

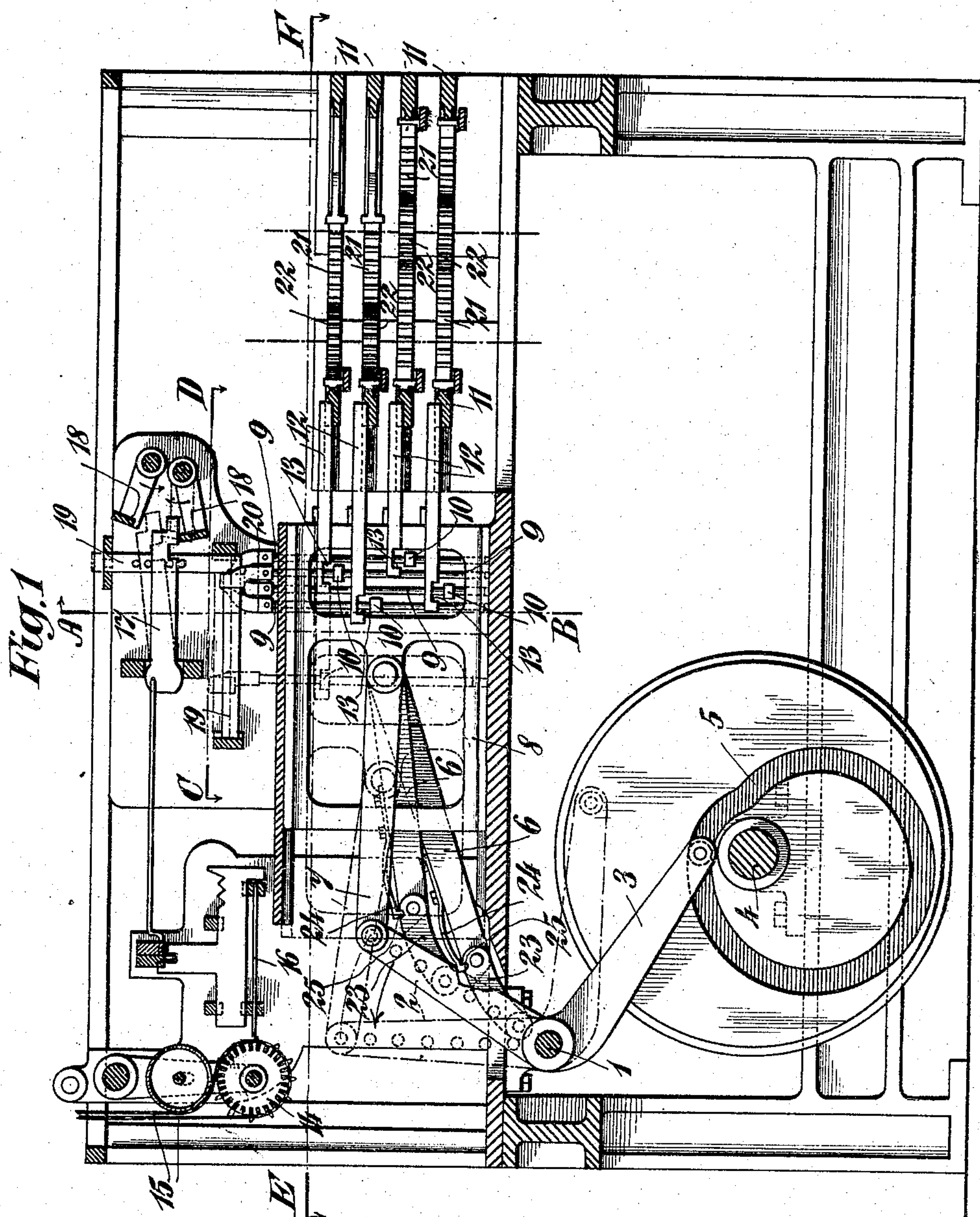
No. 785,169.

PATENTED MAR. 21, 1905.

L. HERZOG.
JACQUARD EMBROIDERING MACHINE.

APPLICATION FILED AUG. 4, 1903.

5 SHEETS—SHEET 1.



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5 SHEETS—SHEET 2.

