other end thereof, against a perforated coupling slidingly engaged on said rod member and being applied on a pin affixed near the top end portion of said articulation member of said levers.

5- A pressing device, according to one or more of the preceding claims, characterized in that the preload on said coil spring is adjusted by a nut threaded on the free end of said supporting rod member, being associated with a counternut or threaded bush and a spacer member adapted to adjust, with the pressing member in a completely raised condition, the spacing to the operating surface of an abutment formed at the bottom of said pressing member.

6- A pressing device according to one or more of the preceding claims, characterized in that in said cutter, between a bottom portion of the cutter operating arm, pivoted to guide uprights of said pressing member through a driving coupling, and the cutter blade there is arranged a pushing lever, pivoted at one end of an sdjusting small block applied at the top of a blade holder and, at the other end, in said driving coupling.

7- A pressing device, according to one or more of the preceding claims, characterized in that said cutter includes an interspacing between the cutter blade pivot point and the pivot point of the end coupling of said coil spring supporting rod.

8- A pressing device according to one or more of the preceding claims, characterized in that said pressing member is provided, at the end portions thereof, with two pins slidingly engaged in slots each formed at the free end portion of each of said levers.

9- A pressing device according to one or more of the preceding claims, characterized in that said end stop member of said coil spring consists of a small block, either of the fixed or of the adjustable type, slidingly engaged on said rod member.

