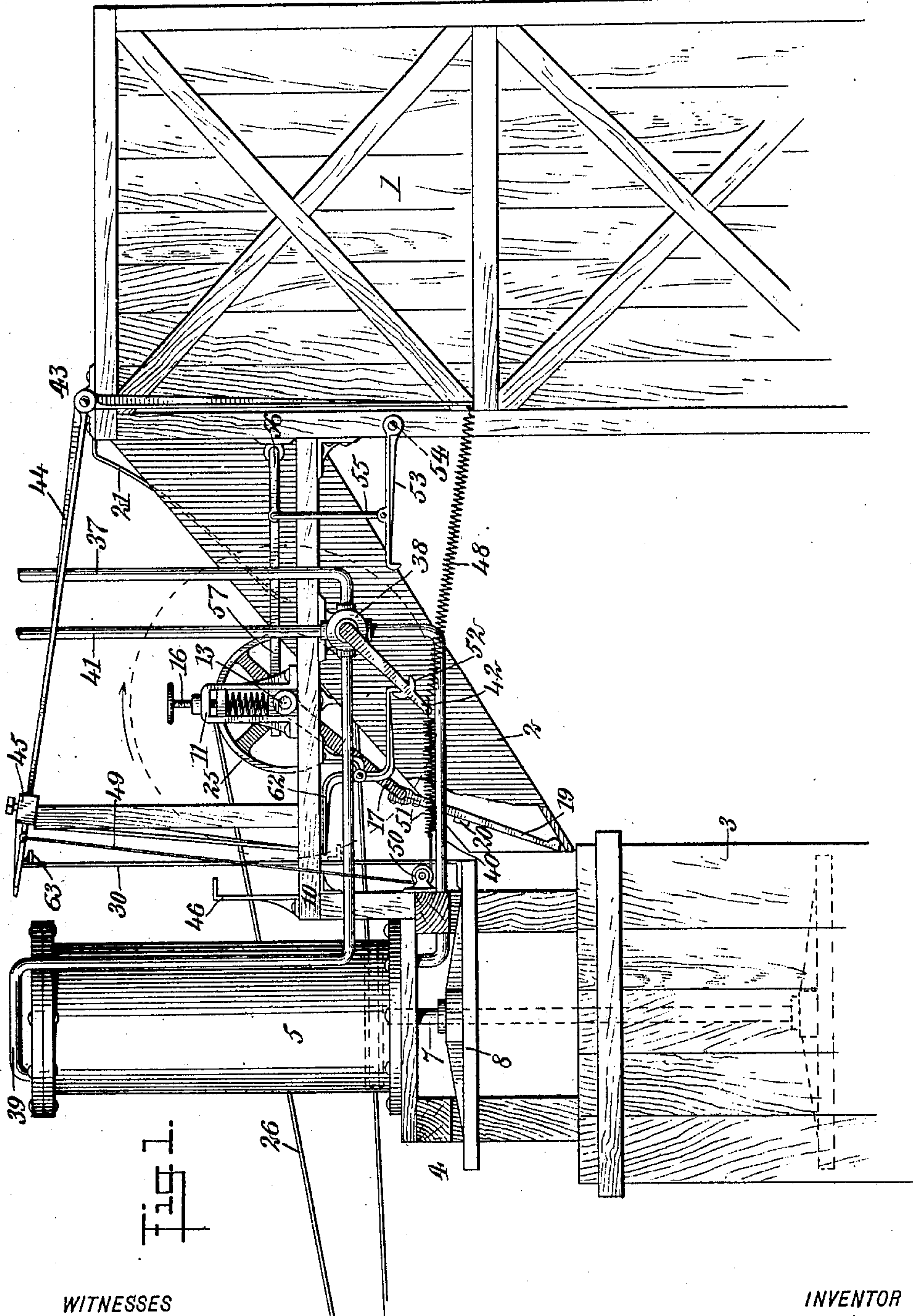


**926,046.**

4 SHEETS—SHEET 1.



*J. D. Pinner*

BY *Mum Co.*

THE NORRIS PETERS CO., WASHINGTON, D.C.

E. H. CAMPBELL.  
 AUTOMATIC COTTON TRAMPER.  
 APPLICATION FILED JULY 10, 1908.

Patented June 22, 1909.

4 SHEETS—SHEET 2.

926,046.