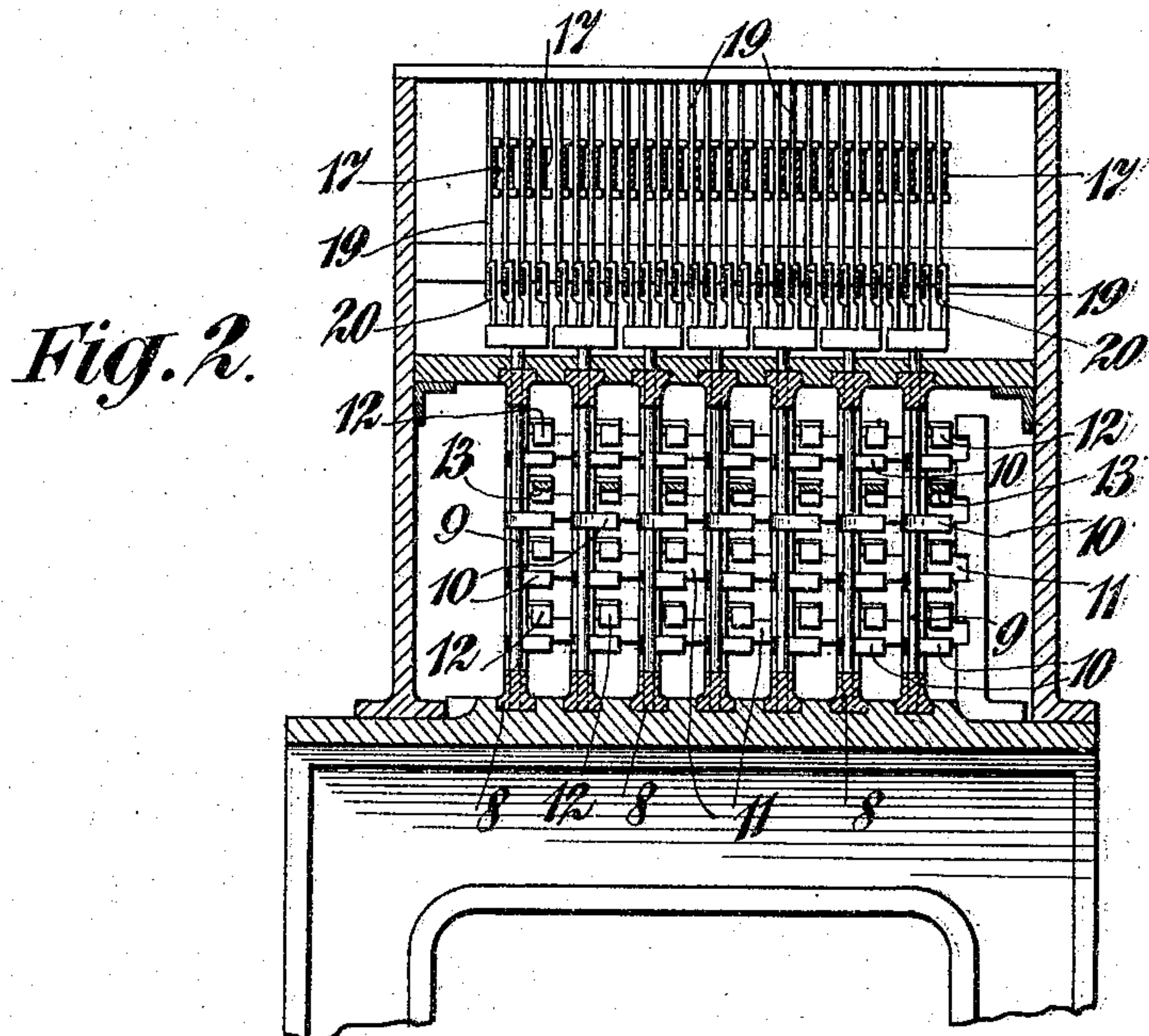
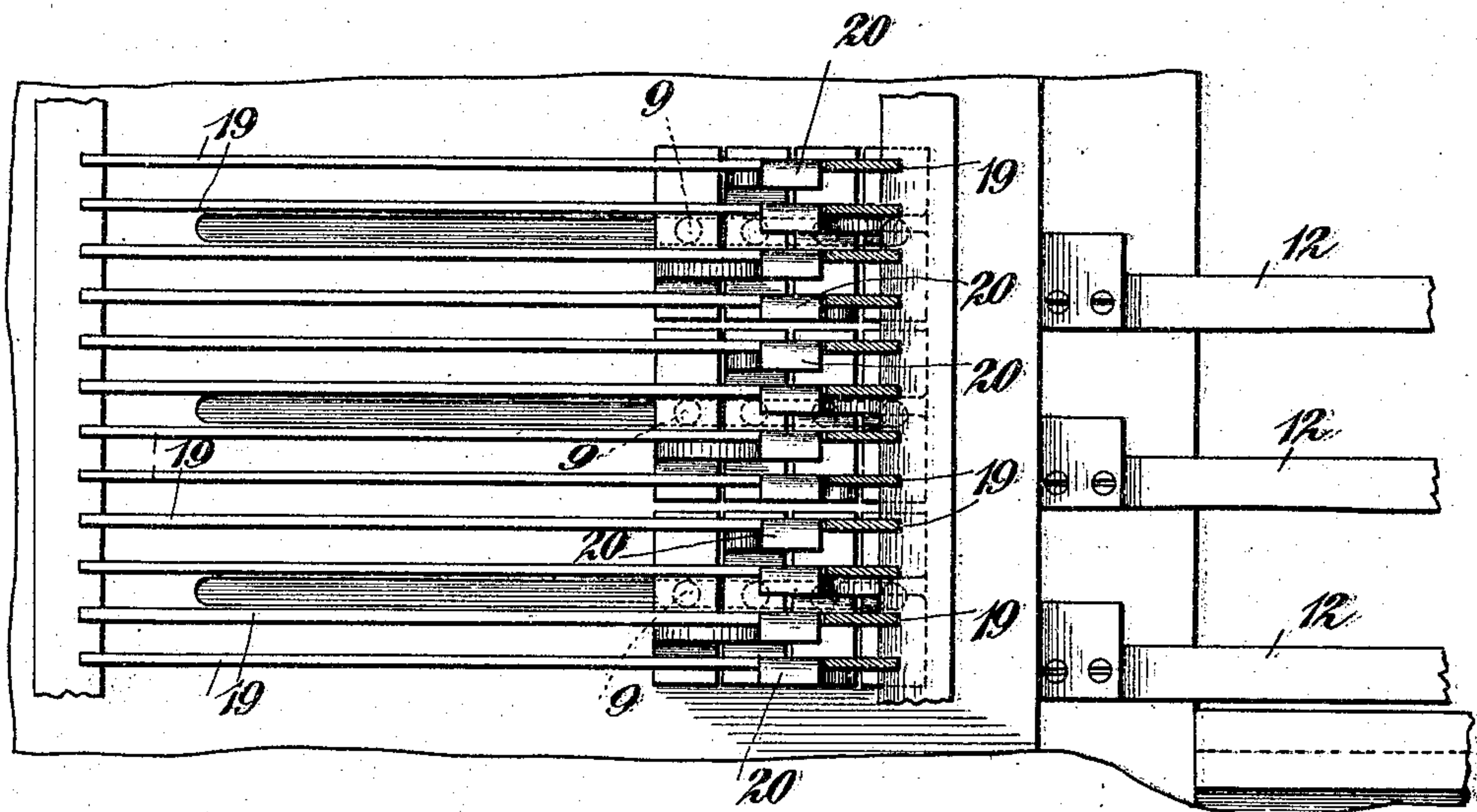


