(No Model.) 5 Sheets—Sheet 1.

H. K. JONES.

MECHANISM FOR FEEDING SCREW BLANKS.

No. 504,435. Patented Sept. 5, 1893.

Fig. 1.

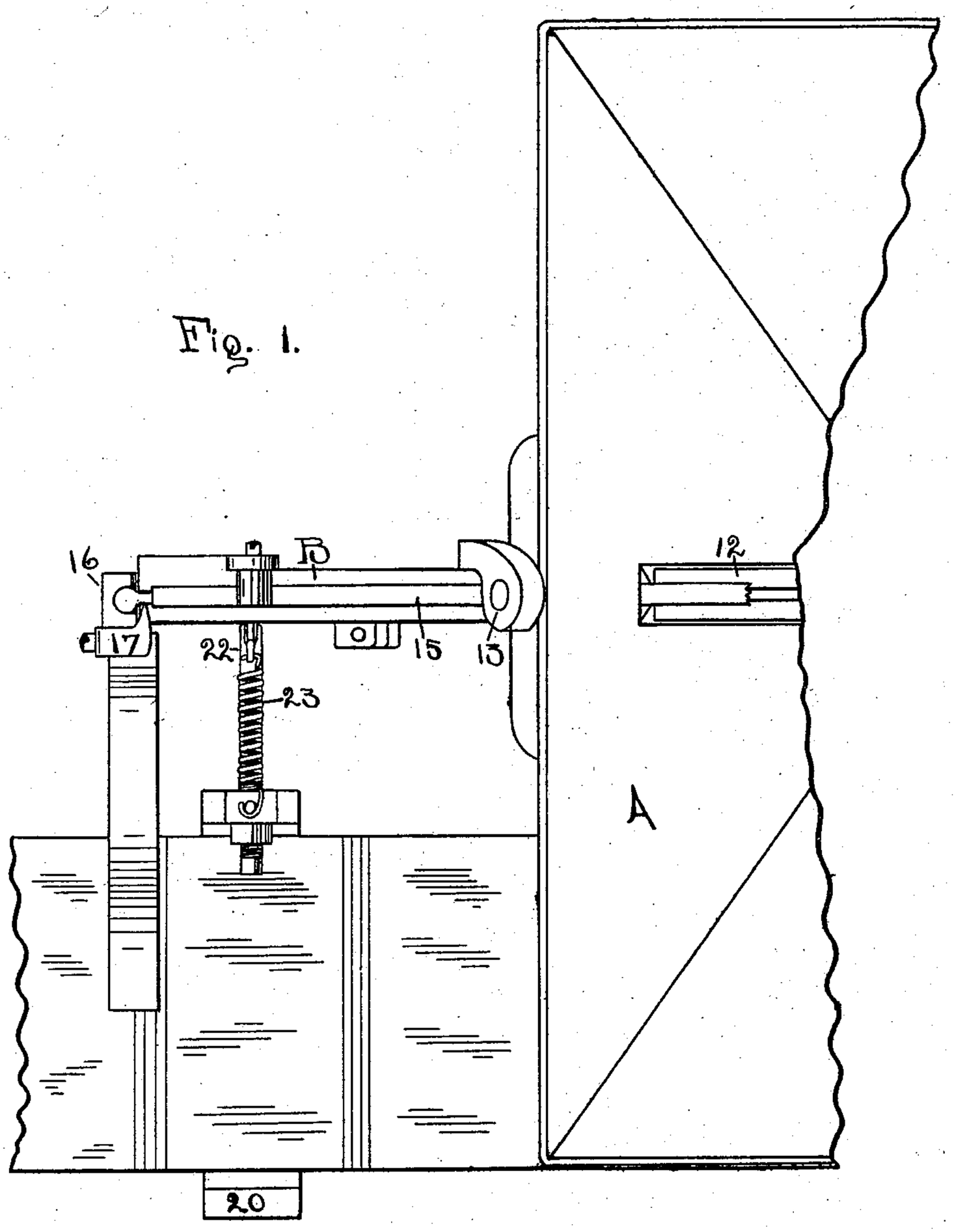

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Fig. 2.

