

No. 644,156.

Patented Feb. 27, 1900.

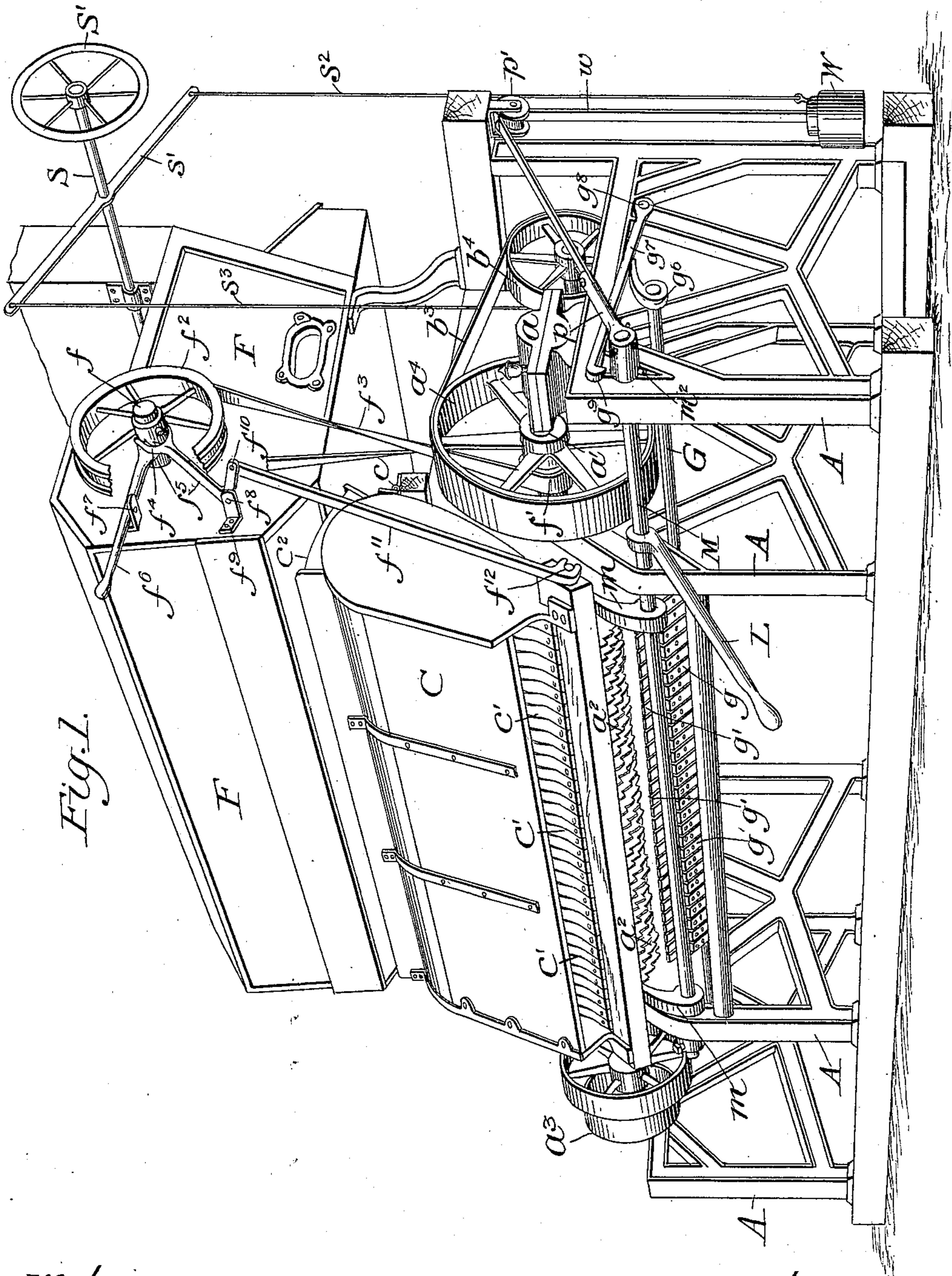
A. D. THOMAS.

SAFETY ATTACHMENT FOR COTTON GINS.

