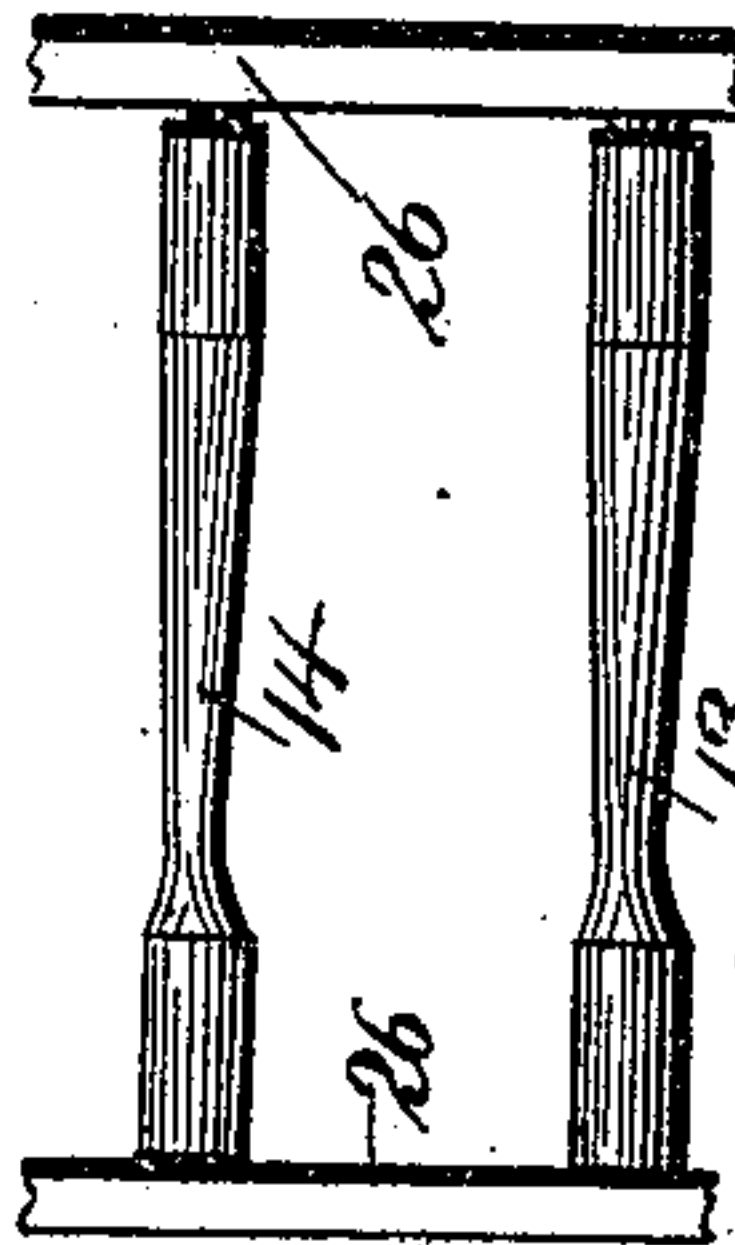
