

No. 694,663.

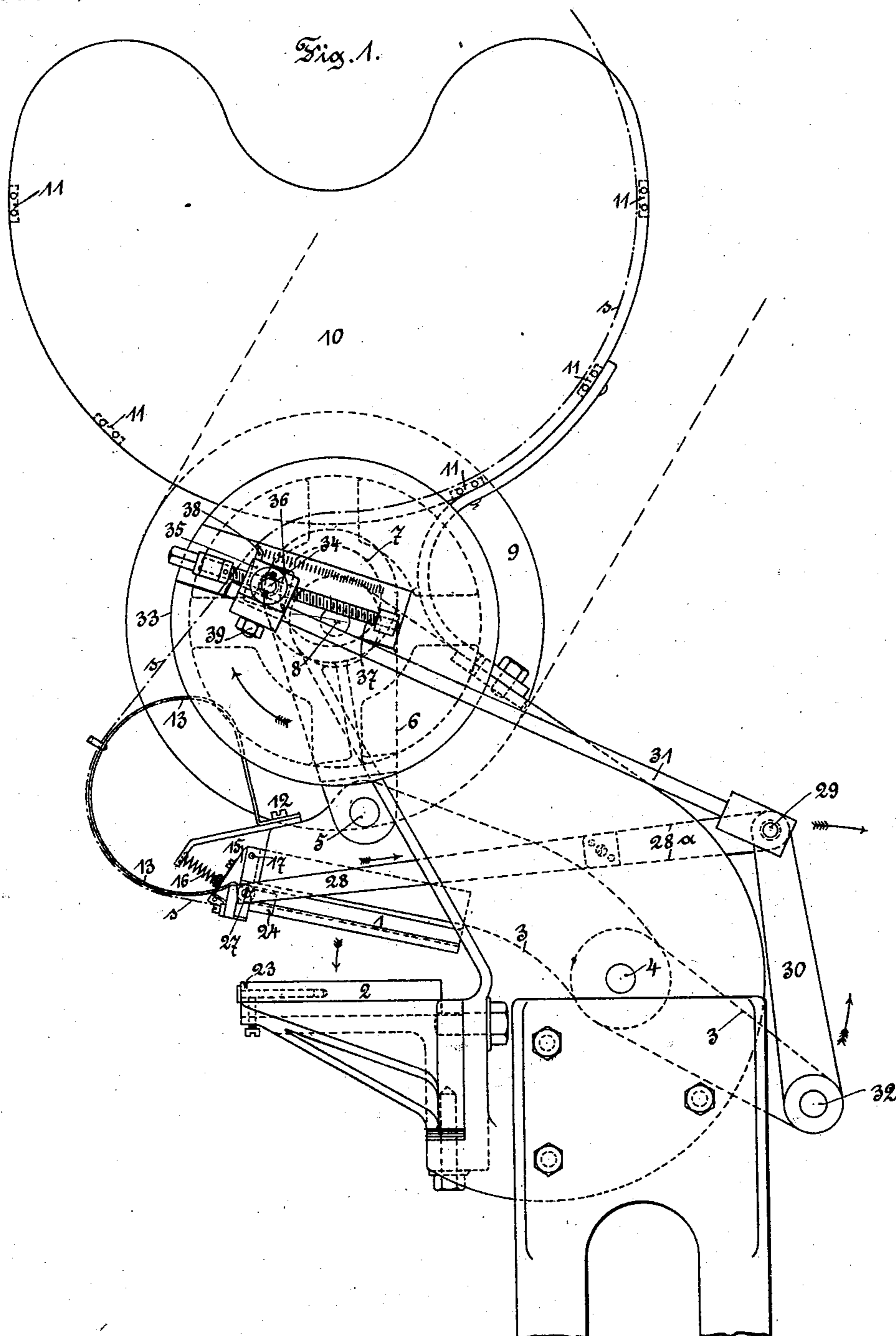
Patented Mar. 4, 1902.

R. PARTZSCH.
BOX STAYING MACHINE.

(Application filed June 2, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
Thomas Durant
Alex Stewart

Inventor:
Richard Partzsch
by Church & Church
his Attys

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Fig. 2.