Fig. 2a.



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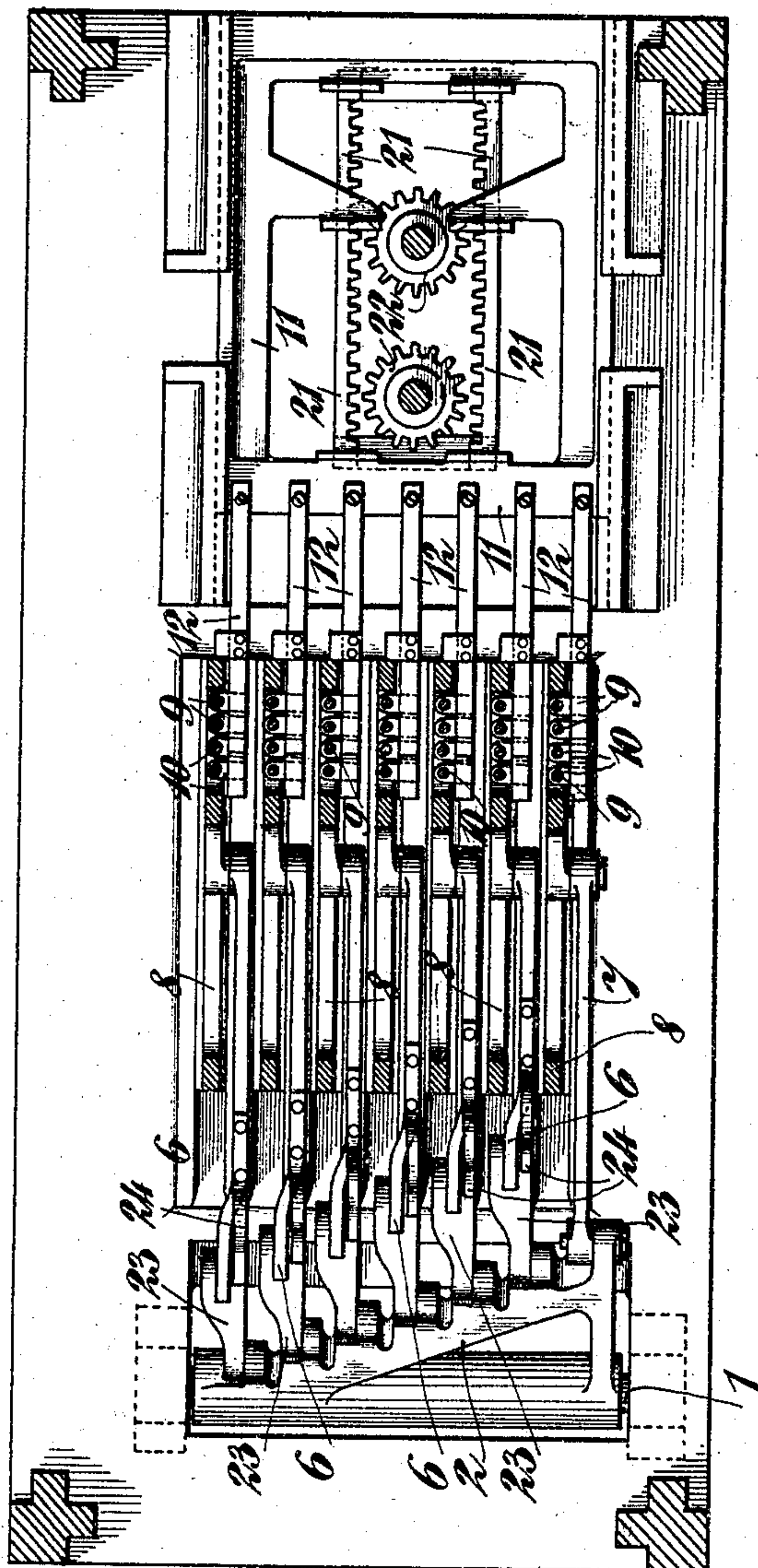
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5 SHEETS—SHEET 3.

