

(No Model.)

4 Sheets—Sheet 1.

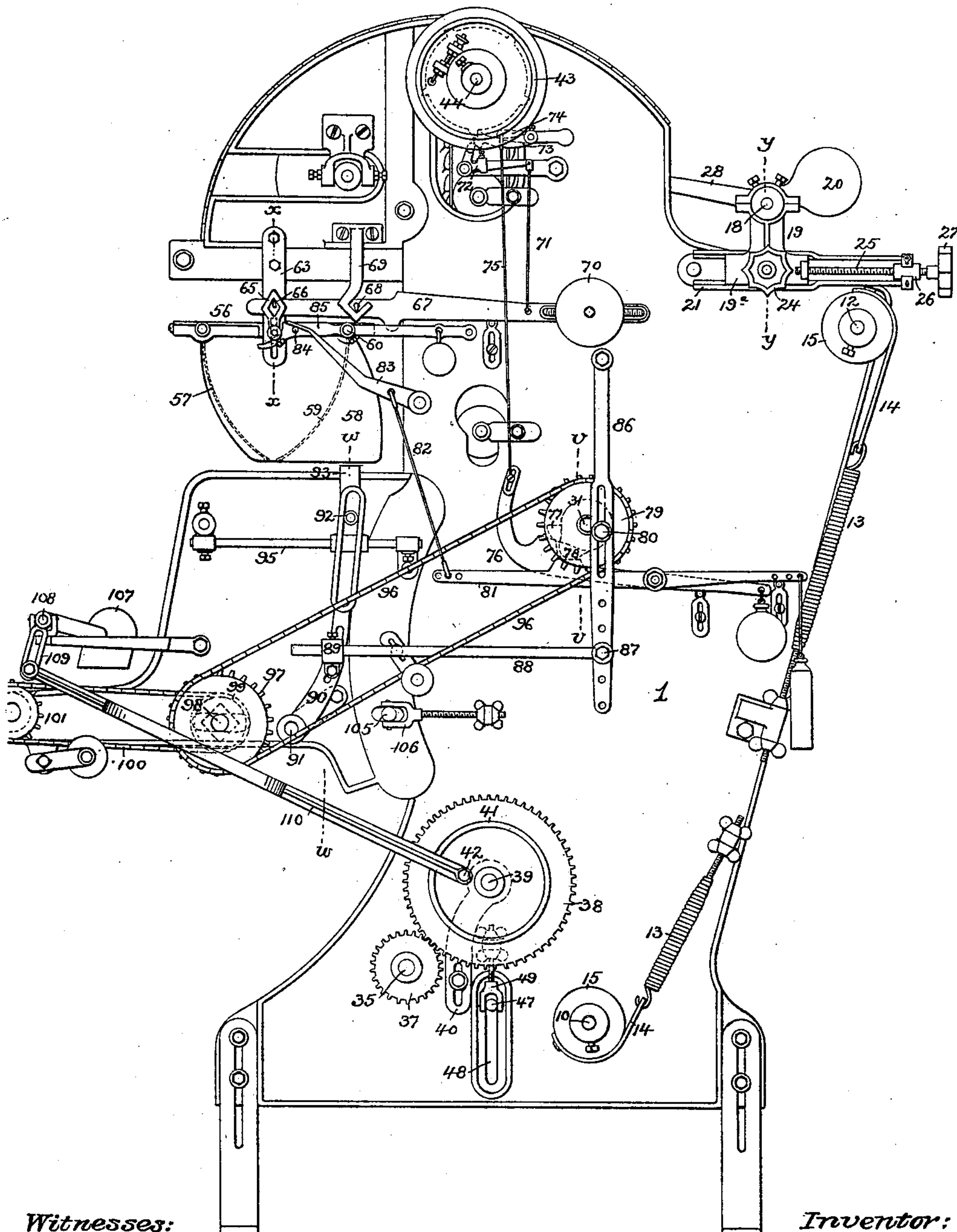
R. J. HILL.

FEEDING MECHANISM FOR CARDING MACHINES.

No. 592,706.

Patented Oct. 26, 1897.

FIG. 1.



Witnesses:

R. Schleicher.
Wm. A. Barr.

Inventor:

Robert J. Hill
by his Attorneys

Howson & Howson

(No Model.)