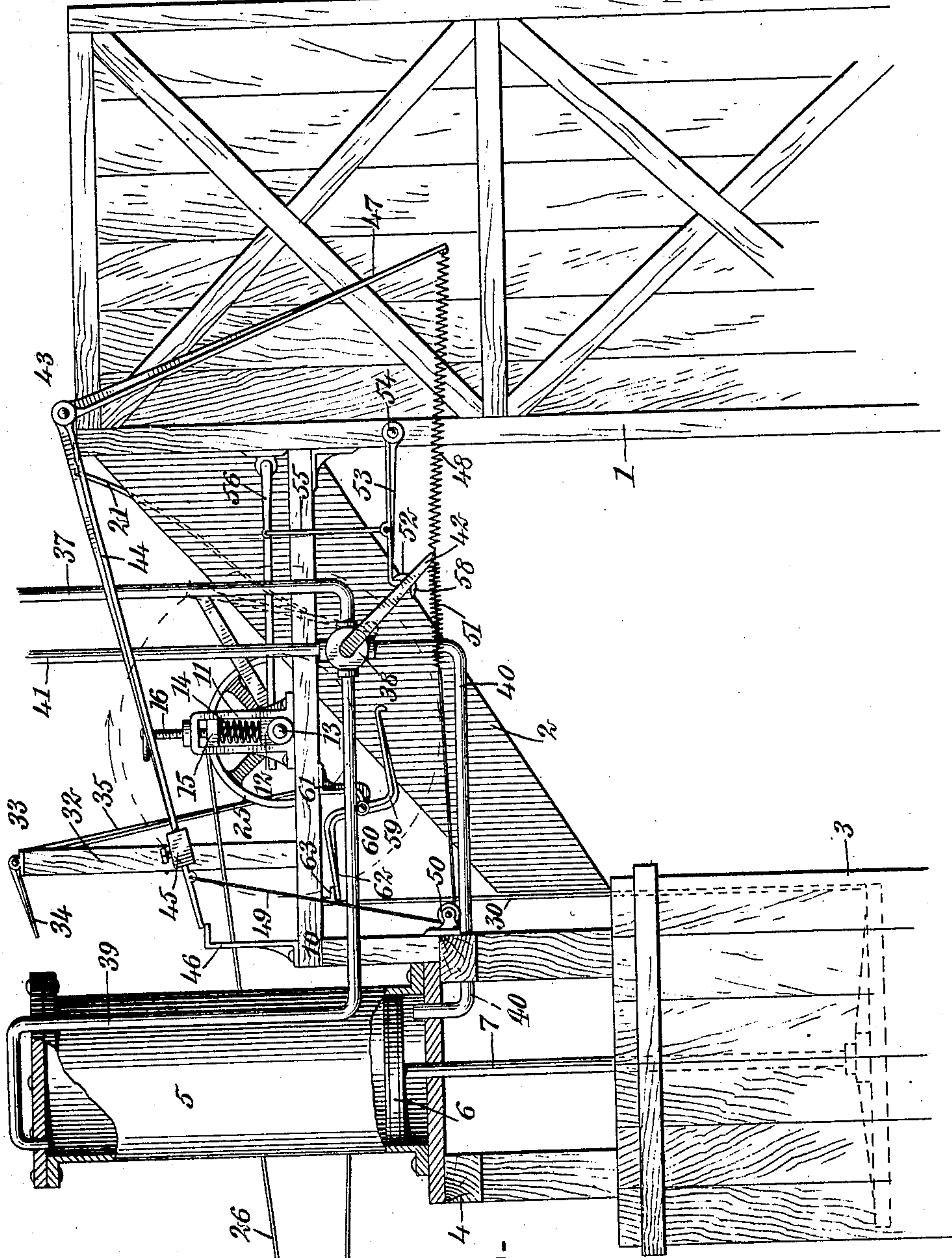


Fig. 2.

