

(No Model.)

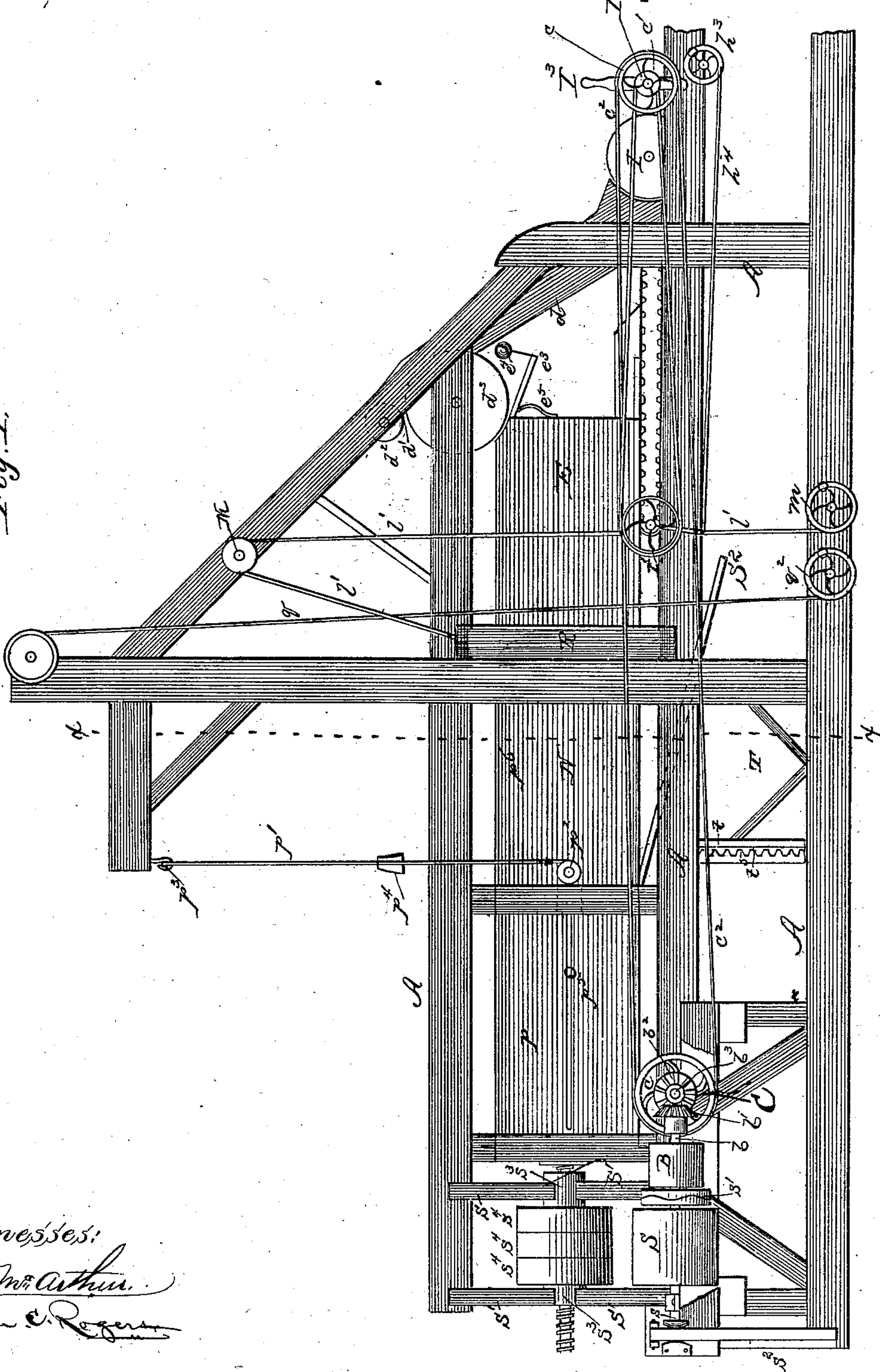
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P. K. CROWELL.
COMBINED COTTON GIN AND PRESS.

No. 256,429.

Patented Apr. 11, 1882.

7.627



Witnesses:
H. C. McArthur.
John C. Rogers.

Inventor
P. H. Crowell
per W. Alexander
Attorney

(No Model.)