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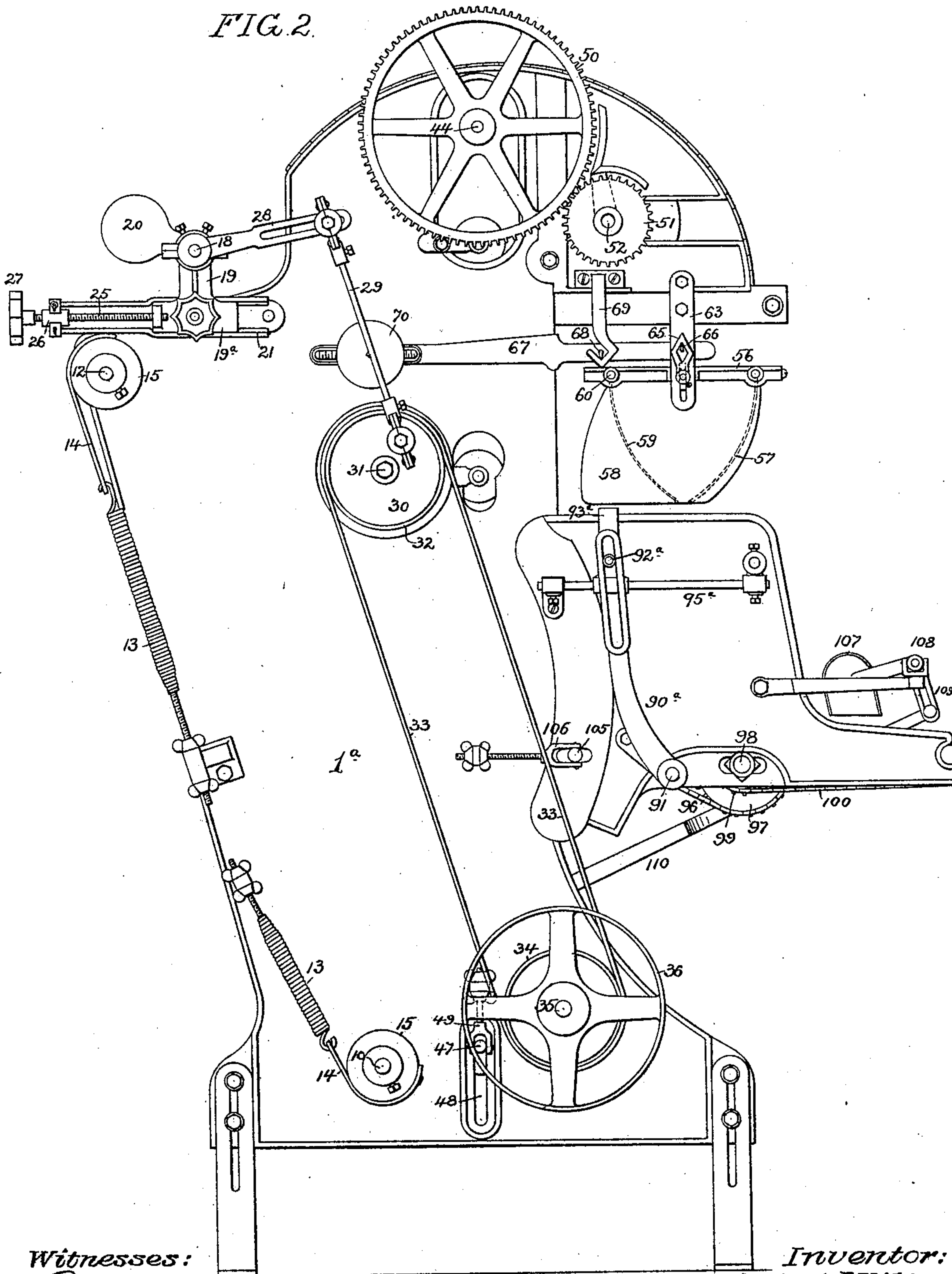
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FIG. 2.