WITNESSES

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INVENTOR  
*Edgar H. Campbell*  
 BY *Munn & Co.*  
 ATTORNEYS



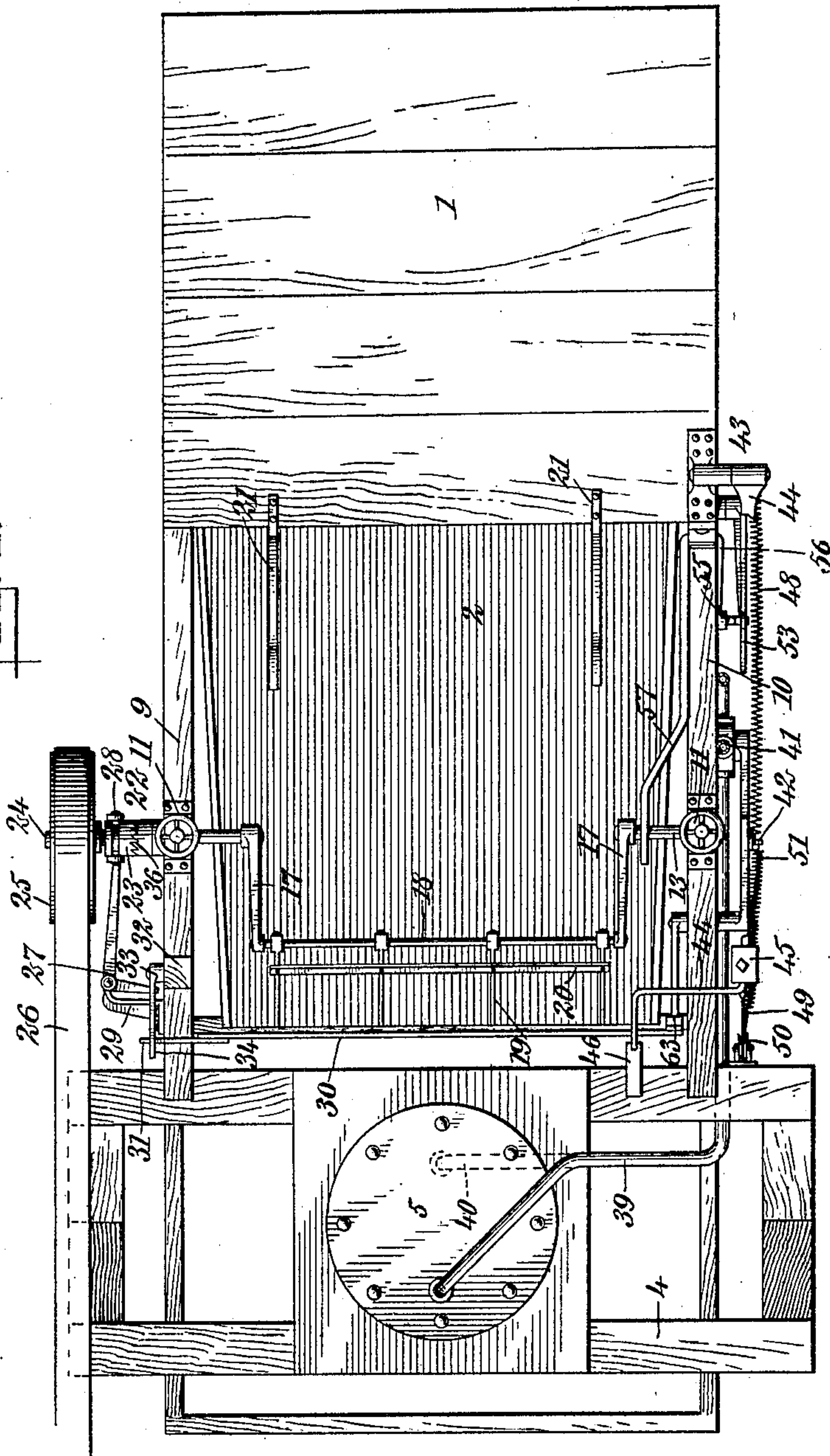
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4 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