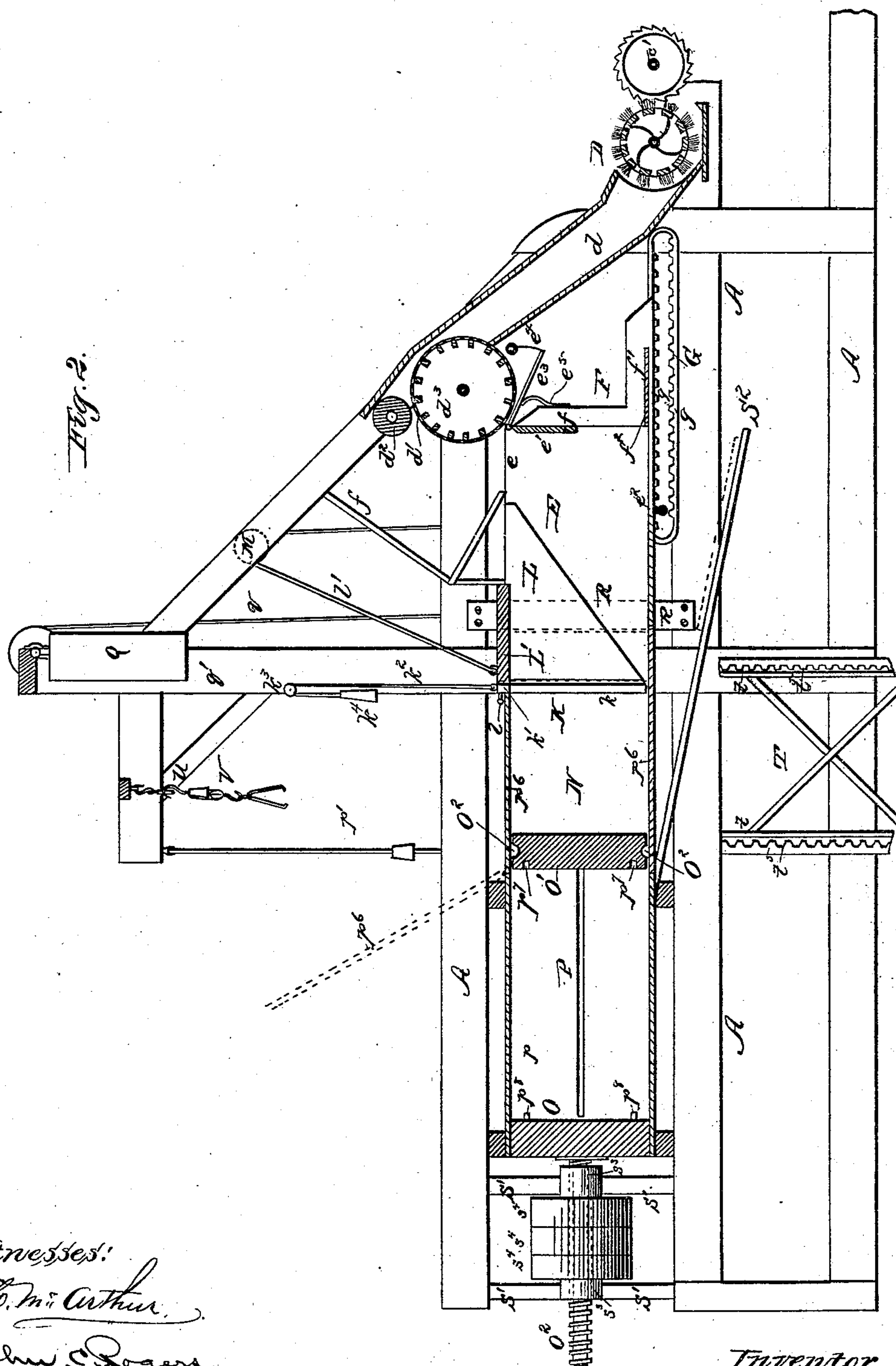
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per W. Alexander
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Fig. 3.