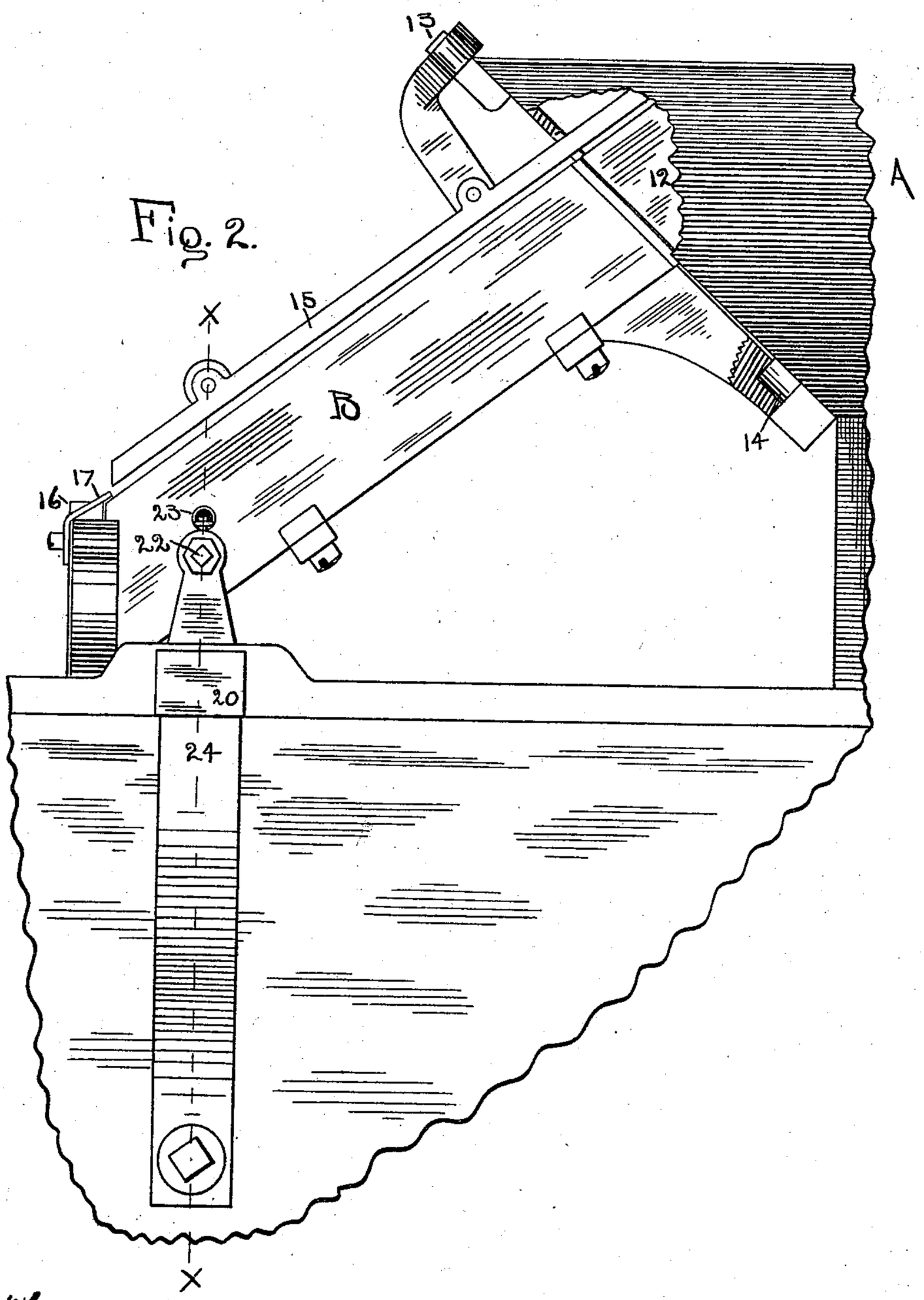

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Fig. 3.

