

(No Model.)

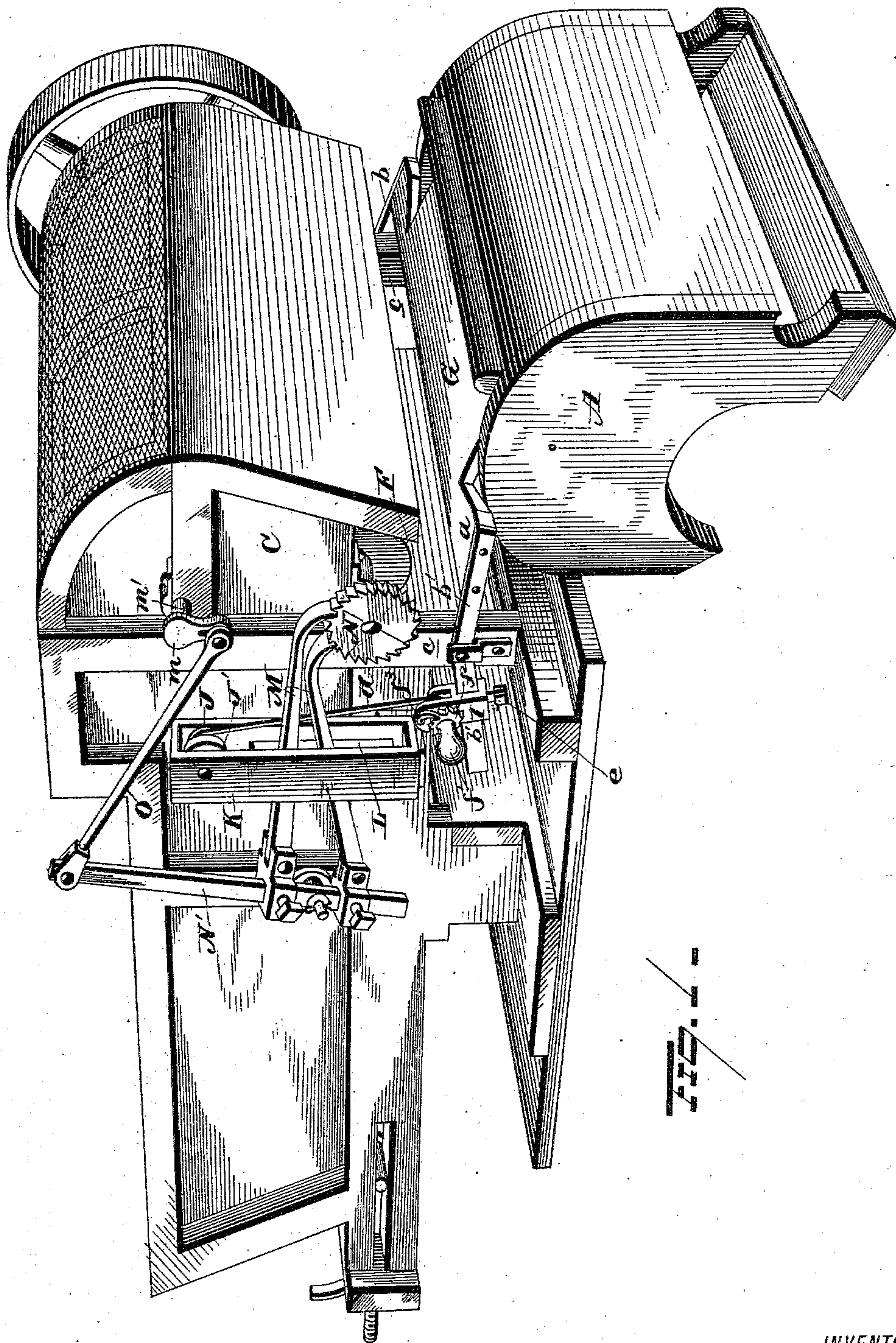
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L. D. FORBES.

GOVERNOR FOR COTTON GIN FEEDERS.

No. 295,377.

Patented Mar. 18, 1884.



WITNESSES
S. G. Nottingham
George Cook.

INVENTOR
L. D. Forbes,
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(No Model.)