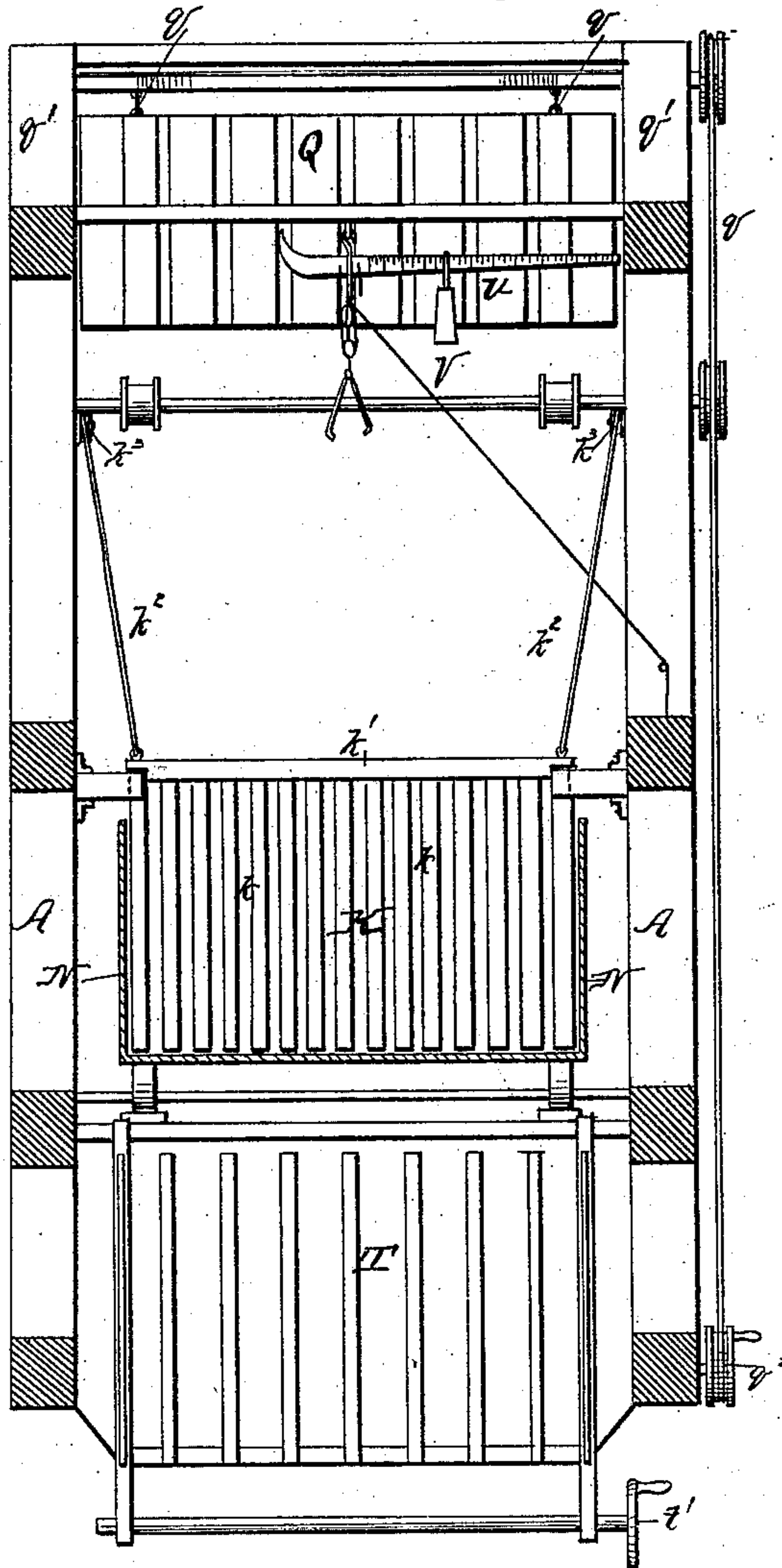
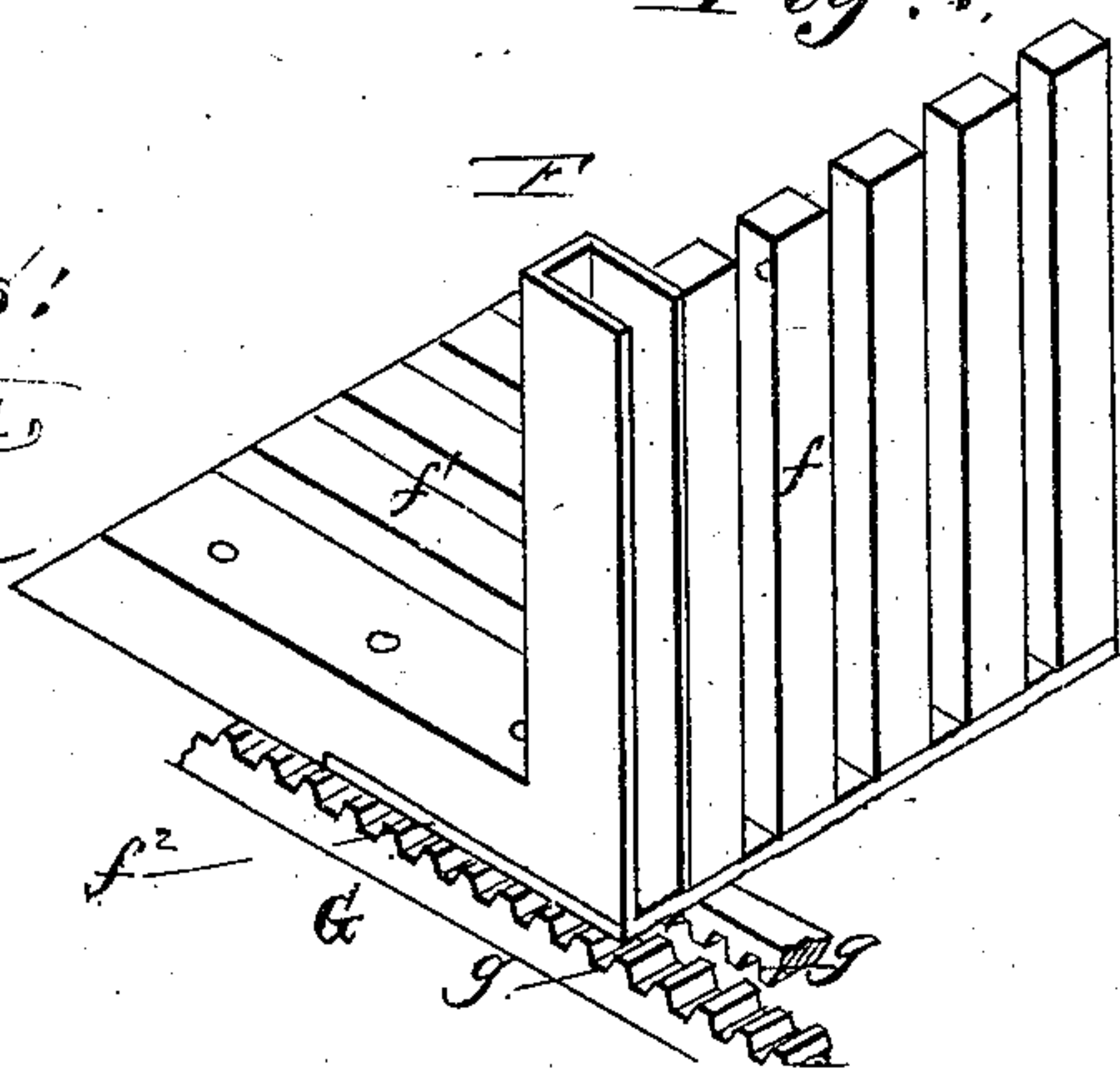