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*[Signature]*

INVENTOR

Edgar H. Campbell

BY

*[Signature]*

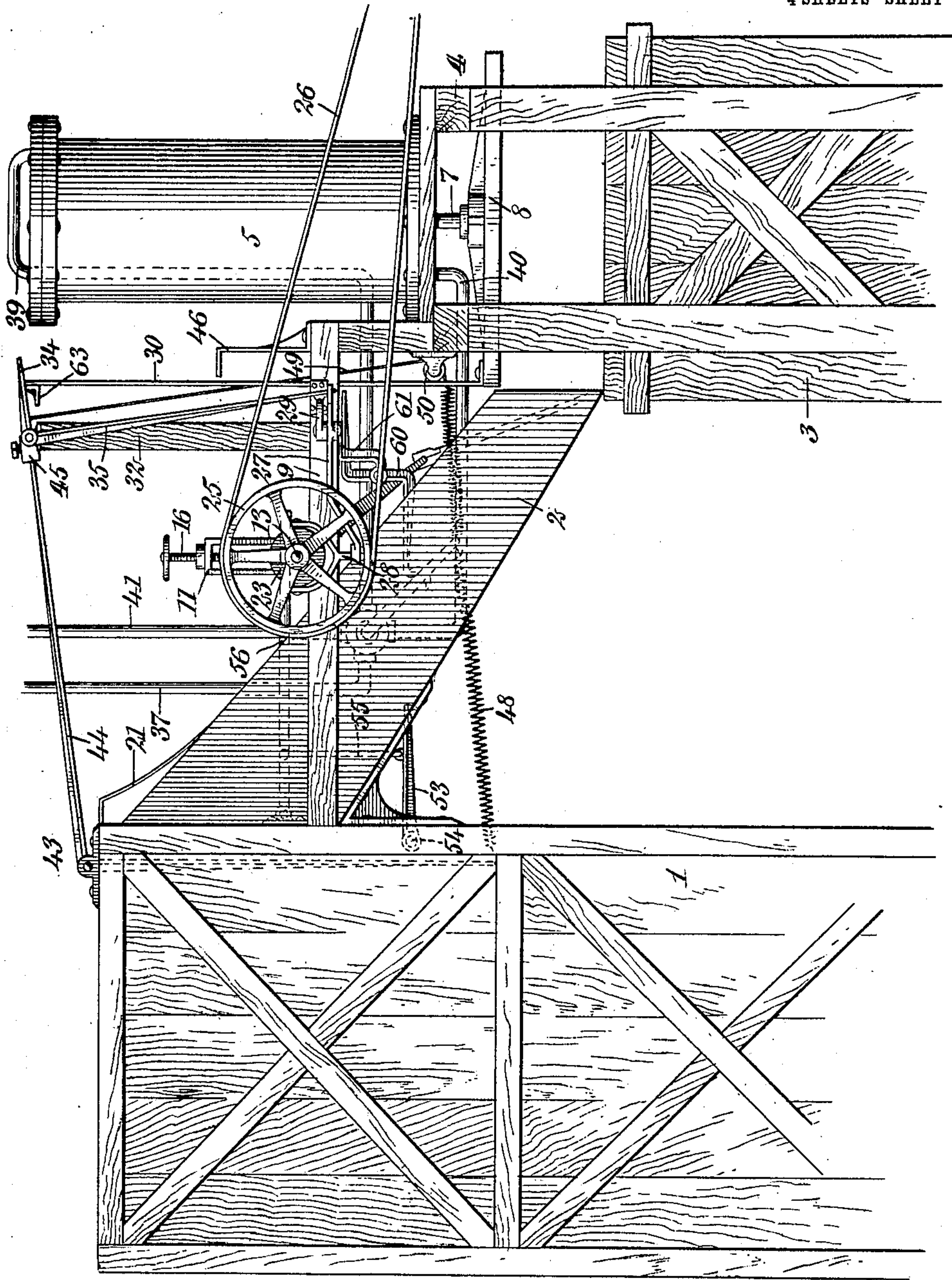
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4 SHEETS—SHEET 4.



WITNESSES

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Fig. 4

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# UNITED STATES PATENT OFFICE.

EDGAR HOWARD CAMPBELL, OF BLOOMING GROVE, TEXAS, ASSIGNOR TO CONTINENTAL GIN COMPANY, OF BIRMINGHAM, ALABAMA, A PRIVATE CORPORATION OF DELAWARE.

## AUTOMATIC COTTON-TRAMPER.

No. 926,046.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed July 10, 1908. Serial No. 443,003.

*To all whom it may concern:*

Be it known that I, EDGAR HOWARD CAMPBELL, a citizen of the United States, and a resident of Blooming Grove, in the county of Navarro and State of Texas, have invented a new and Improved Automatic Cotton-Tramper, of which the following is a full, clear, and exact description.

This invention relates to cotton trammers or presses.

The object of the invention is to produce a press or tramper having improved means for controlling the feeding of the lint through the same, so that when the compressing plunger is in its withdrawn position, the feeding operation proceeds, but when the plunger is advancing, the feeding operation ceases.