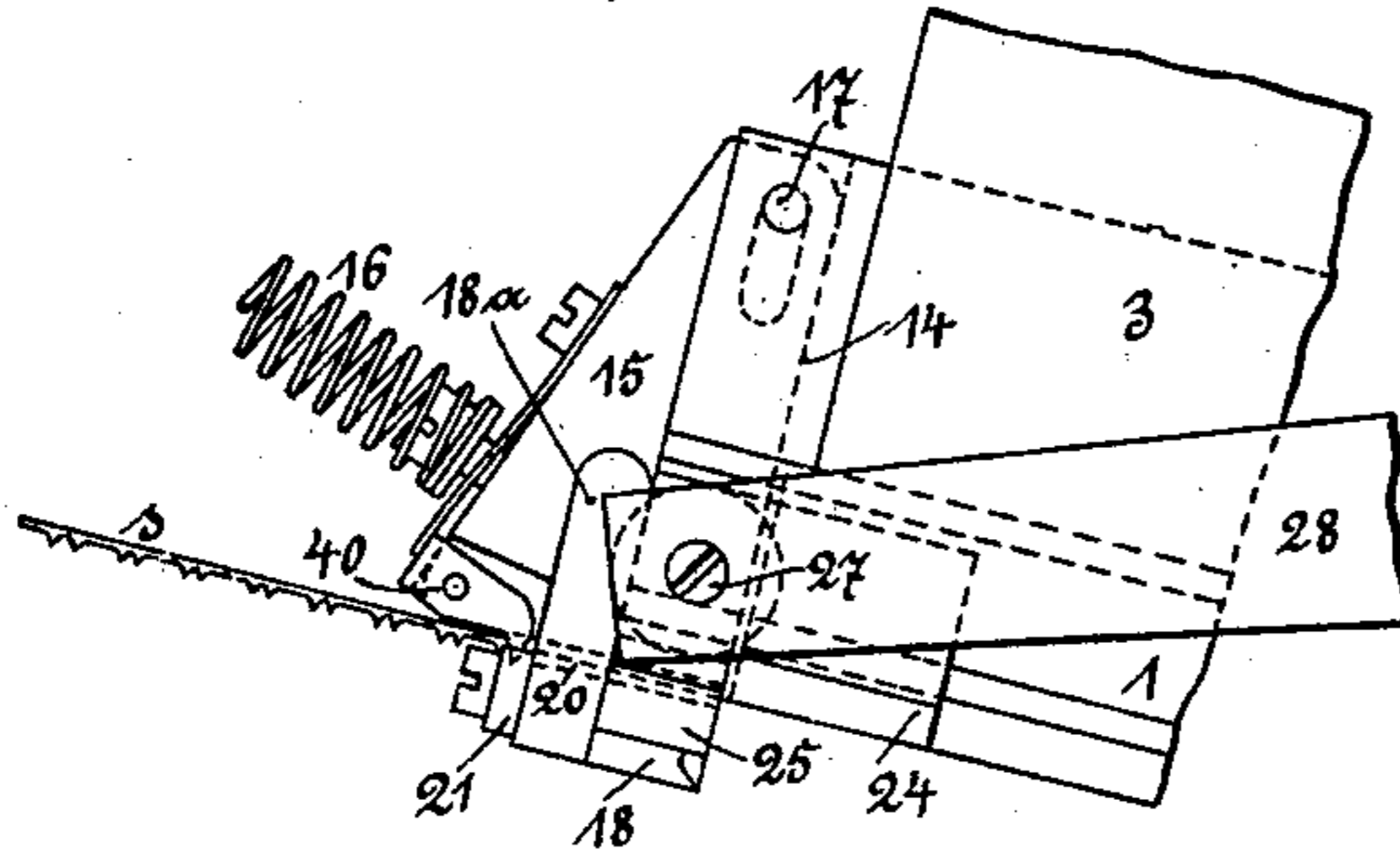


Fig. 3.

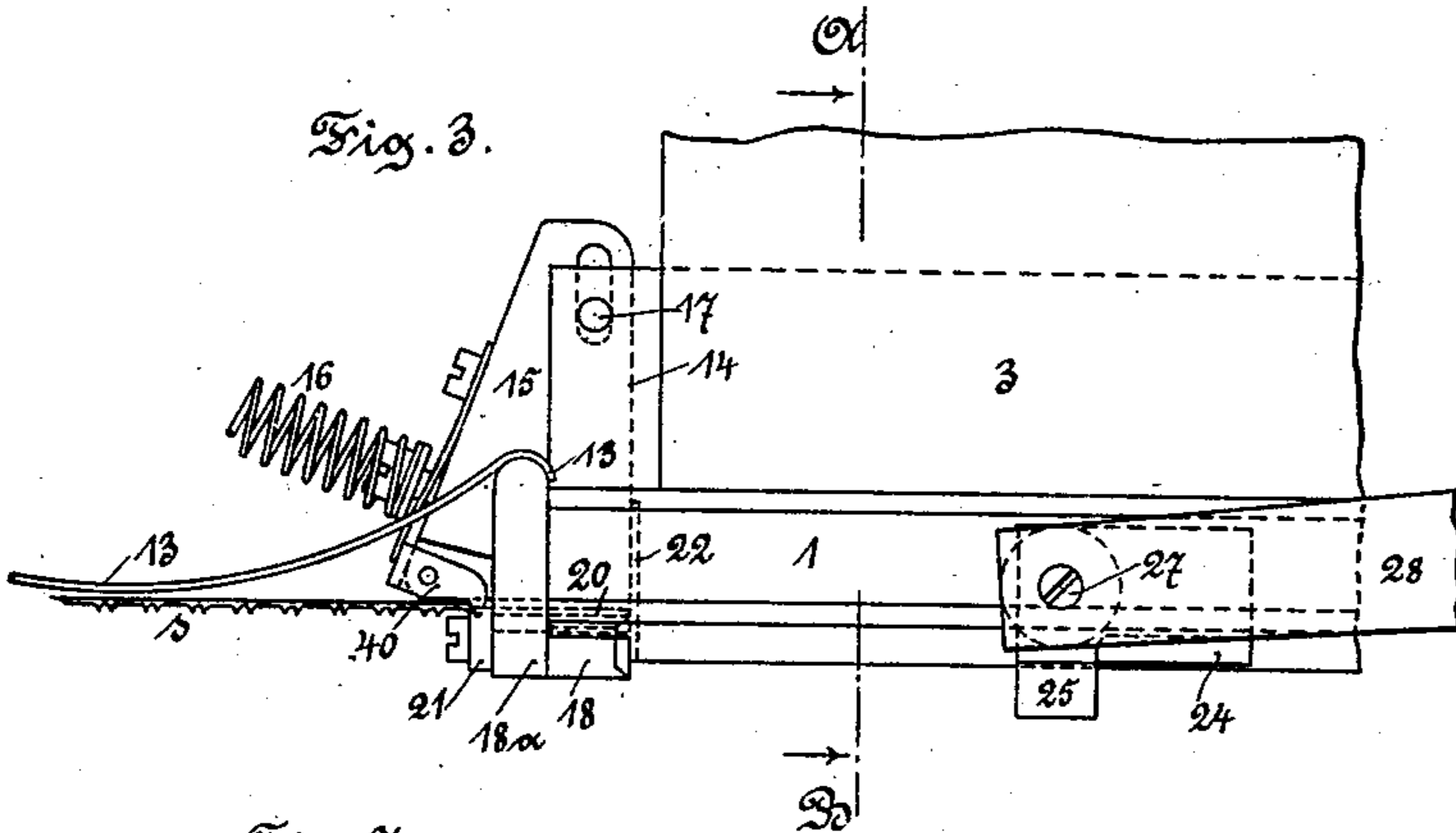


Fig. 4.