Fig. 3.



Witnesses

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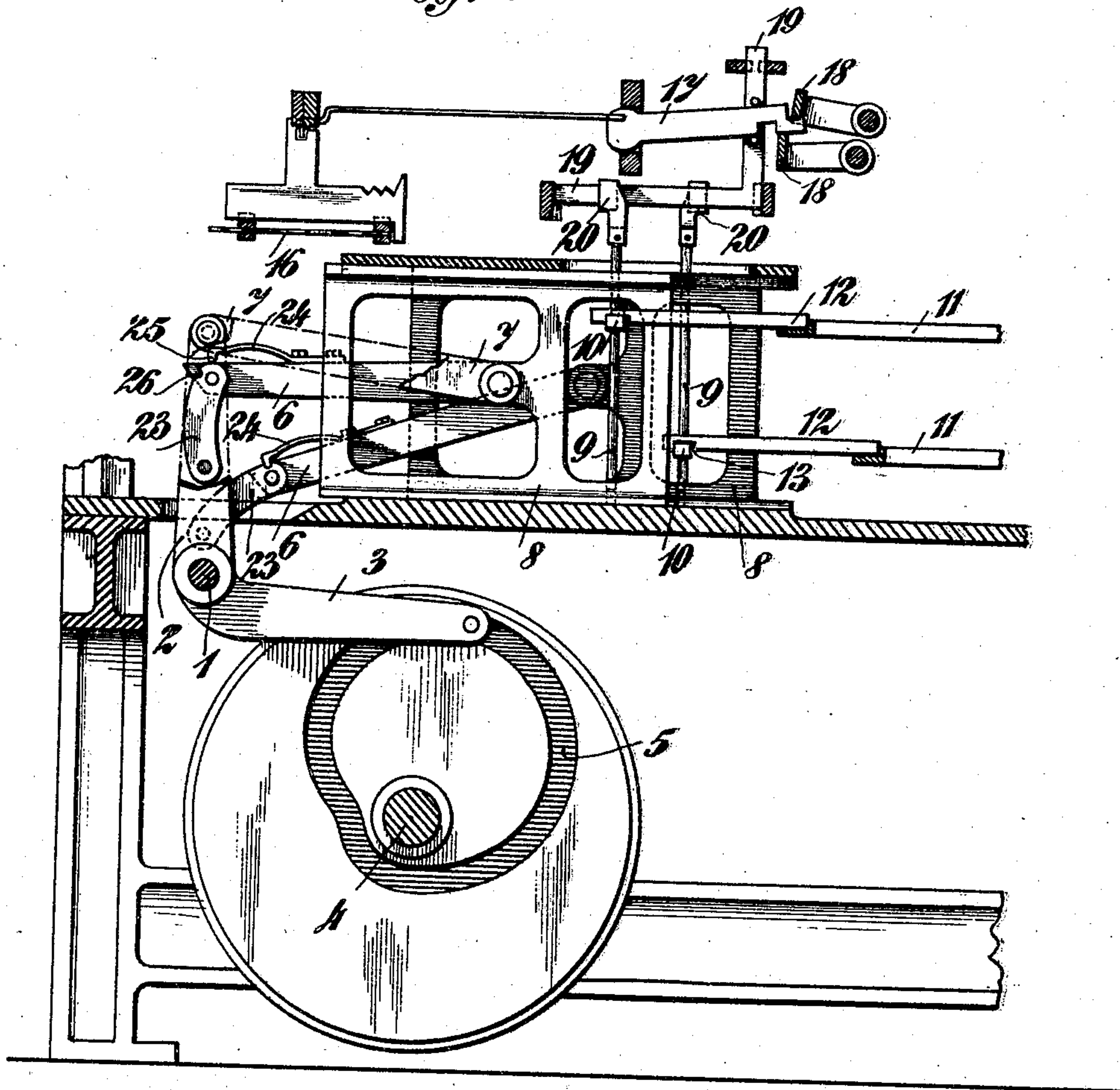
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5 SHEETS—SHEET 4.