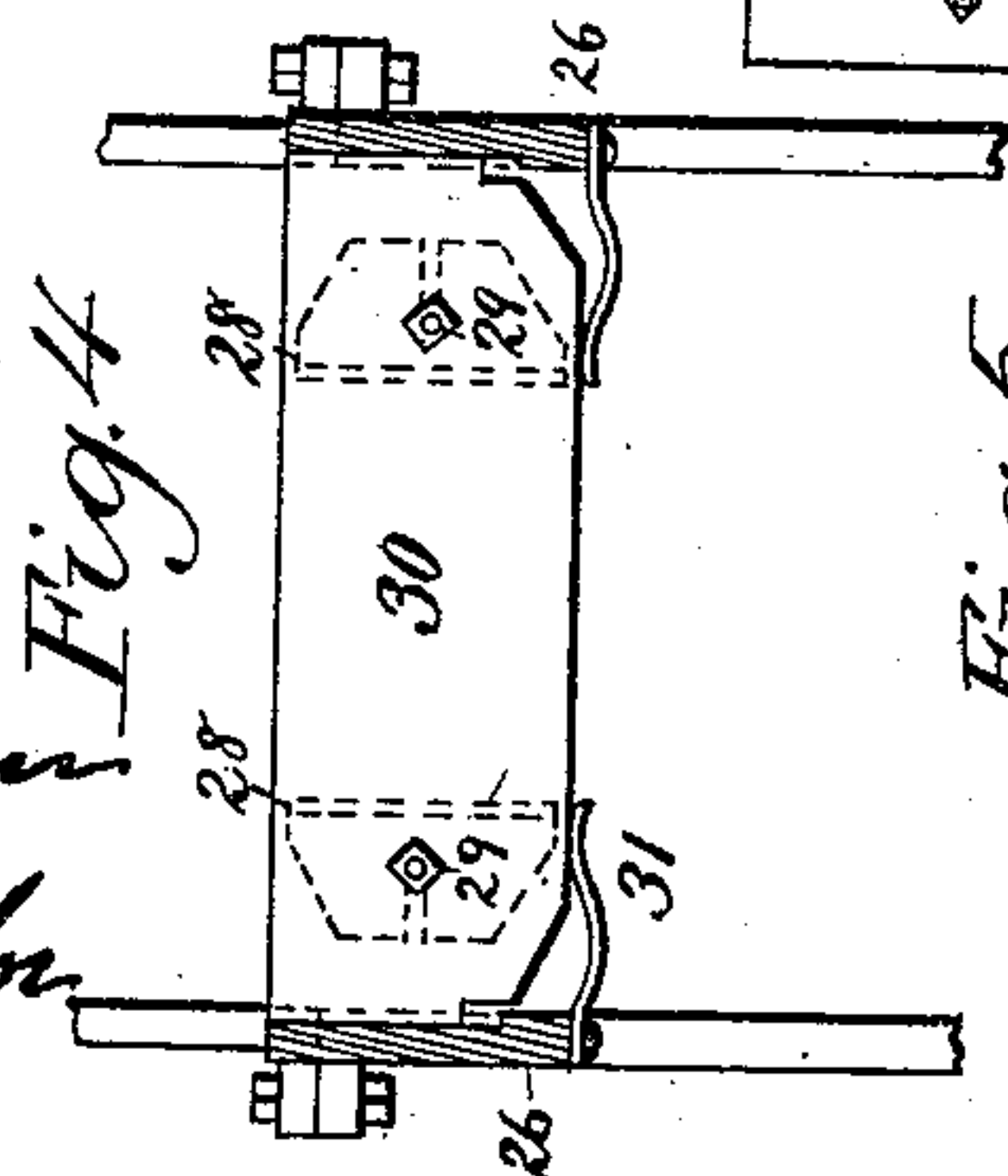
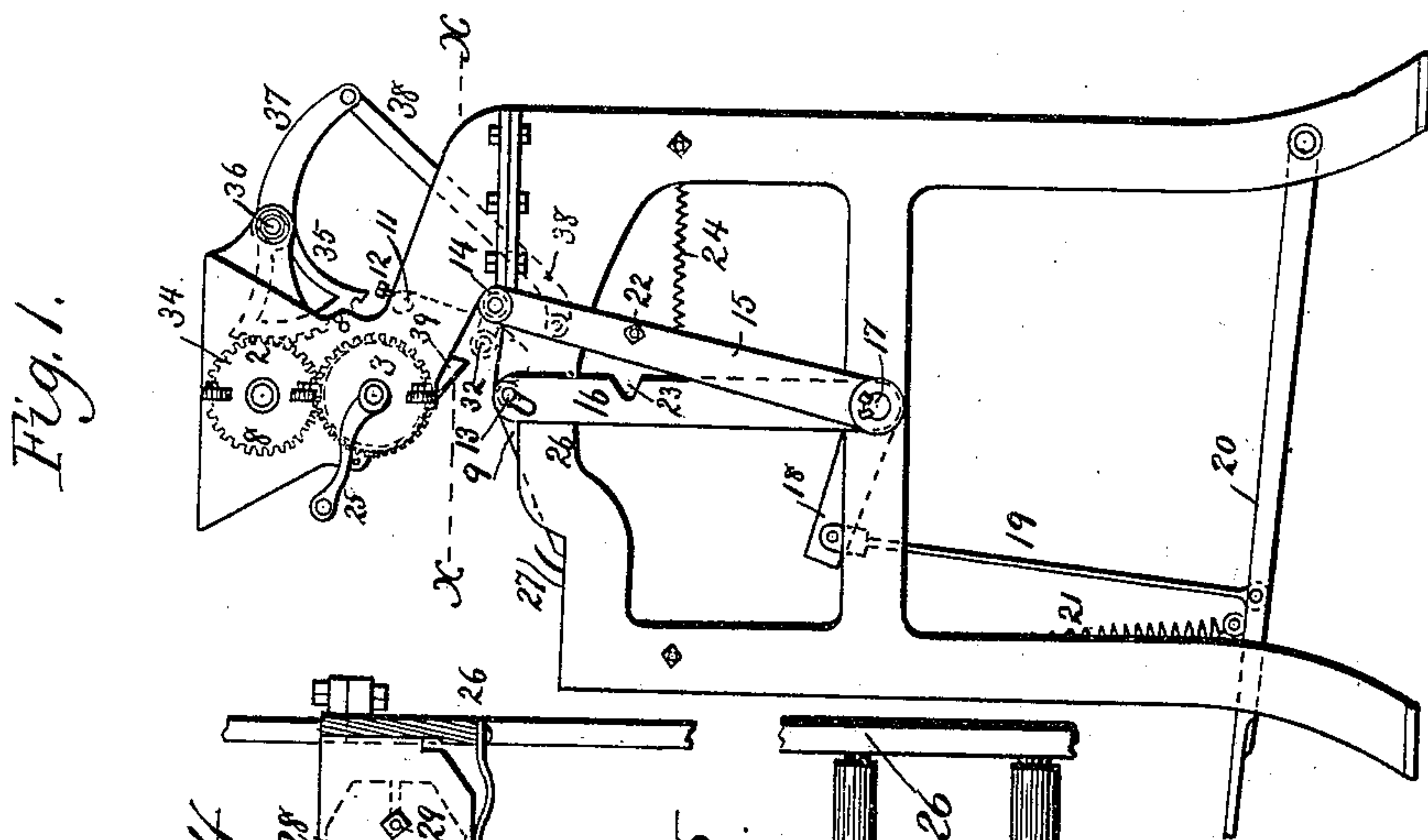