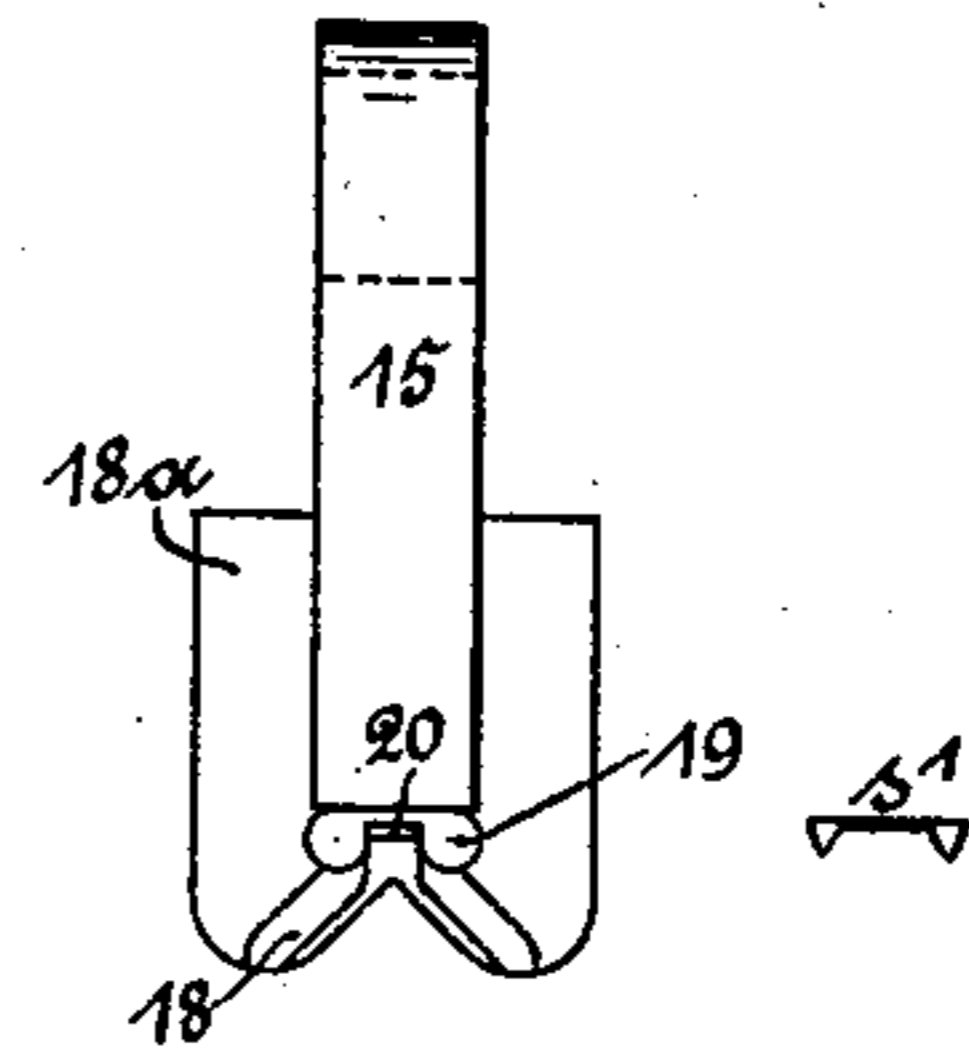


Fig. 7.

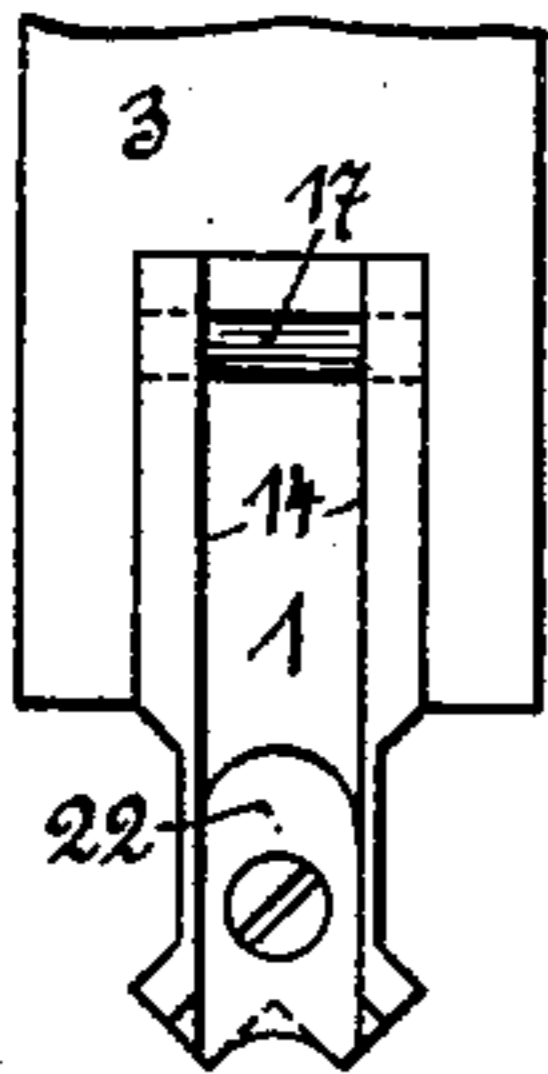


Fig. 5.

