

(No Model.)

S. M. FRASER & A. J. STEWART.
ROLL BOX FOR COTTON GINS.

No. 450,229.

Patented Apr. 14, 1891.

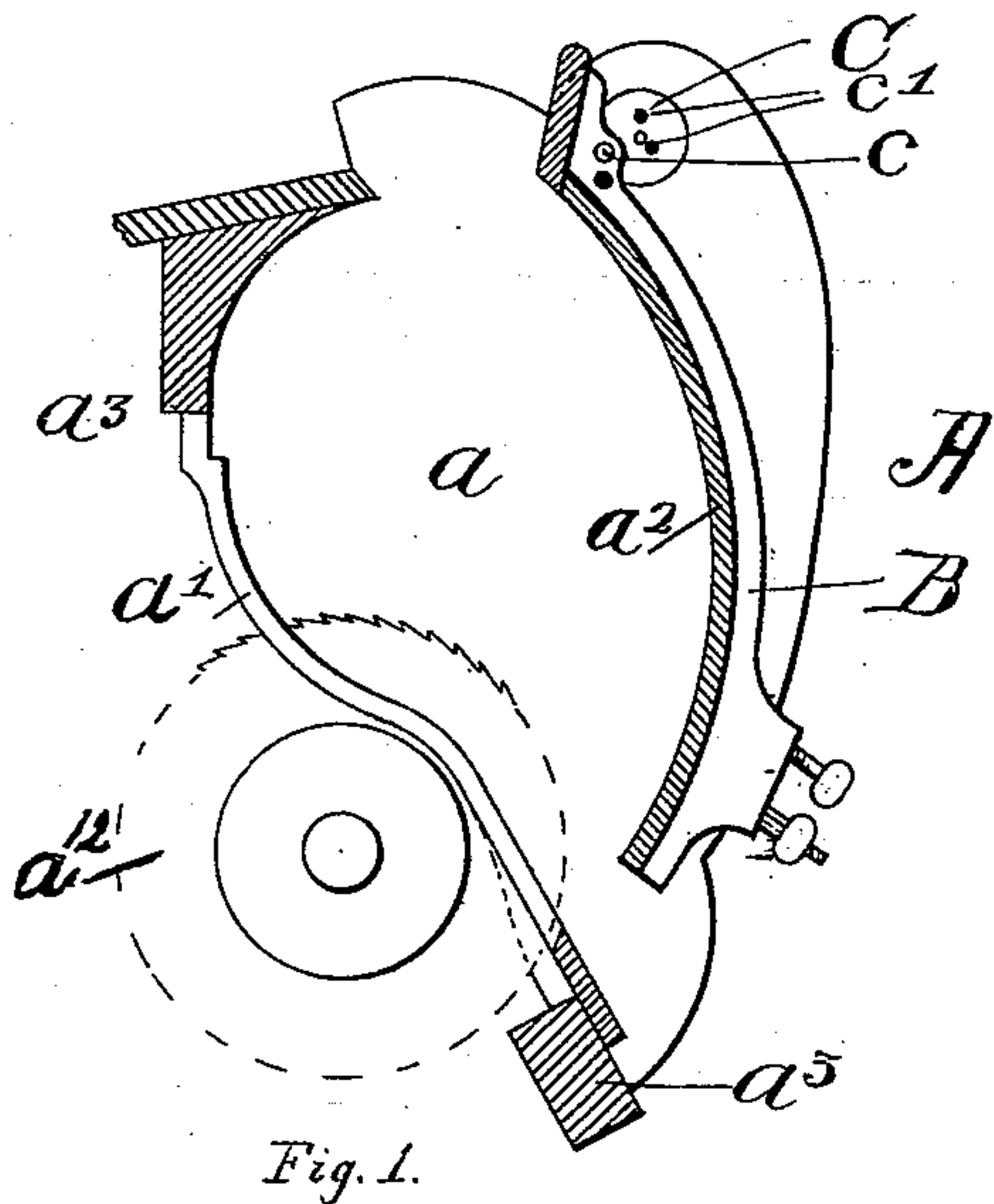


Fig. 1.