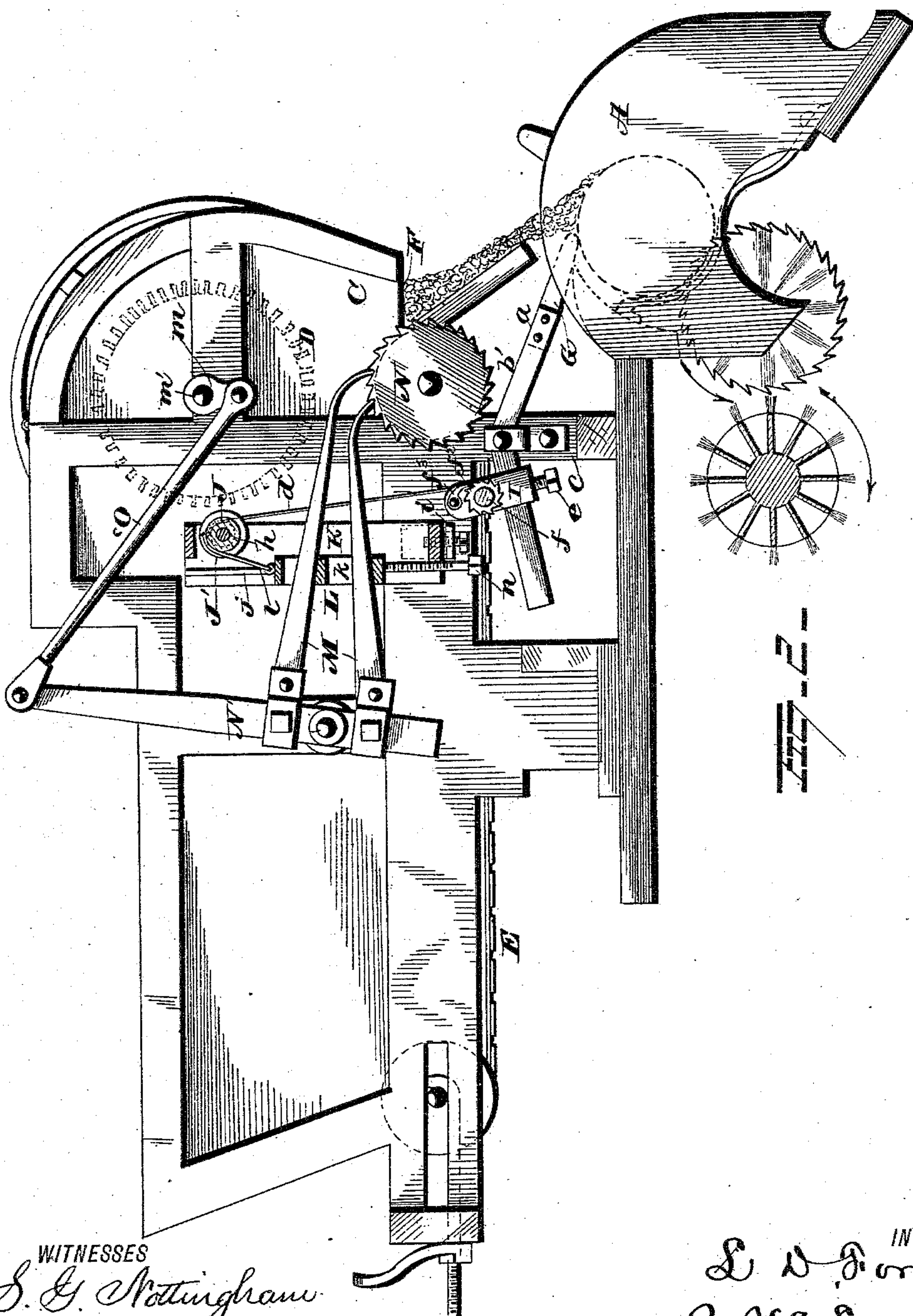
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