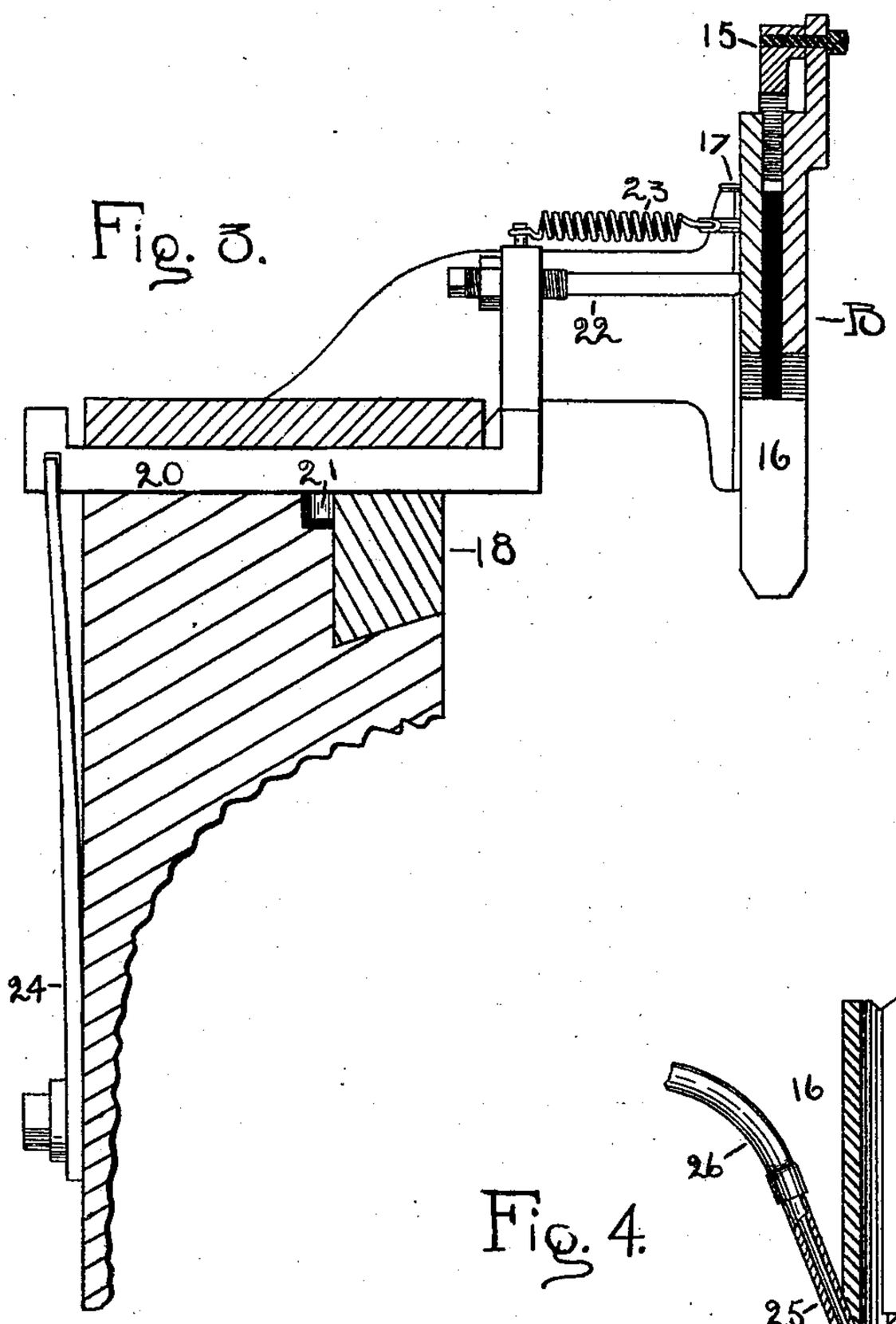

Fig. 4.

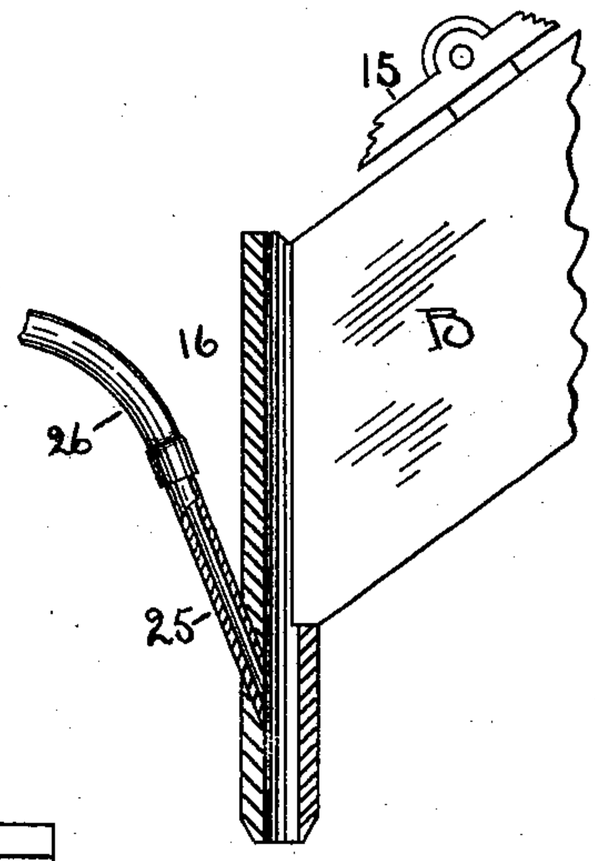

Fig. 4½

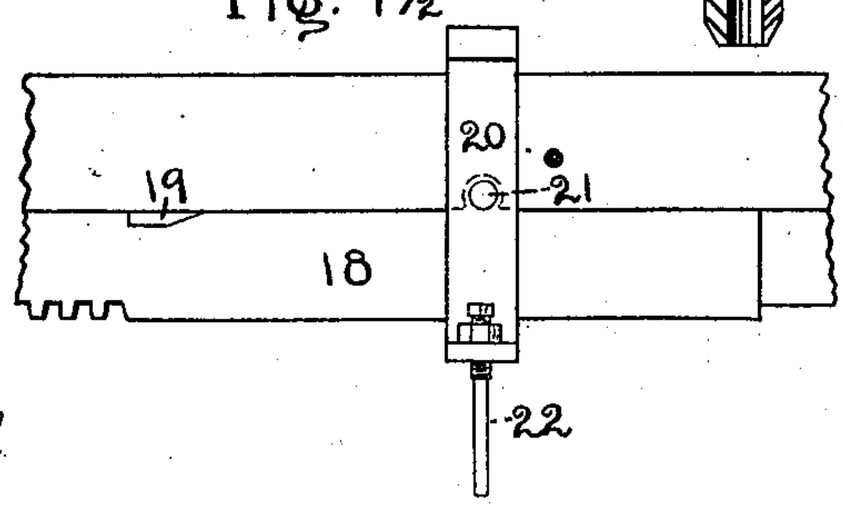

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Fig. 5.