Witnesses:

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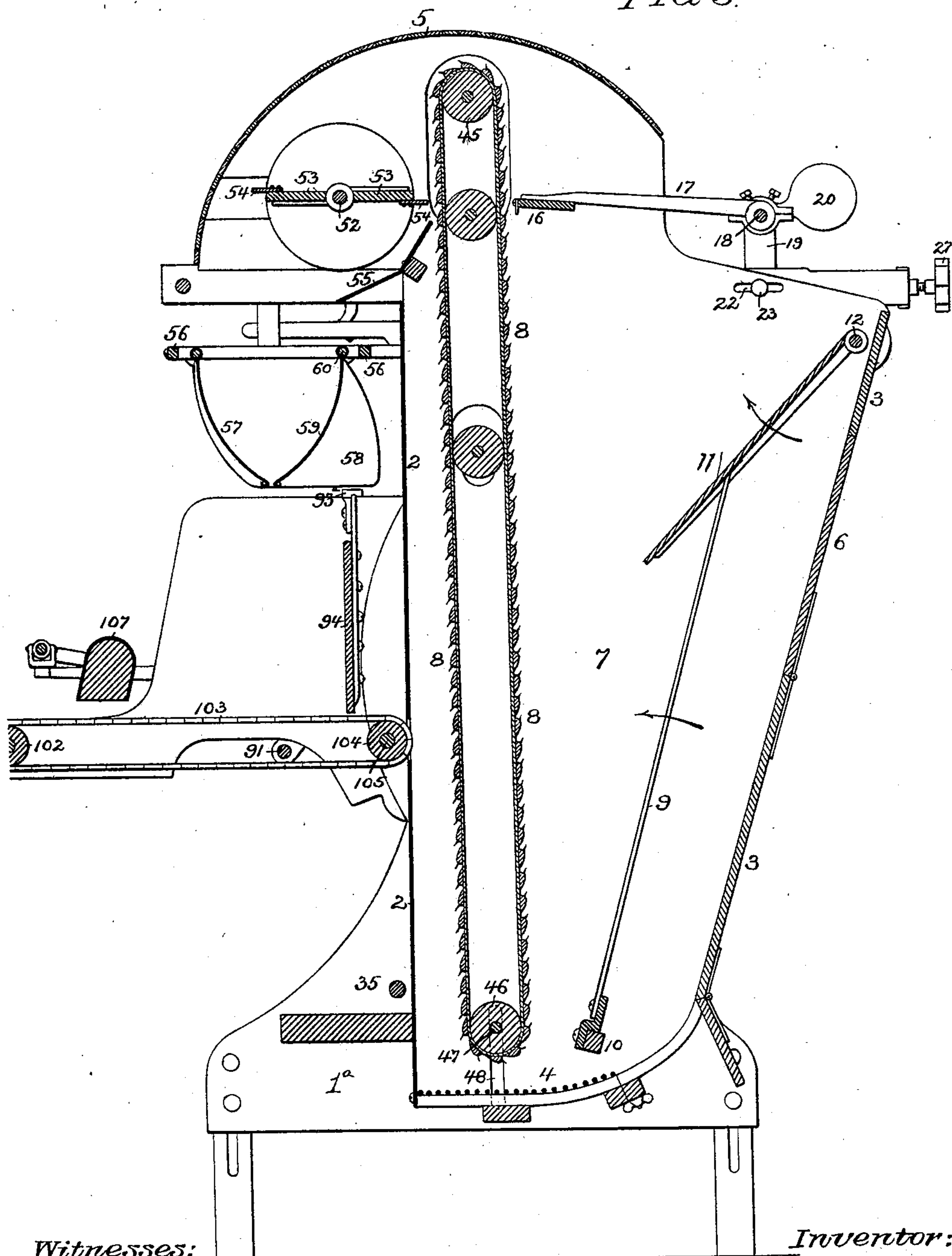
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FEEDING MECHANISM FOR CARDING MACHINES.

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FIG 3.