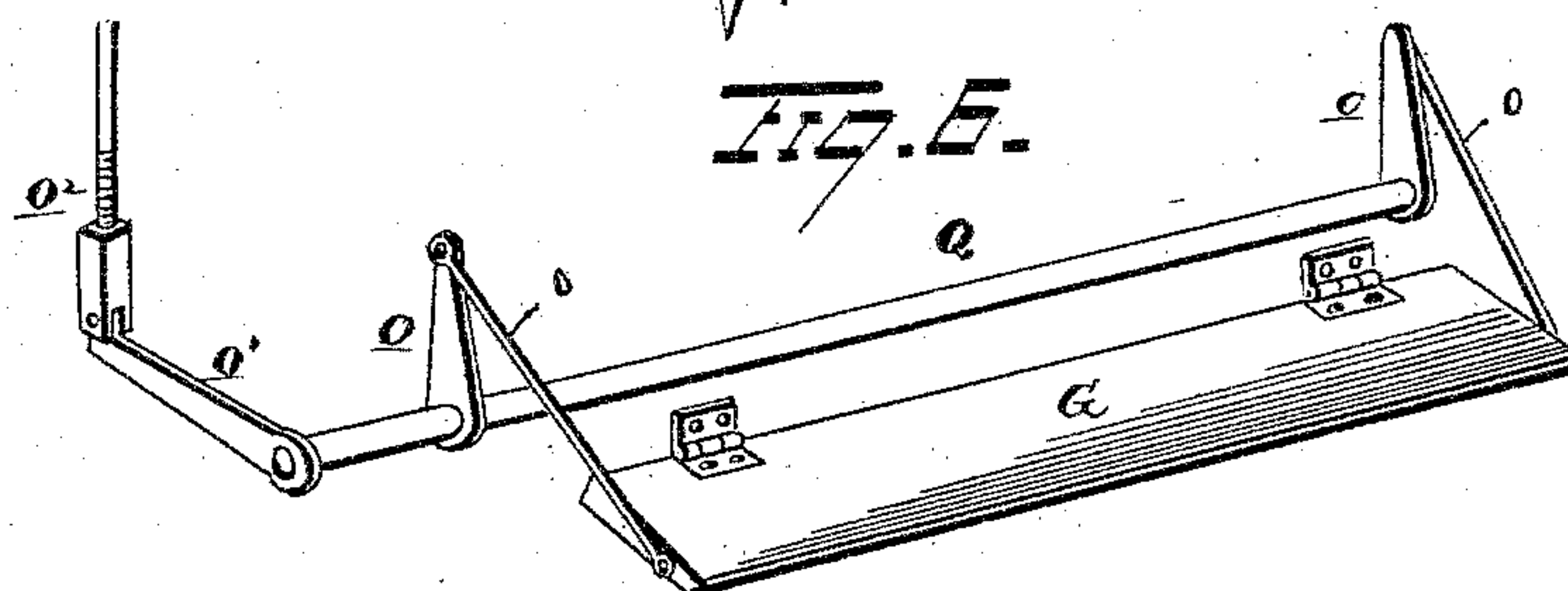
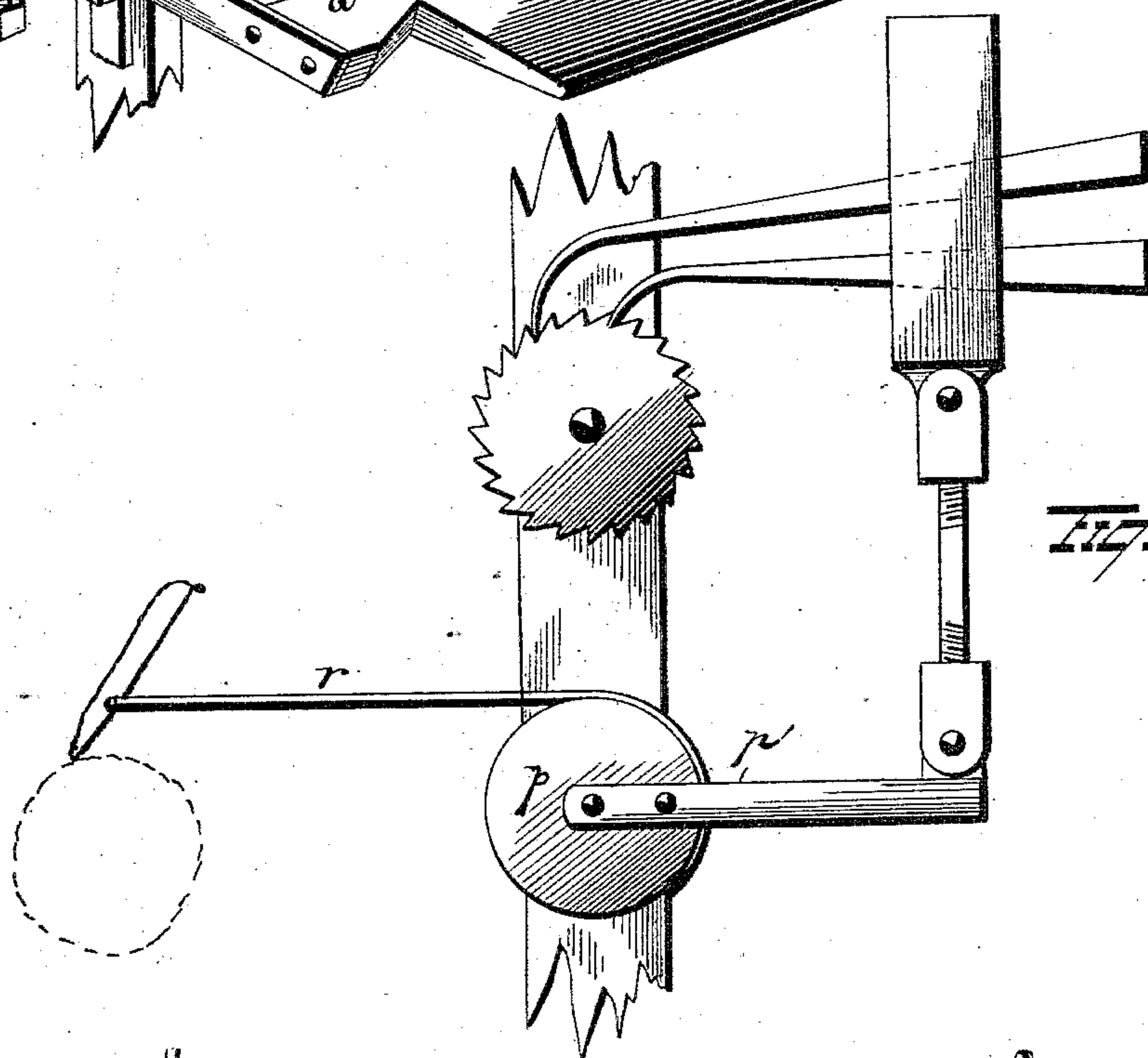
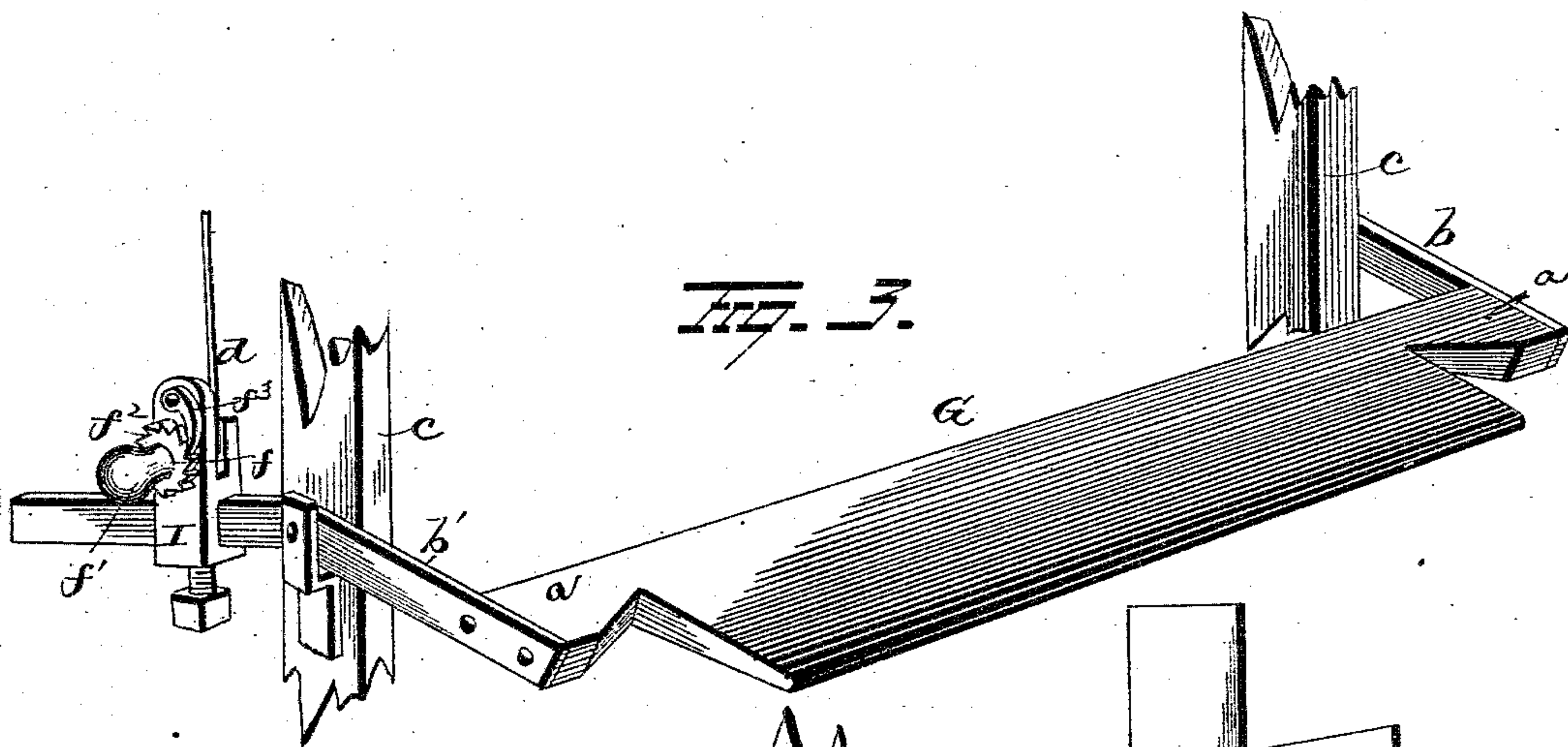
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Patented Mar. 18, 1884.