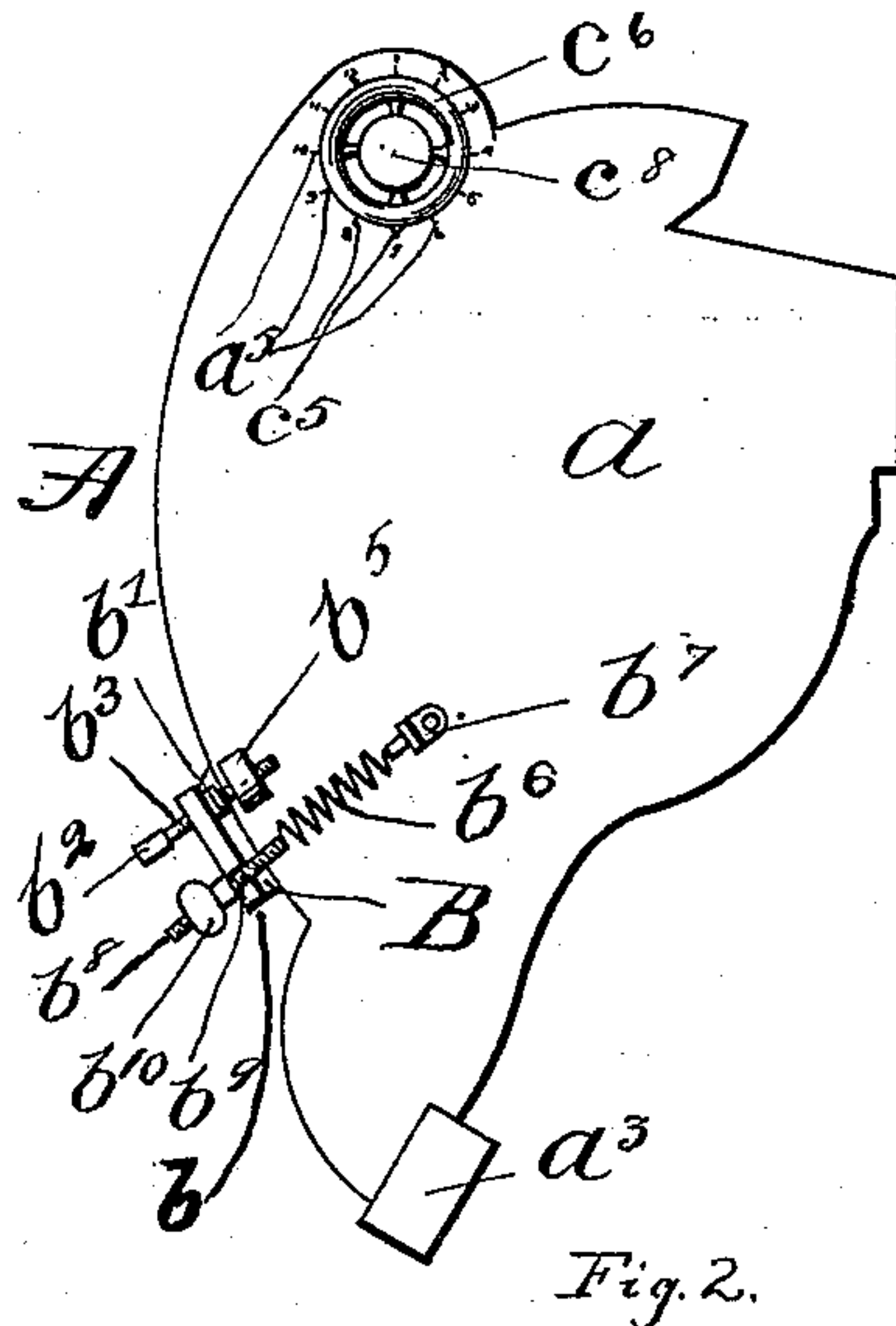


Fig. 2.