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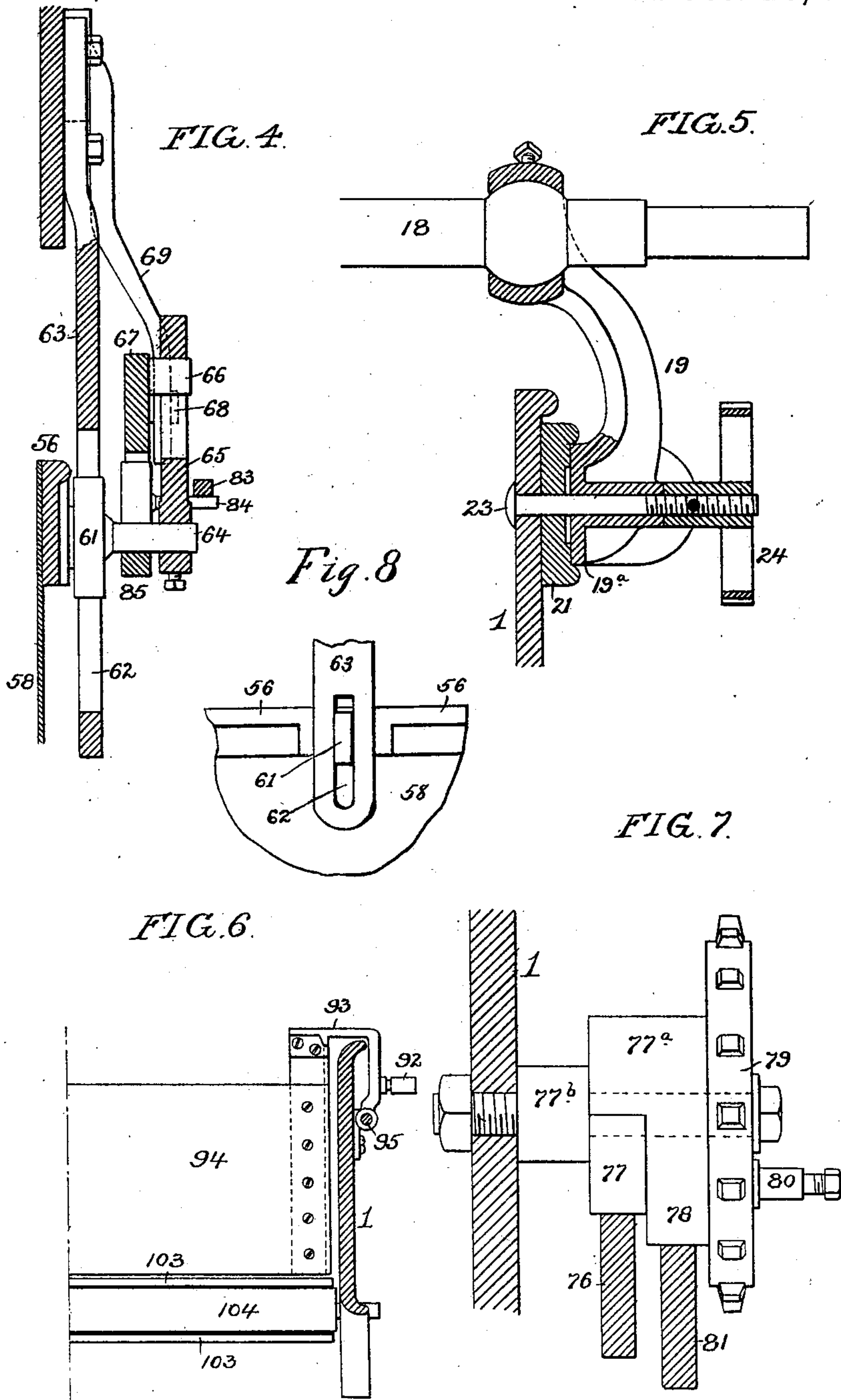
4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

ROBERT J. HILL, OF CAMDEN, NEW JERSEY, ASSIGNOR TO THE JAMES SMITH WOOLEN MACHINERY COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

FEEDING MECHANISM FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 592,706, dated October 26, 1897.

Application filed January 23, 1896. Serial No. 576,591. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. HILL, a citizen of the United States, and a resident of Camden, New Jersey, have invented certain
5 Improvements in Feeding Mechanism for Carding-Machines, of which the following is a specification.

My invention consists of certain improvements in the well-known stock-feeder for carding-machines, the object of my invention being to improve the operation of the machine in some respects and the improvements consisting of certain constructions and combinations of parts fully set forth and specifically claimed hereinafter.

In the accompanying drawings, Figure 1 is a side view of a stock-feeder with my improvements. Fig. 2 is a view of the opposite side of the same. Fig. 3 is a longitudinal vertical section of the machine. Fig. 4 is an enlarged transverse section on the line *xx*, Fig. 1. Fig. 5 is an enlarged transverse section on the line *yy*, Fig. 1. Fig. 6 is a transverse section of part of the machine on the line *ww*, Fig. 1; and Fig. 7 is a view, partly in elevation and partly in section, on the line *vv*, Fig. 1. Fig. 8 is a side view illustrating the means for guiding the scale-hopper in its vertical movement.