(Application filed Oct. 14, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses.
D. W. Edlin.
Katharine O'Leary

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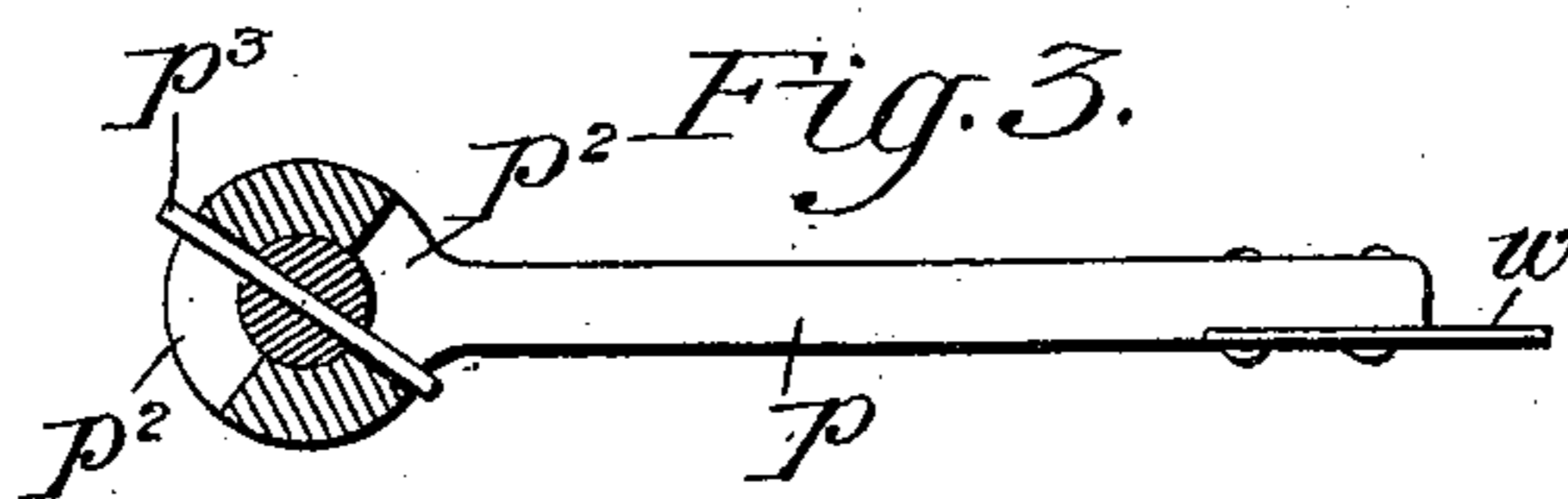