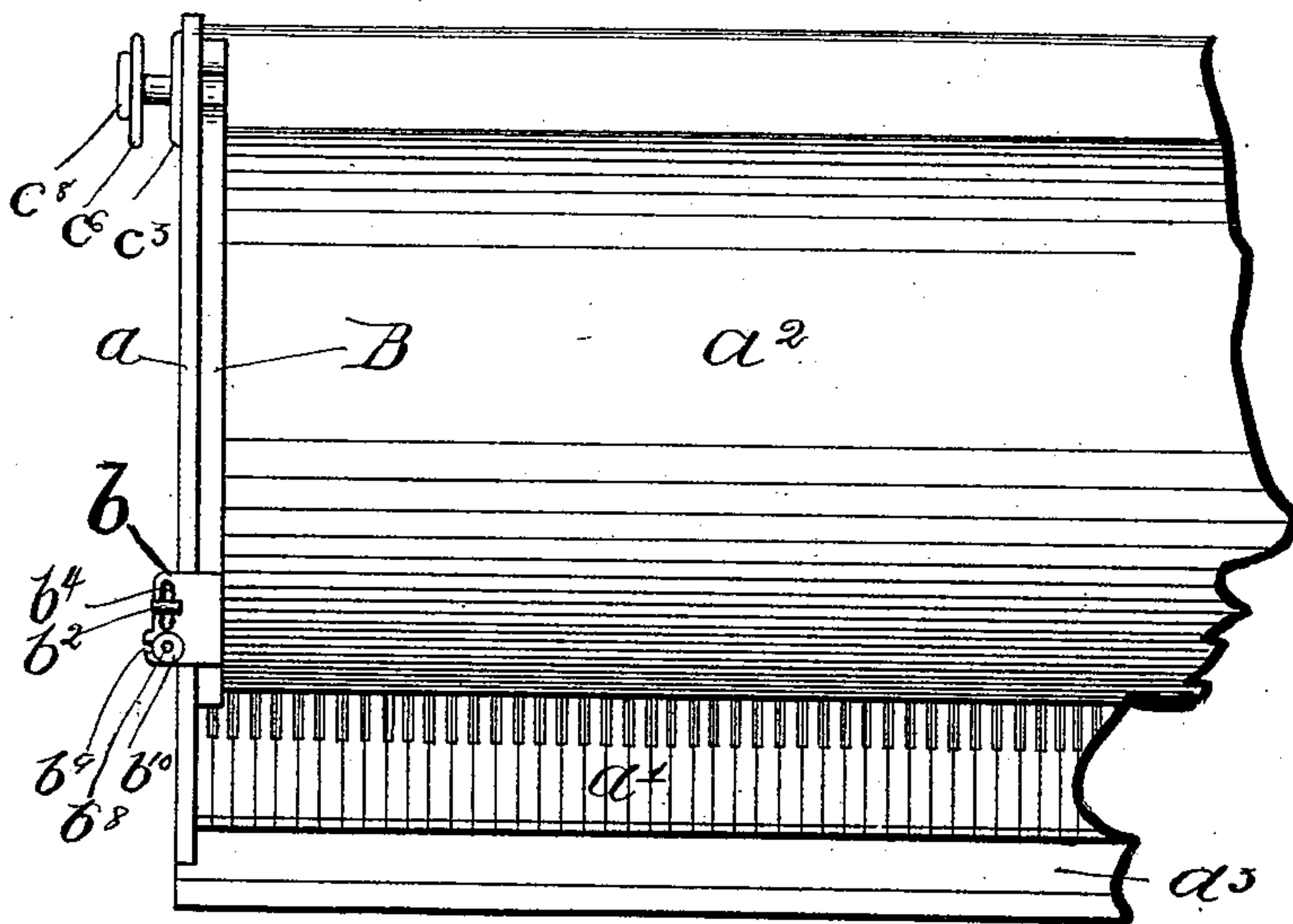


Fig. 3.