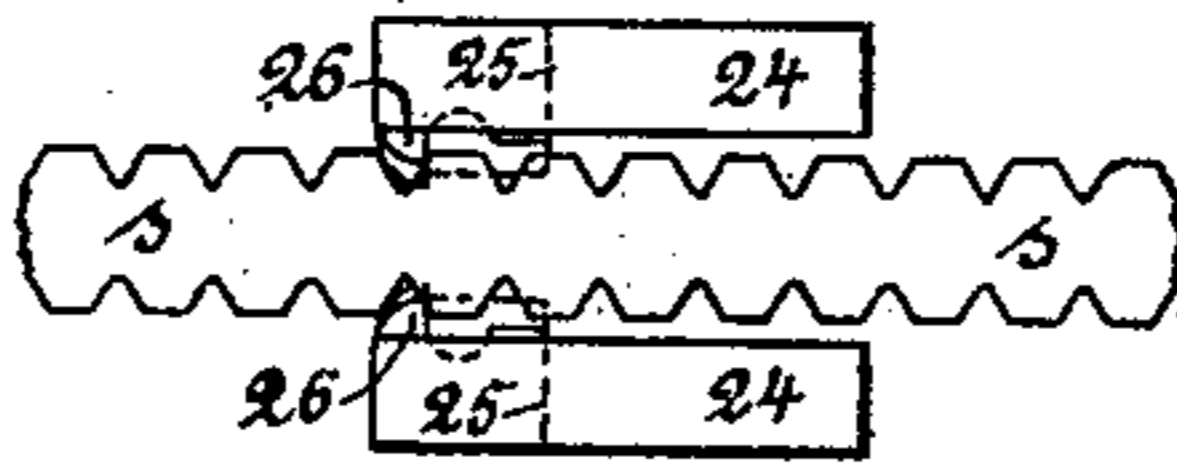


Fig. 6.

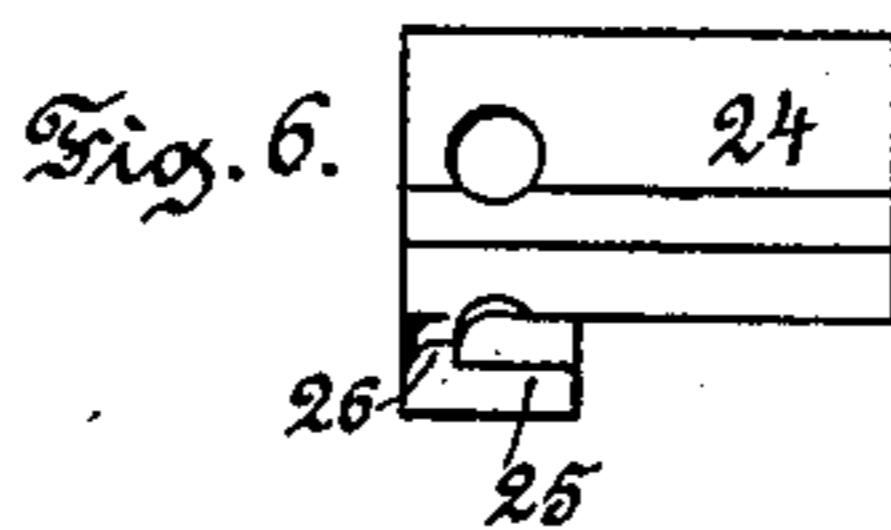


Fig. 8.

