

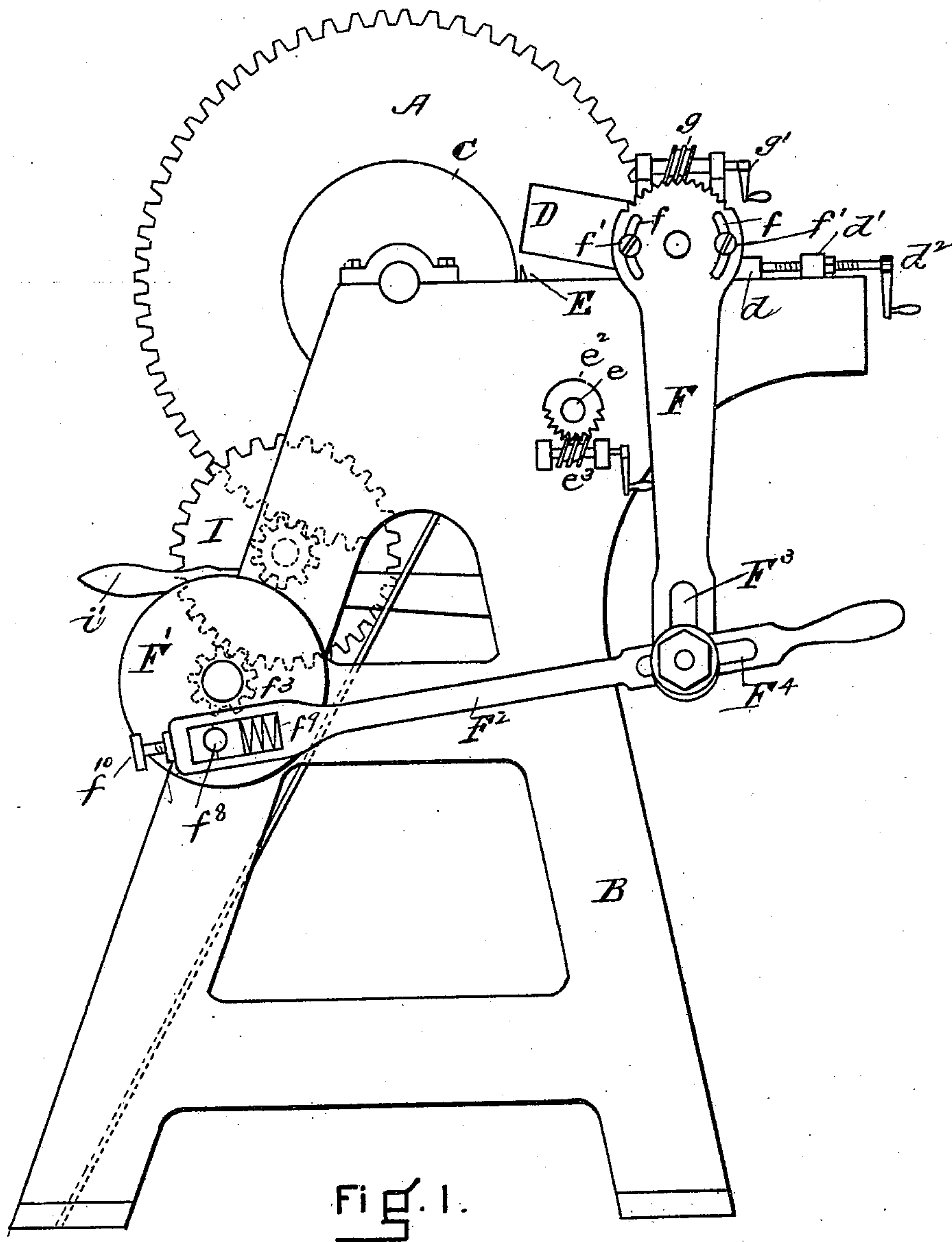
(No Model.)

4 Sheets—Sheet 1.

W. DEARBORN.
ROLLER COTTON GIN.

No. 471,076.

Patented Mar. 15, 1892.



WITNESSES.