The invention concerns itself especially with the devices for controlling the operation of the plunger and the feeding operation.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the apparatus, a portion of the feeding chute being broken away, this view showing the plunger in its withdrawn position and the feeding mechanism in operation; Fig. 2 is a view similar to Fig. 1, a portion of the cylinder being broken away and showing the plunger in its advanced position, at which time the feeding operation is discontinued and the parts of the apparatus are shown therefore in their corresponding relation; Fig. 3 is a plan of the apparatus; and Fig. 4 is a view of the apparatus taken at the opposite side from that shown in Figs. 1 and 2.

Referring more particularly to the parts, 1 represents the condenser from which the cotton or lint is taken down a feed chute 2 to the feed box 3. Over this box 3 a frame 4 is constructed, which supports a vertical cylinder 5. In this cylinder a piston head 6 reciprocates, having a piston rod 7 which extends downwardly so that it constitutes a plunger, at the lower end of which a fol-

low block or head 8 is attached. This follow block moves up and down in the box 3 in a well known manner. The upper part of the frame 4 is connected with the upper part of the condenser by horizontal frame bars or stringers 9 and 10, upon which the upper part of the mechanism is supported. In the middle of these stringers, guide brackets 11 are provided which present vertical guide slots in which movable boxes 12 may travel vertically. These boxes receive the rotatable ends of a crank shaft 13, and they are normally held in their lowermost position by means of coil springs 14, which are received in the slots, as shown, the upper ends of the springs being arranged to thrust against swivel blocks 15 carried by the lower ends of adjusting screws 16. These adjusting screws are mounted in a vertical position in the upper ends of the brackets, as indicated in Fig. 2. The crank shaft 13 comprises two oppositely disposed crank arms 17 which are connected by a wrist bar 18. Upon this wrist bar a plurality of fingers 19 are pivotally hung, said fingers being connected by a connecting bar 20, as indicated in Fig. 3. This connecting bar 20 is disposed near the upper parts of the fingers and operates to hold them all in substantially the same plane when they are in operation. At the upper end of the chute, guide bars 21 are provided. These guide bars are attached at their upper ends to the condenser 1, and project downwardly in a slightly curved direction, as indicated in Fig. 2. They lie directly over the upper part of the chute and operate to incline the fingers or bars 19 on their downward stroke, which advances the lint toward the box.

At the rear side of the machine as viewed in Fig. 3, the shaft 13 is provided with a clutch 22 having a sliding clutch member or collar 23 which is keyed or feathered to the shaft 24 of a pulley 25, said pulley being driven continuously by a belt 26. As shown in Fig. 3 the clutch is closed, but when the collar 23 moves over toward the pulley, the clutch will become open. This clutch member or collar 23 is adapted to be shifted by means of a bell crank lever 27, one arm of which engages with the collar by means of a yoke 28, as indicated. This bell crank lever is suitably mounted upon a bracket 29 at the side of the frame. The edge of the



follow block 8 which lies adjacent to the chute, is provided with a vertically extending apron or gate 30, which consists simply of a plate of sheet metal or similar material.

5 When the plunger descends to compress the lint in the box 3, this apron moves across the lower end of the chute so as to close it. Furthermore, when the plunger moves to its uppermost position, the apron operates

10 to close the clutch 22. For this purpose the side edge of the apron near the upper end thereof, is provided with a projecting arm 31, as indicated in Fig. 3. The stringer 9 is provided with a post 32 to the upper end

15 of which a bell crank lever 33 is pivotally attached. This bell crank lever 33 has an arm 34 which extends over upon the arm 31 so as to be engaged by the arm as the plunger reaches the limit of its upward movement.

20 The bell crank lever has a long arm 35 which extends downwardly and engages the other arm of the bell crank lever 27 referred to above. The arrangement of these members is shown very clearly in Fig. 4, where it will

25 appear that the lower end of the arm 35 projects through a slot in the arm of the lever 27.