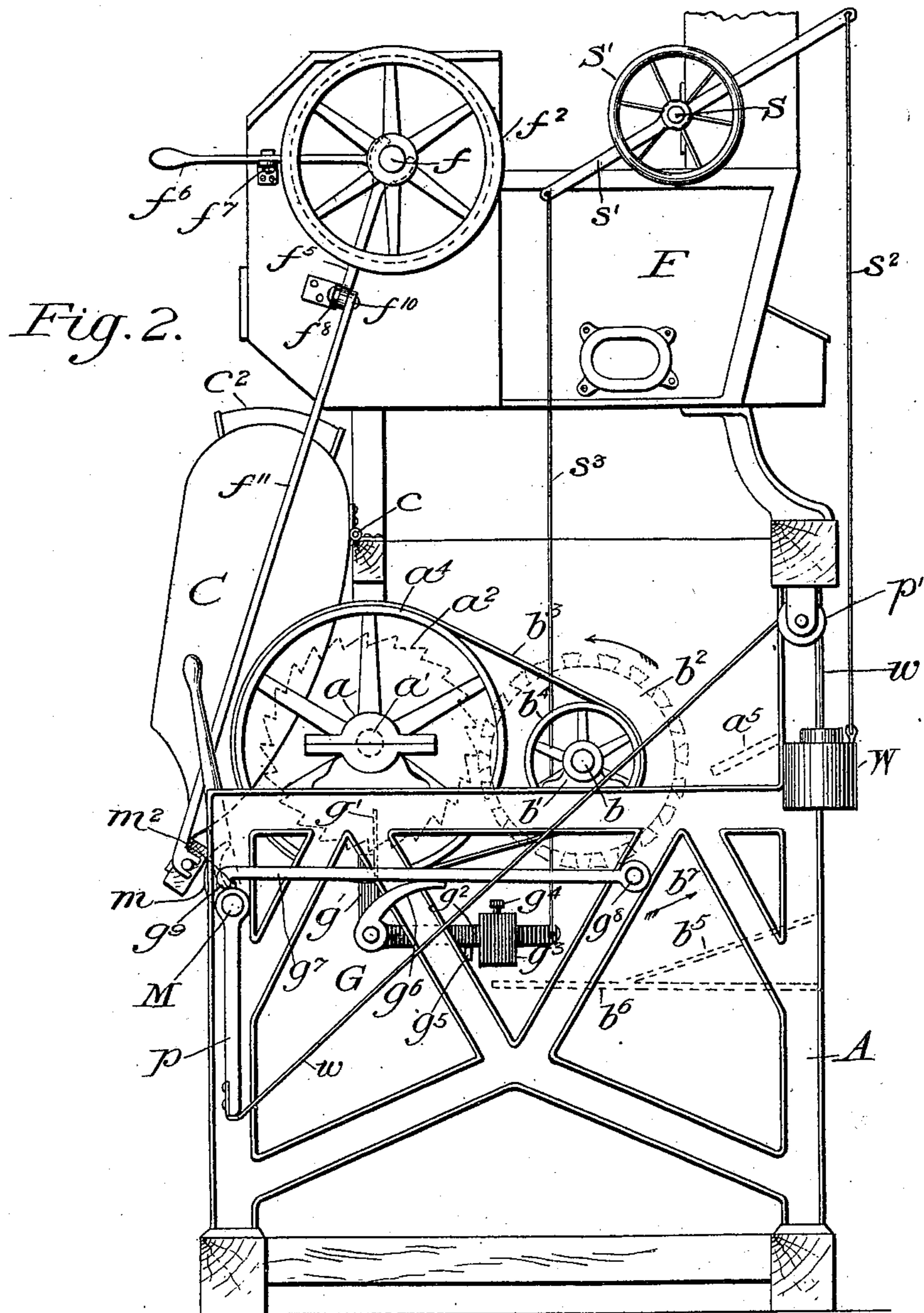
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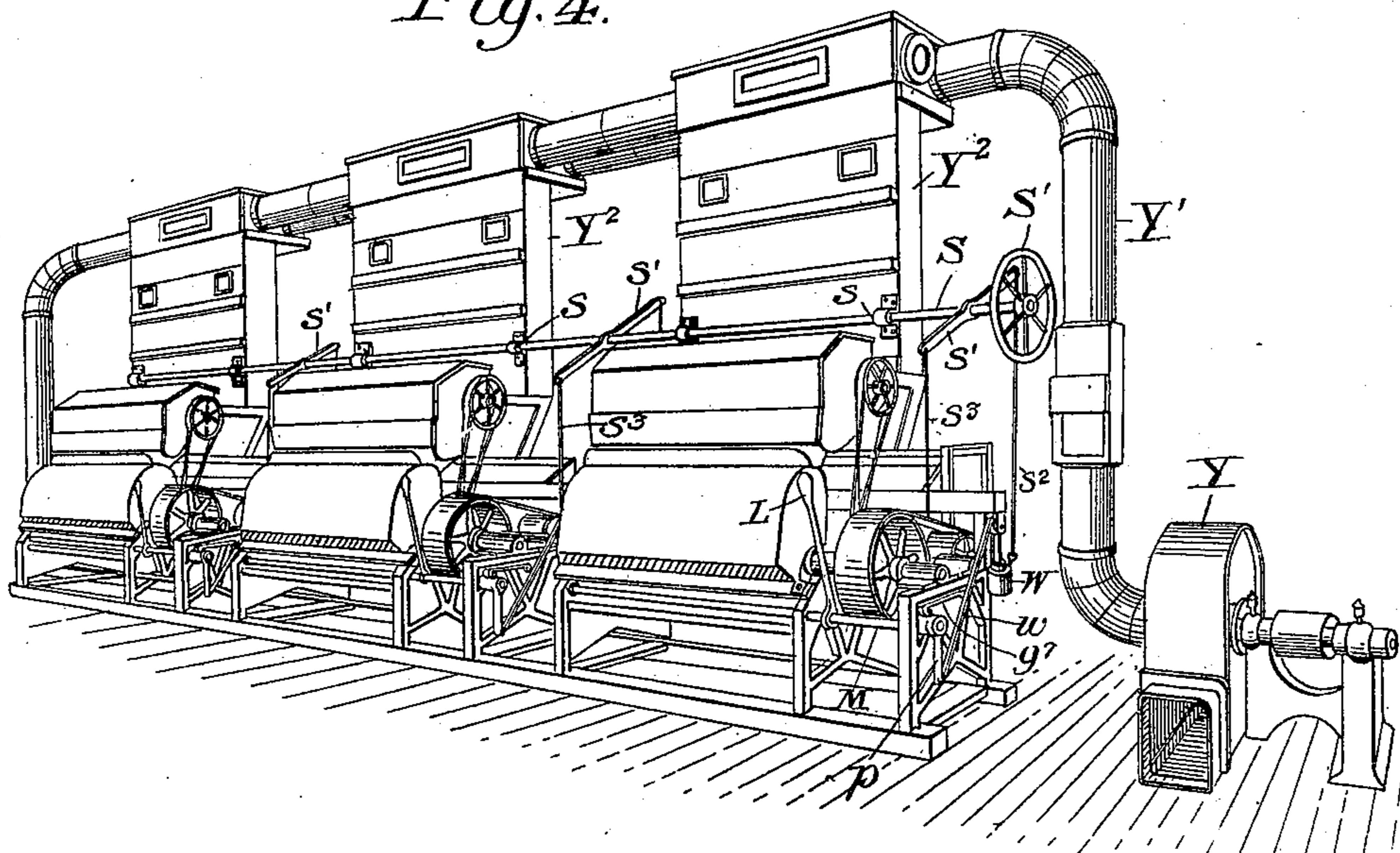
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Fig. 4.