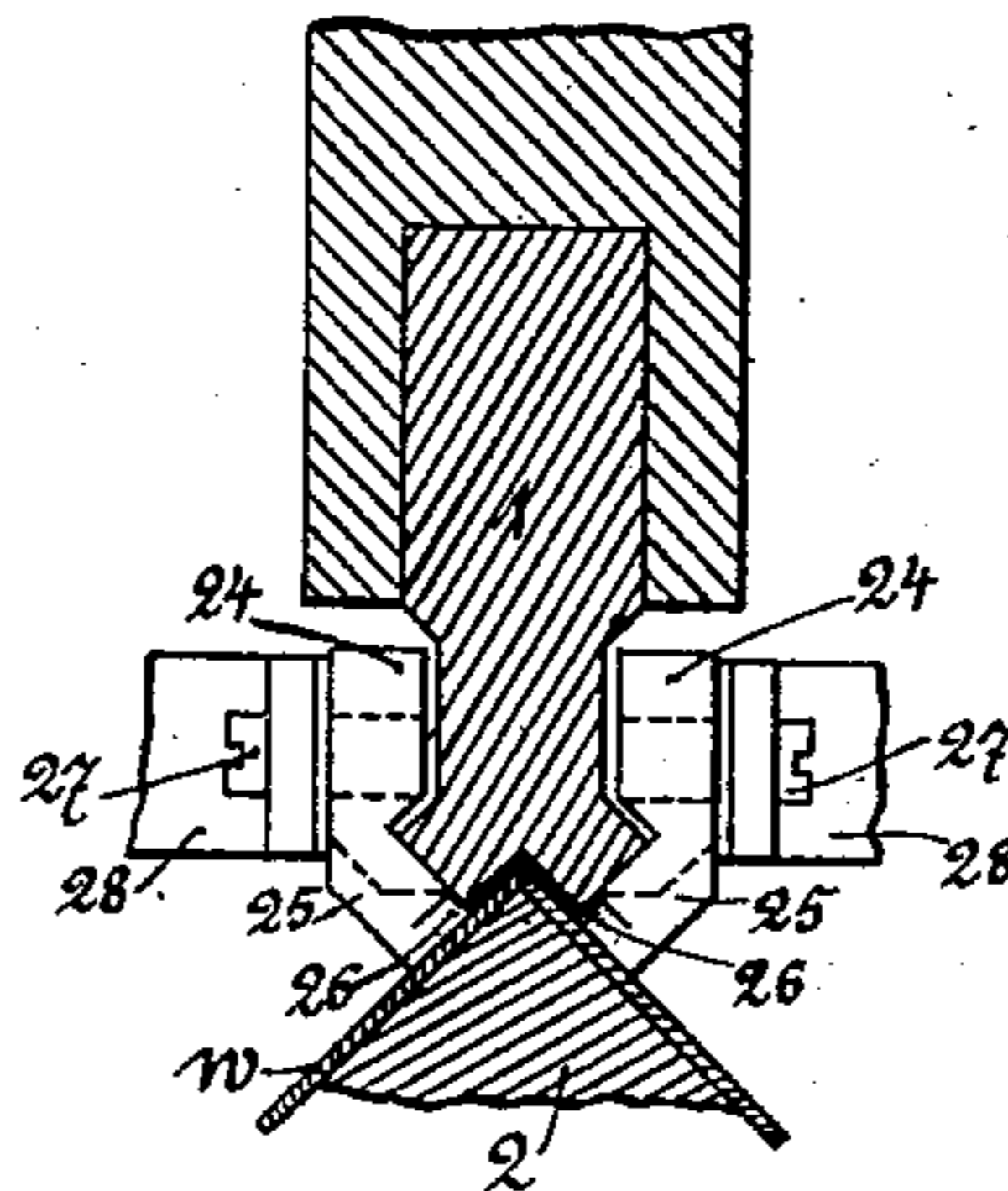
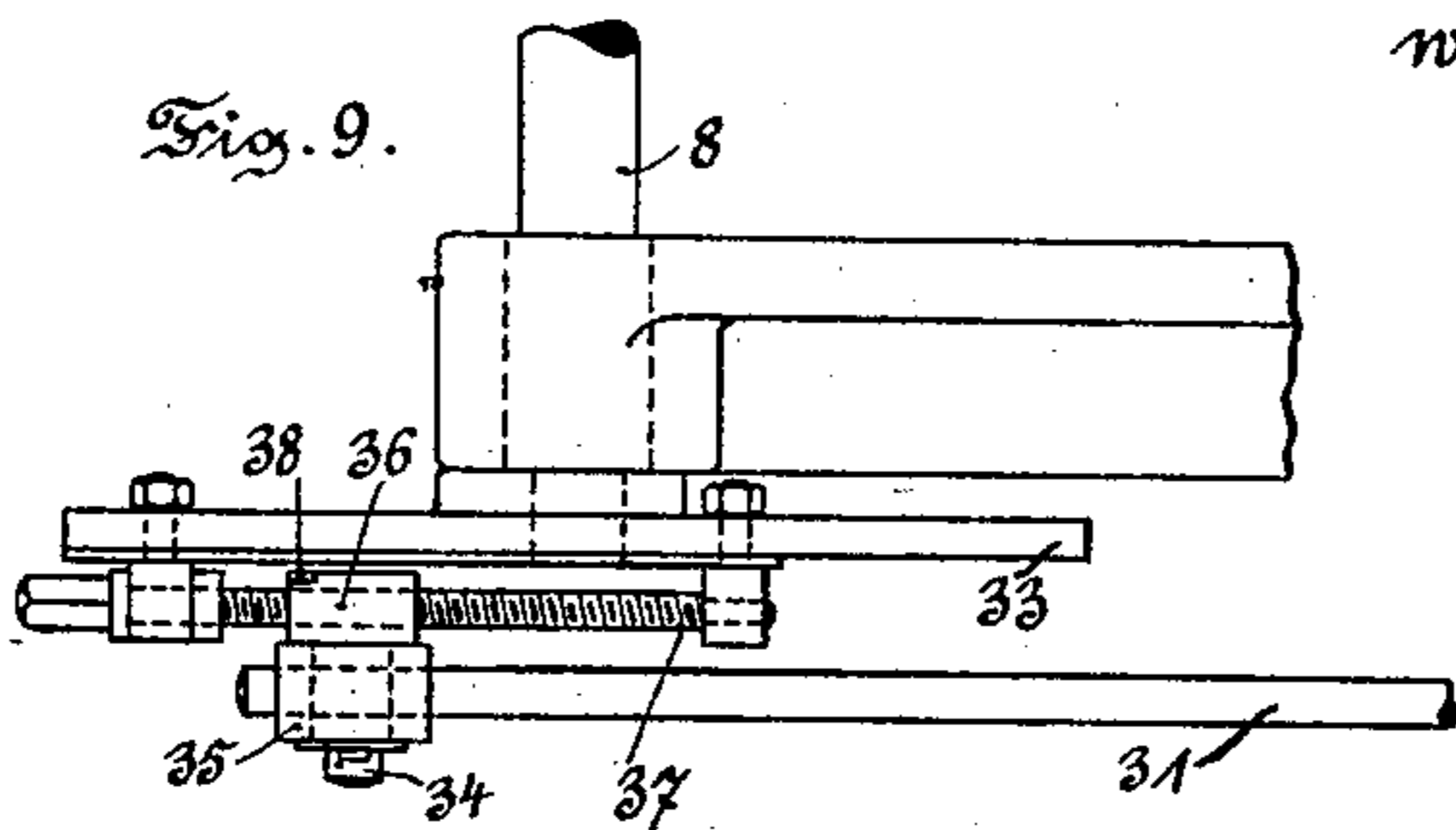


Fig. 9.



