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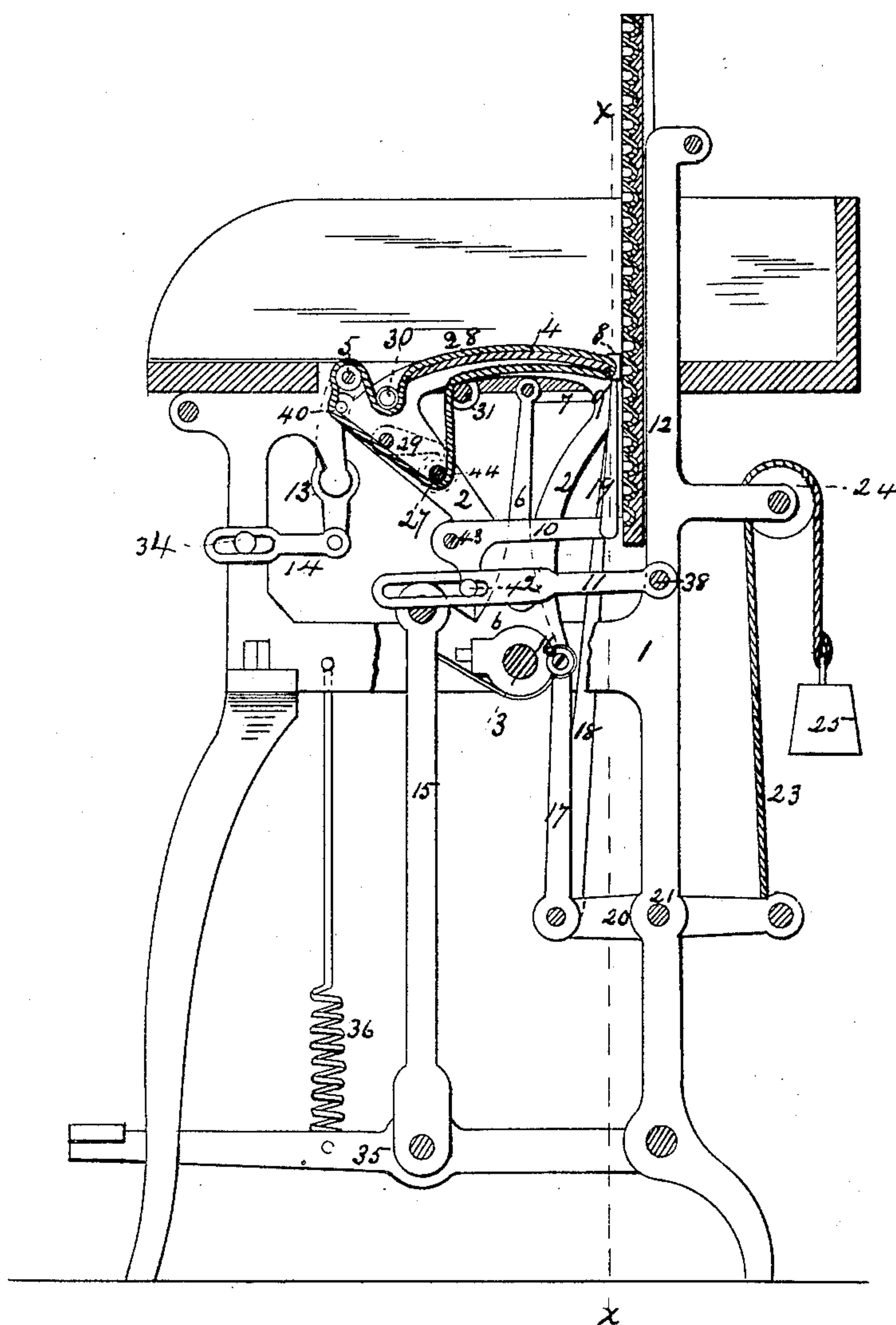
3 Sheets—Sheet 1

W. M. STEINLE.
CIGAR BUNCHING MACHINE.

No. 354,444.

Patented Dec. 14, 1886.

Fig. 1.