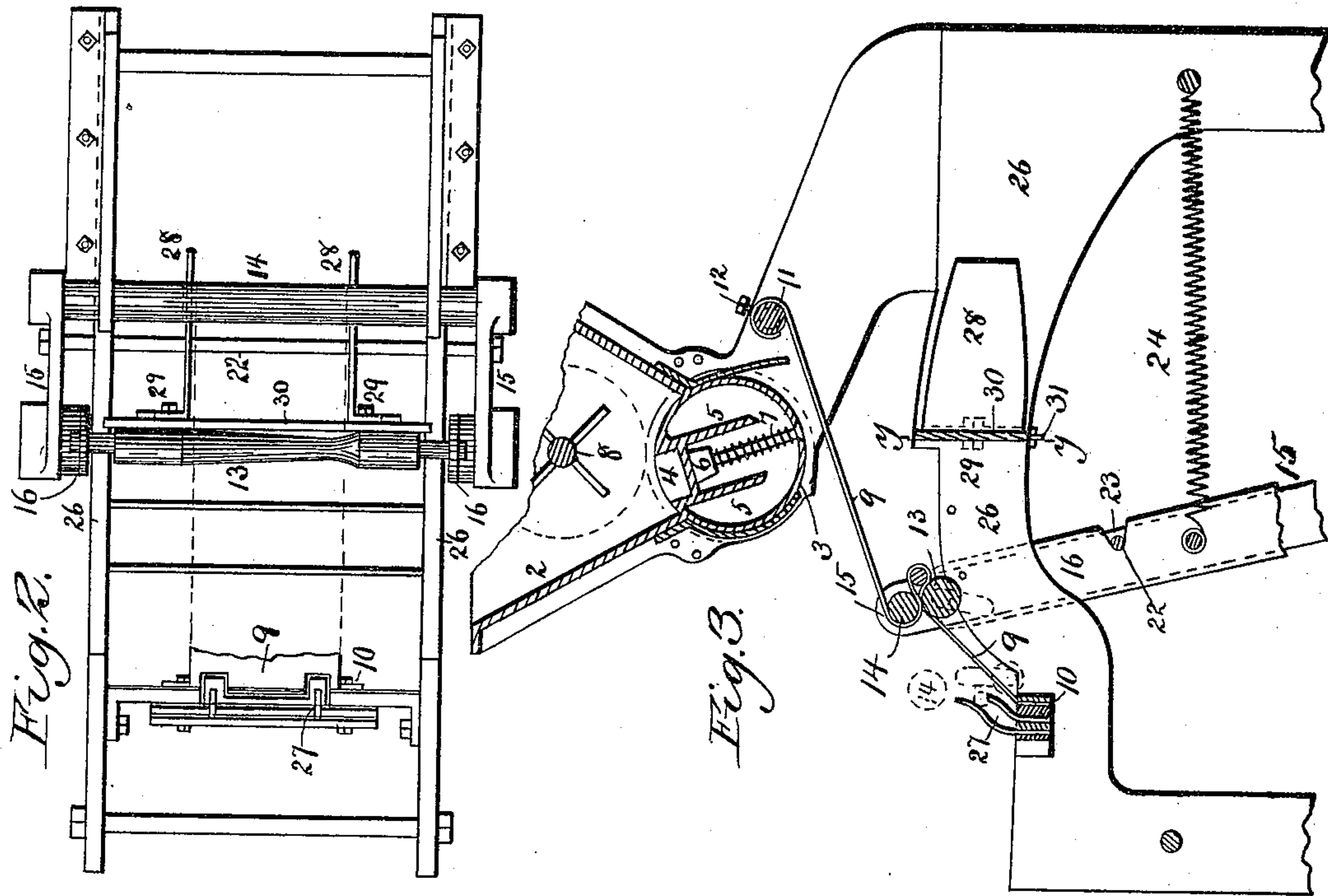