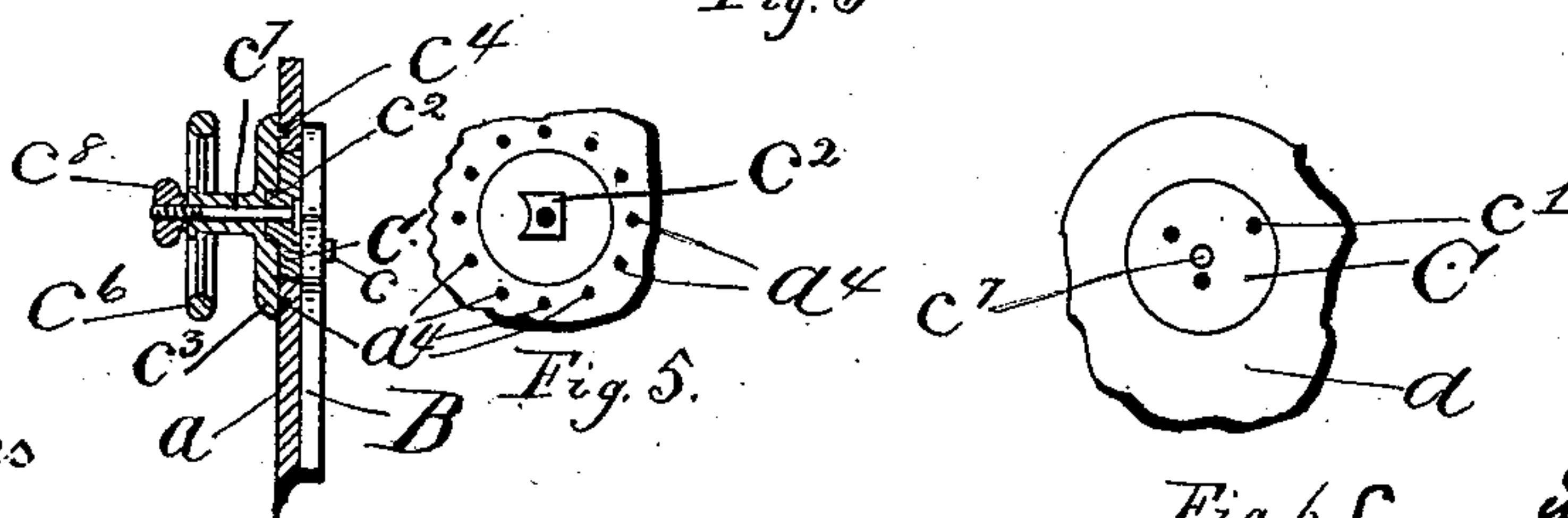


Fig. 4.

Witnesses

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SIMON M. FRASER AND ANDREW J. STEWART, OF ATLANTA, GEORGIA.

ROLL-BOX FOR COTTON-GINS.

SPECIFICATION forming part of Letters Patent No. 450,229, dated April 14, 1891.

Application filed July 16, 1890. Serial No. 358,958. (No model.)

To all whom it may concern:

Be it known that we, SIMON M. FRASER and ANDREW J. STEWART, both of Atlanta, in the county of Fulton and State of Georgia, have
5 invented certain new and useful Improvements in Roll-Boxes for Cotton-Gins; and we 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
10 which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

15 This invention relates to improvements in cotton-gins of that class in which saws and ribs are employed as the means of removing the lint, and has for its object the construction of a roll-box in which the roll may be
20 made to form of the desired hardness and conformation and in which its position relative to the saws may be varied, and which is provided with means which will automatically relieve the roll from any pressure which may
25 be incurred by the same on enlargement from excessive feeding disproportionate to the ginning capacity of the saws.

The invention consists in pivoting the upper end of the front board between rotatable
30 plates seated in the heads and in elastically connecting the lower end to the heads by means of a spring, one end of which is secured to the outer side of one of the heads and the other end to a projecting flange of
35 the front board, so that the said front board is free to move up or down or outward between the heads.