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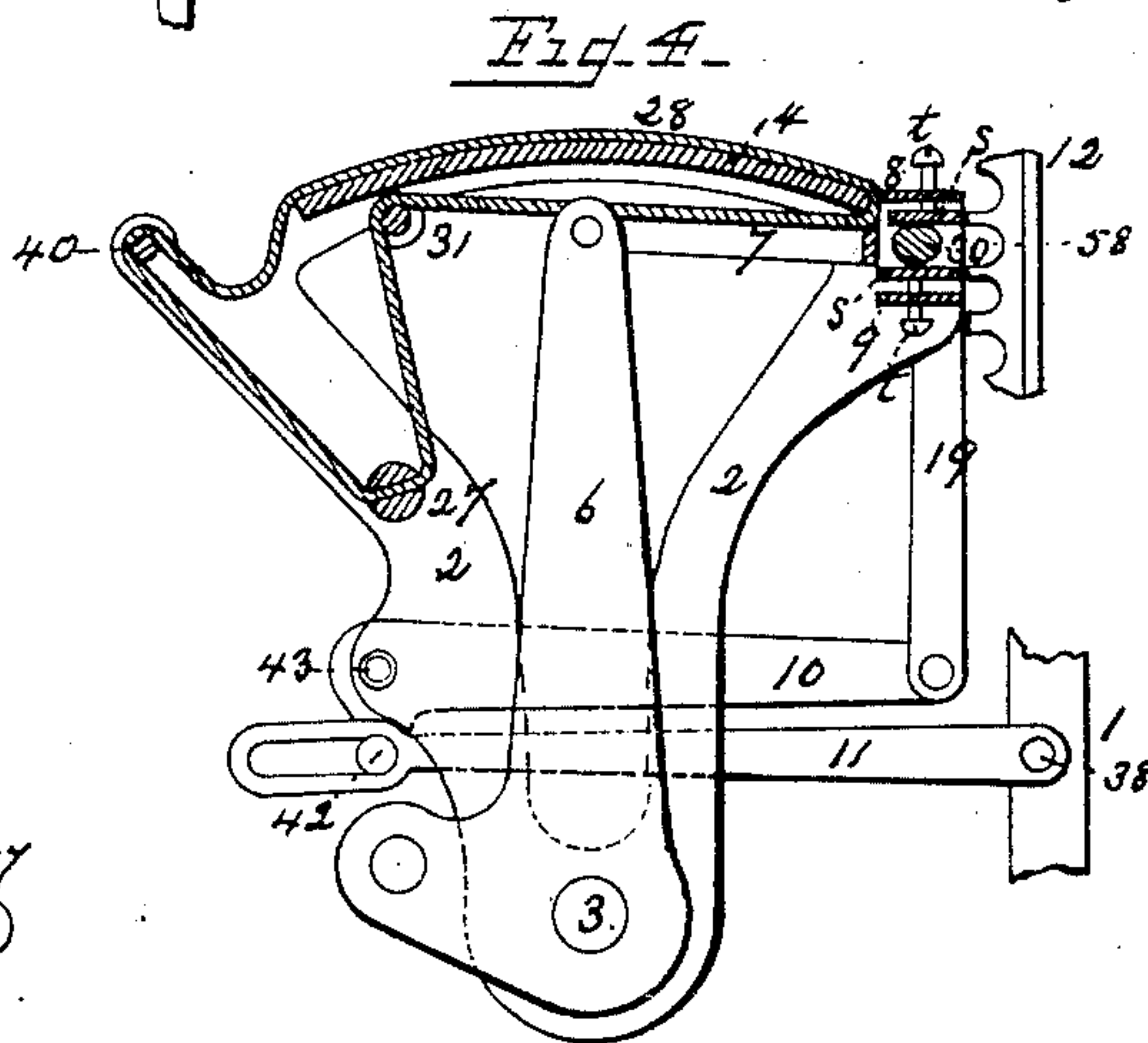
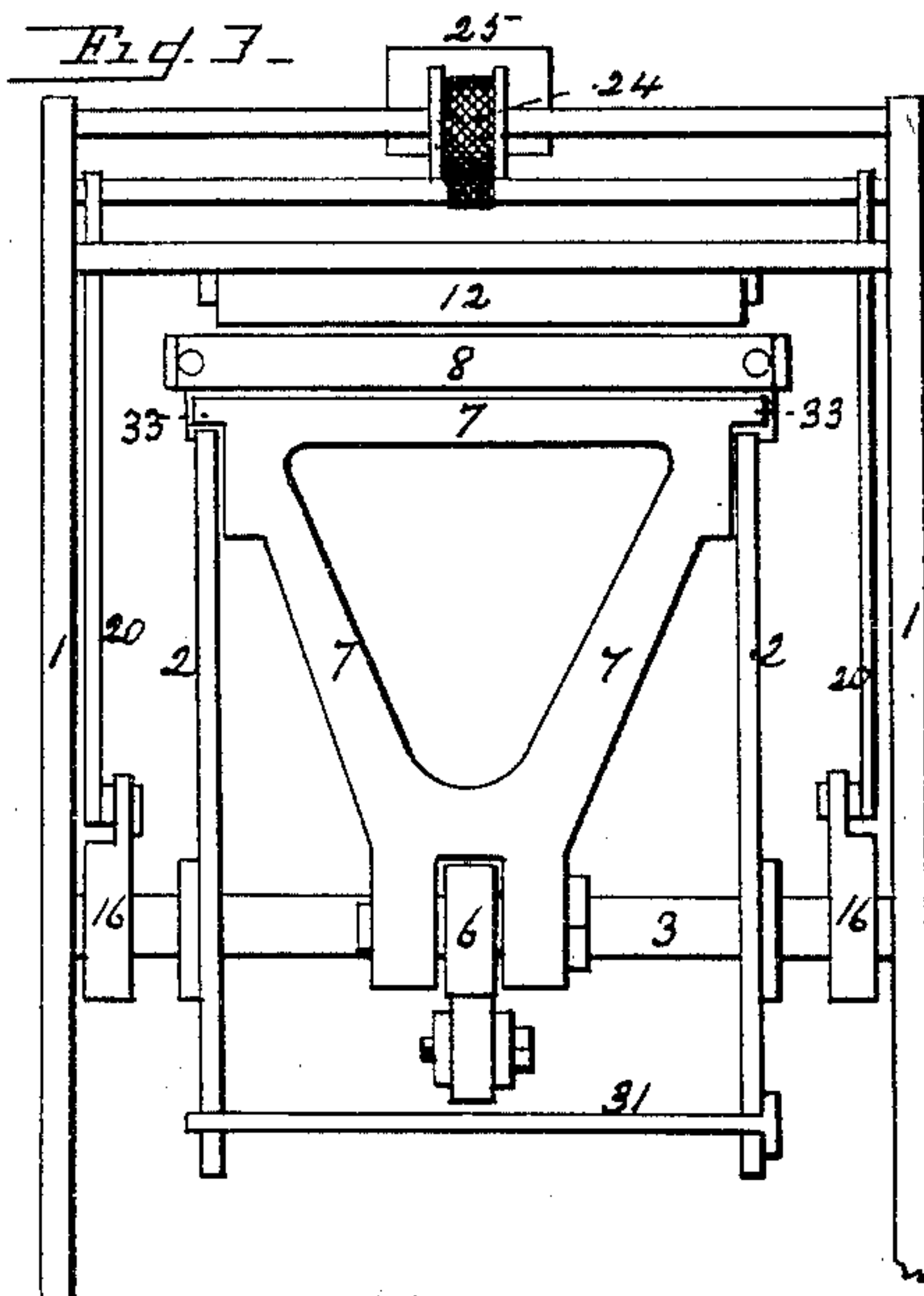