The machine has the usual side frames 1 and 1^a, transverse front plate 2, inclined back plate 3, bottom grate 4, and curved hood 5, part of the back plate being in the form of a hinged door or flap 6 and all of these parts
35 being substantially as usual and inclosing the stock-chest 7, in which is the usual elevating-apron 8, having toothed slats which engage with the material in the stock-chest and carry the same upward. The material is pressed
40 against the rising run of the apron 8 by means of a slatted presser-frame 9, which is secured at its lower end to a transverse shaft 10 near the bottom of the stock-chest, the upper end of said frame 9 bearing against the under or
45 outer side of a flap or apron 11, which is carried by a transverse shaft 12 near the top of the stock-chest. By this means the access of the stock in the chest to the space behind the frame 9 is prevented, thus overcoming an
50 objection to that form of machine in which a

slatted frame is hung at the top of the stock-chest and extends downwardly thereinto, so that its lower free end plays back and forth in the lower portion of the chest.

The slatted frame 9 and pivoted apron 11 55 have a constant tendency to move in the direction of their respective arrows, such tendency being caused by means of springs 13, which are adjustably connected to suitable brackets on the side frames of the machine 60 and engage with straps 14, secured to drums or pulleys 15, applied to the outer projecting ends of the shafts 10 and 12, as shown in Figs. 1 and 2.

As the stock is carried upward by the rising run of the apron 8 the surplus stock is removed therefrom by the action of a vibrating comb-bar 16, which is mounted upon the inner ends of arms 17, secured to a rock-shaft 18, the latter being free to rock in suitable 70 bearings 19, mounted on the side frames of the machine and being provided, preferably, with a counterbalance-weight 20. The brackets 19 are adjustably mounted upon the side frames 1 and 1^a, so that the path traveled by 75 the comb-bar 16 may be caused to bear any desired relation to the rising run of the apron 8, the means for effecting the adjustment of the brackets and the securing of the same in position after adjustment constituting one 80 of the features of my invention. The said brackets 19 have enlarged bases 19^a, adapted to suitable external guideways 21 on the side frames 1 1^a of the machine, and through each of said bracket-bases, as well as through a slot 85 22, Fig. 3, in the side frame upon which the bracket is mounted, passes a bolt 23, having a head bearing against the inner side of the frame and a threaded stem passing through the guide-plate 21 and through the bracket- 90 base 19^a, the outer threaded end of the stem receiving a nut 24. On turning this nut in one direction the bracket will be loosened, so that it can be moved back and forth in its guideways, the tightening of the nut again effecting the secure confinement of the bracket 95 in the position to which it has been adjusted. Each bracket has a nut to which is adapted the inner portion of a screw-stem 25, which passes through but is longitudinally confined 100

to a block 26 at the outer end of the guide-plate 21, the outer end of each screw-stem being provided with a handle 27, whereby it may be readily manipulated so as to cause
5 movement of the bracket 19 in effecting desired adjustments.

The rock-shaft 18 has a slotted arm 28, Fig. 2, carrying a pin which is engaged by the upper end of a rod 29, the lower end of said rod
10 engaging a crank-pin on a disk 30, which turns upon a stud 31, projecting from the side frame 1^a of the machine, said disk having a flange or pulley 32, which receives a belt 33 from a pulley 34 on the primary driving-
15 shaft 35 at the base of the machine, said shaft 35 having a pulley 36, which receives the driving-belt from a pulley upon any available line-shaft.

The shaft 35 extends transversely across
20 the machine and has at the end opposite that which carries the pulley 36 a spur-pinion 37, which meshes with a spur-wheel 38, free to turn on a stud 39, carried by an adjustable bracket 40 on the side frame 1, said spur-
25 wheel 38 having a belt flange or pulley 41 and a crank-pin 42. The belt flange or pulley 41 is intended for the reception of a belt which is not shown in the drawings, but which is designed to run from said pulley to a pulley
30 43, secured to a shaft 44, adapted to suitable bearings at the upper end of the machine, this shaft carrying the upper or driving drum 45 of the stock-apron 8, the lower drum 46 of said apron turning on a shaft 47, which passes
35 through slots 48 in the side frames and is carried by vertically-adjustable forked holders 49, so that the stock-feeding apron can be properly stretched at all times.