WITNESSES
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(No Model.)

4 Sheets—Sheet 4.

L. D. FORBES.

GOVERNOR FOR COTTON GIN FEEDERS.

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Fig. 5.

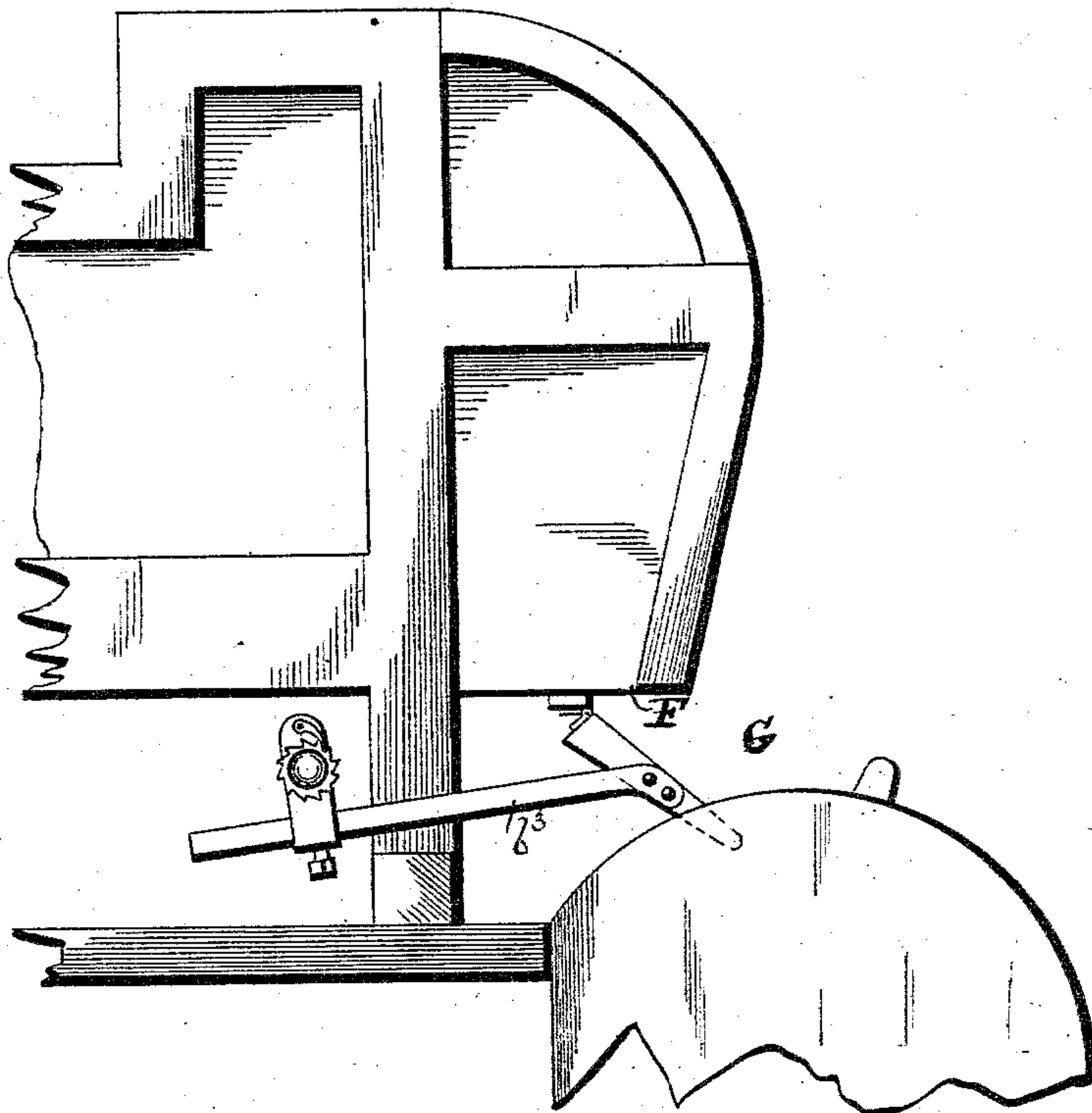
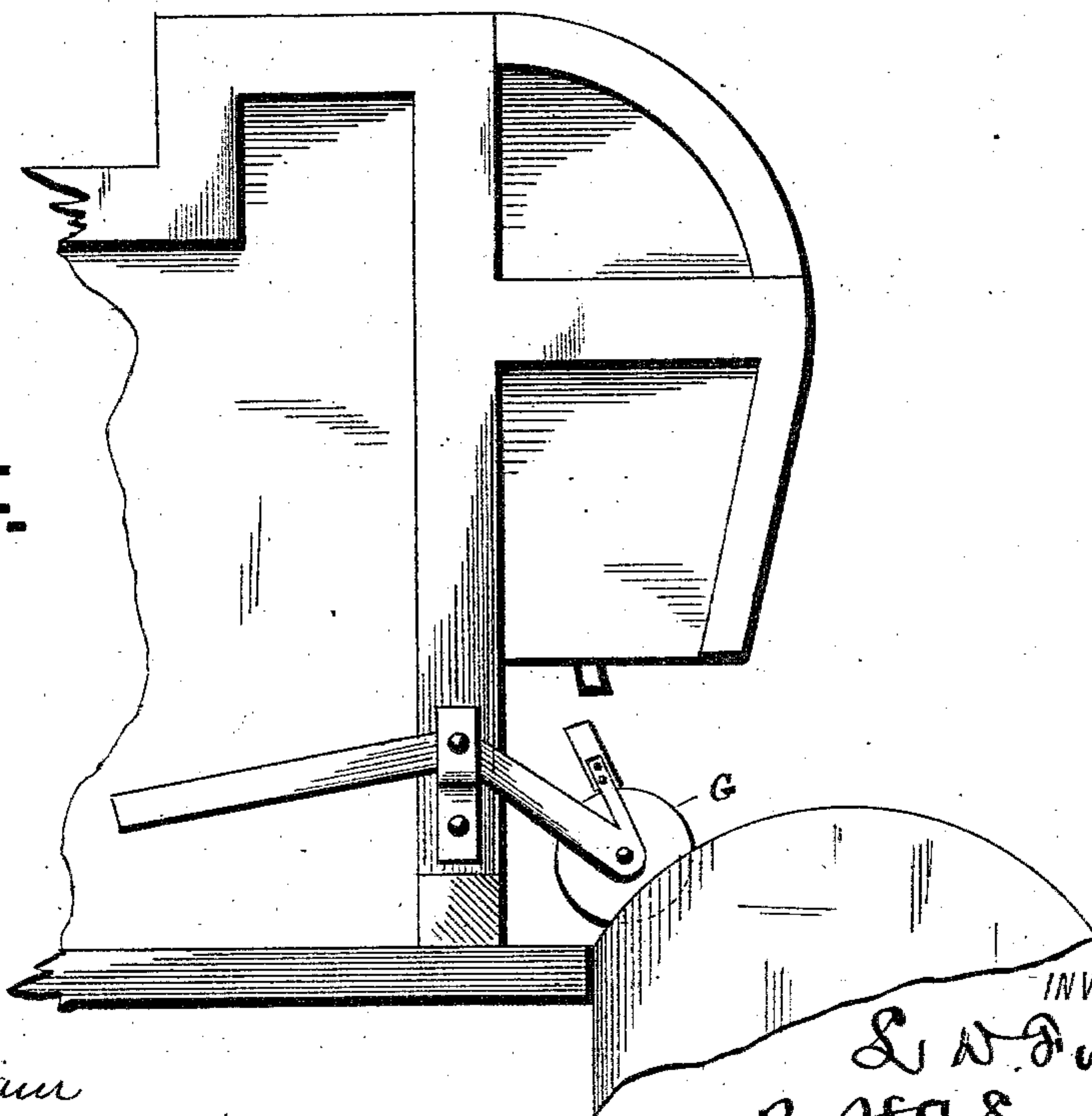