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UNITED STATES PATENT OFFICE.

ABNER D. THOMAS, OF LITTLE ROCK, ARKANSAS.

SAFETY ATTACHMENT FOR COTTON-GINS.

SPECIFICATION forming part of Letters Patent No. 644,156, dated February 27, 1900.

Application filed October 14, 1899. Serial No. 733,564. (No model.)

To all whom it may concern:

Be it known that I, ABNER D. THOMAS, a citizen of the United States, residing at Little Rock, county of Pulaski, State of Arkansas, have invented certain new and useful Improvements in Safety Attachments for Cotton-Gins, of which the following is a specification.

One of the greatest troubles a ginner has to contend with in the practical ginning of cotton is that of cotton fiber getting into the ribs of the gin, owing to imperfect removal of the cotton from the saws by the gin-brush, which fails to perfectly perform its function when from any cause the condenser back of the saws becomes clogged or the brush-belt slips. In either case a quantity of the lint-cotton follows the saws around back to the lower end of the ribs, where it clogs in the slots between the ribs, frequently breaking the latter. The saws then carry some of the lint-cotton to the upper spaces between the ribs, which are usually narrower than the lower space and readily fill with the lint-cotton tightly wedged in, which being acted on by rapidly-revolving saws soon takes fire. Wads of the ignited cotton are then pulled out by the saws and by the brush and air-blast carried into the condenser-flue and so on into the press. These wads of cotton are rarely ever blazing, but smolder in the manner of punk, in which condition they are baled into the cotton and often at unexpected times eat out through the bale, causing serious fires, generally supposed to have been of incendiary origin. It is one of the objects of my invention to provide means whereby when this defective working of the gin occurs the gin-breast will be automatically lifted from the saws, so that they will no longer be in operative contact with the cotton and the feed of the cotton to the saws will be stopped, and another object is to provide means whereby the breasts of a series of gins, or of any one of them, may be raised or lowered at will, as will appear hereinafter.