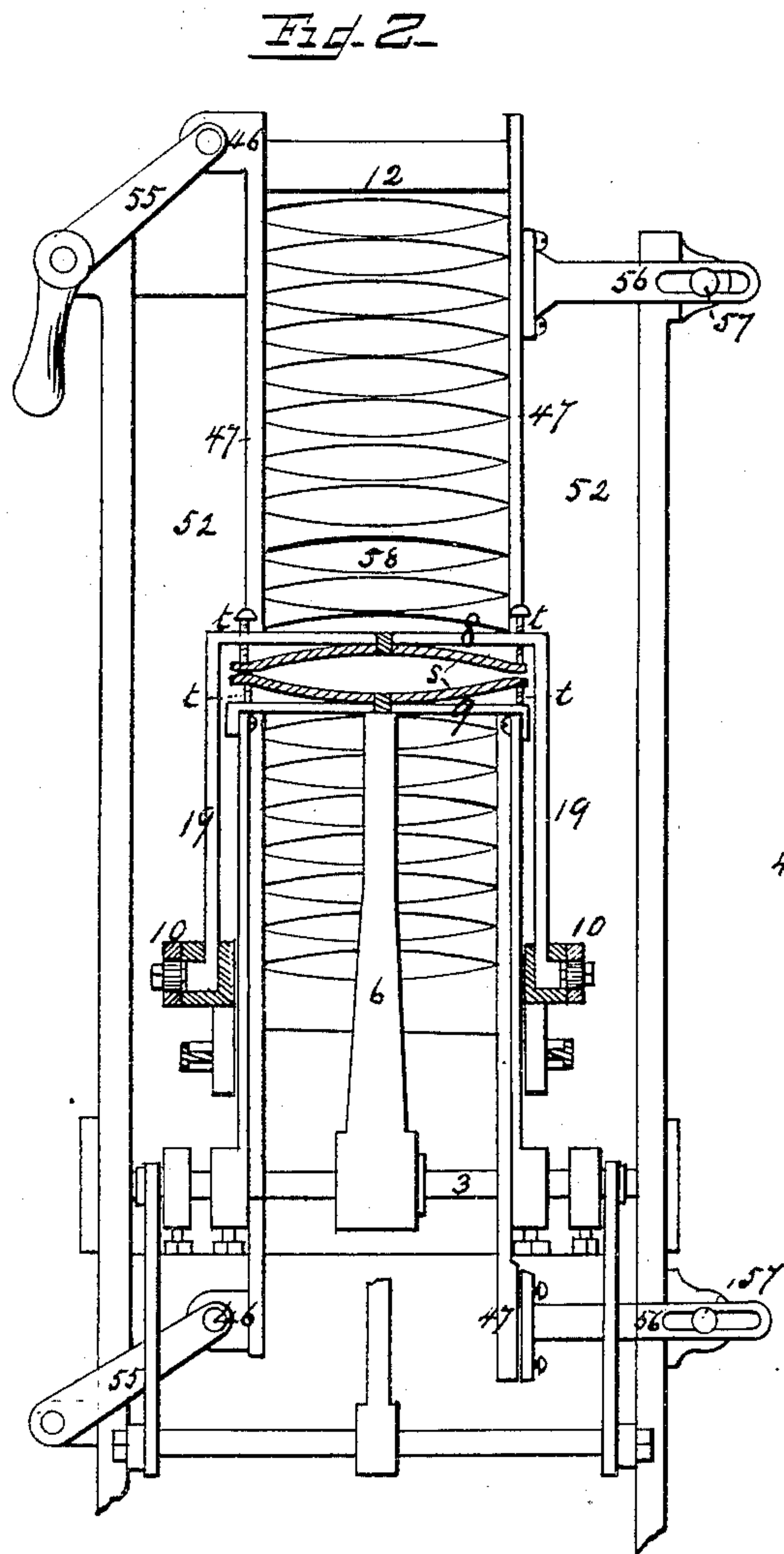
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