Fig. 4.



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UNITED STATES PATENT OFFICE.

LYCURGUS D. FORBES, OF STRANGER, TEXAS.

GOVERNOR FOR COTTON-GIN FEEDERS.

SPECIFICATION forming part of Letters Patent No. 295,377, dated March 18, 1884.

Application filed June 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, LYCURGUS D. FORBES, of Stranger, in the county of Falls and State of Texas, have invented certain new and useful
5 Improvements in Governors for Cotton-Gin Feeders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and
10 use the same.

My invention relates to an improvement in governors for cotton-gin feeders, the object of the same being to provide suitable mechanism whereby the pressure of cotton in the roll-box
15 of the gin operates to control or regulate the feed of the gin-feeder; and with these ends in view my invention consists, first, in the combination, with a roll-box of a cotton-gin, of a movable head-board, roller, or equivalent device adapted to rest on the roll of cotton with-
20 in the roll-box of the gin, mechanism for feeding cotton to the roll-box, and mechanism for transmitting the motion of the movable head-board, roller, or equivalent device, caused by
25 the increasing or diminishing of said roll, to the feeding mechanism, whereby the feed of cotton into the gin will be diminished when the roll increases beyond a fixed size.

My invention further consists in the parts
30 and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved governor, as applied to a gin and gin-feeder.
35 Fig. 2 is a view in side elevation of the same. Fig. 3 is a detached perspective view of the movable board and its connecting mechanism, and Figs. 4, 5, 6, and 7 are modifications.

A represents the roll-box of an ordinary gin,
40 the breast of which can be either solid, as here shown, or slotted for the purpose of allowing the loose seed to fully escape from the roll.

The gin-feeder C is situated above the gin, and is provided with a spiked drum, D, and
45 an endless apron, E, which, combined, move the loose cotton forwardly, and discharge it through the spout F into the roll-box A in front of the movable head-board G, which latter is indirectly secured to the feeder. This
50 head-board is of the same width as the roll-box, so as to enable it to move freely therein, and is provided with the extensions a, to which

the front ends of the arms *b b'* are rigidly secured. The arm *b*, which is preferably made of metal, is pivotally secured at its rear end
55 to one of the feeder-standards *c*, while the other arm, *b'*, which is considerably longer than the arm, *b*, is pivoted about midway its length to the other feeder-standard *c*. The front end of the head-board G rests within or
60 partly within the roll-box, so as to constantly bear on or be in contact with the roll of cotton within said box; and hence when the roll increases in size, from overfeeding, the head-board is caused to rise, and when the roll de-
65 creases in size, on account of an insufficient feed, the head-board descends. That portion of the arm *b'* to the rear side of the standard *c* inclines downwardly, and is provided with the adjustable slide I, to which one end of the
70 cord or chain *d* is secured. This slide is provided with an open slot for the passage of the rear end of the arm *b'*. A set-screw, *e*, passes upwardly through the slide I, and bears against the under side of the arm, and consequently
75 holds the slide in any desired adjustment. This slide is cut away at its upper end, and is provided with a small drum, *f*, to which one end of the cord or chain *d* is secured. This drum
80 *f* is operated by the knob *f'* on the outside of the slide I, and is prevented from accidentally turning by the ratchet *f²*, rigidly secured to the drum-shaft, and the pawl *f³*, pivotally secured to the slide. By turning the knob in the proper direction the cord is wound on the
85 drum, and the ratchet and pawl prevent it from unwinding. When it is desired to unwind the cord or chain, the pawl is disengaged from the ratchet, and leaves the parts free to be turned in the opposite direction. The cord
90 or chain *d* passes upwardly, and is secured at its upper end to the pulley J, journaled in the frame K. This pulley J is rigidly secured to the shaft *h*, and can, if desired, be formed integral with the larger pulley J', which latter
95 is also secured to the said shaft.