My invention consists of the parts and combinations hereinafter more fully described, and definitely pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of a saw-gin provided with my improvements. Fig. 2 is a side elevation thereof.

Fig. 3 is a detail showing the connection between the breast-raising shaft and the operative arm therefor. Fig. 4 is a perspective view showing a series of gins provided with my improved automatic attachment and also with means for raising and lowering the breasts of all the gins of the series simultaneously.

Mounted in suitable bearings a on the main supporting-frame A of the machine is the saw-shaft a' , carrying the usual series of saws a^2 and driven from any usual source of power through suitable means, as the pulley a^3 , to the left of Fig. 1. To the rear of the saw-shaft a' is the shaft b , journaled in suitable supports b' on the main frame A and having secured thereto the usual brush b^2 for removing the lint from the saws. The brush-shaft b is driven from the saw-shaft by means of the belt b^3 , which passes over pulleys $a^4 b^4$ on the saw and brush shafts, respectively, as will be obvious from Figs. 1 and 2. In proper relative position to the brush b^2 is the flue b^7 , formed by the walls a^5 , b^5 , and b^6 and leading to the condenser. (Not necessary to here show or describe.) The parts so far alluded to are and may be of the usual construction.

Suitably hinged to the front of the gin, at c , is the gin-breast C, carrying the gin-ribs c' , Fig. 1, between which the saws a^2 revolve when the parts are in normal working position. When, however, the breast C is turned upon its hinge or pivot c , the ribs are carried with it from the saws, so that the latter no longer pass operatively through the ribs.

Secured to the rock-shaft G, journaled in proximity to the saws a^2 , and preferably in the main frame A subjacent to the saws, are a series of detectors g' , preferably in the form of a grid or comb g , the fingers of which extend upward between the saws, as indicated by dotted lines in Fig. 2. Said fingers do not directly contact with the sides of the saws, but are fitted to the spaces between the saws in such close proximity to the sides of the latter that any undue accumulation of cotton lint on the saws will contact with the fingers, pushing them forward, and thereby turn the shaft G. Of course it will be understood that it is not necessary to extend a finger between each two saws, as some of them may be omitted, and, in fact, any suitably-constructed device

that will detect such accumulation of cotton on the saws and be moved thereby I consider within the scope of the term "detector." Secured to the shaft G, Fig. 2, preferably near one end thereof, is the arm g^2 , carrying a weight g^3 , adjustable thereon and adapted to be held in position by a set-screw g^4 . This arm and weight serve to hold the shaft G in the position indicated in Fig. 2, with the fingers g' of the comb projecting upward, any suitable stop g^5 preventing undue turning of the shaft. On or near the end of the shaft G there is secured a trip or cam finger g^6 , which normally rests upon the under surface of a catch g^7 , suitably pivoted to some stationary part, as the frame A, at g^8 and having at its free end a hook or turned point g^9 . The construction and general arrangement of these parts are such that turning of the shaft G by the forward movement of the detectors or fingers g' will cause the cam or trip g^6 to lift the latch g^7 , and while I have shown and described a particular means for doing this it is to be understood that my invention is not to be construed as limited to this specific structure. For instance, the detector might be in the form of separate fingers projecting from the shaft G, or it might be a continuous piece having slots therein to form the fingers, and the trip or cam g^6 might be merely a pin or projection, it being only necessary that the detector shall cause the shaft to turn when cotton adheres to the saws and that the turning of the shaft will lift the latch, all as will be obvious without further illustration.

Mounted to turn in suitable bearings, preferably in the main frame and in proximity to the lower end of the gin-breast C, is the shaft M, carrying any suitable means, as fingers or cams m m , upon which normally rests the lower end of the gin-breast in a manner such that turning of the shaft M will cause the fingers or cams to raise the breast from the saws, and the breast will tend to turn the shaft in the opposite direction by its weight resting on the fingers or cams. Secured to this shaft in any convenient location is the hand-lever L, whereby the shaft may be turned by hand when desired.