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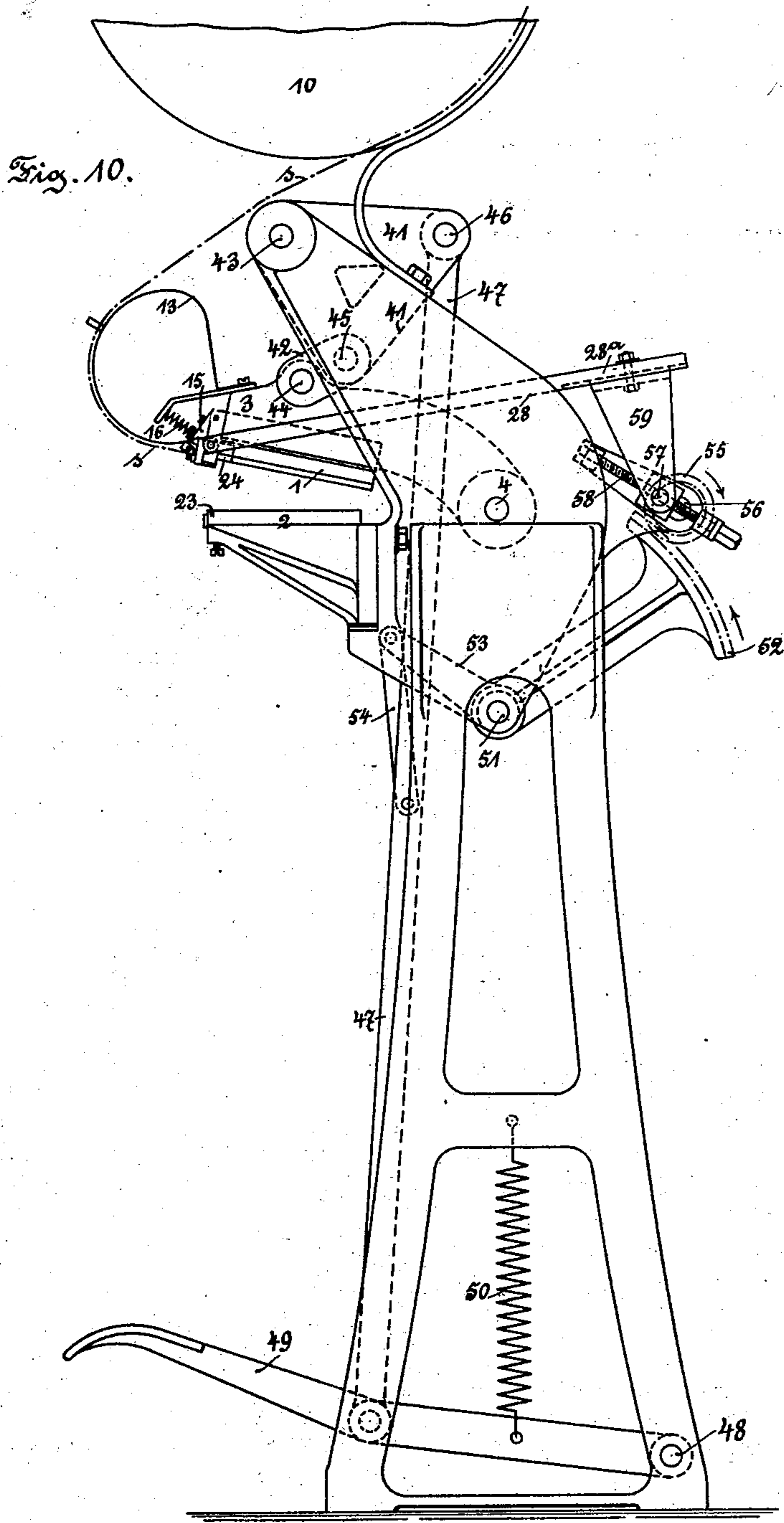
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

RICHARD PARTZSCH, OF DRESDEN, GERMANY.

BOX-STAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 694,663, dated March 4, 1902.

Application filed June 2, 1900. Serial No. 18,885. (No model.)

To all whom it may concern:

Be it known that I, RICHARD PARTZSCH, a subject of the King of Saxony, residing at Dresden, Germany, have invented certain new and useful Improvements in or Relating to Machines for Attaching Jointing or Strengthening Strips to Cardboard Boxes and other Articles, (for which I have made application for Letters Patent in Great Britain under No. 3,543, dated February 22, 1900; in Hungary, No. 2,505, dated February 23, 1900; in Belgium, No. 116,897, dated February 24, 1900, and in Austria, dated February 19, 1900,) of which the following is a specification.

The operation effected according to British Patent No. 8,806 of 1898 of drawing the strip under the hammer in contrast with the older machines working by hammer action and fed by a pushing device (instead of a drawing action) has proved successful in practice. On the other hand, it would be desirable to substitute the hammering action, which produces a great noise, by a pressing action, which, while being almost silent, does more work for the same amount of force expended. The difference between a hammering-machine and a pressing-machine consists, essentially, in that in the case of the former the hammer passes through a relatively long travel with considerable acceleration of speed, so as to be able to produce a great effect, while in the case of the pressing-machine the hammer (in this case more appropriately called the upper "stamp" or "presser") has a comparatively short travel without any particular acceleration of speed, the necessary pressing effect being produced more through suitable transmission means—such as eccentrics, bell-crank levers, simple levers of suitable proportions between the arm applying the force and the arm carrying the weight—than by means of an accelerated speed of the operating device. Such a pressing-machine works practically without any noise and vibration. In the case of such machine, however, the short lift of the upper stamp is not sufficient to effect the drawing forward of the strip by the means indicated in the said patent. Then, again, for reasons of construction it is not advisable to arrange the upper stamp adjustably, so as thereby to adjust the length of the work or strip fed forward. In order, therefore, to render it

possible to employ the improved form of feed in the case of pressing-machines according to this invention, in which the strip is drawn forward, it is necessary to substitute the grippers which seize the teeth of the strip beyond the cutting device by other suitable means to be actuated in a different manner. This is obtained in the case of the present pressing-machine by a gearing, which can be adjusted, especially as regards its rising movement.

The present invention therefore consists in employing the method of drawing the strip to the case of a pressing-machine having a short stamp-lift.

This invention is represented in the accompanying drawings in two constructive modifications, the feeding of the strip being effected in both cases from the front inward. This system of front feeding possesses the advantage that the cutting device, naturally placed at the forward end of the upper clamp, need not be arranged adjustably—i. e., it may be so placed as to always strike the anvil or under stationary stamp in one and the same place. This spot of the anvil is therefore specially prepared against the impact of the cutting device. If the feeding were effected from the back, it would be necessary to change with each change of the length of the strip the place on which the cutting device is to act. The latter would then strike the anvil in various places, thereby injuring it, especially in the case where thin cardboard is to be handled. Where there is no risk of such a drawback, the feeding may be effected by drawing the strip from behind with essentially the same means. When, however, the feeding is effected from the front, the machine has the great advantage over other machines in which the strips are fed from the front, but by a pushing movement instead of a drawing movement, that the strip may be led to the entrance of the machine in a sharp bend from above, which is not possible in the case of a pushing movement, owing to the risk of the strip becoming jammed and stopped. This method of drawing the strip into the machine also possesses the advantage that it does not necessitate any obstructing structural arrangement in front of the machine, thereby interfering with access to and use of the machine.

The modification first to be described is intended to be driven by motor force.