Fig. 4.



Witnesses:
H. C. McCutcher,
John C. Rogers

Inventor,
P. K. Crowell.

Per
W. H. Alexander
Attorney.

(No Model.)

4 Sheets—Sheet 4.

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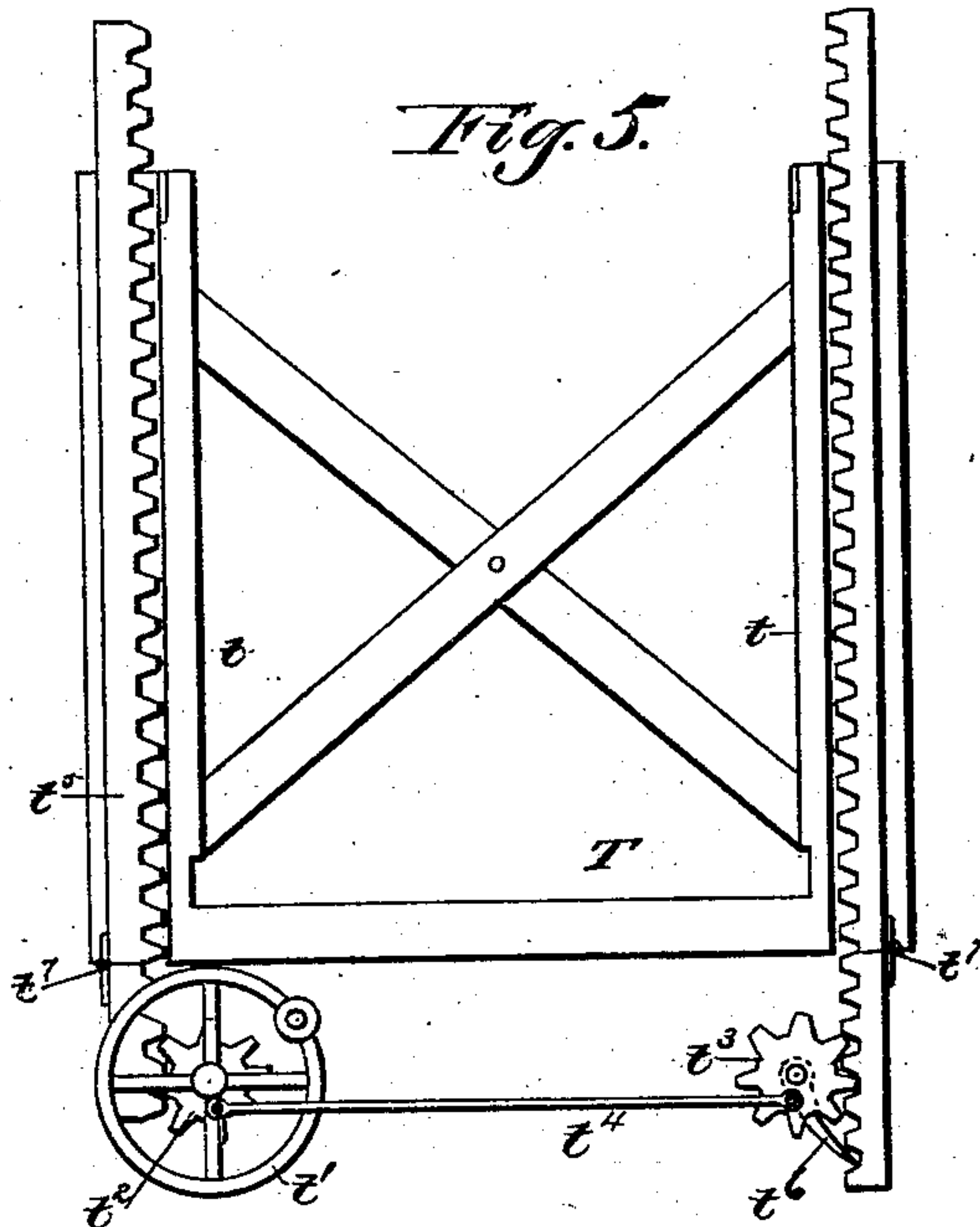
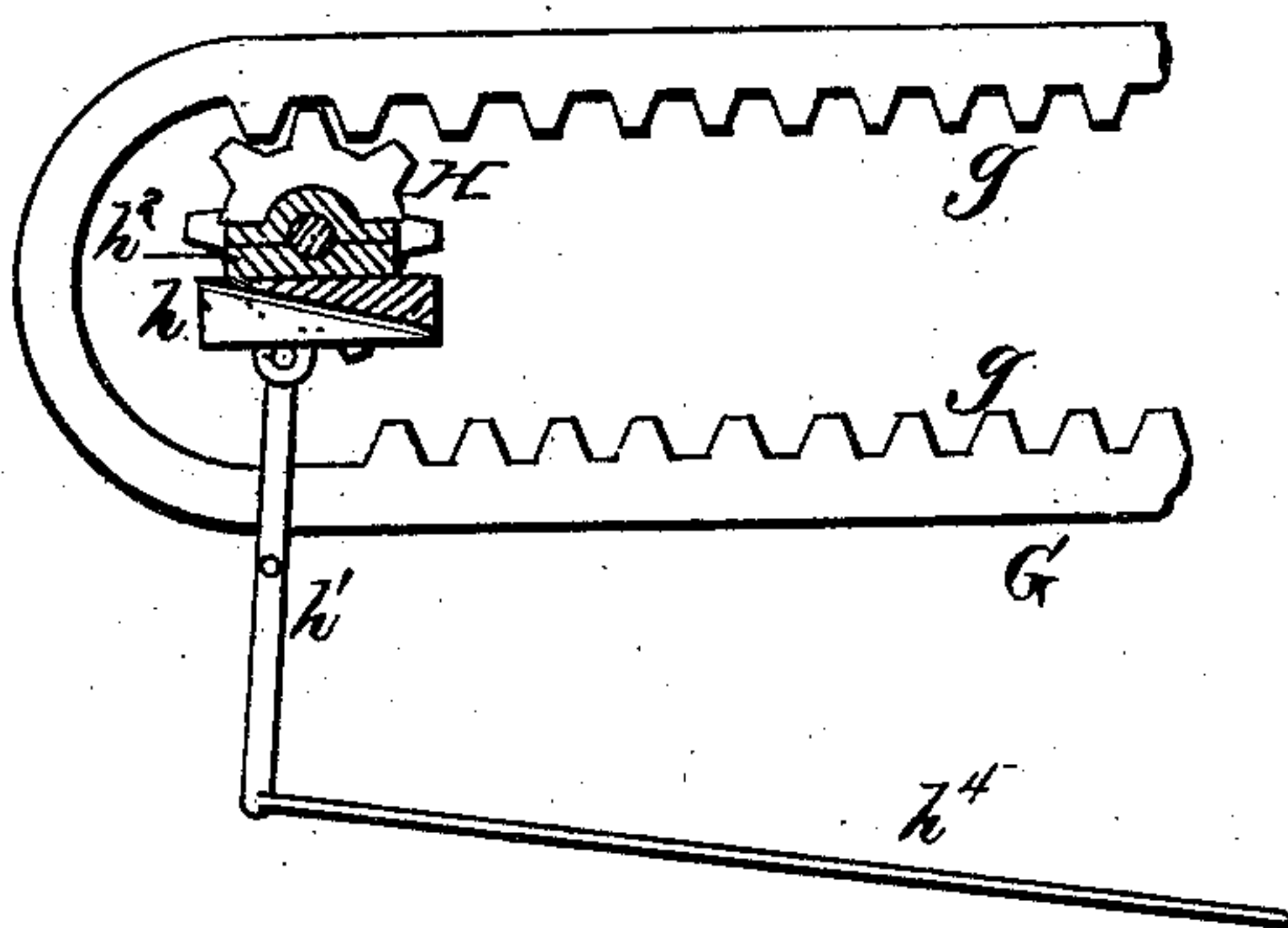