Secured to the shaft M by the pin p^3 , Fig. 3, is the arm p , having the slots p^2 p^2 , in which the pin p^3 may freely work from end to end, so that the shaft and arm p may be relatively moved, and secured to the free end of the arm p is the strap, cord, or chain w , which, passing over the guide-pulley p' at the rear of the machine, has secured to its end the weight W, normally tending to turn the shaft M and its fingers or cams m m to lift the breast C. On the hub of arm p is fixed the catch or pin m^2 , which, being normally engaged by the hooked end of the latch g^7 , prevents turning of the arm, and consequently the shaft M, under stress of weight W, the normal working position of the parts being represented in Figs. 2 and 3. It will be evident from Figs. 2 and 3 that while the latch g^7 and catch m^2

prevent the arm from turning under the stress of the weight W yet the shaft M can be turned by the hand-lever L when desired, during which operation the pin p^3 , fixed to the shaft M, simply moves from one end of the slot p^2 to the other. Thus without disturbing the safety attachment the shaft M may be turned by hand and the breast raised at any time as desired.

Mounted, preferably, upon the top of the main frame, so as to supply seed-cotton to the gin-breast through the opening c^2 in the top thereof, is the gin-feeder F, of any usual or desired construction and therefore unnecessary to illustrate or describe in detail. The feeder, of whatever construction, is driven from the pulley f' on the saw-shaft a' through the belt f^3 , which passes over pulley f^2 on the main driving-shaft f of the feeder. The pulley f^2 is loose on the shaft f and is given driving connection therewith by means of a clutch f^4 , of any usual construction. One member of the clutch f^4 is engaged by the forked arms f^5 and f^6 , the latter of which is pivoted at f^7 and consists of a simple hand-lever whereby the clutch may be operated to throw the members into and out of engagement. The other forked arm f^5 consists of a bell-crank lever pivoted at f^8 on the bracket f^9 and having pivotal connection at f^{10} with the rod f^{11} , the other end of which detachably engages a pin f^{12} on the gin-breast. From this construction it will be obvious that as the gin-breast is raised the forked arm f^5 will be operated to unclutch the shaft f from driving connection with the pulley f^2 , and as it is lowered the reverse action takes place.

The device so far described serves to stop the feeder and to raise the breast of any gin in which the ginning operation is not being properly performed, and it also admits of the attendant raising the breast of any gin by the hand-lever L without disturbing the safety attachment. Inasmuch, however, as gins are usually operated in series of three or more, as indicated in Fig. 4, it is desirable also to provide some device whereby the breasts of all the gins may be simultaneously raised and lowered. To this end and in connection with my safety attachment I provide means for freeing the breasts of all the gins to the action of the breast-raising devices and for returning the parts to normal position, and while the device may be varied in construction I preferably provide a shaft S, mounted in any usual bearings s and extending across the tops of all the gins of the series, and to one or both ends thereof I secure a hand-wheel S' . Fixed to said shaft at suitable intervals are the cross-arms s' or other desired lifting devices, one for each gin, and to one end of each cross-arm is secured a connection s^2 , whose other extremity is attached to the weight W. To the other end of each cross-arm is secured the connection s^3 , whose other extremity is attached to the shaft G, preferably by the arm g^2 or other projection.

From this construction it will be evident that with the parts in working position, as indicated in Fig. 2, if it is desired to raise the breasts of all the gins the attendant has only to turn the shaft S to raise the connections s^3 , when the trips or fingers g^6 , secured to the shaft G, will be operated to free the hooked ends of levers g^7 from the catches m^2 , whereupon the weights W will at once act through the arms p to lift the breasts of all the gins of the series. To return the breasts of all the gins of the series to lowered or working position, it is only necessary to turn the shaft S in the opposite direction, which will lift the weights, and the weight of the breasts acting on the fingers or cams m will turn the shafts M, so that the hooks on the levers g^7 will engage the catches m^2 on the arms p , and thus automatically return the safety attachment to position for detecting improper ginning.

The parts Y, Y', and Y² are of any usual or preferred form of pneumatic or other feed attachment, and as it forms no part of my present invention needs no further description.