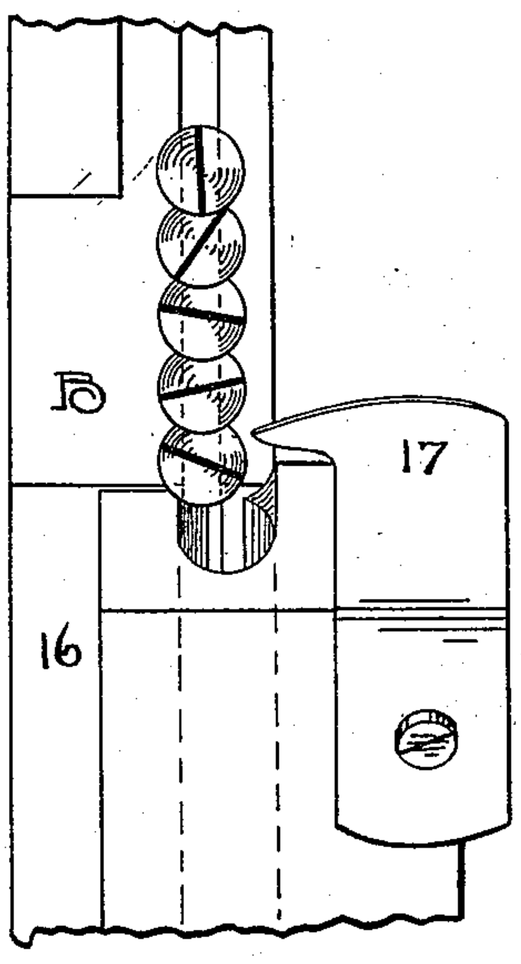

Fig. 6.

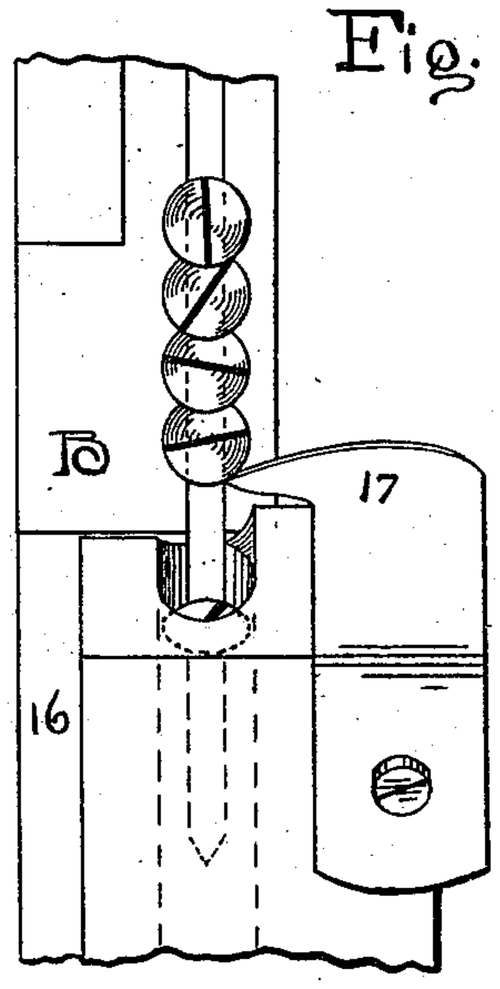

Fig. 7.