J. M. Dolan
W. C. Whitney.

INVENTOR

Hyman Dearborn
by his atty.
Charles Dearborn

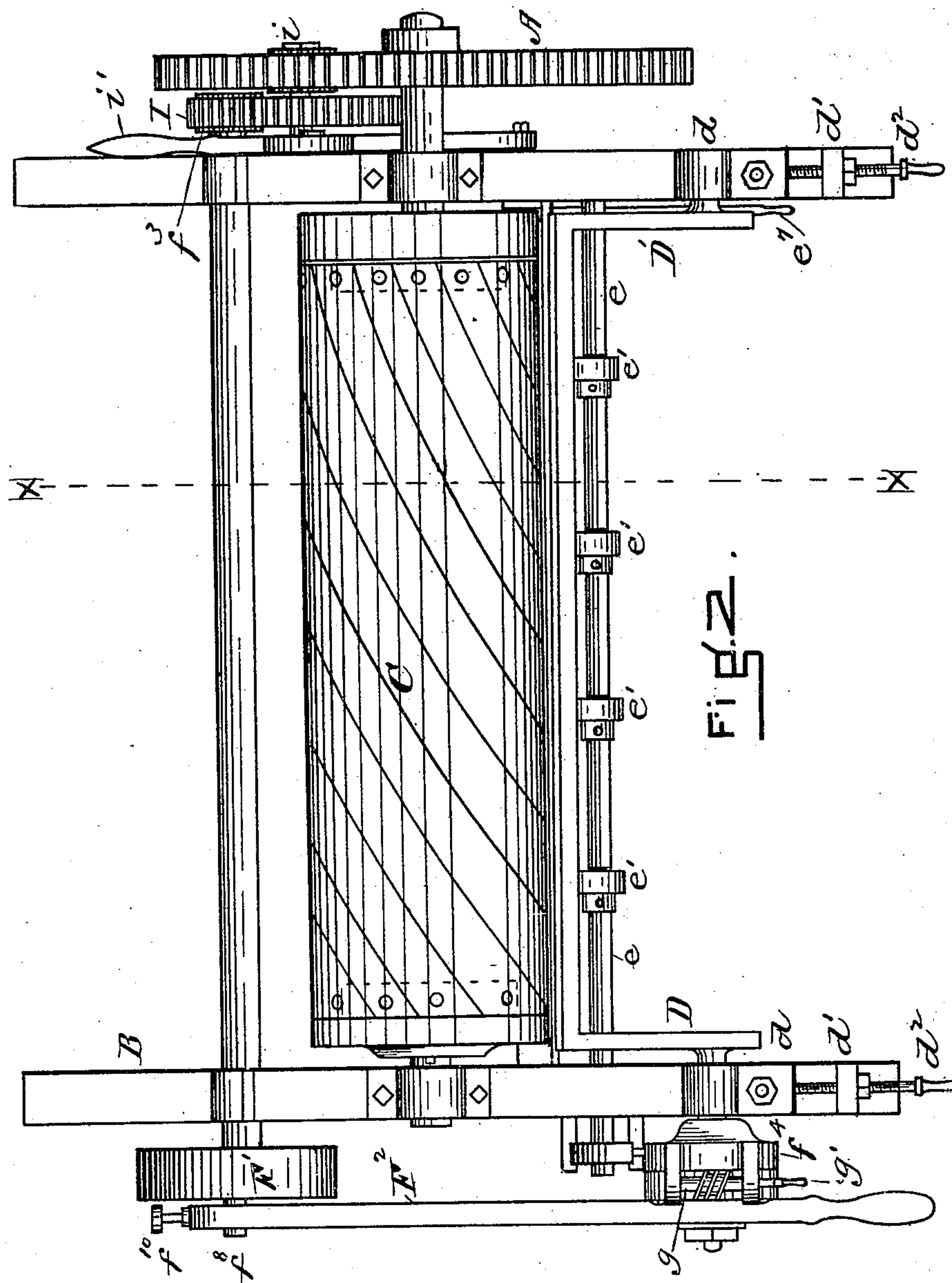
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J. M. Dolan
W. H. Whitney.