The shaft 44 has a spur-wheel 50, which en-
40 gages with a spur-pinion 51 on a shaft 52, mounted in appropriate bearings and carrying within the hood 5 a pair of projecting blades or arms 53, Fig. 3, with beater-bars 54 at their outer ends, these bars serving to re-
45 move the stock from the downward run of the apron 8 and direct it over a chute 55 and into the hopper of the weighing-scale. The means employed for mounting and guiding this hopper constitute one of the features of my in-
50 vention. The hopper has a top frame 56, to which the curved front plate 57 and the end wings 58 of the hopper are rigidly secured, the rear plate 59 of the hopper being pivotally mounted at its upper end upon a rock-shaft 60,
55 adapted to bearings in said frame. The end bars of the top frame 56 have secured thereto slides 61, which are adapted to vertical slots 62, formed in fixed hanger-bars 63, depending from the forwardly-projecting portions of the
60 side frames 1 and 1^a of the machine, whereby in its vertical movements the hopper of the weighing-scale is properly guided and is prevented from tipping either forward or backward. Projecting from the slides 61 are pins
65 64, to which are secured slotted hangers 65,

the upper ends of the slots forming bearings for knife-edges 66, projecting from the scale-
beams 67, this feature of construction being best illustrated in Fig. 4. The scale-beams
67 have other knife-edges 68, supported by
70 hangers 69 on the opposite side frames of the machine, the inner ends of the scale-beams having the usual adjustable weights 70. It will be seen that by this construction the hopper of the weighing-scale is compelled to
75 travel in a vertical course and is held rigidly so far as regards any tipping or tilting movement, but the weight of the hopper and its load is exerted upon the scale-beams through the medium of connections 65, mounted upon the
80 knife-edges 66 on said scale-beams, so that the weight is always exerted at an unvarying distance from the fulcrums of said scale-beams. Hence it is immaterial to the proper weight-
85 ing of the charge deposited in the scale-hopper whether the preponderance of the charge is in front or in rear of the central line of the hopper, such unequal distribution of the load having no effect upon the scale-beams.

The tripping of the scale-beams effects the
90 stoppage of movement of the stock-feeding apron by means of mechanism which is substantially similar to that formerly used and which I will therefore describe but briefly.

One of the scale-beams is connected by a rod
95 or wire 71 to a trip-catch 72, which during the operation of the stock-apron engages with a weighted locking-lever 73 and holds the same out of engagement with lugs upon the stop-disk, which lugs are shown by dotted lines in
100 Fig. 1, said stop-disk being secured to the shaft 44 of the upper drum 45 and having a frictional connection with the pulley 43, so that the stoppage of the shaft 44 can be effected without stopping said pulley.
105

When the hopper is filled and the scale-
beams tilt, the catch-lever is moved, so as to disengage the lock-arm 73, thus permitting the latter to engage with one of the lugs of the
110 stop-disk on the shaft 44 and arrest the rotation of the latter. In order to again start the movement of the stock-apron after the hopper has dumped its load, the lever 73 is again pulled down into engagement with the catch-
115 lever 72 by means of an arm 74, hung to the fulcrum of the lever 73, as shown in Fig. 1.

The means employed for operating the arm
74 and for tilting the movable side of the scale-hopper, so as to permit the latter to dump its
120 load, constitute one of the features of my invention.

The arm 74 is connected by means of a rod
or wire 75 to a weighted lever 76, which I term the "resetting-lever" and which is hung to
125 a stud on the side frame 1 of the machine and is acted upon by a cam 77 on a cam-hub 77^a, the latter turning on a stud 77^b, secured to the side frame 1 and being provided with another cam 78 and with a sprocket-wheel 79, having a crank-pin 80, (see Fig. 7,) the cam
130

78 acting upon a weighted lever 81, which I term the "dumping-lever" and which is connected by means of a rod or wire 82 to an arm 83, the latter acting upon a pin 84 on a counterbalanced lever 85, which is secured to the rock-shaft 60, carrying the rear side of the scale-hopper. Hence when the lever 81 is depressed by the cam 78 said rear side of the scale-hopper will be swung away from the front side 57 and the load of stock contained in the hopper will be dumped therefrom. By thus operating both the resetting-lever 76 and the dumping-lever 81 by means of cams on the same hub multiplication of parts is avoided and the construction of the machine is materially simplified as compared with machines now in use.