The guide-frame K can be made of any suitable material, and is adjustably secured to the bracket *i*, which in turn is rigidly secured to the feeder-frame. This bracket is provided
100 with a series of small holes or with an elongated slot, through which the set screw or bolt which secures the guide-frame to the bracket passes. By loosening the screw or bolt the guide-frame

can be moved toward or away from the feeder, as circumstances demand, and, by simply tightening the screw or bolt, can be again secured in position against movement. This frame is open, and is provided with the vertical guides *j*, on which the vertically-movable dog-holder *L* moves or slides. This holder is preferably made of metal, and is grooved longitudinally on opposite sides for the reception of the guides *j*, and is provided with the open slots *k* for the passage of the dogs *M*. The upper end of the dog-holder is connected to the pulley *J'* by the cord *l*, which passes over the rear side of the pulley; and hence when the pulley *J* is turned in either direction by the movement of the arm *b'*, the pulley *J'* also turns in the same direction and winds or unwinds the cord *l* around the same. The rear ends of the dogs *M* are pivotally secured to the vibrating lever *N'*, while the front ends thereof are adapted to engage the ratchet-wheel *N* and move the endless apron of the feeder. The vibrating lever is pivotally secured to the feeder-frame, and the dogs *M* are adjustably secured thereto respectively above and below its pivotal point, so that while one dog is moving forward the other is retracting. Both dogs pass through the dog-holder, and are held in position and moved thereby; and hence it follows that when the holder is elevated the front ends of the dogs are elevated, and when the holder is lowered the front ends of the dogs are also lowered. When the dogs are let down to their lowest positions, they take in the maximum number of teeth of the ratchet-wheel *N*, and consequently move the endless carrier at its maximum rate of speed, and when the dogs are elevated they take in a less number of teeth, and consequently move the endless apron proportionally slower. The upper end of the vibrating lever *N'* is pivotally secured to one end of the pitman *O*, while the opposite end of the said pitman is connected to the crank *m* of drum-shaft *m'*. The opposite end of the drum-shaft is provided with a belt-wheel, around which the driving-belt passes. Both dogs *M*, when adjusted equidistant from the axis of the vibrating lever, necessarily have the same length of stroke, and consequently move the endless apron continuously at an even rate of speed. Sometimes it is desirable to make one dog feed faster—or, that is to say, have a longer stroke—than the other, and this is accomplished by the adjusting-screw *n*, mounted in the dog-holder and adapted to abut against or form a rest for the lower dog. By turning the screw the lower dog can be elevated independently of the upper dog, and consequently take in a less number of teeth at each stroke.

Motion is imparted to the crank *m* by a suitable belt or equivalent mechanism, and from thence to the apron through the intervention of the pitman, vibrating lever, dogs, and ratchet-wheel *N*. As soon as the endless apron begins to move, the cotton thereon is carried

to the spout *F* and discharged into the roll-box in front of the movable head-board. As soon as the roll forms in the roll-box, the capacity of the machine can then be determined, and the dogs are adjusted vertically by means of the drum on the slide *I* and the intermediate connections, so as to feed a predetermined amount with evenness and regularity.

If the amount of cotton fed to the roll-box should, from any cause whatever, exceed the capacity of the machine, the pressure of the roll against the head-board elevates the latter, and consequently depresses the rear end of the arm *b'*. As the rear end of the arm *b'* is depressed, the dog-holder is elevated by means of the cords before referred to, and elevates the dogs more or less, so as to wholly or partially disengage them from the ratchet-wheel, and consequently stop the feed entirely or retard it sufficiently to enable the pressure in the roll-box to be diminished until it regains its former or predetermined pressure.

This improvement is adapted to be secured to any style of feeder and gin, and constitutes a medium of connection between the two, thereby establishing a reciprocal action between them.

The feeder, after it is attached to the gin by my improvement, ceases to act with an automatic regularity independently of the gin; but it becomes responsive to the demands of the gin for more or less cotton. The whole principle of the invention consists in making the pressure of the cotton-roll in the roll-box govern and control the whole mechanism by which the feeding is regulated. By the application of this fundamental principal of roll-pressure to regulate the feed, it is only necessary to ascertain the capacity of the gin, and then adjust the governor, as before described, to receive the predetermined pressure, and the machine requires no more attention. Should too much cotton at any time be fed to the roll-box, the governor will at once throw the feeder partly or wholly out of gear until the overpressure has been reduced, and should the feeding at any time be too light, the rapidity of feeding is correspondingly increased until the full pressure is reached.

Sometimes it is desirable, when the gin and feeder are geared together, to stop the feeding without stopping the gin, and this can be accomplished by simply elevating the dog-holder by a loose cord, which latter can be wound around a button or secured in any manner until it is desired to again start the feeder.

In Fig. 4 I have simply substituted a roller, *G*, for the head-board. This roller is free to turn with the roll of cotton, and consequently creates less friction than the head-board. A shield or other device can partly cover the roll, to prevent any cotton that might fall thereon from being discharged before it is ginned.

Fig. 5 I have dispensed with the arms *b* and *b'* and hinged the head-board *G* to the feeder

just behind the spout F. To one side of this head-board is rigidly secured the arm b^3 , which latter performs the same function as the arm b^1 . This arm, however, is not hinged to the feeder-standard, but merely rocks with the up-and-down motion of the breast-board. When the head-board falls or sinks into the roll-box, the rear end of the arm b^3 rises, which, as before described, lowers the dog-holder, thereby enabling the dogs to take in more teeth, and consequently feed faster. When the breast-board is elevated by overfeeding, the rear end of the arm b^3 is lowered and the dogs elevated, which causes the feeder to run at a slower rate of speed.