INVENTOR

Norman Dearborn
 by his atty-
 Charles Dearborn

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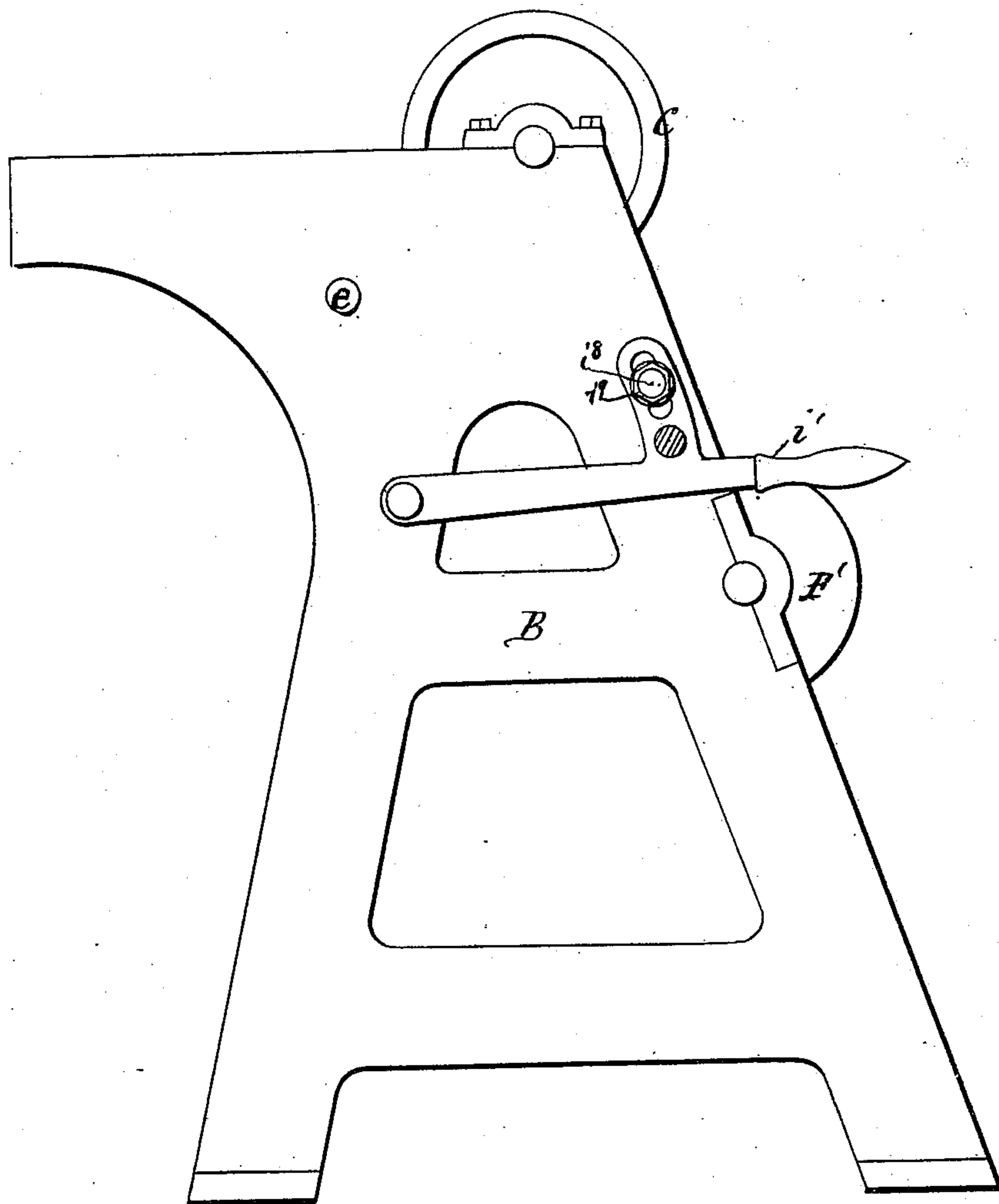


FIG. 6.

WITNESSES.

J. M. Dolan
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UNITED STATES PATENT OFFICE.

WYMAN DEARBORN, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO CHARLES RIPLY, OF SAME PLACE, AND ALBERT W. MANN, OF MALDEN, MASSACHUSETTS.

ROLLER COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 471,076, dated March 15, 1892.

Application filed November 26, 1890. Serial No. 372,671. (No model.)

To all whom it may concern:

Be it known that I, WYMAN DEARBORN, a citizen of the United States, and a resident of Boston, in the State of Massachusetts, have
5 invented a new and useful Improvement in Roller Cotton-Gins, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

This improvement relates to the roller-gin; and it consists in a new combination and arrangement of parts, in new and improved forms common to some of the parts, and a new and
15 improved connection of the moving parts with each other.

In the drawings, Figure 1 is a side elevation of a gin of my improved construction. Fig. 2 is a plan thereof. Fig. 3 is a section
20 through the center of the gin of plan parallel to the elevation shown in Fig. 1. Fig. 4 is a longitudinal section of an improved way of constructing the roller. Fig. 5 is an end elevation of the roller, showing the mode in which
25 the covering of the roller is tightened and how the surface of sectional spirals is produced. Fig. 6 is a detail drawing of the means by which the lever i' is supported.