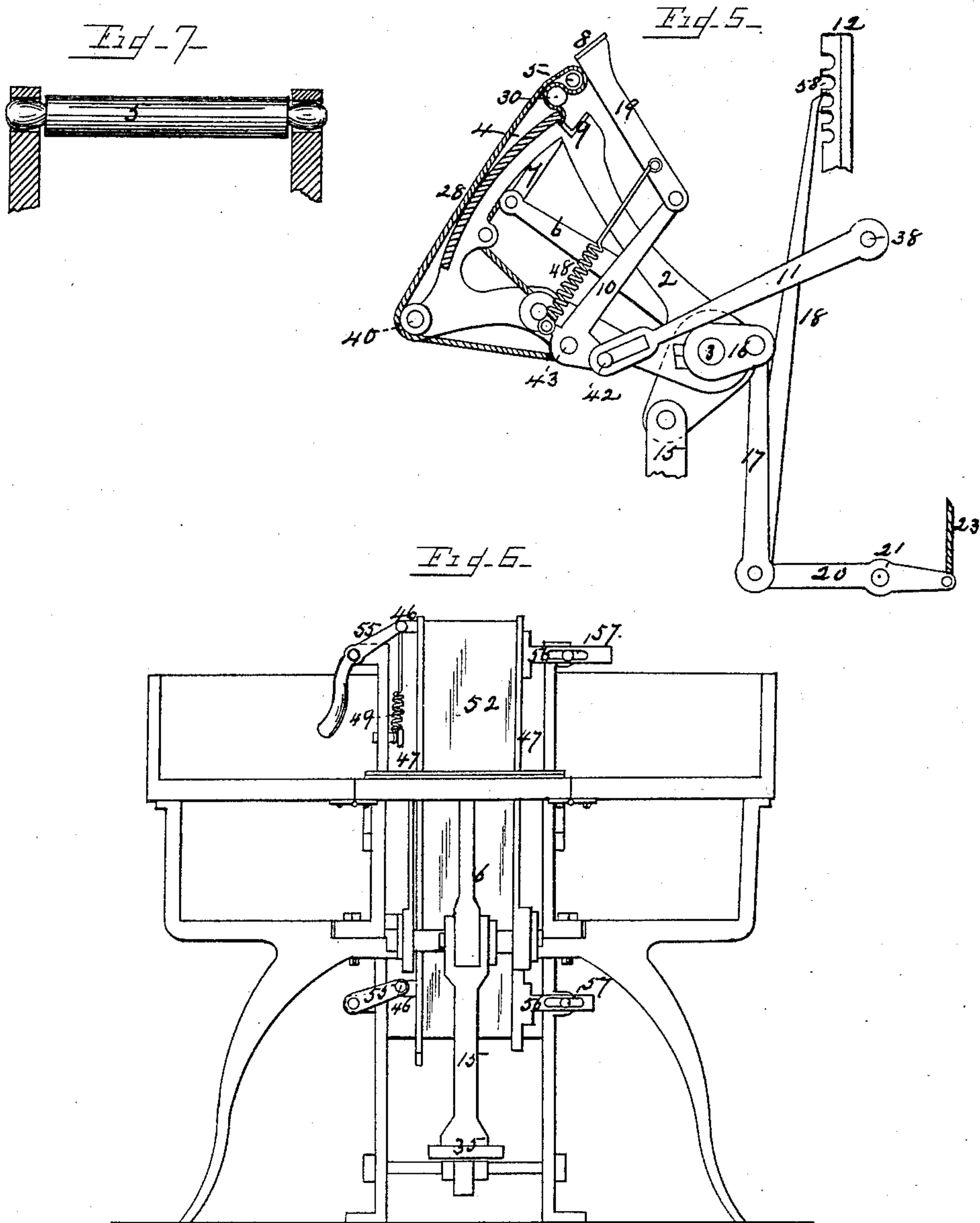
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CIGAR BUNCHING MACHINE.