(No Model.)

F. & E. H. THOMPSON  
CIGAR BUNCHING MACHINE.

No. 438,903.

Patented Oct. 21, 1890.



Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANCIS THOMPSON AND EDWARD H. THOMPSON, OF ALLEGHENY, PENNSYLVANIA.

## CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 438,903, dated October 21, 1890.

Application filed July 19, 1888. Serial No. 280,382. (No model.)

*To all whom it may concern:*

Be it known that we, FRANCIS THOMPSON and EDWARD H. THOMPSON, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cigar-Bunching Machines; and we do hereby declare the following to be a full, clear, and exact description thereof.

10 In the use of cigar-bunching machines of the sort which has been commonly used heretofore, especially with those in which the bunch is formed by the conjoint action of a traveling roller, a flat forming-surface, and a  
15 forming belt or apron, it has always been difficult to secure uniformity in the length of the bunches, because the tobacco filler has a tendency to spread out lengthwise of the bunch to the full width of the wrapper, and  
20 the length of the bunch will therefore depend not only on the amount and position of the filler, but on the width of the wrapper, and as the different wrappers vary in size more or less among themselves the bunches are  
25 necessarily irregular.

Our invention is designed to obviate this difficulty, and also to provide means for forming bunches rapidly and cheaply and to make the bunches of better quality as regards  
30 tightness or density.

Our invention is illustrated in the accompanying drawings, forming part of this specification, in which—

35 Figure 1 is a side elevation of our improved cigar-machine. Fig. 2 is an enlarged sectional plan view thereof, the section plan being on the line *xx* of Fig. 1. Fig. 3 is an enlarged vertical longitudinal section of the machine shown in Fig. 1. Fig. 4 is a vertical cross-section on the line *yy* of Fig. 3. Fig. 5 is a plan  
40 view of a modified sort of forming-rollers.

Like symbols of reference indicate like parts in each.

45 In the drawings, 2 is the feed-hopper of the machine, which may be constructed in any suitable manner, since its construction does not form part of our present invention. In the drawings we show it made in the usual form, having at the base an opening which is  
50 closed by a rotary drum or cylinder 3, having

a measuring feed-pocket 4, formed by two internally-projecting walls or flanges 5, the depth of the pocket and the amount of tobacco received in and discharged from it being preferably regulable by making its bottom  
55 6 radially movable between the walls 5 and adjustable by means of set-screws 7, which are encircled by coiled springs, as shown in United States Letters Patent No. 349,069,  
dated September 14, 1886. Within the hop- 60 per 2 is a shaft 8, having radially-projecting arms, which, when the shaft is rotated, agitate the tobacco filler in the hopper and cause it to be fed regularly into the feed-pocket. This shaft is rotated in any suitable way, 65 preferably by being geared with the axis of the drum 3.