In the accompanying drawings, Figure 1 represents a side view of a machine according to the invention. Figs. 2 and 3 show enlarged side views of the front end of the upper stamp in its raised position and after the pressing in and cutting of the strip, respectively. Fig. 4 represents the cutter-slide shown in Figs. 2 and 3 as seen from the right. Fig. 5 represents in plan the grippers taking hold of the strip. Fig. 6 is a view of a gripper, and especially with reference to Figs. 3 and 5 of a rear gripper. Fig. 7 shows the end of the upper stamp with the upper knife fixed to the stamp. Fig. 8 represents a section on the line A B of Fig. 3, and Fig. 9 represents a plan view of the crank-disk and actuating-rod of the gearing for feeding the strip. Fig. 10 is a side view of a modified form of machine.

Since the machine represented in the accompanying drawings is intended for pressing into place connecting or strengthening strips on angular edges, the upper stamp 1 is provided with an angular recess on its under side, Fig. 8. The lower stamp or anvil 2 is correspondingly roof-shaped and so arranged that the edge of the work *w*, Fig. 8, rests on the edge or top of the roof. In treating flat surfaces both the upper and lower stamps would be flat. The upper stamp is arranged on a lever 3, pivoted at 4 and connected at 5 to a rod 6, arranged on an eccentric 7 of the operating-shaft 8. The shaft is turned by means of the pulley or wheel 9, which acts at the same time as a fly-wheel. Owing to this rotation of the shaft, the upper stamp is caused to swing upward and downward about its pivot 4. The clamp-strips *s* is supplied from a roll which may freely rotate between the two metal sheets forming the receptacle and connected with each other by means of the cross-bars 11. A curved guide 13, secured at one end 12 to the arm 3, Fig. 1, and engaging with its free end, Figs. 1 and 3, on the cutter-slide, forms a guide for the strip, guiding the latter to the front end of the upper stamp 3 and to the cutting device.

In order to render the description more intelligible, especially as regards Figs. 2, 3, and 5, it may be observed here that the strips employed are made according to the British Patent No. 3,105 of 1898.

At the front end of the stamp 1 is a vertical groove 14, Figs. 3 and 7, in which the knife-slide guide 15, Figs. 2 to 4, can reciprocate. A spring 16 presses it against the front end of the stamp and at the same time downward, the extent of upward movements of the cutter being limited by a pin 17, moving in a corresponding slot in the slide. By this arrangement of the knife slide a clean cut is always secured, the spring 16 pressing the rear side of the slide constantly against the wall in which groove 14 is made, thereby neutralizing whatever wear and tear may

have taken place in the course of time. The slide 15 carries, by means of side plates 18^a, Figs. 2 to 4, a saddle 18, grooved in the same manner as the upper stamp and so arranged as to fit on the front end of the anvil 2. This saddle is provided with a recess 19 in the direction of the stamp under surface for the purpose of allowing room for the strip-section *s'* (by the side of Fig. 4) to pass. The back of the strip between the small teeth is supported by a narrow tongue-shaped plate 20, Figs. 2 and 4, which is secured to the cutter-slide by means of a projection 21 and the sharp rear edge of which serves as an under knife, or, at any rate, as a support during the cutting of the strip. The cutting is effected by means of the upper cutter 22, let into the back wall of the groove 14, Figs. 3 and 7.

According to Fig. 7 the upper knife is provided with a curved edge, the apex of which is somewhat in advance of the groove in the upper stamp. For this purpose a small recess 23, Fig. 1, is provided in the front end of the anvil, in which this projecting portion of the knife enters. This peculiar shape of the knife is necessitated by the fact that the cutting of the strip takes place on the cardboard or material of the work operated upon, the latter forming a somewhat rounded surface and not a sharp edge.

The cutting is effected in the following manner: As the upper stamp swings downward the knife-slide 15, with its saddle, comes in contact with the anvil or work, whereupon the stamp still continues its forward movement until it itself touches the anvil or presses against the work. During this relative movement the upper knife 22 passes by the under knife 20, which is stationary, thus cutting the strip. Of course in the latter case the pressing of the teeth into the work takes place during this descending movement of the upper stamp. In the direction of the feed-line and beyond the cutting device—*i. e.*, behind the latter—the grippers drawing the strip forward come into operation. These grippers consist of two small blocks 24, Figs. 2, 3, 5, 6, 8, sliding on the sides of the upper stamp and shaped according to the profile of the latter, Fig. 8, the grippers engaging in the notches of the strip *s*, with their small teeth 26 arranged on the inner side of projections 25 on the blocks. These projections 25 are cut obliquely, corresponding to the roof-shaped surface of the anvil, Fig. 8. The projections 25 press upon the work *w* when the upper stamp is at its lowest position, the blocks being at the same time pressed slightly outward by the converging inclined surfaces of the stamp and upward relatively to the stamp itself, as shown in Fig. 8. This slight relative displacement between stamp and blocks is sufficient to relieve the hold of the teeth 26 on the strip. The small projecting teeth (projecting only about two millimeters) 26 can only penetrate into the notches when the upper stamp is away from the anvil or

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work and the blocks occupy their relatively lowest and closed position. In order to render this relative displacement of the blocks possible, bars or rods 28, attached to the blocks at 27, are so arranged that they act as springs pressing inwardly—i. e., toward the sides of the upper stamp.