No. 354,444.

Patented Dec. 14, 1886.



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UNITED STATES PATENT OFFICE.

WILLIAM M. STEINLE, OF BROOKLYN, N. Y., ASSIGNOR TO THE RALEIGH MANUFACTURING COMPANY, OF PITTSBURG, PA.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,444, dated December 14, 1886.

Application filed February 13, 1885. Serial No. 155,842. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. STEINLE, of Brooklyn, in the county of Kings, and in the State of New York, have invented a new and useful Improvement in Cigar-Bunching Machines; and I do hereby declare the following to be a clear and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section, of a cigar-bunching machine embodying my invention. Fig. 2 is a vertical section on the line *x x*, Fig. 1, the view being taken from the front of the machine, so as to show the compressor and the mechanism for operating it, the molds, and the adjustable guides or ways for the mold. In this view the table and the bunching mechanism have been omitted. Fig. 3 is a detail plan or top view showing the rocking frame 2 of the curved forming-plate, (the plate and slack belt removed,) and the plunger or ejector 7, and compressor 8. Fig. 4 is an enlarged detail side elevation, partly in section, showing the rocking frame 2, curved forming-plate 4, slack belt 28, and mechanism for actuating said parts, the position being that of the machine at the instant before the plunger or ejector delivers the bunch to the mold. It also shows the bunching mechanism in the position (similar to Fig. 1) for receiving the filler and binder to form a bunch. Fig. 5 is a similar view showing the rocking frame at the completion of its stroke, just as the bunch is delivered to the compressor. It also shows the manner of feeding forward the slide-mold. Fig. 6 is a front elevation of the mechanism, including the work-table, partly shown in Fig. 1. Fig. 7 is an enlarged detail view of roll 5 and its conical bearings.

Like figures refer to like parts wherever they occur.

This invention relates to the construction of that class of cigar-bunching machines wherein an oscillating or reciprocating forming plate or platform is employed in conjunction with a bunching-roll and slack belt or apron, and has for its object, first, to provide means for receiving the bunch when formed by the bunching mechanism and compressing the same so that it can be inserted in the mold without in-

jury to the bunch; secondly, such a construction of the compressor that it can be altered to suit the different forms and sizes of cigars and molds, as required; thirdly, in such a construction of the roll which coacts with the reciprocating or oscillating forming-plate, and the shaft or roll for increasing or decreasing the slack of the belt, that the said parts may be readily adjusted to produce any form, thickness, or tension of bunch that the quality or condition of the tobacco or the requirements of the trade demand; and, fourthly, in adjustable and cam or spring guides or ways to permit the use of different widths of sliding molds.