Referring again to Fig. 3, it will be observed that the teeth 36 of the clutch 22 are inclined rearwardly with respect to the di-

30 rection of the rotation. From this arrangement it follows that unless the clutch is held closed by some means, it will open itself automatically. This follows of course, from the fact that the clutch member 23 drives on

35 the inclined faces of the teeth; hence, as soon as the plunger commences its downward movement, the clutch opens and the rotation of the feed shaft 13 ceases. In this connection it should be understood that the

40 direction of rotation of the shaft 13 is in the direction of the arrow indicated in Fig. 2, and the rotation of the shaft is continuous while the plunger is in its uppermost position. As the crank arms 17 descend at the

45 right of the shaft 13, the connecting bar 20 engages the guide bar 21 so that they are deflected or inclined in the position in which they are shown in dotted lines in Fig. 2. As the rotation progresses beyond this point,

50 the lower ends of the fingers 19 strike the bottom of the chute in such a way as to feed lint downwardly toward the box 3.

The plunger is adapted to be reciprocated by steam, compressed air, or any other operating fluid. For this purpose a feed pipe 37

55 is provided which leads to a four-way valve 38 which constitutes a throttle valve for controlling the operation of the cylinder. From this valve 38, a pipe 39 extends

60 through the upper cylinder head and a pipe 40 extends through the lower cylinder head. From the valve 38 an exhaust pipe 41 extends upwardly. The valve is provided with a lever 42 which rotates the valve into

65 its two positions. In the position shown in

Fig. 1, the valve is admitting steam to the lower end of the cylinder so as to hold the plunger withdrawn, that is, the pipe 37 is connected with the pipe 40 through the valve, while the pipe 39 is connected with

70 the valve through the exhaust pipe 41. In the position of the lever shown in Fig. 2, an opposite condition exists. The pipe 37 is connected with the pipe 39 so that the plunger is held down by the steam, the pipe

75 being connected to the valve through the exhaust pipe 41.

As indicated most clearly in Figs. 1 and 2, the upper end of the condenser is provided with a bell crank lever 43 having an

80 arm 44 which extends over and lies in the path of the apron 30. This arm is provided with a counterweight 45 which tends to hold it depressed when the apron does not support the arm 44; in other words, when

85 the plunger is depressed, as indicated in Fig. 2. At this time the end of the arm 44 will remain supported upon a bracket or rest 46 which is mounted upon the frame bar 10, as indicated. The bell crank lever

90 43 is provided with a downwardly extending arm 47, and this arm is connected by a coil spring 48 with the lever 42, as indicated. Near the end of the arm 44, a cord 49 is attached, and this cord extends downwardly

95 around a guide pulley 50, which is attached to the frame about in line with the lower end of the lever. At this point the cord extends over toward the lever and is connected to a spring 51 which is itself attached to the

100 lower end of the lever 42 opposite to the spring 48.

The right-hand side of the lever 42, as viewed in Figs. 1 and 2, is provided with a tooth 52, which is adapted to engage with

105 the ends of a catch or pawl 53 which is disposed in a horizontal position and pivotally mounted at 54 on the side of the condenser. This catch 53 is connected by a link 55 with an arm 56, which arm is rigid with and is

110 operated by a long arm 57. This arm is shown in Fig. 3, and extends over and rests upon the upper side of the shaft 13 near one of the crank arms 17. The arms 57 and 56 are formed integrally so that together they

115 may be considered as constituting a trip lever, the function of which will be described more fully hereinafter. Opposite to the tooth 52 the lever is provided with another tooth 58. This tooth is adapted to

120 be engaged by a catch arm 59 on a catch lever 60 which is pivotally mounted on a bracket 61, as indicated in Fig. 2. This catch lever has an arm 62 which extends over to a point near the apron 30, and is

125 adapted to be struck by an angle clip 63 which is attached to the forward face of the apron, as shown. It should be understood that the catch 53 affords means for holding the lever in the position shown in

130



Fig. 2, while the catch arm 59 may engage the tooth 58 so as to hold the lever in the position in which it is shown in Fig. 1.