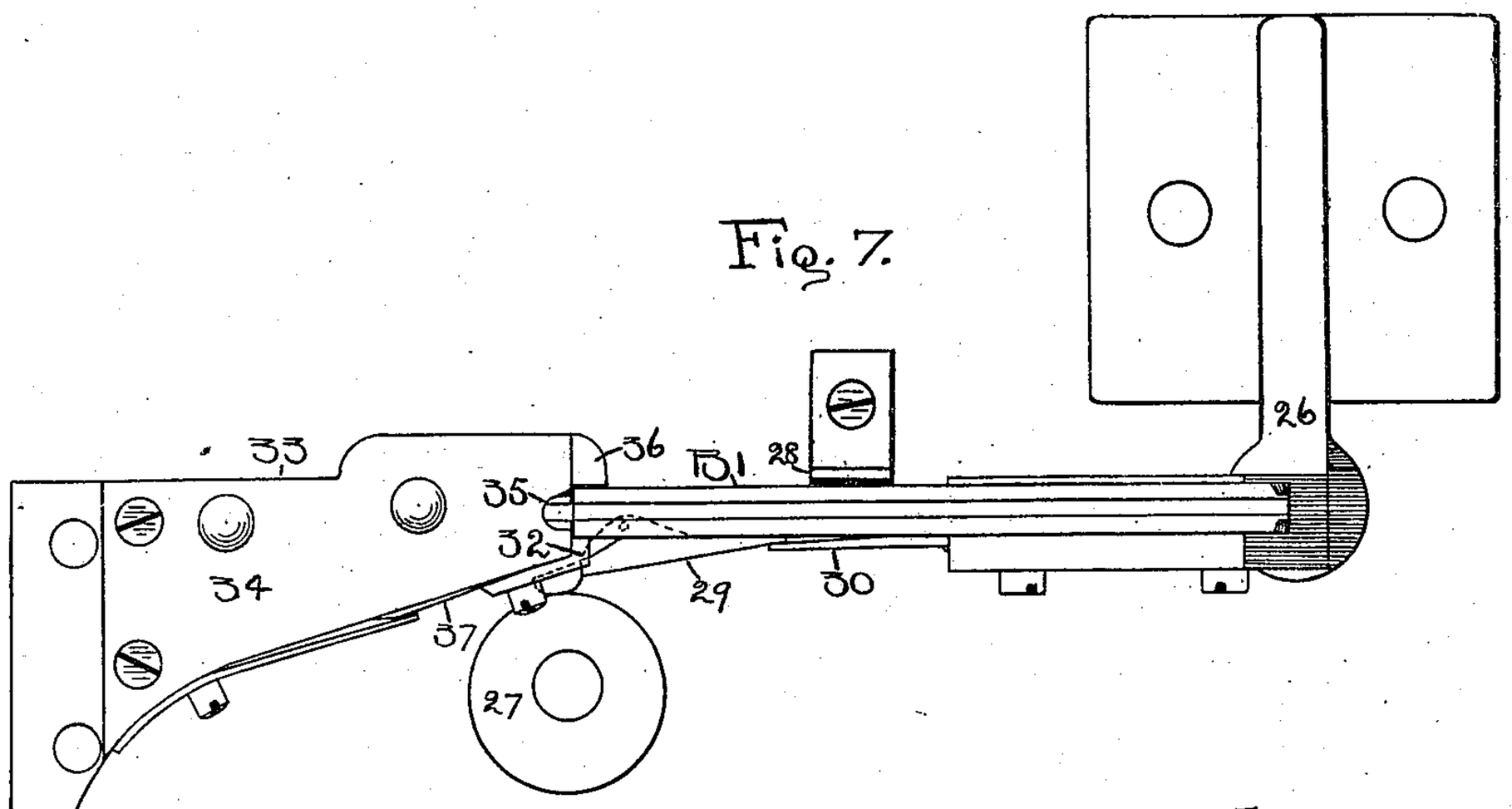

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Fig. 8.

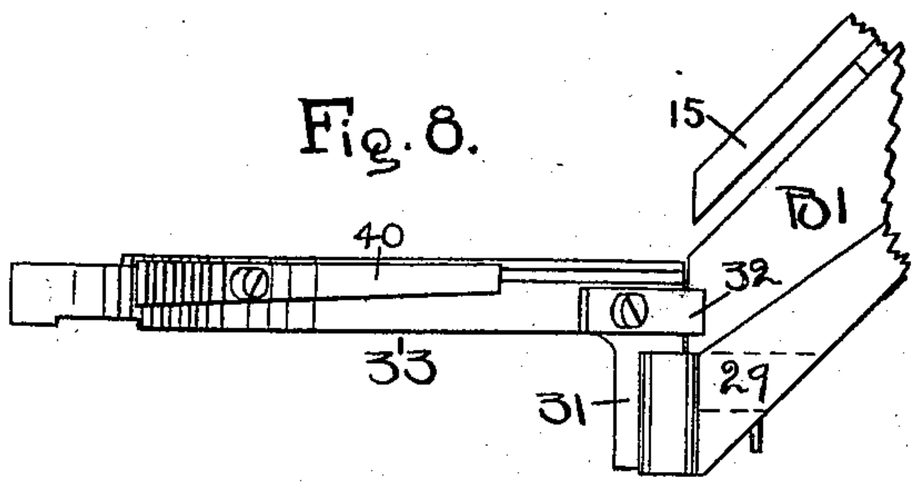


Fig. 9.

Fig. 10.