The invention also consists in providing means whereby the pivotal points of the upper
40 end of the front board and the tension of the spring securing the lower end may be adjusted, so that the movement of the board can be more or less confined.

In the accompanying drawings, in which
45 similar letters of reference designate corresponding parts, Figure 1 is a vertical cross-section through the breast of a saw-gin, showing the saw-cylinder and the ribs, the roll-box, and the adjustable front board. Fig. 2 is an end
50 elevation of the breast, not showing, however, the cylinder of saws, but showing the adjust-

ing device as seen from the outside. Fig. 3 is a front elevation of a portion of the breast, showing the front board and its adjusting devices and the lower ends of the ribs forming
55 the grid. Fig. 4 is a vertical section through the adjusting device seated in the roll-box and carrying the end casting of the front board. Fig. 5 is a side elevation of a portion of the roll-box head, showing the index-holes
60 and the conically-formed wrist-pin-carrying disk and lug thereon. Fig. 6 is an elevation of Fig. 5, as seen from the opposite side from the view shown therein, showing the wrist-pin holes at varying radial distances.

65 The breast A is composed ordinarily of heads a , the grid a' , and the front board a^2 , the grid a' being formed of a multiplicity of ribs secured at their ends to suitable longitudinally-extending sticks or bars a^3 , and the
70 whole structure is suitably hinged to the frame carrying the saws a^{12} , one saw projecting through each of the interstices left between the ribs of the grid. The front board a^2 , the heads a , the ribs, and the part a^3 form
75 the roll-box, which is cut into on its lower back side by the saws which project into it.

Cotton is fed into the roll-box and forms a mass which by its contact with the revolving
80 cylinder of saws is caused to revolve, and by contacting with the front board is held in such a position that its center is midway between the grid and the front board. It is obvious that the position of the roll relative to the
85 front board should be governed by the position of the front board. Should the roll increase in size by overfeeding, it will be pressed against the said board with a pressure proportionate to its excessive size, and as gins are ordinarily
90 constructed there is no way to relieve this pressure, and the roll will not freely turn, and the saws, having to drive it by frictional contact of their teeth in the roll, will cut and
95 nap the lint and cause the product to sample a much lower grade. Especially is this the case with damp cotton.

In order that the front board may be elastically held so that the same will automatically swing, relieving the pressure on the roll
100 and lowering the center of the arc of its curvature, and hence the center of the roll, to a position nearer the center of the saws, and

so cause the saws to sink deeper into the roll and catch more cotton, and so automatically increase the ginning capacity, we pivot the upper edge of the front board between plates seated in the upper parts of the heads of the roll-box, and elastically connect the lower edge by a spring or springs to the lower part of the head or the heads.

As the means for attaching the front board at its top and at its bottom are dissimilar although mutually dependent to give the desired result, they will each be described separately.

The front board is curved, as usual, and has on its ends strengthening-pieces B, through holes in which pass the wrist-pins c , entering holes c' in the disks C. The disks are conical in form, as best shown in Fig. 4, and are seated one in each roll-box head. Each disk has two or more holes c' , differing from each other in radial distance, for the introduction of the screw-threaded wrist-pins. The object of having the holes at different radial distances will be explained farther on. Each of the disks C has on its outer side the lug c^2 , the sides of which are straight except one, which has a depression or concavity, into which fits a projection from the side of the recess in the wheel c^3 receiving and corresponding to the said lug. The object of having the lug and recess so formed is to cause the wheel and disk to always occupy the same relative positions when brought together. The wheels c^3 are larger in diameter than the disks C and cover said disks and contact with the heads a , the lugs c^4 of each of the wheels c^3 projecting into one of the apertures a^4 in the adjacent head, graduations a^5 being cast or marked into or on said head, by which the pointer c^5 , Fig. 2, will indicate the position of the disk, so that like adjustments can be made on both sides. The wheel c^3 may, if desired, carry a hand-wheel c^6 for convenience of manipulation. The bolt c^7 passes through the disk C and wheel c^3 , having on its outer end a hand-nut c^8 , by means of which the disk C may be drawn into its conical seat in the roll-box head a and the wheel c^3 be pressed against the said head a , thereby securing the said disk C firmly in any set position, and hence holding the top edge of the front board in any position desired within the limit set by the position of the wrist-pin in the disk C. It is obvious that if the wrist-pin be inserted in one of the inner of the holes c' of the disk the adjustment will be more limited than if it were inserted in one of the outer holes, owing to the difference in the lengths of the arcs through which the holes would pass on rotating the disk.