The mode of operation of the entire apparatus, will now be briefly described: The belt pulley 25 is driven continuously by the belt or engine so that when the clutch 22 is closed, the shaft 13 rotates continuously. In this way the fingers constantly pass down the bottom of the chute so as to feed the lint into the box under the follow block 8. After a sufficient quantity of the lint has accumulated in the box, the lower ends of the fingers will not move freely in the chute when they reach the position such as that in which they are indicated in Fig. 1; in other words, the lint accumulating at the mouth of the box will afford a resistance to the sliding of the fingers and this will exert an upward thrust on the fingers, this thrust will be transmitted to the wrist bar 18 and will raise the shaft 13 slightly in the guide brackets 11. When the shaft 13 moves upwardly, in this way, it raises the arm 57 of the trip lever and pulls upwardly on the catch 53 and releases the lever 42. As soon as this takes place, the spring 51 operates to pull the lever 42 over to the position in which it is shown in Fig. 1; this admits steam to the upper side of the piston head 6, and the plunger then descends. As the plunger descends, it compresses the lint beneath the follow block, as will be readily understood. As the apron 30 descends with the plunger it releases the bell crank lever 33 and the clutch opens, and the feeding movement then ceases. As the apron descends with the plunger, the counterweight 45 operates to depress the arm 44 of the bell crank lever 43, and this depression continues until the end of the arm 44 rests upon the bracket 46, as illustrated in Fig. 2, this places the spring 48 under tension. As soon as the plunger reaches the lower limit of its movement, the clip 63 strikes the arm 62 of the catch lever 60 and releases the lever from the catch, and the spring 51 then operates to pull the lever over to its opposite position, that is, to the position in which it is shown in Fig. 2. This admits steam to the under side of the piston so that the piston returns to its uppermost position. As the piston or plunger reaches the upper limit of its movement, the arm 31 carried by the apron, strikes the lever 33 again and closes the clutch. In this way the feeding operation is resumed and cut off automatically at the time the plunger is in motion.

Special attention is called to the counterweight 45 and its function in producing tension in the spring 48 to draw the lever over to its right-hand position. Special attention is called also to the resilient means for holding the shaft 13 down. This resiliency allows the shaft to rise under the thrust

force in the fingers and in this way release the catch 53. In Fig. 2 the lever is shown in the position in which it is pulled by the spring 48 in order to admit steam to the under side of the piston; in other words the parts are shown in the relation they have immediately after the release of the lever at the end of the down stroke.

Special attention is called also to the fact that the upward movement of the plunger and the apron restores the lever 42 to its normal position, and relaxes the spring 48 and through the operation of the cord 49 places the spring 51 under tension. The parts will remain in this position until the feed automatically releases the lever by raising the catch 53.

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

1. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box in which said plunger co-operates to compress the cotton, a chute, feeding members moving in said chute and adapted to force the cotton downwardly therein, means for resiliently mounting said feeding members, permitting the abnormal displacement thereof by the pressure of the cotton thereupon when said box becomes full, and means actuated through the medium of said feeding members for causing said plunger to descend.

2. In apparatus of the class described, in combination, a cylinder, a plunger operated thereby, a box in which said plunger compresses the cotton, a feed chute leading to said box, a shaft rotatably mounted across said chute, fingers operated by said shaft and working in said chute to press the cotton, resilient means for holding the shaft in position and enabling said shaft to move upwardly when an upward thrust is exerted in said fingers, and means actuated by the movement of said shaft for causing said plunger to descend.

3. In apparatus of the class described, in combination, a cylinder, a plunger driven thereby, a box coöperating with said plunger to press the cotton, a chute for feeding the cotton into said box, feeding members operating in said chute for advancing the cotton, means for resiliently mounting said feeding members, permitting an abnormal displacement thereof by the pressure of the cotton when said box becomes full, a valve controlling the admission to said cylinder, and means for controlling said valve from said feeding members.

4. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box coöperating with said plunger and in which the cotton is compressed, a valve for admitting to either end of said cylinder for raising or lowering said plunger,



a spring attached to said valve and tending to hold the same in one extreme position, a second spring attached to said valve and tending to hold the same in its other extreme position, means for maintaining either of said springs in tension and the other of said springs relaxed, means for locking said valve in either of said extreme positions, and automatic means for releasing said valve.

5. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box cooperating with said plunger to compress the cotton, a valve for admitting to either end of said cylinder and having a lever, a spring attached to said lever and tending to hold the same in one extreme position, a counterweight connected with said spring and adapted to place the same in tension when said plunger has descended, a second spring attached to said lever, means for placing said second spring in tension when said plunger is withdrawn, means for locking said lever in either of its extreme positions, automatic means for releasing said lever when said box is full, and automatic means for releasing said lever when said plunger reaches the lower limit of its movement.

6. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box cooperating with said plunger to compress the cotton, a valve adapted to admit to either end of said cylinder, a spring tending to hold said valve in one extreme position, a second spring tending to hold said valve in its other extreme position, means for relaxing either of said springs, catches affording means for holding said valve in either of its extreme positions, automatic means for releasing one of said catches when said box is full, and means for releasing the other of said catches when said plunger has reached the lower limit of its movement.

7. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a valve controlling the admission to said cylinder, a box cooperating with said plunger, a counterweighted movable member, means for supporting said counterweighted member on said plunger when in its elevated position, said valve having a lever, a spring connecting said lever with said movable member, a catch for holding said lever in the position which admits to the upper end of said cylinder before said plunger could descend, and automatic means for releasing said catch.

8. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box cooperating with said plunger, a feed chute delivering to said box, a feed shaft disposed across said chute, resilient means for holding said shaft in its normal

position, fingers connected with said feed shaft and adapted to move downwardly into said chute to advance the cotton to said box, said fingers being arranged so that an upward thrust thereupon will displace said shaft, a valve, means for holding said valve in a position to admit steam to the lower end of said cylinder to maintain said plunger withdrawn, and means actuated by the displacement of said shaft to move said valve to its opposite position to admit steam to the upper end of said cylinder before said plunger could descend.

9. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box cooperating with said plunger to compress the cotton, a feed chute delivering to said box, a crank shaft disposed transversely above said chute, fingers connected with said crank shaft and adapted to advance the cotton in said chute, yielding means for holding said shaft in its normal position, a valve adapted to admit steam to either end of said cylinder and having a lever, a spring connected with said lever and tending to hold said valve in a position to admit to the upper end of said cylinder, a catch for maintaining said lever, and a member connected with said catch and resting on said shaft, said member being adapted to release said catch when displaced by the yielding of said shaft.

10. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box cooperating with said plunger to compress the cotton, a chute delivering to said box, feeding mechanism operating to advance the cotton in said chute, a valve adapted to admit steam to either end of said cylinder and having a lever, a bell crank lever, a spring connected with said bell crank lever and connected with said valve lever, normally tending to hold said valve lever in a position to admit steam to the lower end of said cylinder, means for normally supporting said bell crank lever when said plunger is in its elevated position, a counterweight tending to depress said bell crank lever when said plunger descends, a second spring attached to said valve lever and tending to hold the same in a position to admit steam to the upper end of said cylinder, a cord connecting said last spring with said bell crank lever and adapted to relax said spring when said bell crank lever is depressed by said counterweight, a catch for holding said lever in a position to admit steam to the lower end of said cylinder, automatic means for releasing said catch actuated by said feeding device when said box becomes full, a second catch adapted to hold said valve lever in a position to admit steam to the upper end of said cylinder, and means for actuating said catch automatically when said plunger descends.



11. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box cooperating with said plunger to compress the cotton, a feed chute 5 delivering to said box, a feed shaft, feeding devices driven by said shaft and operating in said chute, a clutch sliding on said shaft, means for normally holding said clutch closed when said plunger is in its withdrawn 10 position, and means for automatically throwing said clutch open when said plunger descends.

12. In apparatus of the class described, in combination, a cylinder, a plunger actuated thereby, a box cooperating with said 15 plunger to compress the cotton, a chute delivering to said box, guide brackets, boxes adapted to slide in said guide brackets, a shaft rotatably mounted in said boxes, springs 20 constraining said shaft and permitting a displacement thereof, feed fingers carried by said shaft and operating in said chute to force the cotton downwardly therein, a valve controlling the admission to said cylinder, 25 and means for controlling said valve connected with said shaft and actuated by the displacement of said shaft.

13. In apparatus of the class described, in combination, a cylinder, a plunger actu-

ated thereby, a box cooperating with said 30 plunger, a valve adapted to admit to either end of said cylinder and having a lever, a bell crank lever, a spring connected with said bell crank lever and said valve lever and 35 tending to hold said valve in a position to admit to the upper end of said cylinder, a catch tending to retain said lever, feeding mechanism, means actuated by said feeding 40 mechanism for releasing said catch, means for normally supporting said bell crank lever when said plunger is in its elevated position, a counterweight for depressing said 45 bell crank lever when said plunger has descended, a second spring connected with said valve lever, a cord connecting said second spring with said bell crank lever, a second 50 catch for retaining said valve lever in a position to admit steam to the lower end of said cylinder, and means carried by said plunger for releasing said latch catch.

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

EDGAR HOWARD CAMPBELL.

Witnesses:

J. R. GILBERT,  
O. E. MORRIS.