The crank-pin 80 of the disk 79 engages with a slot in a lever 86, hung to a stud on the side frame 1, this lever also having a series of openings, to any one of which may be adapted a pin or bolt 87 on a rod 88, which is secured to a swinging lug 89 on a lever 90, the latter being secured to a transverse rock-shaft 91, which has at the opposite side of the machine a similar lever 90^a.

The lever 90 is slotted for the reception of an antifriction-roller 92 on a pin carried by a yoke 93, which extends over the top of the forwardly-projecting portion of the side frame 1 and is secured to one end of the pusher-board 94, as shown in Fig. 6, the lower end of the outer portion of said yoke 93 being guided upon a rod 95, suitably mounted in brackets at the opposite ends, as shown in Fig. 1. In like manner the lever 90^a is slotted for the reception of an antifriction-roller 92^a, mounted on a pin carried by a yoke 93^a, which is secured to the opposite end of the pusher-board 94 and is guided by a rod 95^a on the side frame 1^a, as shown in Fig. 2. By mounting the push-board upon yokes depending on the outer sides of the frame and adapted to outside guide-rods, the slotting of the side frames, as usual, is rendered unnecessary and the access of oil or other lubricant to the material acted upon by the push-board is prevented.

The sprocket-wheel 79 receives a chain 96, which is adapted to a sprocket-wheel 97 on a stud 98 on the side frame 1, said stud being secured to a sprocket-wheel 99, which engages with a chain 100, running to a sprocket-wheel 101 on the shaft carrying the drum 102 at the outer end of the conveyer-belt 103, said shaft being driven, as usual, from some available shaft of the carding-machine. The drum 104 at the inner end of the belt 103 is carried by adjustable hangers 106, as shown in Figs. 1 and 2, whereby the belt may be kept tightly stretched.

The usual presser-bar 107 is carried by arms on a rock-shaft 108, another arm 109 on the latter being connected by a rod 110 to the crank-pin 42 on the spur-wheel 41.

The following brief description will convey a proper understanding of the working of the machine: As shown in Fig. 1, the feed-apron is stopped and the scale-hopper is emptied and occupies its highest position. As the lever 76 is depressed by the cam 77, however, it draws down the lock-arm 73, thus permitting the operation of the feed-apron, said lock-arm being retained in the depressed position by engagement with the catch-lever 72. Stock is fed into the scale-hopper until the proper amount has been deposited therein, whereupon its weight causes the descent of the hopper and the lifting of the weighted arm of the scale-beam, so as to withdraw the catch-lever 72 from engagement with the lock-arm 73, the latter thereupon moving upward into engagement with one of the lugs on the disk carried by the shaft of the upper drum of the feed-apron, so as to again arrest the movement of the latter. The dumping-lever 81 is now acted upon by the cam 78, so as to swing outward the movable side 59 of the scale-hopper and dump the load of the same onto the conveyer-apron in front of the push-board, the scale-hopper then rising, so that the scale-beam adjusts the catch-lever 72 into position for engagement with the lock-arm 73, when the latter is again pulled down by the action of the lever 76, so as to permit the further movement of the feed-apron. These operations are repeated continuously.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the stock-chest and the feed-apron, with means for pressing the stock toward said apron, said means comprising a presser-frame pivoted at the lower end, a flap or apron pivoted at the upper end and overlapping the upper free end of said presser-frame, and springs acting upon both the presser-frame and apron to move the same forward, substantially as specified.

2. The combination of the scale-hopper having projecting slides, guides for said slides whereby the hopper is prevented from tipping forward or backward, the scale-beams, and hangers pivotally suspended upon said beams and carrying the hopper, substantially as specified.

3. The combination of the push-board, provision for reciprocating the same, yokes extending from the push-board up over the sides of the fixed frame of the machine, and external rods upon which said yokes are mounted and guided, substantially as specified.

4. The combination of the push-board having yokes extending from the push-board up over the sides of the fixed frame of the machine, external rods upon which said yokes are mounted and guided, and vibrated levers engaging with said yokes, substantially as specified.

5. The combination of the push-board hav-

ing yokes extending up over the sides of the
fixed frame of the machine, external rods
upon which said yokes are mounted and guid-
ed, levers engaging with said yokes, a slotted
5 lever connected to one of said yoke-actuating
levers, and a wheel for engaging said slotted
lever, substantially as specified.

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

ROBERT J. HILL.

Witnesses:

FRED C. BENNER,

FRANK E. BECHTOLD.