In the drawings, B is the frame of the machine, and A is the driving-wheel, on the axis of which is mounted the roller C. The presser-bar, the top of which appears in Fig. 1, is shown in Fig. 3 in section at E. This presser-bar is made of sheet-steel, and is fastened to
30 a bar at its lower edge, which bar is united to the frame at its ends on each side by bolts e^4 . A shaft e runs through the frame from side to side and has mounted upon it at frequent intervals eccentrics e' , by which the edge of the presser-bar may be adjusted to and from
40 the periphery of the roller C. A rod e^5 runs through the machine from side to side behind the presser-bar, and has on it at frequent intervals eccentrics e^6 , which bear against the back of the presser-bar. The position of this rod may be adjusted by the handle e^7 . Thus this presser-bar is fast to the frame at its lower end and is pressed hard in both directions above its lower edge by the eccen-
50 trics e' e^6 , and so may be retained in any de-

sired position. This construction and arrangement of the presser-bar forms in part the subject of an application divided from the present application, dated August 3, 1891, Serial No. 401,562, and pending simultaneously with it.

The clearers D reciprocate on an arc directly in front of the presser-bar and are formed with knife-edges, as shown in Fig. 3. These clearers D are formed of one piece of
60 bent steel, as shown in Fig. 2, and have journals, as shown in that figure, which are mounted in sliding bearings d , which bearings are adapted to be clamped to the frame when in the proper position. The arms of
65 the clearer D are welded to the journals on which it oscillates, and the center of oscillation is a little above the level of the center of rotation of the roller C, whereby the center of oscillation of the clearer D, the upper edge
70 of the presser-bar E, and the center of rotation of the roller C are brought into nearly the same right line, and as the presser-bar stands nearly at a tangent with the roller C at its horizontal diameter the nip of the roller
75 C upon the fiber is a little tighter than it would be if the edge of the presser-bar did not stand quite so high, and at the same time, by the location of the axes of oscillation of the clearers at a point higher than the axis
80 of the roller C, a better combing action is given to the clearer-blade, and the seeds are drawn away from the presser-bar and from the roller C, instead of being thrown down almost parallel to it, as was formerly done in
85 gins where the clearers vibrated in a right line governed more or less by guides or parallel links. The arms of the clearer D, it will be seen, are less than once and a half the radius of the roller C, which causes the edge
90 of the clearer to move rapidly away from the presser-bar as it descends. This short-arm clearer is thought to be a great advantage.

In order to move the clearers with great accuracy into position, a bearing d' is mounted
95 on the frame, through which passes a screw provided with a crank-handle d^2 . This screw lays hold of the sliding box d and moves it to and fro, and it may be set in any proper position by a nut. (Shown in Fig. 1.) By this
100

contrivance either end of the clearers may be moved toward or from the roll, and the clearer may be very accurately adjusted to its position. The journal of the clearer is carried through the bearing d and terminates in a boss f^4 . (Shown in Fig. 2.) Upon the top of this boss is mounted in standards a worm g , and the shaft of this worm terminates in a crank g' .

Centered upon the journal of the clearer is a rocker-arm F , which terminates upward in a large eye, the upper edge of which is cut into teeth adapted to engage with the worm-gear. This rocker-arm F is adjustable with relation to the clearers D by moving the worm-gear when the nuts are loosened which fasten it to the boss f^4 . Two curved slots pierce this arm near its outer edges, which curved slots are marked f on Fig. 1. A couple of clamping-screws f' pass through these slots and engage with the boss beneath them. It is obvious, therefore, that by loosening the clamping-screws and moving the worm-gear the angle at which the horizontal arms of the clearers D stand with relation to the rocker-arm F can be adjusted, and when the proper angle has been obtained they can be clamped together. Of course any other ordinary system of clamping will answer in this place and any other method of fine adjustment; but the worm gear and wheel upon the whole seem to be the simplest and most delicate arrangement for this purpose.