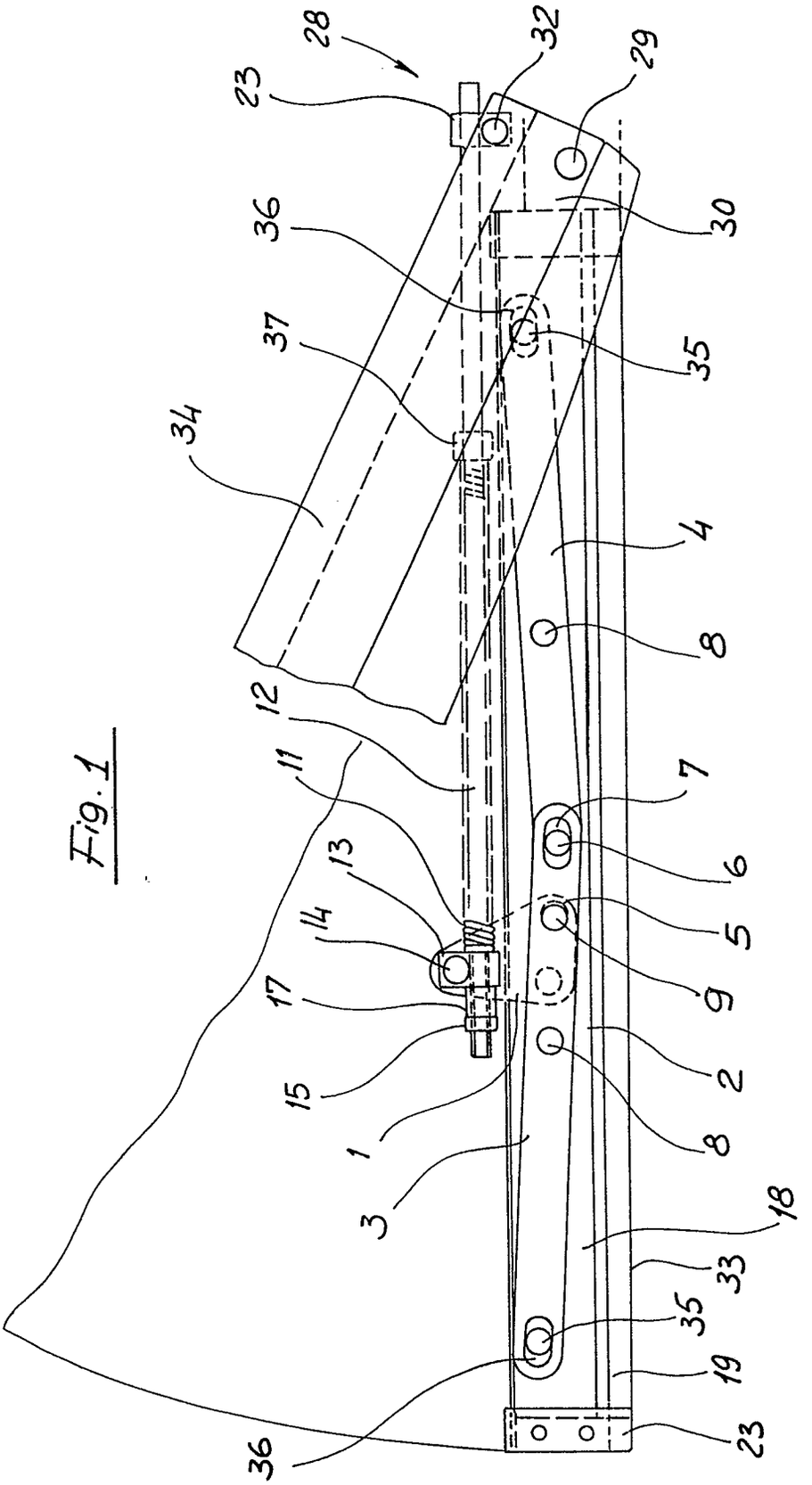
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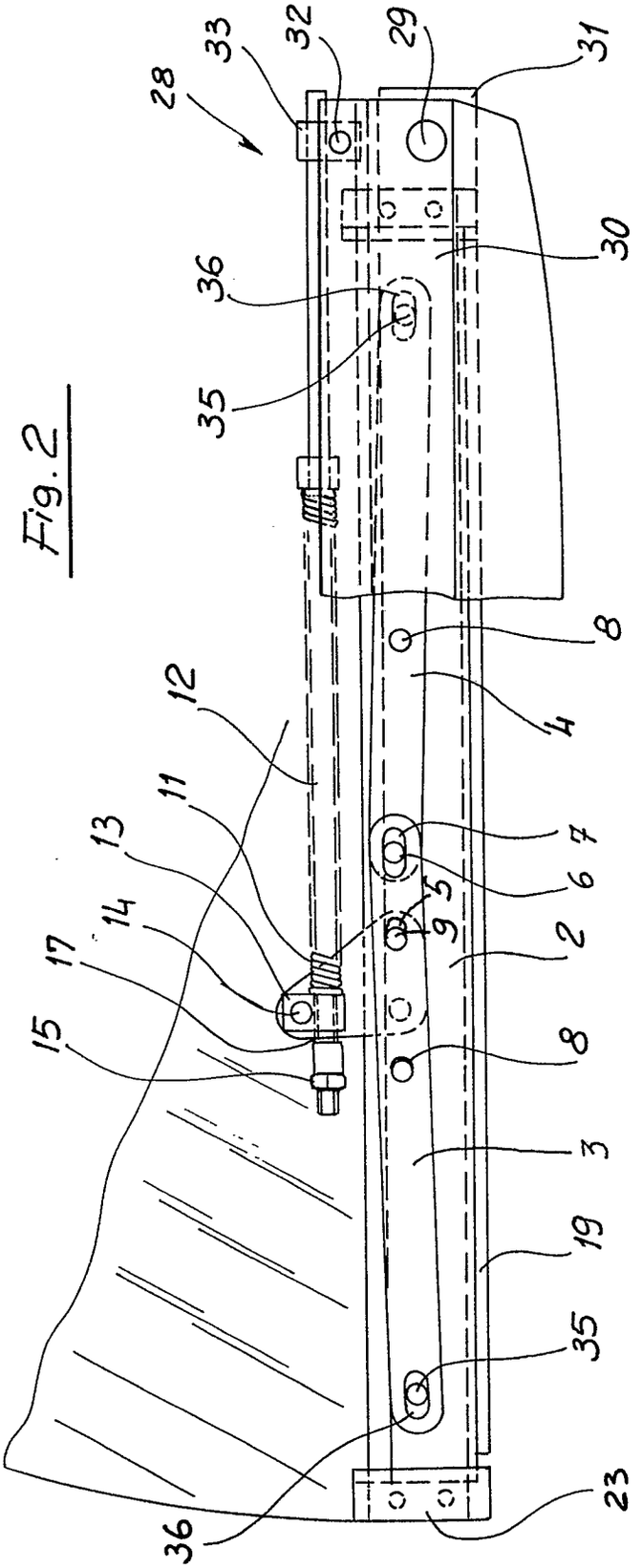
Fig. 1