Fig. 4.



Witnesses

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5 SHEETS—SHEET 5.

Fig. 5.

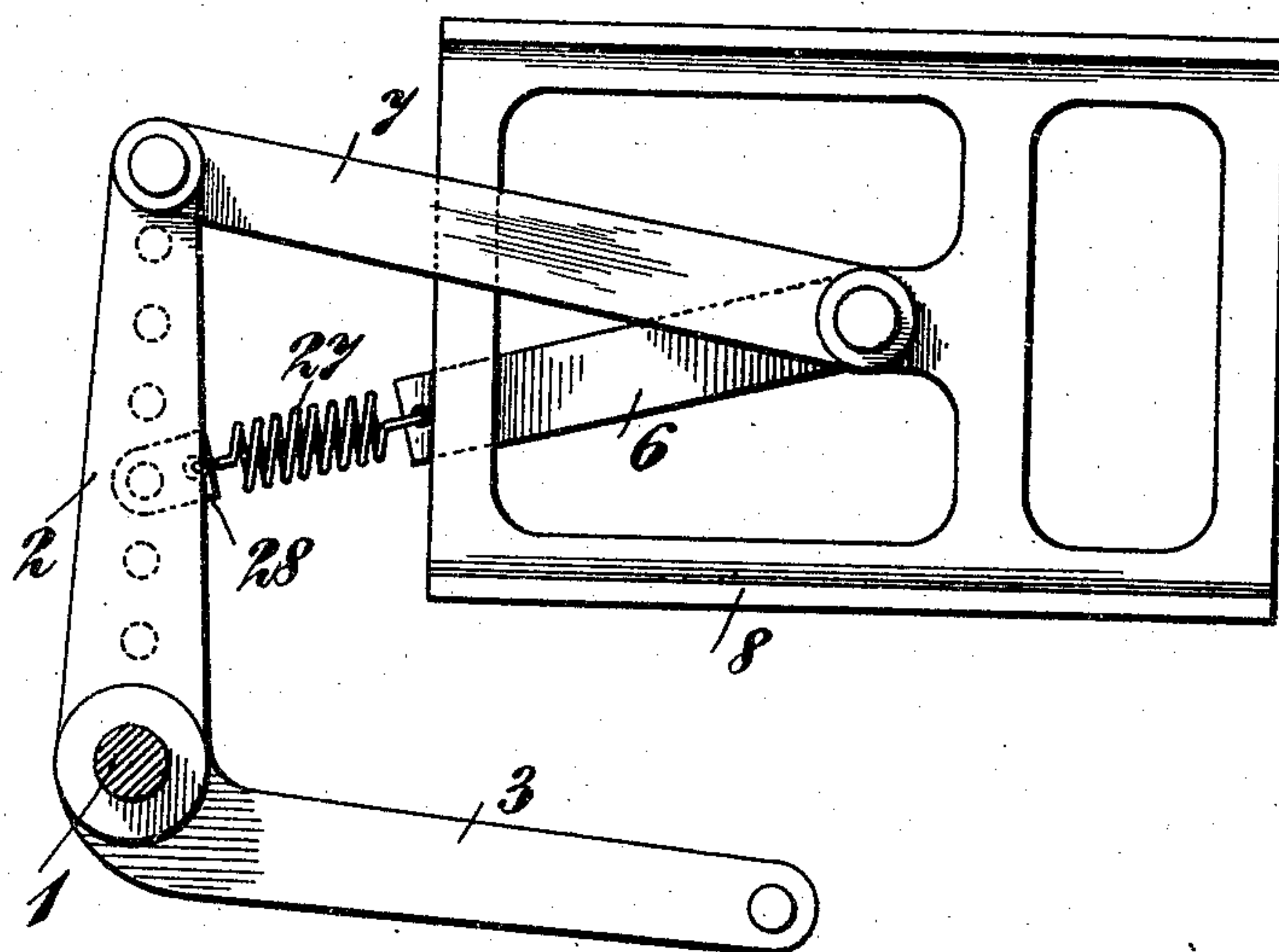
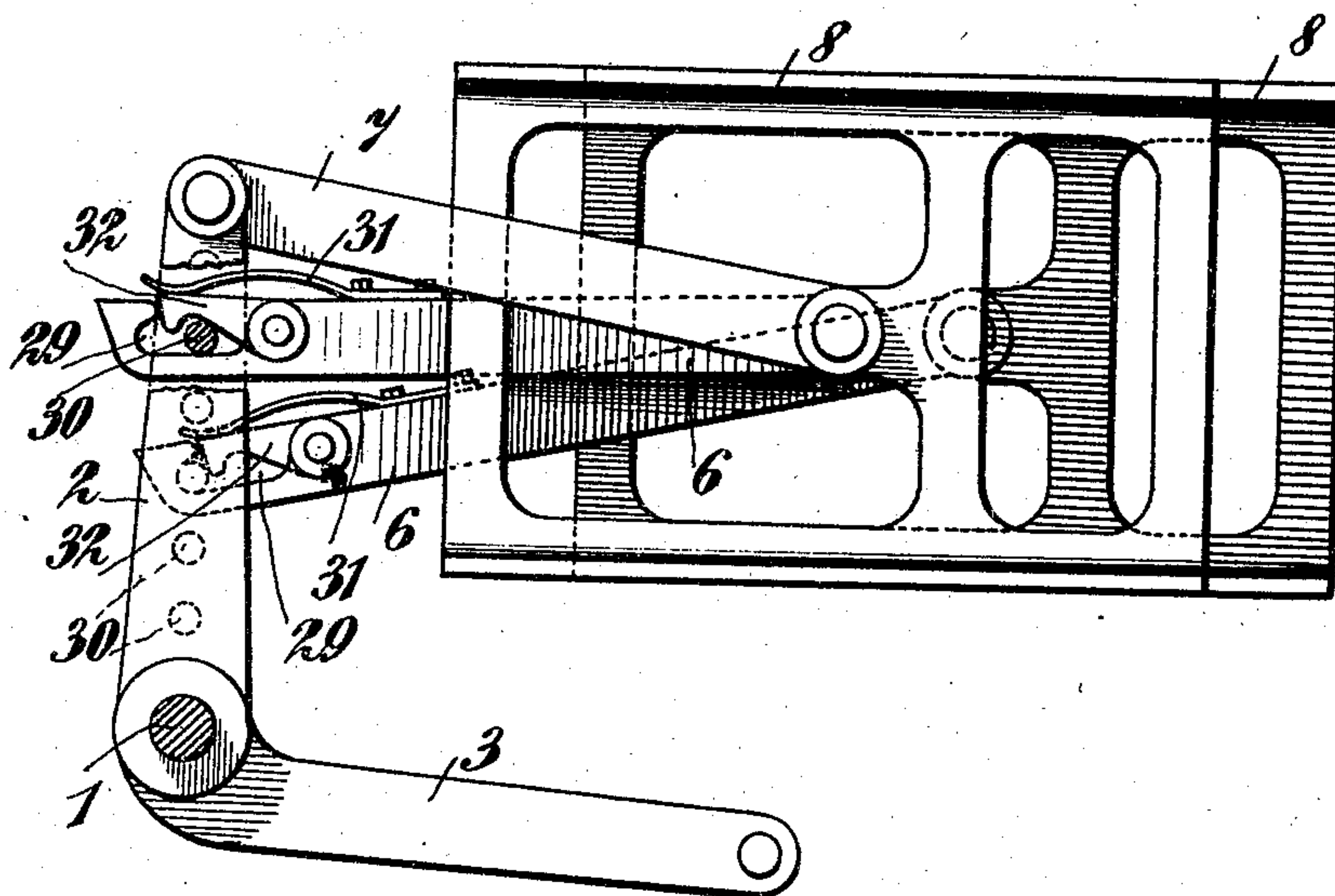


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

LOUIS HERZOG, OF RORSCHACH, SWITZERLAND, ASSIGNOR TO THE FIRM OF STICKEREI FELDMÜHLE, VORMALS LOEB, SCHOENFELD & CO., OF RORSCHACH, SWITZERLAND.