We shall now describe the bunching mechanism of the machine. The machine is provided with a bunching belt or apron 9, which 70 is attached to the bed of the machine at 10, and at the rear part of the machine it is attached to a roller 11. By turning the roller the belt may be wound on it and adjusted to any length desired. When the proper ad- 75 justment is reached, it is made permanent by locking the roller with a set-screw 12. The bunch is formed by the action of two traveling rollers, behind which the bunch is drawn when enveloped by the belt, the loop of which 80 passes back between the rollers. These rollers may be moved in any suitable way; but the most convenient form is that which we have illustrated in the drawings.

13 and 14 are the rollers, which are jour- 85 naled in positions parallel to each other at the ends of levers or arms 15 and 16 at each side of the machine, the arms 16, which carry the roller 13, being loosely pivoted at their lower ends to a cross-shaft 17, and the arms 90 15, which carry the roller 14, being keyed to this shaft. The shaft 17 has a projecting arm 18, which is connected by a rod 19 to a foot-lever 20, and by motion of this foot-lever the shaft may be rotated and the arms 15 moved 95 in the arc of a circle. The shaft 17 may, however, be rotated by other means—for example, by a hand-lever or by connection with a steam-engine. When the foot-lever is used; it is desirable to employ the spring 21, which 100



acts to raise the foot-lever after it has been depressed in forming the bunch. The arms 15 are somewhat longer than the arms 16, and are provided with a cross-bar 22, which, when the arms 15 are moved forward by action of the foot-lever, engage notches 23 in the arms 16 and move the arms 16 in the continued forward motion of the arms 15. The arms 16 are provided with a spring 24, which tends to draw them back.

The operation of the machine when constructed as just described is as follows: In the beginning of the bunching operation the parts are in the positions shown in Fig. 1, the arms 15, carrying the roller 14, being back beyond the position of the arms 16. The belt, which is indicated by dotted lines, is formed by the operator into a loop between the rollers 13 and 14, as shown in Fig. 1, and then the crank 25 of the hopper mechanism is turned so as to rotate the cylinder 3 and to cause the cylinder to discharge a measured quantity of tobacco filler upon the binder-leaf of tobacco, which is first placed in the loop of the belt. The foot-lever 20 is then depressed, and the effect of this is to move the arms 15 forward, thus inclosing the binder and the filler in the loop of the belt until the roller 14 comes into position directly above the roller 13 and the cross-bar 22 engages in the notches 23 of the arms 16. Then the continued forward motion of the arms 15 carries with them the arms 16 and the roller 13, and the two rollers 13 and 14, acting together, as shown in Fig. 3, wrap the binder around the filler and form the bunch, as will be readily understood by reference to the last-named figure. The side frames 26 of the machine are shaped at their upper edges, as shown in Figs. 1 and 3, in curved form, and the journals of the roller 13 rest on these side frames. These journals have their bearings in slots at the ends of the arms 16, and when the arms 15 and 16 come to the end of their travel the eccentric shape of the curve of the frames 26 causes the roller 13 to drop in the slots and to separate from the roller 14, thus releasing the bunch, which is caught between forked spring-arms 27 at the end of the machine and is there held until it is removed by the operator. Then by relieving the pressure of the foot from the lever 20 the springs 21 and 24 draw back the arms 15 and 16 into the position shown in Fig. 1, and the operation is repeated as just described for forming the next bunch.

It will be noticed from the foregoing description that the bunch is formed entirely by the action of the rollers and that there is not, as heretofore, any bed or table in conjunction with which the rollers operate to form the bunch. This is a very material part of our invention, because with the rollers the filler of the bunch has not that same tendency to spread out beyond the limits of the belt as in machines having beds, and the length of the bunch may be accurately determined

by fixing the width of the belt, so that, no matter what the width of the wrapper may be, the filler will not spread appreciably in it beyond the limits of the belt which forms the bunch.

We have shown in the drawings several important additions to our invention, which we have just described. Thus the rollers 13 14, or one of them, are made, preferably, of varying cross-section, as shown in the plan view, Fig. 2, so that the outline of the rollers shall be approximately that of the bunch which is to be formed, and in this way, by properly shaping the rollers, we may make bunches either of the same thickness throughout or we may make them of elliptical form to suit the shape of the cigar which is desired to be made by the manufacturer. In Fig. 2 we show the roller 13 shaped to conform to an elliptical bunch, while the roller 14 is of simple cylindrical form, and in Fig. 5 we show both rollers having their peripheries shaped to conform to an elliptical bunch.