Fig. 2



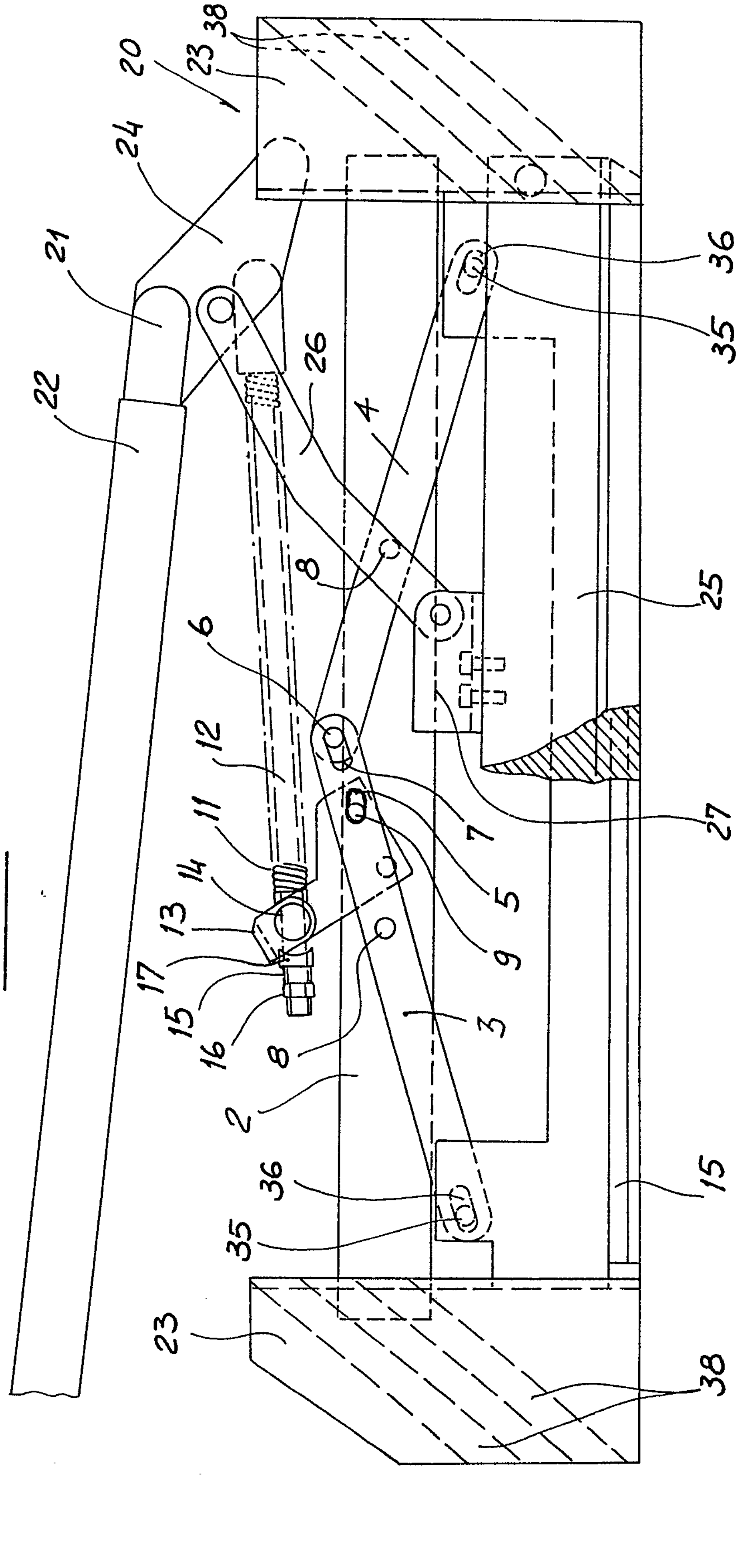

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Fig. 3