There are other features involving special details of construction whereby the machine is simplified and the best results are attained, which features will hereinafter more fully appear.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, 1 indicates a suitable frame for the support and attachment of the operative parts of the machine. In the frame 1 is journaled a shaft, 3, and on the shaft is secured a segmental frame, 2, (composed of two side pieces,) which carries or has attached to its periphery a curved platform or forming-plate, 4. On the inner (or rear end) of the segmental frame 2, just below the level of the forming-plate 4, is a ledge or shelf, 9, which receives the bunch after it is formed and coacts with the compressor 8, as will hereinafter more fully appear.

6 indicates a bell-crank or elbow lever journaled loosely at its angle on the shaft 3, and connected by its lower or short arm by a treadle-rod, 15, with a treadle, 35. The treadle 35 is also connected with the frame 1 by a suitable traction-spring, 36. The long or vertical arm of elbow-lever 6 is connected with a plunger or ejector, 7, which is located under the curved forming-plate 4, and above the plane of the shelf 9, so as to slide between the same. The ejector 7 has lateral projections or pins, 33, (see Fig. 3,) which lap the edges of the frame 2, so that while the ejector takes up and carries the frame 2 and its forming-plate 4 with it, as it moves forward in forming the bunch, the ejector is at liberty to move farther

back than frame 2 on the return movement, so that the plunger or ejector can pass over the shelf 9 and force the bunch therefrom into the mold. This additional movement of ejector 5 or plunger 7 is produced by the action of spring 36, which lifts the treadle 35, treadle-rod 15, and rocks the elbow-lever 6, which, as before stated, is loosely journaled on shaft 3.

The return or backward movement of the 10 operating mechanism after the bunch is formed is accomplished by the following mechanism: It will be remembered that the rocking frame 2 is fast on shaft 3. The shaft 3 is provided with a crank-arm, 16, secured thereto by a 15 set-screw or otherwise, and said crank-arm 16 is connected by a rod or link, 17, with one end of a rocking-lever, 20, pivoted at 21 on the frame 1 of the machine. From the opposite end of rocking lever 20 a cord, 23, passes up 20 over a pulley, 24, and to said rope or cord is attached a suitable weight, 25. (The equivalent of the rope, pulley, and weight would be a spring.) Pivoted to the same end of rocking 25 lever 20 and the rod or link 17 is a pawl or dog, 18, the free end of which rests on the face of mold 12. These devices will operate as follows: When the segmental frame 2 is rocked forward, as before mentioned, the crank-arm 16 will lift the inner arm of rocking lever 20, and with it the pawl 18, so as to feed the mold 12 up one cavity. At the same time it depresses the outer end of rocking lever 20 and raises weight 25. Then as soon as the rocking frame 2 is released the weight or spring descends, 35 drawing up the outer end of lever 20, drawing down rod 17, crank-arm 16, and rocking shaft 3, so as to bring the rocking frame 2 back to its first position, (see Figs. 1 and 4,) until its further motion is arrested by the mold 12, or 40 suitable stops. The frame 2, bearing on pins or projections of plunger or ejector 7, brings the ejector with it, and as soon as the mold 12 arrests the motion of frame 2 the spring 36 comes into play and gives the ejector 7 an additional movement, which forces the bunch 45 out of the compressor and into the mold-cavity 58, which happens to be in line. This motion of rocking-frame 2 also drops the pawl 18 one cavity, so that it is ready to raise the mold 50 at the next movement of the bunching mechanism.

I will now return to the description of the bunching mechanism proper. In conjunction with the curved forming-plate 4 I employ a 55 slack belt which may, if desired, be secured at one end to the rocking frame or forming-plate 4, and at the other end to a tightening-roller journaled in the rocking frame, and provided with a pawl and ratchet, (as described in my 60 case, Serial No. 142,100, filed September 3, 1884;) but I prefer a continuous slack belt, 28, as shown, which passes over the curved forming-plate 4 around a guide or roll, 40, through the longitudinally-slotted tightening-shaft 27, 65 (provided with a ratchet, 44, and pawl 29,) and over a shaft or roll, 31, all of said rolls or shafts supported in the rocking frame 2. I

also employ an adjustable bunching or forming roll, 5, the bearings of which are supported on the frame 1, and beneath which the forming-plate 4 and rocking frame 2 travel back and forth. 70

While the size of the bunch can be controlled by regulating the amount of slack in the belt 28, by means of the tightening shaft 75 or roll 27, its form or shape and tension (whether the filler is more or less tightly wrapped) depends on this bunching or forming roll 5, and it is desirable, owing to the varying character and condition of the stock 80 operated on, that this roll should be independently adjustable at each end, and should run with as little friction as possible, no matter how canted or set.