JACQUARD EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 785,169, dated March 21, 1905.

Application filed August 4, 1903. Serial No. 168,226.

To all whom it may concern:

Be it known that I, LOUIS HERZOG, a citizen of the Republic of Switzerland, residing at Rorschach, Switzerland, have invented new and useful Improvements in Jacquard Embroidering-Machines, of which the following is a specification.

In embroidering-machines of the kind, for instance, disclosed in British Letters Patent No. 21,361, A. D. 1894, the embroidering-frame is adjusted by a jacquard-card which couples singly vertical slide-frames moved by a stepped lever and connecting-rods, with horizontal slide-frames having coupling-rods and acting on a double rack-gear. In such machines it frequently happens that if there is an incorrect or redundant hole in the pattern-card then instead of only a single vertical slide-frame two of such frames will be coupled or advanced simultaneously with one and the same horizontal slide-frame, the result being injury to the machine and temporary breakdown. In order to overcome this drawback, such machines have been provided with a device by means of which immediately that part of the card with the incorrect hole meets the jacquard-needles which effect the coupling of the slide-frames the automatic device is stopped. This device, however, is extremely defective, is subject to great wear and tear, and thus soon fails to act. If then there is a surplus hole in the pattern-card, causing false coupling of the horizontal slide-frame, it is obvious that if the stop device fails to operate, and since the vertical slide-frames joined to the stepped lever by the rigid connecting-rods have an unequal throw—that is, have connecting-rods of unequal length—tension results between the various moving parts, rendering continued working impossible, the result being that either the stepped lever fractures or the coupling and connecting rods are broken, necessitating extensive repairs.

The subject of my invention is an automatic regulating device for the connecting-rods in jacquard embroidering-machines,

whereby the rods connecting the stepped lever with the vertical slide-frames are spring-controlled in such manner that the tension arising between the stepped lever and the slide-frames on false coupling of the vertical with the horizontal slide-frames can be removed by the spring control of the connecting-rods being overcome, whereby injury to the machine and consequent breakdown is avoided.

My invention is illustrated by the accompanying drawings, in which—

Figure 1 is a vertical sectional view showing the apparatus with the connecting-rods in their rearward position. Fig. 2 is a vertical section on the line A B of Fig. 1. Fig. 2^a is a section on the line C D of Fig. 1, drawn to an enlarged scale. Fig. 3 is a sectional plan view of Fig. 1, taken on the line E F. Fig. 4 is a vertical sectional view showing a portion of Fig. 1, the connecting-rods being in their forward position. Figs. 5 and 6 are detail views, drawn to an enlarged scale, of modified constructions of the invention to be hereinafter referred to.

The stepped lever 2 is mounted on the shaft 1, having its bearings in the main framing, and has an arm 3 cooperating with the cam-disk 5, mounted on the driving-shaft 4, whereby reciprocating motion is imparted to the stepped lever. The latter is connected by rods 6 7 to the seven vertical slide-frames 8, each provided with four vertical locking-rods 9, each of which has a lateral stop 10. Opposite the vertical slide-frames lie four horizontal slide-frames 11, to each of which seven parallel coupling-rods 12 are secured. Each four superposed rods 12 lie adjacent to a slide 8, and the front end of each is recessed at 13 to fit the stop 10, located below it, Figs. 1, 2, and 3.

The jacquard-card 15, perforated in the usual manner, runs over the cylinder 14. The jacquard-needles 16 actuate the slide-plates 17, which are raised and lowered by the rocking bars 18. To each slide-plate 17 a lifter is coupled, and on each of the latter one of the

locking-bars 9 is suspended by means of claw 20. The slides 11 are provided with racks 21, meshing alternately with cylindrical pinions 22, whereby the embroidering-frame is
 5 operated. The construction and operation of the said parts are the same as described in British Letters Patent No. 21,361, A.D. 1894.