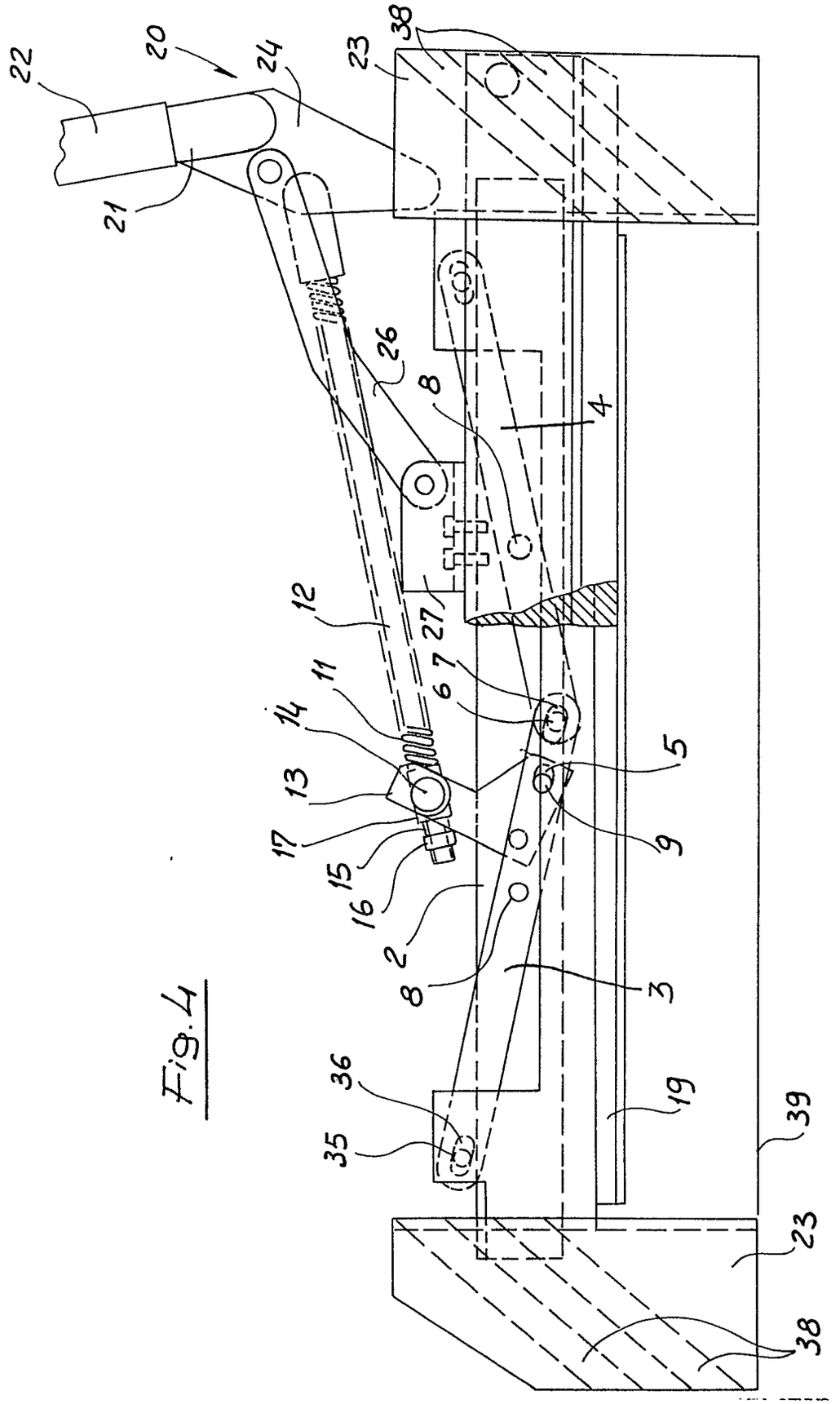
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Fig. 4