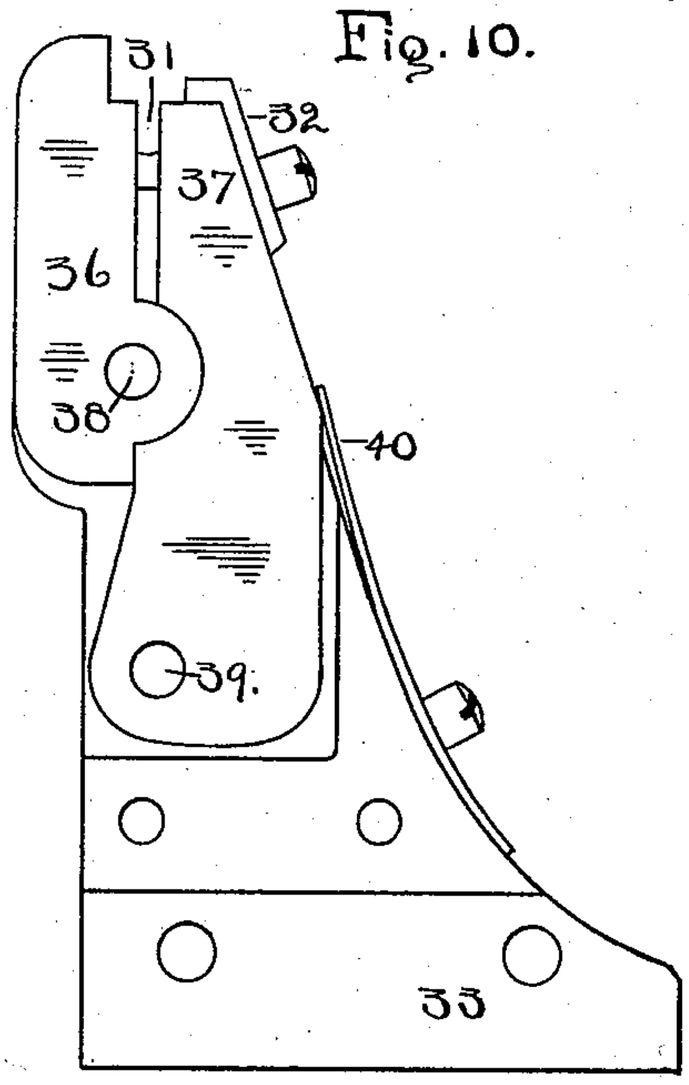
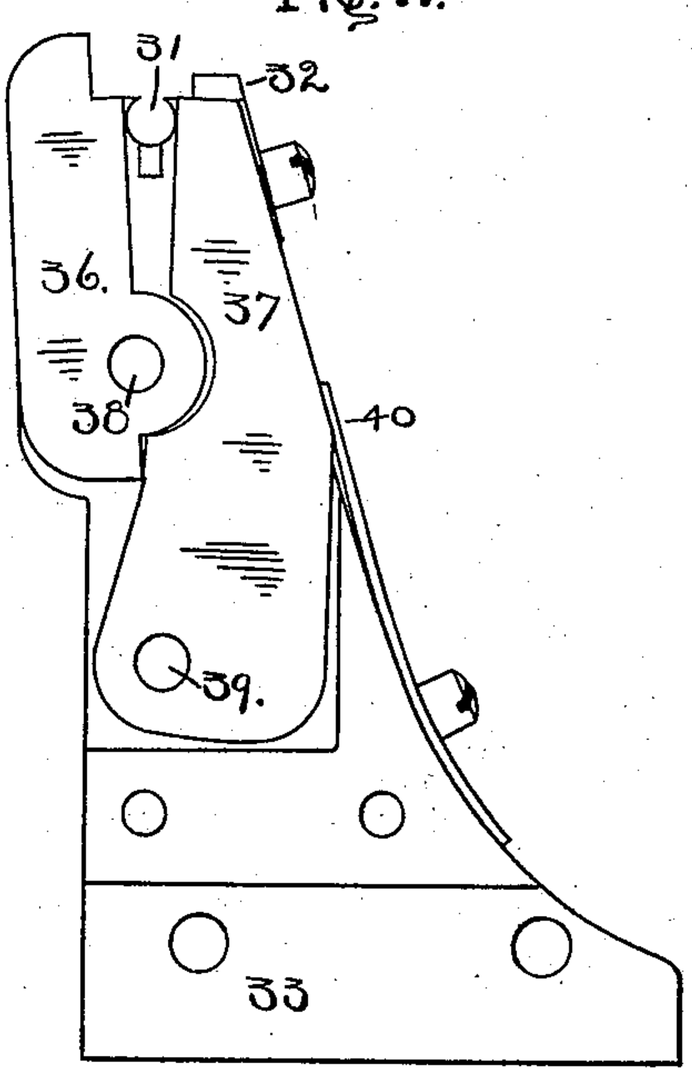


Fig. 11.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR FEEDING SCREW-BLANKS.

SPECIFICATION forming part of Letters Patent No. 504,435, dated September 5, 1893.

Application filed October 22, 1892. Serial No. 449,638. (No model.)

To all whom it may concern:

Be it known that I, HORACE K. JONES, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and Improved Mechanism for Feeding Screw-Blanks, of which the following is a specification.

My invention relates to improvements in mechanism for feeding screw blanks or analogous headed blanks; and the objects of my improvement are simplicity of construction and efficiency in operation.