The manner in which the lower edge of the front board is elastically secured to the heads will now be described. The lower edge of the front board is limited as to motion around the wrist-pins c by the distance between the nut b' and the head b^2 of the set-screw b^3 ,

which passes through the slot b^4 in the short flange b on either or each of the pieces B, and the position of these two limits is changed relative to the saws by screwing the said screw b^3 into or out of the lug b^5 on the head a . The slot b^4 is provided to allow the front board the vertical movement due to the revolution of the disk C, and the head b^2 of the screw b^3 is made flat to allow the passage of the said head through the slot on being turned parallel therewith to allow the lifting of the front board for the purpose of exposing the interior of the roll-box.

In order to cause the return of the front board to its normal position in contact with the nut b' , a spring b^6 is supplied, one end of which is connected to the lug b^7 on the head a and the other to the screw b^8 , which passes through the open-ended slot b^9 , a nut b^{10} being supplied, by means of which the said screw may be drawn through the slot and the tension increased, or the reverse. The slot b^9 is open at its end in order that the screw may be passed out sidewise to allow the lifting of the front board, as hereinbefore specified. This spring and contiguous parts may be duplicated on the other end, if necessary.

By connecting the upper and lower ends of the front board to the heads in the manner described any extraordinary pressure induced by over-feeding will press the front board outward, revolving it on the wrist-pins. This revolution will be limited by the elastic connection at the lower part. To increase or diminish the size of the chamber of the roll-box, the pivotal points of the upper end of the front board can be changed either by rotating the disk C or seating the wrist-pin in the holes c' at a different radial distance. The rotation of the disk will cause the front board to move either up or down, inwardly or outwardly, according to the direction in which the disk is turned, thereby increasing or diminishing the size of the chamber.

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

1. In a saw-gin, the combination of the heads, the rotatable plates or disks seated in the upper parts of the heads, the front board pivoted at its upper end between the said disks, and the elastic connection between the front board at its lower end and the heads, substantially as described.

2. In a saw-gin, the combination of the heads, the rotatable disks seated in the upper parts of the said heads and provided with openings at different radial distances, the front board pivoted at its upper end between the heads by means of wrist-pins journaled in the said opening, and the elastic connection between the lower end of the front board and the heads, as described.

3. In a saw-gin, the combination of the heads, the front board pivoted at its upper end between the said heads, and the adjust-

able elastic connection between the lower end of the front board and the heads, as described.

4. In a saw-gin, the combination of the heads, the front board pivoted at its upper end between the said heads, and the elastic connection between the lower end of the front board and the heads, consisting of the spring attached at one end to the head, and the adjusting-screw seated in a projecting flange of the front board and connecting with the free end of the spring, as described.

5. In a saw-gin, the roll-box A, having its front board a^2 pivoted at its top edge, and the spring b^6 , secured at one end to a stationary point on the roll-box and at its other end to the screw b^8 , passing through the open slot b^9 in an extension b of the front board a^2 , substantially as described.

6. In a saw-gin, the roll-box A, having its

front board pivoted at its top edge, and the spring b^6 , secured at one end to a stationary point on the roll-box and at the other end to the screw b^8 , passing through the open slot b^9 in an extension b of the said front board a^2 , and a stop to the motion of the said front board, consisting of the set-screw b^3 , screwed into the lug b^5 on the roll-box head and passing through the said flange b and having on opposite sides of said flange the stops b' and b^2 , substantially as described.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

SIMON M. FRASER.

ANDREW J. STEWART.

Witnesses:

A. P. WOOD,

S. M. WOOD.