Compared with the grippers described in the above-mentioned patent the construction of the grippers in the present case, in which slide-blocks and grippers are made in one piece, the inclined surfaces of the upper stamp converging downward, effecting the lateral and upward movement of the grippers, and in which rods 28 act as springs, offers important advantages. These advantages consist not merely in the fact that by avoiding special bolts and special springs work is economized, but greater precision in the work and greater durability of the machine results by avoiding the otherwise unavoidable dead movement in the special bearings of the grippers. The spring-rods 28 pass on either side of the upper stamp and arm 3 and are connected together at 28^a, Fig. 1, which, on the one hand, is articulated at 29 to a guide-rod 30 and, on the other, with a rod 31. The guide 30 is pivoted (not necessarily, but preferably for constructional reasons) at 32 to the lever 3, prolonged beyond its pivot 4, while the rod 31 is connected with a crank-stud 34 on a crank-disk 33, Figs. 1 and 9. This is effected by the rod 31 being connected to a block or eye 35, rotatorily mounted on the stud, while the rod 31 can be fixed or clamped in the correct position. The plate 36, carrying the stud, is screw-threaded, so as to be adjustable on a spindle 37, and is provided with an inlet or pointer 38, by means of which and of a scale on the slide-track, Fig. 1, an exact adjustment can be facilitated. By these means the length of travel of the mechanism actuating the grippers is regulated. For the purpose of changing the length of travel, which is effected with the stamp raised and the grippers occupying their most forward position, the set screw or nut 39, Fig. 1, is loosened and the plate moved in one or the other direction by turning the spindle 37, and then set-screw is screwed up again.

When the shaft 8 turns in the direction indicated by the arrow, the pivot-point 29 moves backward during the first half of the revolution, (from the position represented in Fig. 1,) and the blocks 24, with the grippers, slide backward on the sides of the stamp. The grippers entering between the notches of the strip draw it forward under the stamp to an extent equal to the distance of the travel of the grippers. This movement terminates the moment the cutting is effected, such coincidence for the various actions being obtained by means of the corresponding position of the spindle 37 to the shaft 8 or to the concentric. During the second half of the revolution the gripper-blocks move forward, first gliding over the work and then rising together with

the stamp in order to again seize the end of the strip and draw it forward. Any retreat of the strip is prevented by locking grippers or catches 40, Figs. 2 and 3, arranged on the slide 15 in front of the cutter, the grippers 25 seizing the strip between the point where the strip is severed and the point where the locking-grippers hold it.

The second modification (represented in side view in Fig. 10) is arranged to be driven by a treadle, or it might be hand-driven by slight alteration in construction, and differs from the one described above in the arrangement of the mechanism for the movement of the stamp and of the mechanism for the movement of the grippers. The arm 3, carrying the upper stamp 1 and pivoted on a stud, is actuated by means of a jointed lever device, consisting of the members 41 and 42, the former being pivoted to a stud fixed in the machine-frame, the latter being pivoted at 45 to the lower part of 41 and to the arm 3 at 44. A stud 46 at the other corner of the triangular member 41 is connected with a treadle-rod 47, connecting a treadle 49, pivoted at 48, to the frame. It will be evident that on moving the treadle 49 downward and against the spring 50 the lever device 41 42 will approach its extended position, owing to which the upper stamp on the arm 3 will be pressed downward. A toothed sector 52, pivoted at 51, is connected by an arm 53 and lever 54 with the rod 47 in such a manner that it swings upwardly, as indicated by the arrow, whenever the rod moves downward, thus rotating a short crank-shaft 56 in the direction indicated by the small arrow, the sector gearing with a small toothed wheel 55 on said shaft. In this case also the crank-stud 57 is adjustably arranged by means of a nut-and-spindle device 58 in a similar manner to that already described. The crank-stud engages in a part 59, with which is connected the part 28^a of the operating-rods 28 in the same manner and for the same purpose as in the first-described modification. The gearing between the treadle-rod 47 and crank-shaft and the position of the crank-stud in the second modification must be fixed in a like manner, so that the termination of the feeding movement coincides with the operation of the cutter.

There is no need of further descriptive detail, since in other respects the two machines are similarly arranged.

The devices for guiding the strip as it is fed to the machine may of course be substituted by devices of any other construction answering the same purpose.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for the purpose specified the combination of the following instrumentalities, to wit, an anvil and stamp moving toward and from each other, strip-guides, a strip-severing mechanism and a strip-feeding mechanism embodying grippers cooperating with the strip, a drive-shaft, a crank projec-

tion moved by said drive-shaft and adjustable to vary its throw and an adjustable connection between said crank projection and grippers whereby by adjusting the crank projection and the connection between said crank projection and grippers the feed of the strip may be varied with relation to a fixed point.

2. In a machine such as described, the combination with the reciprocating stamp, the grippers sliding on the stamp, the drive-shaft, the connection between the drive-shaft and stamp, the rod connected at one end to the grippers, a second rod connected to the opposite end of the first rod and to the drive-shaft, and means for adjusting the connection between the rod and drive-shaft, whereby the throw of said rod may be varied and the feed of the grippers correspondingly varied.

3. In a machine such as described the combination with the reciprocating stamp, the drive-shaft, the connection between the drive-shaft and stamp, the grippers sliding on said stamp, the rods connected at one end to the grippers, a rod as 31 connected to the opposite ends of said rods, the crank-disk on the drive-shaft, the stud on the crank-disk to which the rod 31 is connected and means for adjusting said stud radially on the disk, as and for the purpose set forth.

4. In a machine such as described, the combination with the anvil, the stamp having guideways or channels in each side, the blocks sliding in said channels, the projections on

said blocks, the teeth arranged on the inner side of said projections, the rods or bars to which the blocks are connected, and acting as springs to press the blocks inwardly to grip the strip, and means for reciprocating the blocks; substantially as described.

5. In a machine such as described, the combination with the anvil, and reciprocating stamp, the drive-shaft, connection between the drive-shaft and stamp, the disk on said shaft, the screw-spindle mounted on said disk, the stud 34 adjustable on said spindle, the block or eye mounted on the stud 34, the rod 31 working in the eye or block, the grippers sliding on the stamp, the rods connected at one end to the stamp and at the other pivotally connected to the rod 31, whereby by adjusting the position of the stud 34 on its spindle the length of travel of the grippers may be varied; substantially as described.

6. In a machine such as described, the combination with the stamp, the slide carrying the knife adapted to reciprocate in the face of the stamp and the spring for pressing the slide against the front of the stamp to take up wear; as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD PARTZSCH.

Witnesses:

OTTO WOLFF,

C. J. AUG. DUMMER.