Fig. 6.



Witnesses:
H. C. McArthur,
John C. Rogers

Inventor,
P. K. Crowell

per W. Alexander
Attorney.

UNITED STATES PATENT OFFICE.

PEARL K. CROWELL, OF LITTLE ROCK, ARKANSAS, ASSIGNOR OF ONE-FOURTH TO ELIZA K. WILLIAMS, OF WASHINGTON, D. C.

COMBINED COTTON GIN AND PRESS.

SPECIFICATION forming part of Letters Patent No. 256,429, dated April 11, 1882.

Application filed April 5, 1881. Renewed March 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, P. K. CROWELL, of Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Combined Cotton Gin and Press; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to a combined cotton gin and press.

The main objects of the improvement are to reduce to a minimum the delay and trouble incurred in erecting an outfit by rendering the gin-house unnecessary, and to construct, with the exception of the steam-engine, an entire machine for ginning and pressing cotton in a cheap, compact, and portable form; also, to reduce the number of hands which are usually employed for ginning and pressing cotton, as will be apparent from the following specification.

In the drawings, Figure 1 is a side elevation of my machine. Fig. 2 is a longitudinal central section taken on a vertical plane. Fig. 3 is a vertical section on the line $x x$, Fig. 1. Fig. 4 represents the packer detached. Fig. 5 illustrates the tie-holder, and Fig. 6 shows a portion of the rack-frame and devices for raising or lowering the pinion arranged in said frame.

A indicates the main frame of the machine. This will be supported by wheels, so that it can be readily moved from place to place, as may be required. The means employed for driving the saw-shaft consist of a belt-pulley, B, secured upon a shaft, b , and driven by a belt from the engine, a bevel-gear, b' , secured upon the same shaft and gearing with a like bevel-gear, b^2 , upon a shaft, b^3 , and a drum, C, secured upon said shaft and connecting with a pulley, c , upon the saw-shaft c' by means of an endless belt, c^2 .

D indicates the rotary gin-brush, which strips the cotton from the gin-saws and blows it up through the inclined flue d to the condenser d' , which is formed by means of the two rotary cylinders $d^2 d^3$, between which the cotton is passed and condensed.

E refers to the lint-chamber, into which the cotton drops from the condenser through the opening e of a trap, which is closed by a door, e' , during certain periods in the operation of the machine, as will be presently explained.

F refers to the packer, which consists of a series of vertical bars, f , arranged at equal distances apart, and a series of horizontal slats, f' , also arranged at equal distances apart, and secured to a thick iron plate, f^2 , which extends across the bottom of the lint-chamber and constitutes the base of the packer. The bottom of the lint-chamber is formed with longitudinal slots e^2 to admit of the connection of the packer with rack-frames G. The rack-frame G employed in connection with my invention is provided with two lines of internal teeth, $g g$, and between the said lines of teeth is arranged a pinion, H, that is mounted upon a shaft arranged to be raised or lowered, so as to bring the pinion into gear with either the upper or the lower set of teeth. The mechanism for thus operating said shaft consists of a movable wedge, h , connected with a lever, h' , that can be operated either to force the wedge under a bearing, h^2 , of the shaft, so as to raise the same, or to withdraw the wedge from under the bearing to admit of the descent of the shaft, in order to bring the pinion into gear with the lower set of teeth. Thus while the pinion, during its rotation, engages one set of teeth, the rack-frame and packer will be carried in one direction, and when it is shifted to engage the other set of teeth the rack-frame and packer will be moved in a reverse direction, whereby the packer can be moved back and forth at the will of the operator.

The device for shifting the wedge consists of a crank-wheel, h^3 , connecting with the lever h' by means of a connecting-rod, h^4 , and the means for operating the pinion consist of a belt, I, passing around a belt-wheel, I' , upon the pinion-shaft and a belt wheel or drum, I^2 , upon a sleeve on the saw-shaft, said sleeve being arranged to be engaged with a clutch by means of a crank-handle, I^3 , so as to cause its rotation simultaneously with the saw-shaft, or to be disengaged therefrom, so as to remain idle, and thus check the movement of the packer.