In the accompanying drawings, Figure 1 is a plan view of my mechanism, together with so much of a screw threading machine as is necessary to show its connection therewith. Fig. 2 is a side elevation of the same with a portion of the hopper broken away. Fig. 3 is a vertical section thereof on the line *x x* of Fig. 2, some of the parts being shown in elevation. Fig. 4 is a vertical section of the feeding tube and a portion of the laterally moving chute. Fig. 4½ is a plan view on a reduced scale illustrating the manner of moving the slide for operating the chute. Fig. 5 is an enlarged detached view of one end of the laterally moving chute and the upper end of the feeding tube as viewed at right angles to the upper face of said chute, the guard being removed. Fig. 6 is a like view of the same in a different position. Fig. 7 is a plan view of my mechanism for feeding headed blanks showing a somewhat modified construction. Fig. 8 is a side elevation of portions thereof. Fig. 9 is a like view showing additional parts. Fig. 10 is a plan view on an enlarged scale of the feeding tube and holding fingers, and Fig. 11 is a like view of the same with the fingers open.

A designates a hopper having secured thereto a stationary chute 12 of any ordinary construction and which may be supplied with screw blanks by means of ordinary lifting mechanism or by hand.

B designates a chute which is hinged or pivoted to the hopper A as at 13 and 14, so that its lower end may be moved laterally; hence I term it the laterally moving chute. The upper end of said chute abuts against and coincides with the stationary chute 12 in the hopper. This laterally moving chute is also provided with the usual upper guard 15 which may extend up over the stationary chute and serve as a guard for both. At the lower end of this laterally moving chute is a vertical stationary feeding tube 16, the same being slotted for a portion of its height upon that side which faces the end of the laterally moving chute. The upper end of this feeding tube is provided with a stop and discharge finger 17.

18 designates a reciprocating rack moving longitudinally within the frame of the machine and having a cam recess 19 at one side. The cap for covering this slide is removed in Fig. 4½.

20 designates a laterally moving slide having on its under side the pin 21, (see Fig. 3,) and at one end an adjustable extension 22. I prefer to make the extension 22 of a separate piece for the purpose of adjustment, but it is evident that if non-adjustable it might be made rigid with the slide 20. The end of this extension 22 is designed to bear against one side of the laterally moving chute B near its lower end as shown. A spiral spring 23 is connected by one end to the laterally moving chute B and by its other end to the slide 20. The slide 20 is notched or recessed on its under side at its outer end for the engagement of the upper end of the spring 24 which presses upon said slide with a constant tendency to move it toward the laterally moving chute. When the cam recess 19 of the reciprocating rack 18 comes in front of the pin 21 of the slide 20, said slide is permitted to move inwardly under the influence of its spring 24 and carries with it the lower end of the laterally moving chute from a position where it registers with the slot in the feeding tube as shown in Fig. 6 to a position where it does not register with said slot as shown in Fig. 5. Upon the reverse movement of the rack 18 the cam slot acts to move the slide 20 back again to its former position, drawing with it the lower end of the laterally moving chute. In case, however, of any obstruction, the spring 23 will yield and permit the slide to be moved without the chute; but when the chute is free,

the spring 23 holds it in contact with the extension of the slide and the parts are moved together.

Other mechanism may be employed for operating the chute laterally, an example of which will be hereinafter described. In Figs. 5, 6 and 7 the guard 15 is removed and in Figs. 5 and 6 several screw blanks are shown in the lower end of the laterally moving chute. When this end of the chute is moved so as not to register with the slot in the feeding tube the screw blanks may all fall down, and the lowest blank will be stopped from entering the feeding tube by striking against one corner thereof. Upon the chute being moved to the right, the point of the stop finger 17 comes in front of the lowermost blank but one therein, and stops it and the blanks above it from coming down the chute, but leaving the lowermost blank free to fall down through the feeding tube as soon as the end of the laterally moving chute registers with the slot in said tube as shown in Fig. 6. When the laterally moving chute is again moved to the left, the screw blanks are moved from in front of the stop finger so that they may fall down past the stop finger when they are again stopped by coming in contact with the stationary feeding tube, ready to deliver thereto the lowermost blank as soon as the parts are again moved to the right as shown in Fig. 6. Thus the stop finger in the combination constitutes means for discharging the lowermost blank while all the other blanks within the chute are stopped.

In Fig. 4 I have shown the feeding tube 16 as provided with a pipe 25 which points obliquely downward and enters the bore of the feeding tube near its lower end. This pipe may be connected by means of a flexible tube 26, or other connection, with any fluid jet, as for instance air, which when the machine is in operation may be continuously forced down through the lower end of the feeding tube. As the blank is falling through the tube it will be caught by the air blast and its motion accelerated, and said blast will also assist in holding the blank thus fed downward upon the proper stop or gage that receives it and thereby insures a better delivery of the blanks to the dies, better holds them to their work and facilitates their discharge at the end of the operation.

In Figs. 7 to 11 I have shown different mechanism for operating the laterally moving chute and a somewhat different manner of stopping and releasing the lowermost blank. These devices may be used in connection with any suitable machine, preferably in connection with a hopper having a stationary chute. These devices are shown for the purpose of illustrating in another form such features as are common to them and the mechanism illustrated in Figs. 1 to 6 and hereinbefore described. I have also made them the subject of another application, Serial No. 449,639, filed October 22, 1892, and therefore do not herein claim them further than the claims for the other mechanism may be applicable thereto.