To the rods 6 are pivoted the forked ends of the links 23, the other ends of the latter being pivoted to the corresponding step of the lever 2. The rods 6 are provided with
 10 springs 24, the free ends 25 of which enter notches 26 in the forked ends of the links 23, thus rigidly connecting the two parts 6 23.
 15 The rod 7 consists of a single piece.

Suppose now for the reasons already stated two of the slides 8 become coupled with the same slide 11 simultaneously. In Fig. 4, for example, the front and the antepenultimate
 20 slide 8 are shown so coupled. Since the thrust of the front slide 8—that is, of the rod 7—is greater than that of the antepenultimate slide 8—that is, of the rod 6—and since the length of this latter is greater than that of
 25 the rod 7 it is obvious that when the stop device fails to act the said antepenultimate slide 8 is compelled to make the same stroke as the front slide 8, which is coupled to it by the antepenultimate rod 12. The result will
 30 be that the composite member 6 23 will bend at its joint, the end 25 of the spring 24 leaving the notch 26, so that the bar 6 takes up the position shown in Fig. 4. The same will also be the case with the other rods 6, so far as
 35 they come in question in like cases.

In the modified form of construction shown in Fig. 5 the rods 6 are connected to the lever 2 by means of spiral springs 27 and
 40 pivotal plates 28. The tension arising between the longer and shorter connecting-rods on false coupling of the slides occurring is in this case taken up by the springs 27.

In the modification shown in Fig. 6 the rods 6 are made in one piece and their ends
 45 recessed at 29, so as to receive the pins 30 on the steps of the lever 2. In the slots pawls 32 are located, pressed down into the gaps 29 by springs 31. In the case in question the third rod 6 in consequence of false coupling
 50 of its slide in spite of its different length has had to pass over the same distance as the front rod 7. This has been possible owing to the arrangement of the spring-pawl above mentioned, which on further advance of the
 55 rod 6 has been raised by a pin 30, so that the rod 6 has been able to travel farther beyond the pin 30.

By the provision of these automatically-regulating connecting-rods all breakdowns
 60 of the machine occurring through defects in the jacquard-cards are prevented and the expense of repairs saved.

Having now particularly described and ascertained the nature of my said invention and

in what manner the same is to be performed, 65
 I declare that what I claim is—

1. In a jacquard embroidering-machine, the horizontal slide-frames, the vertical slide-frames, the jacquard mechanism and the coupling members connecting the said hori- 70
 zontal and vertical frames, in combination with the stepped lever and rods connecting the same with the vertical frames, said connecting-rods provided with means to auto- 75
 matically adjust their effective length, whereby in the event of false coupling of the said vertical and horizontal frames, injury to the machine is prevented, substantially as set forth.

2. In a jacquard embroidering-machine, 80
 the horizontal slide-frames, the vertical slide-frames, the jacquard mechanism and the coupling members connecting the said horizontal and vertical frames, in combination with a stepped lever and links connecting the 85
 same with the vertical frames, said links consisting of two pivoted parts and a leaf-spring to control the joint at the pivot to admit of the links bending in the manner of a toggle, substantially as set forth. 90

3. In a jacquard embroidering-machine, the combination with slides, of a stepped lever, links connecting the steps of said lever and slides, and means to automatically adjust the effective lengths of the links when 95
 two or more slides have the same travel, substantially as described.

4. In a jacquard embroidering-machine, the combination with vertical slides, of a stepped lever, a rigid link connecting one of 100
 the slides to the lever, and a link connecting each of the other slides to the lever and having means to automatically adjust the effective length of said link, substantially as described. 105

5. In a jacquard embroidering-machine, the combination with slides each having a different travel from the others, of a stepped lever, a rigid link connecting that slide having the greatest travel with the lever, and a 110
 link connecting each of the other slides with its respective step on said lever, each of said last-named links having means to automatically adjust its effective length, substantially as described. 115

6. In a jacquard embroidering-machine, the combination with slides and a stepped lever, of a rigid link connecting the slides having the longest movement with the lever, and a short link pivoted to a long link and a leaf- 120
 spring to yieldingly hold the two links to move as a unit, a pair of said links connecting each of said slides to the stepped lever, substantially as described.

7. In a jacquard embroidering-machine, 125
 the combination with slides, of a stepped lever, a rigid link connecting that slide having the greatest travel with the lever and each of

the other slides connected to said lever by
a short link hinged to a long link, the short
link having a notch in its hinge end prox-
imate the long link, a spring secured to the
5 long link to normally engage said notch, sub-
stantially as described.

In testimony whereof I have signed my

name to this specification in the presence of
two subscribing witnesses.

LOUIS HERZOG.

Witnesses:

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A. LIEBERKNECHT.