K represents the bale-holder, consisting of

vertical iron bars k , secured to a rail, k' , and triangular-shaped plates L , secured to a thick iron top plate, L' , that is connected with the rail or horizontal top bar of the bars k by means of eyebolts l . Ropes k^2 extend up from the rail k' over pulleys k^3 , and are provided with weights k^4 , and ropes l' extend from the plate L' over a pulley, M , and thence down to a crank-wheel, m . The triangular plates L are of the same thickness as the vertical iron bars k , and are made to fit into grooves in the rear sides of said bars.

N indicates the bale-box, which is in front of the bale-holder. The follower which works in the bale-box is composed of two blocks, O O' , the former of which is acted directly upon by the screw O^2 . The block O' is provided with pins passing through slots P in the side boards, p , and it is adapted to hold the cotton within the bale box by a yielding pressure by means of a rope, p' , which connects therewith and passes around a pulley, p^2 , and over a hook or staple, p^3 , and is provided at its end with a weight, p^4 . This block is arranged to swing upon its pivots p^5 when the doors p^6 of the bale-box are open, so as to facilitate the placing of the bagging thereon. It is also provided with mortises p^7 to receive the dowels p^8 upon the block O .

Q indicates the head-block, which is suspended by a rope, q , that is carried down from the top of the standards q' and connected with the shaft of a crank-wheel, q^2 . Heavy timbers R R are arranged, as shown in full and dotted lines, Fig. 2, to receive the pressure during the operation of baling.

S indicates a drum mounted upon a shaft, s , which is coupled with or uncoupled from the shaft b by means of the side-acting friction-gearing s' and a lever, s^2 , which can be operated to force the shaft s toward the shaft b , and thus bring the friction-gearing together, or which can be swung away from said shaft, whereby the rotation of shaft b will disconnect said gearing. The drum S imparts motion to the screw when the said shafts b and s are connected by means of belting, for which purpose I provide upon the screw two nut-blocks and collars, s^3 , and the three pulleys s^4 , the center one being fast and the outer ones loose. In this connection I employ two belts, one of which will be crossed, whereby the screw can be driven back and forth by shifting the open or the crossed belt upon the fast pulley, as the case may be. S' indicates braces for holding the nut-blocks. In Figs. 1 and 2 I have shown the inclined slides S^2 for the under doors of the bale-box N .

T indicates the tie-holder, having a series of vertical bars, t , formed with channels for holding the ties, the number of said bars or sheaths admitting of a dozen ties being held thereby, if required. The tie-holder is raised so as to bring the ties around the sides and bottom of the bale within the bale-box by means of the crank-wheel t' , having a pinion, t^2 , upon its shaft, and a pinion, t^3 , connecting with the

crank-wheel by a connecting-rod, t^4 , said pinions being arranged to engage with the vertical rack-bars t^5 . On the shaft of one of these pinions is a pawl, t^6 , to prevent the descent of the rack-bars until the pawl has been released from the rack-bar.

The letters U V refer to steelyards and lifting apparatus for lifting and weighing the bales. In operating this machine the cotton drops from the compressor d into the lint-chamber so long as the packer F is back under the lower cylinder of the compressor, as shown in Fig. 2.

In order to move the packer forward, so as to carry the cotton into the bale-box, the operator turns the crank-wheel k^3 , so as to bring the pinion within the sliding rack-frame into mesh with one of the sets of teeth in said frame, by means of which the rotation of the pinion will move the rack-frame and consequently the packer forward. The pinion is set in motion by turning the handle l^3 , so as to engage the pulley l^2 with the saw-shaft by any suitable clutch mechanism, said pulley transmitting motion to the drum upon the pinion-shaft by a belt, l . As the packer moves forward it strikes against and raises the door e' , so as to close the opening at the top of the lint-chamber. This door is hung upon a rod secured in the sides of the lint-chamber, and it is provided with an arm, e^3 , carrying a weight, e^4 , which, after the packer has passed forward beyond the door, holds the same in a vertical position until, by reversing the above-described operation of the pinion and bringing the same into engagement with the other set of teeth in the rack-frame by shifting the wedge, the packer returns and causes the door to drop by the action of a spring, e^5 , carried by the packer, against the weighted arm e^3 of said trap or door. As the packer advances its vertical bars f pass between the triangular plates L and the vertical bars k of the bale-holder, said plates and bars being now connected by means of the eyebolts l passing through the bar k' into the plate L , to which the triangular plates are secured. During this forward movement of the packer the lint which is carried by the same is wedged under the plates L , so as to raise the bale-holder to a sufficient height to admit of the passage of the lint under the same and into the bale-box N . The forward movement of the packer will be continued until it is about three inches in advance of the bars k of the bale-holder, at which point it is stopped and the bale-holder allowed to drop to nearly its former position. The position and direction of rotation of the pinion H will now be changed by the means hereinbefore described, so as to bring the packer back to the position shown in Fig. 2, whereby the trap-door e' will be opened and the lint which has accumulated upon the guard e^6 while the door has been closed will drop through opening e into the lint-chamber in front of the packer. The guard e^6 here referred to consists of a series of inclined fingers with spaces between them to admit of the pas-