While I have described the above mechanism as embodying my invention, I desire it to be understood that I do not limit myself to the particular mechanism.

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

1. In a safety attachment for cotton-gins, the combination of the saws, a detector to feel for and detect accumulation of cotton on the saws, and means controlled by the detector for rendering the parts inoperative on movement of the detector.

2. In a safety attachment for cotton-gins, the combination of the saws, a detector to feel for and detect accumulation of cotton on the saws, a gin-breast, and means controlled by the detector for moving the breast from the saws.

3. In a safety attachment for cotton-gins, the combination of the saws, a detector to feel for and detect accumulation of cotton on the saws, a pivoted gin-breast, and means controlled by the detector for turning the breast on its pivot.

4. In a safety attachment for cotton-gins, the combination of the gin-breast, the feeder to supply cotton thereto, the saws, a detector to feel for and detect accumulations of cotton on the saws, and means under control of the detector for moving the breast from the saws and stopping the feeder.

5. In a safety attachment for cotton-gins, the combination of a pivoted gin-breast, the saws projecting and working therein, a detector comprising fingers projecting between the saws and means controlled by said detector to lift the breast from the saws.

6. In a safety attachment for cotton-gins the combination of the feeder and operative means therefor, the movable gin-breast, the saws projecting and working therein, a detector to feel for and detect accumulation of

cotton on the saws, means controlled by the detector for moving the breast from the saws, and connections between the breast and feeder, to render the latter inoperative on movement of the breast from the saws.

7. In a safety attachment for cotton-gins, the combination of the saws, the gin-breast, a rock-shaft provided with devices for moving said breast, means normally tending to turn the rock-shaft and move the breast from the saws, a catch for preventing such movement of the rock-shaft, and a detector movable by accumulation of cotton on the saws to release the catch and thereby permit the breast to be moved.

8. In a safety attachment for cotton-gins, the combination of the saws, the gin-breast movable toward and from the saws, a detector to feel for and detect accumulation of cotton on the saws, means under the control of the detector normally tending to move the breast from the saws, and manually-operative devices for moving the detector to thereby free said means to effect movement of the breast.

9. In a safety attachment for cotton-gins, the combination of the saws, the pivoted breast, a shaft having devices for moving said breast, means for turning said shaft to thereby lift the breast, a catch to normally restrain the operation of said means, a hand-lever on said shaft, and provisions whereby the shaft may be turned by said hand-lever independently of the said means.

10. In a safety attachment for cotton-gins, the combination of the saws, the pivoted breast and means for raising the breast from the saws, devices for holding said means inoperative, and a trip for freeing said means from the control of said devices to thereby raise the breast.

11. In a safety attachment for cotton-gins, the combination of the saws, the pivoted breast, and means for raising the breast from the saws, devices for holding said means inoperative, a trip for freeing said means from the control of said devices to thereby raise the breast, and mechanism to return said means to the control of said devices.

12. In combination, a series of gins each having a movable breast, means for raising said breasts, devices for holding said means inoperative, a trip connected to each gin for freeing said means from the control of said devices, and mechanism for simultaneously actuating the trips of all the gins of the series.

13. In combination, a series of gins each having a movable breast, means for moving said breasts, devices for holding said means inoperative, a trip connected to each gin for freeing said means from the control of said devices, mechanism for actuating the trips of all the gins of the series, and for returning the parts to their normal positions.

14. In a cotton-gin, the combination of the pivoted breast, the saws, a shaft having devices thereon for moving the breast from the saws,

an arm having a pin-and-slot connection with said shaft, means acting on said arm for turning said shaft, a catch to prevent movement of said arm, and a hand-lever connected to said shaft for turning the same.

15. In a safety attachment for cotton-gins, the combination of the movable breast, the saws, a shaft having devices thereon for moving the breast from the saws, means for turning said shaft, a pivoted latch to restrain the operation of said means, a detector comprising fingers projecting between the saws, and

adapted to be moved by cotton thereon and connections between the latch and detector to operate the former on movement of the latter to free the shaft to the action of its operating means.

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

ABNER D. THOMAS.

Witnesses:

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BEN D. SCHAAD.