In Fig. 6 I have dispensed entirely with the cords for elevating and lowering the dog-holder, and substituted a long rocking bar, Q, the opposite ends of which are bent upwardly at right angles to the body. This rocking bar runs from one side of the feeder to the other, and is suitably journaled thereto, and the upper bent ends thereof are pivotally connected to the inner ends of the arms o , while the opposite ends of the said arms are pivotally secured to the hinged head-board. The rocking bar Q is also provided with a rearwardly-extending arm, o' , to the end of which the rod o^2 is secured. The upper end of this rod is screwed into the lower end of the dog-holder, and the lower end thereof, which is screw-threaded in an opposite direction from the upper end, is also screwed to the arm o' —or, that is to say, into a screw-coupling secured to the end of the said arm. The screw-coupling is for the purpose of enabling the rod o^2 to retain its vertical position irrespective of the inclination of the arm o' . By means of the screw-threaded rod o^2 the dog-holder can be adjusted vertically to suit the capacity of the machine.

Fig. 7 illustrates another manner of connecting a hinged head-board to the movable dog-holder. In this construction the arms b b' are dispensed with entirely, and a pulley, p , secured to one of the feeder-standards. An arm, p' , is rigidly secured to the pulley, so as to move simultaneously therewith, and the outer end thereof is connected to the dog-holder by a screw rod and coupling similar to that described in Fig. 6. A rope or cord, r , is rigidly secured at one end to the rear side of said pulley, and is carried upward and over the same, while the opposite end thereof is connected to the hinged head-board. When the head-board is elevated, the cord is drawn forward and the pulley p partly turned. This movement of the pulley inclines the arm p' upwardly, and the latter, through the intervention of the screw-threaded rod, elevates the dog-holder. As soon as the original pressure of cotton in the roll-box is restored, and as soon as it begins to diminish, the head-board and dog-holder drop by their own weight, and are consequently always in position to act instantly.

It is evident that numerous devices for

transmitting the movement of the breast-board or its equivalent to the feeding mechanism might be resorted to without departing from the spirit of my invention; and hence I would have it understood that I do not limit myself to the exact construction shown and described, but consider myself at liberty to make such changes as fairly fall within the spirit and scope of my invention.

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

1. The combination, with the roll-box of a cotton-gin, of a device constructed and arranged to swing within the arch of the roll-box and rest upon the roll in that arc of its circumference which has passed the saws before new cotton is taken onto the roll, a feed-roll, a feeding-apron for supplying cotton to the feed-roll, and means for transmitting the motion of the device that rests on the roll, caused by the increasing or diminishing of said roll, to the feeding-apron, whereby the feed of cotton into the gin will be accelerated when the roll diminishes and retarded when the roll increases beyond a fixed size, substantially as set forth.

2. The combination, with the roll-box of a cotton-gin, of a device arranged and adapted to rest on that portion of the roll which is in rear of the point at which the cotton is delivered thereto, of a feeding apron and roll and devices for transmitting the motion of the device that engages the roll, caused by the increasing and diminishing the size of the roll, to the feeding-apron, and thereby automatically starting, stopping, and regulating the rate of speed of the feeding-apron, substantially as set forth.

3. The combination, with the roll-box of a cotton-gin, of a vertically-movable device arranged and adapted to rest on that portion of the roll which is in rear of the point at which the cotton is delivered thereto, a feed-roll, a feeding-apron for supplying cotton to the feed-roll, a ratchet-wheel for actuating the feed-apron, pawls for operating the ratchet, and mechanism transmitting the movement of the device that engages the roll to said pawls for regulating their adjustment, and thereby regulating the rate of speed of the feeding-apron, substantially as set forth.

4. The combination, with the roll-box of a cotton-gin and a head-board arranged to rest on that portion of the roll which is in rear of the point at which cotton is delivered thereto, of a feed-roll and endless apron for supplying cotton to the feed-roll, a ratchet-wheel connected with one of the rollers of the feeding-apron, pawls for actuating the ratchet, devices for transmitting motion from the feed-roll to said pawls, and devices for transmitting the motion of the head-board to the pawls, and thereby regulating their adjustment and the rate of speed of the endless apron.

5. The combination, with the gin, of the head-board, arms b b' , slide, ratchet-wheel, holder-

frame, dog-holder, dogs, vibrating lever, and devices connecting the arm *b'* to the dog-holder, substantially as set forth.

6. The combination, with the gin, of the
5 endless apron, head-board, arms *b b'*, slide, dog-holder, dogs, and cords connecting the arm *b'* to the dog-holder, substantially as set forth.

7. The combination, with the gin, of the
10 endless apron, head-board, arms *b b'*, ratchet-wheel, dogs, dog-holder, a screw for moving

the lower dog independently of the upper one, and the cords connecting the arm *b'* to the dog-holder, substantially as set forth.

In testimony whereof I have signed this 15 specification in the presence of two subscribing witnesses.

LYCURGUS D. FORBES.

Witnesses:

GEO. F. DOWNING,
E. I. NOTTINGHAM.