sage of the triangular plates L of the bale-holder during the vertical movement thereof. The block O' of the follower, being kept forward against the cotton in the bale-box by means of the weight p^4 , will be gradually pushed back as the bale-box is filled until it abuts against the block O, that is acted upon by the screw, said block O' being arranged to swing upon its pivots when the doors of the bale-box are open to facilitate the operation of putting the bagging upon it, and being further provided with a large groove, O², in which the edges of the bagging are secured. After the bale has been packed in the bale-box the part L L' of the holder is detached from the bar k' by withdrawing the eyebolts l , and it is then elevated by turning the crank-wheel m . The head-block Q is then let down by turning crank-wheel q^2 , said head-block coming in front of the heavy timbers R, which afford suitable resistance to the great pressure which it sustains when the follower is advanced to compress the bale. After the head-block is in position the remaining portion, kk' , of the bale-holder can be raised by the weight k^4 and the follower advanced to press the bale by rotating the screw by means of the devices before described. After this operation the doors of the bale-box can be removed and the tie-holder, with the ties for the bale, run up to their place on the bale by operating the crank-wheel t' . Thus in a space of about three minutes one man can inclose, tie, sew, lift out, and weigh the bale by means before described, and in about two minutes more have the box ready for another bale—an amount of labor which has heretofore occupied about half an hour when performed by two men. The ties will all have an equal tension, and thus be less liable to break than when they are put on one at a time and pounded instead of pressed onto the bale. In transporting this machine the screw can be run in and the tie-holder elevated, the lower portions of the rack-bars being turned up on their hinges $t^7 t^7$.

What I claim as my invention is—

1. In a combined cotton gin and press, the packer F, connected with a reciprocating rack-frame, and composed of vertical and horizontal bars secured to a base-plate, substantially as described.

2. The combination, with the packer F, of the rack-frame G, provided with two internal sets of teeth, a pinion arranged to be raised or lowered within the rack-frame to engage the teeth of either set, and devices for raising and lowering the said pinion, whereby the rack-frame and the packer can be moved back and forth by the rotation of the pinion in one direction, substantially as described.

3. The combination, with the movable pack-

er F, arranged within the lint-box, of the trap-door e' , arranged to be raised by the forward movement of the packer, and the weighted arm e^3 , arranged to be raised by the spring e^5 during the backward movement of the packer, substantially as described.

4. In a combined cotton gin and press, the bale-holder K, consisting of vertical bars k , forming one section thereof, and the triangular-shaped plates L, secured to a plate, L', and constituting the remaining section of the same, said sections being connected by eyebolts, substantially as described.

5. The combination, with the packer F, provided with a series of vertical bars, of the vertically-movable bale-holder K, provided with vertical bars, and triangular-shaped plates arranged to admit of the passage of the vertical bars of the packer between them in the manner set forth, said bale-holder being adapted to be raised by pressure of the lint wedged under its triangular-shaped plates by the packer, substantially as described.

6. The tie-holder T, comprising vertical sheaths for the ties and pinions, and rack-bars for raising the same, substantially as described.

7. The combination, with the vertical sheaths t for the ties, of the crank-wheel t' , the pinion t^2 upon the shaft of the crank-wheel, the pinion t^3 , connected with the crank-wheel by a connecting-rod, and the rack-bars t^5 , with which the pinions engage, whereby by operating the crank-wheel the tie-holder can be raised into the bale-box, substantially as set forth.

8. The combination, with the head-block Q, of the follower-blocks O O', the latter provided with pins passing through slots P, the screw acting upon the block O, the fast and loose pulleys s^4 , and mechanism for driving the fast pulley in different directions, substantially as described.

9. The combination, with the gin-saws, the rotary brush, and a flue leading from the brush to the condenser, of a movable packer arranged to travel back and forth in the lint-chamber below the condenser, a vertically-moving bale-holder arranged in front of the packer, the head-block arranged to be lowered at one side of the bale, the follower and screw of the press, and the vertically-moving tie-holder, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

P. K. CROWELL.

Witnesses:

T. H. ALEXANDER,
AUG. A. NICHOLSON.