B′ designates the laterally moving chute which is pivoted on a vertical axis in the bracket 26. It is also provided with the ordinary guard 15, not shown in Fig. 7. This chute is moved in one direction by a cam or eccentric 27, and in the reverse direction by means of a spring 28. In order to guard against accident, I employ a yielding lever 29 which is pivoted or hinged to the lower end of the chute and held in position by a spring 30. The cam or eccentric 27 presses upon the lever 29 and ordinarily moves the chute with it, but in case of obstruction the spring 30 will permit the lever to yield and thereby allow the cam to operate without any damage to the machine. This laterally moving chute as in the construction first described, abuts against the slotted side of a stationary feeding tube 31 through which the screw blanks are discharged. I have illustrated these parts in their proper position, but I consider it unnecessary to show the frame of the machine upon which they are supported. At one side of the stationary feeding tube there is a stop 32 to limit the movement of the swinging chute in the direction that it is forced by the spring 28. The bracket 33 by which the feeding tube 31 is supported is provided with a cap 34, Fig. 7, having a notch or recess 35 for receiving the head of the blank and centering it over the upper end of the feeding tube. This cap is removed from Figs. 10 and 11 in order to show the stop fingers 36 and 37 that lie underneath said cap. The finger 36 projects so as to extend along by the side of the laterally moving chute. The finger 36 is pivoted at 38, and the finger 37 is pivoted at 39, Figs. 10 and 11. The spring 40 bearing upon the finger 37 has a tendency to hold both fingers in their closed position as shown in Fig. 10. When the laterally moving chute is stopped by the stop 32 as shown in Fig. 7, it registers with the slot in the feeding tube and the fingers 36 and 37 are closed sufficiently to catch the head of the screw blank upon them while they are open sufficiently to permit the shank or body of the screw to extend downwardly between them. They thus catch and hold the lowermost blank and suspend it centrally over the feeding tube. As the cam or eccentric 27 moves the chute against the projecting end of the finger 36 that finger is moved with it to one side, while the heel of said finger at its opposite end presses upon the edge of the other finger 37, so that both fingers are open together as shown in Fig. 11. By the time that the chute is moved far enough to force open the fingers and let the blank fall from between them down through the feeding tube, the end of the chute is carried to one side of the slot in the feeding tube so that the feeding tube, as in the construction before described, serves as a stop to prevent the blanks from falling down the chute. Upon the re-

turn movement of the chute the spring 40 throws the fingers together again so that when the laterally moving chute and feeding tube again register and let the blanks fall down again the lowermost blank is caught by the fingers 36 and 37 as before described.

I claim as my invention—

1. The combination of a feeding tube for the endwise passage of blanks, said tube having a side slot for the admission of said blanks thereto, the laterally moving chute mounted with the opening at its discharge end arranged to face the slotted side of said tube and to be brought into and out of position for registering therewith and mechanism for operating said chute, substantially as described and for the purpose specified.

2. The combination of the laterally moving chute; a slotted feeding tube set relatively thereto for having its slot register with and form a continuation of said chute when it is in one position while said tube acts to obstruct the passage of blanks when its slot does not register with said chute; means for discharging the lowermost blank into said feeding tube, and operating mechanism, substantially as described and for the purpose specified.

3. The combination of a feeding tube for the endwise passage of blanks, said tube having a side slot for the admission of said blanks thereto, the laterally moving chute mounted with the opening at its discharge end arranged to face the slotted side of said tube and to be brought into and out of position for registering therewith, the stop finger 17 located in the path of the blanks in said chute when it is in position to register with the slot in said feeding tube and mechanism for operating said chute, substantially as described and for the purpose specified.

4. The combination of the laterally moving chute; the reciprocating rack having the cam recess 19; the slide 20 having an extension for engagement with said chute, and a pin 21 for engagement with said cam recess, and the spring 24 for moving said slide when released by said rack, substantially as described and for the purpose specified.

5. The combination of the laterally moving chute, a power device for moving said chute in one direction; a spring for moving said chute in the opposite direction and a yielding device between said power device and chute, whereby said chute may be ordinarily moved a given distance by power but may yield when meeting an obstruction, substantially as described.

6. The combination of the laterally moving chute; the slide 20 for acting against the same; the spring 24 for moving said slide in one direction; the spring 23 for holding said chute and slide together, and the reciprocating rack having the cam slot for holding and releasing said slide and moving it in the opposite direction, substantially as described and for the purpose specified.

7. The combination of mechanism for feeding headed blanks, a feeding tube for the endwise passage of the blanks received from said feeding mechanism, a pipe or pipe connection extending obliquely to the bore of said feeding tube with its effluent end pointed toward the discharge end of said tube for conducting a fluid jet in the same direction through said tube as the blanks move in passing therethrough, substantially as described and for the purpose specified.

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Witnesses:
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