To accomplish the adjustment of the roll 5, 85 I form the bearing for the roll at each end in a rock-lever or movable arm, 13, pivoted on the frame 1, and adjustably secure said movable arm 13 by a slotted link or lever, 14, which can be rigidly secured to frame 1 by a set-screw, 34, or in other suitable manner, by 90 which means either end of the roll 5 may be independently adjusted. In order to avoid all possible friction, I reduce the contact of the journals of roll 5 and their bearings by 95 forming the journals on a double taper or elliptical in longitudinal section, of the general character shown in Fig. 7, which also facilitates the canting of the roll without cramping the journal. 100

8 indicates the compressor, which coacts with the receiving-shelf 9 at the rear of the forming-plate 4. This compressor 8 (see Figs. 3 and 5) is a cross-plate which connects or is 105 attached to two rods, 19, one on each side, and said rods are pivoted to one arm of an elbow-lever, 10, which lever is in turn pivoted at its angle 43 on the rocking frame 2, and is provided on its opposite arm with a stud, 42, which enters a slot in a bar, 11, which bar is 110 pivoted or secured to the frame 1 by a set-screw, 38. A spring, 48, extends from each rod 19 to the rocking frame 2, so that when the bunching mechanism is in the position shown in Figs. 1 and 4 the compressor is drawn 115 down toward the shelf 9 to hold and compress the cigar-bunch previous to its delivery to the mold.

When, in forming the bunch, the rocking frame 2 moves from the position shown in Figs. 120 1 and 4 to that shown in Fig. 6, the stud 42 on the short arm of slotted bar 11 moves along to the outer end of the slot, then the lever 10 is rocked on the rocking frame 2 by the arrest of stud 42, the rods 19 are raised, and with 125 them the compressor 8, until it rises above the slack belt 28 and permits the belt to deliver the cigar-bunch 30 on shelf 9. Then as the rocking frame 2 starts on its inner or return movement the spring 48 draws the compressor 130 8 down on the cigar-bunch and holds and compresses it.

It is desirable that the shelf 9 and compressor 8 should conform to the general shape of the

cavity of the mold used or the form of the cigar to be produced, and be capable of being readily altered at the will of the operator. To accomplish this I secure to the face of both shelf 9 and compressor 8, by a center rivet, or in any other suitable way, spring-plates *s*, (see Fig. 2,) and provide adjusting-screws *t*, so that said spring-plates can be adjusted so that the cavity or matrix formed by the plates can be varied at will.

As cigar-bunches may be made of different lengths by my machine, it is desirable to provide means for holding sliding molds 12 of different widths, and adjusting the same with respect to the central line of the bunching mechanism. For this purpose I provide side guides, 47, for the mold 12, which guides are supported at the back of the machine by the vertical mold-bed 52, and are adjustable thereon. The guides 47 of one side are provided with slotted arms 56, and are secured by set-screws 57 when adjusted, while the guide 47 of the other side is pivoted, as at 46, to links or arms 55, which are in turn pivoted to the bed 52. In the operative position the pivot-point 46 between the guide and link is higher than the pivot-point between the link and bed, so that the guide binds on the mold 12 like a cam and prevents it from slipping down, while it presents no obstruction to the upward feed of the mold by the pawl 18. If desired, further power for holding the cam-guide may be obtained by connecting a spring, 49, (see Fig. 5,) to the link at one end and to the bed at the other.

The devices, being constructed substantially as hereinbefore specified, will operate as follows: The shaft 27 having been turned to give the desired slack in belt 28 for the size of bunch to be made, the bunching-roll 5 having been set by adjusting the arms 13 to give the desired tension and shape to the bunch, the spring-plates *s* having been adjusted to give the matrix formed by the shelf 9 and compressor 8 the desired form to suit the mold and the form of bunch, and the mold-guides 47 having been arranged, as before specified, to accommodate the width of mold 12, which is used, the rocking frame 2 is placed in the position shown in Fig. 1, and the filler and binder are placed, as at 30, in the bight of the slack belt 28, between the forming-plate 4 and the bunching or forming roll 5. The treadle 35 is then operated, which draws down the treadle-rod 15, rocks the lever 6, which draws forward the plunger or ejector 7, the ejector 7, by the pins or projections 33, moves the rocking frame 2, causing it to vibrate or travel forward under the bunching or forming roll 5, and thus the slack belt rolls the binder around the filler and forms the cigar-bunch. The mechanism having now assumed the position shown in Fig. 5, the bunch 30, which has been carried the length of the forming-plate 4, is discharged by the belt 28 on the shelf 9, and the instant the return movement