In order to properly confine the filler within the limits of the belt when it is deposited thereon by the discharging mechanism of the hopper, we prefer to employ two guide-plates 28, Figs. 2 and 4, which are adjustably fixed to the frame of the machine by bolts 29, and which are set at the edges of the belt parallel with each other directly beneath the discharge mechanism of the hopper, so that when the filler is discharged from the hopper on the belt the plates 28 shall prevent it spreading out or spilling over beyond the edges. These plates 28 are fastened to a cross-plate 30, which extends from one side of the machine to the other, and in order that it shall not interfere with the formation of the bunch when the bunch is being drawn over it by action of the roller 14 we prefer to set the cross-piece 30 in vertical grooves in the sides of the machine and to support it by springs 31, which bear on its lower edge, so that if there is any pressure on the top edge of the cross-piece 30 in the passage of the bunch this cross-piece shall yield and shall move downwardly out of the path of the bunch against the pressure of the springs 31, which lift it again after the bunch has passed.

If desired, a greater number of rollers than two may be employed to form the bunch, and by the mention in the claims of two rollers we do not intend to exclude the use of more than two. Thus in Fig. 1 we illustrate in dotted lines a third roller 32, which is journaled to arms 33, projecting from the journal-bearings of the roller 14. This roller 32 is over and in front of the roller 14 during the formation of the bunch and serves as a guide to prevent disarrangement of the belt. We also show in Fig. 1 a device by which the hopper measuring and discharging mechanism may be worked simultaneously with and by the same mechanism which forms the bunch. A gear-wheel 34 is fixed to the shaft 8, and a segmental gear-wheel 35 is journaled to the hopper at 36 and



is in gear with the wheel 34. An arm 37 is fixed to and projects from the segmental gear-wheel 35 and is connected by a link 38 to the arm 15. When the arm 15 is moved forward in the act of forming the bunch, it turns the segment 35 through the link 38 and rotates the shaft 8 and drum 3, thus causing the discharge of a measured quantity of filler into a receptacle 39, from which it may afterward be dropped into the pocket of the belt.

The advantages of the machine will be understood and appreciated by those skilled in the art. The machine can be worked by the operator when he is in either a sitting or standing position, and the power may be applied either by hand or foot or by a power-engine. The working of the machine is very easy and rapid, and the bunches formed thereby are uniform in length and the density of the bunch is the same from end to end. The machine may also be used to make cigarettes.

We claim—

1. In a cigar-bunching machine, the combination, with a slack apron, the ends of which are fixed, of two traveling rollers arranged to move in different planes, one above the other, beneath the apron, and between which rollers a fold of the apron is received, substantially as and for the purposes described.

2. In a cigar-bunching machine, the combination, with an apron, of two traveling bunching-rollers arranged beneath the apron, and between which the apron is looped in forming the bunch, and two sets of radial arms in which the rollers are respectively journaled, said arms having a common center, substantially as and for the purposes described.

3. In a cigar-bunching machine, the combination, with an apron, of two traveling bunching-rollers arranged beneath the apron, between which the apron is looped in forming

the bunch, and two sets of radial arms having a common center, one of said sets having a stop and the other a retracting-spring, one of the rollers being mounted in each set of the said arms, the two being of different lengths, substantially as and for the purposes described.

4. In a cigar-bunching machine, the combination, with an apron, of two traveling bunching-rollers arranged beneath the apron, between which the apron is looped in forming the bunch, and two sets of radial arms, in each of which a roller is mounted, one of said sets having slots in which its roller is mounted, substantially as and for the purposes described.

5. In a cigar-bunching machine, the combination, with a bunching-apron, of two traveling bunching-rollers arranged beneath the apron, one of said rollers being loosely journaled in its bearings, and a cam-guide at the end of the travel of the rollers for separating the rollers to discharge the finished bunch, substantially as and for the purposes described.

6. In a cigar-bunching machine, the combination, with a bunching-apron, of two traveling bunching-rollers arranged beneath the apron, said rollers being arranged with the plane which intersects their axes at right angles to the plane of the apron, whereby the bunch shall be caused to follow the rollers during the formation of the bunch, substantially as and for the purposes described.

In testimony whereof we have hereunto set our hands this 11th day of July, A. D. 1888.

FRANCIS THOMPSON.

EDWARD H. THOMPSON.

Witnesses:

W. B. CORWIN,

H. L. GILL.