of the rocking frame 2 commences the compressor 9 is operated by spring 48, as before specified, to compress and hold the cigar-bunch. The descent of the weight 25, which has been raised by the former movement of the rocking frame, actuates rocking lever 20, rod 17, shaft 3, and rocking frame 2, to pull it back into the first position, as shown in Figs. 1 and 4, and the rocking frame 2, bearing on pins or lugs 33 of the plunger or ejector, carries the ejector 7 with it. As soon as the return movement of rocking frame 2 is arrested, spring 36 lifts treadle 35 slightly, and through rod 15 and rocking lever 6 gives an additional independent movement to the ejector 7, which serves to force the cigar-bunch out of the grip of the compressor and into mold-cavity 58. These several movements of the machine recur with the formation of each cigar-bunch, and are very rapid, simple, and perfect in the results obtained.

The advantages of my invention are, the facility with which the machine can be adjusted to make any sized bunch of any desired tension of binder, and this regardless of the condition or quality of the stock or tobacco, the perfect control of the slack belt and the greatly reduced friction of the bunching or forming roll, so that very tender tobacco can be worked as readily as tough leaf, the control of the size of the bunch by the compressor, so that it can be inserted in the mold-cavity without injuring the bunch, the ability to change the form of the compressor to suit different forms of cigars and molds, and the ability to employ different widths of molds with the same bunching mechanism.

On the 3d day of September, 1884, I filed an application (Serial No. 142,100) for cigar-bunching machines, wherein I claimed the combination of a forming-roll, slack belt, vibrating forming-plate, and ejector, as well as several minor combinations, which will more fully appear on reference to said case, and therefore I do not herein embrace any subject-matter claimed in said previously-filed case.

Having thus described the nature, operation, and advantages of my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cigar-bunching machine, the combination, with a movable forming-plate and slack belt, of a bunching-roll having convex journals and adjustable bearings, substantially as and for the purposes specified.

2. In a cigar-bunching machine, the combination, with a movable forming-plate, a slack belt, and a bunching-roll having convex journals and adjustable bearings, of a belt-tightening shaft or roll for controlling the slack of the belt, substantially as and for the purposes specified.

3. In a bunching-machine, the combination, with a movable forming-plate having a shelf to receive the cigar bunch, of a compressor for compressing the bunch, an ejector or plunger

for delivering the bunch to the mold, and devices for operating said ejector, substantially as and for the purposes specified.

4. In a bunching-machine, the combination, 5 with a bunching-roll, a slack belt, and a rocking frame having a forming-plate and bunch-shelf, of a compressor-plate and a rocking lever pivoted on the rocking frame, a slotted bar, and a spring for actuating the compressor, 10 substantially as and for the purposes specified.

5. The combination, with a compressor and forming-plate provided with a bunch-ledge, of adjustable spring-plates and devices for adjusting said spring-plates, substantially as and 15 for the purposes specified.

6. In a cigar-bunching machine, the combination, with a sliding mold, of a two-part guide, means for adjusting one part of said guide, and devices, substantially as specified, 20 for suspending the sliding section of said guide, substantially as and for the purposes specified.

7. In a cigar-bunching machine, the combination, with a sliding mold, of a two-part guide, means for adjusting one part of said 25 guide, devices, substantially as specified, for

suspending the sliding section of said guide, and a tension-spring which acts on the sliding section, substantially as and for the purposes specified.

8. In a cigar-bunching machine, the combination, with a bunching-roll, a slack belt, and a rocking frame having a forming-plate and a bunch-shelf, of an ejector, a shaft common to the ejector and rocking frame and provided with a crank-arm rod, 17, pawl 18, and rock lever 30 20, common to both pawl and rod, mechanism for actuating rock-lever 20, and a sliding mold operated by the pawl 18, substantially as and for the purposes specified. 35

9. In a bunching-machine, the combination, 40 with the bunching-roll 5, of the two independent rock-levers 13, in which it is journaled, and the links 14, provided with set-screws, substantially as and for the purposes specified.

In testimony whereof I have hereunto set 45 my hand.

WILLIAM M. STEINLE.

Witnesses:

GEO. M. BALL,

JAMES H. BIRD.