The rocker-arm F is slotted at its lower end, as shown at F^3 , so that a greater or less throw may be given to the clearers D with the same length of driving-crank. The driving-wheel A meshes with the pinion i upon the same shaft as the second wheel I , and this second wheel I meshes with the pinion f^3 on the shaft of the crank-wheel F' . This crank-wheel F' carries in its face a wrist-pin f^8 , which takes hold of a box in a slot in the end of the link F^2 . This box is pressed into position in one direction by the spring f^9 and in the other direction by an adjusting-screw f^{10} . The spring f^9 is strongly compressed at all times; but the position of the box in the length of the rod may be slightly adjusted by aid of the set-screw. The spring f^9 takes up some portion of the shock arising from the rapid reversal of the link F^2 when the machine is run at high speed. The link F^2 is slotted at F^4 , as shown in Fig. 1, and is united with the arm F by a bolt passing through slides in the two slots F^3 F^4 .

The mechanical construction of this device may be as follows: A slide is mounted in each slot F^3 F^4 , which slide has a hole in it about the center and is provided with a screw-neck around the hole on one side and is formed with a flange on the other or with a bevel upon its edges, which would serve the purpose of the flange referred to. A flange-nut run down from the neck will engage the surface of the arm or link around the slot, and by this means the slide may be clamped at any position in

the slot. The two necks around the hole would point in opposite directions. Then the bolt, being passed through all from side to side, would make the pivotal connection. The bolt might be fixed to one slide, if desired, and the motion all take place in the other. Constructions of this sort are not unusual mechanical contrivances. The circle made by the wrist-pin f^8 will of course be a circle of unvarying radius. The length of the chord of the arc described by the point of connection between the rocker-arm F and the link f^2 will therefore be a constant; but as the adjustment of the rocker-arm F with the clearers D may be varied and will require to be varied from time to time according to the conditions of the work and according to the wear of the edges of the presser-bar and the working edge of the clearers it is necessary to have the slot F^4 to accommodate this adjustment, and as, also, on different kinds of cotton it is desirable at times to have different lengths of stroke to the clearer it is desirable to slot the lower end of the rocker-arm F , in order that the leverage of this arm may be adjusted. This arm F acts as a pendulum to balance the clearers D and to carry the necessary vibration of the machine downward. The joint between the rocker-arm F and the link F^2 will be seen to be a joint of great power, and it may be somewhat varied in construction from this without varying the principle of operation of the machine.

The plan, Fig. 2, shows fulcrum of the lever i' , and Fig. 3 shows the wheel I and pinion i as supported in a frame, and the detail of the lever i' is shown in Fig. 6. The frame which carries the wheel I and pinion i forms an offset of the lever i' . This frame is slotted at its upper end and a bolt i^3 with a clamping-nut or a clamping-screw i^9 passes through the slot and fixes the position of the lever i at any convenient point. This is not an unusual method of inserting change-gears in a machine.

The intermediate gear I and its pinion i may be changed in order to change the speed of the clearers without changing the speed of the roll C , if this should be desired.

In order to hold upon the fiber of the cotton it has been found convenient to provide spiral grooves in the surface of the roller, and the best material hitherto in use for covering rollers has been a canvas fabric, something like packing, made up of several thicknesses of canvas cemented together by india-rubber. I propose to use strips of this fabric upon the exterior of the roller for its surface and to put them upon the roller parallel to each other; but I make my roller different from ordinary rollers, as shown in Figs. 4 and 5. In these C' is the shaft. At one end of this shaft a head G is fastened by a spline. Wooden thimbles H are then slipped upon the shaft, and these wooden thimbles are fitted accurately against each other, but are not splined to the shaft. Another head

K is fitted on the opposite end of the shaft from the head G, and this head is not splined to the shaft. A plate L (shown in plan in Fig. 5 and in section in Fig. 4) is fitted upon the shaft and is splined to it. This plate L carries in a recess a pawl P. The inside wall of the head K, which surrounds the recess into which the plate L fits, is provided with internally-projecting ratchet-teeth, with which the pawl P is adapted to engage. It will be seen that this construction allows the head G and the plate L to move in unison, while the head K is not obliged to move with them. The covering of the roll, made into strips of proper length and width, is then laid onto the roll, the strips being placed side by side, and these strips are securely fastened at one end to the head G and at the other end to the head K. This may be done by means of straps placed on their exterior, which clamp them down to the heads G and K, or by pins or nails, which unite them to these heads, or in any other appropriate way. If now one of the heads be held stationary and the other rotated round the shaft in such direction that the ratchet-teeth will slip upon the pawl or the pawl slip upon the ratchet-teeth, the strips of covering, which were in the beginning parallel to the shaft, will be twisted upon it so as to lie around it in spirals, and thus I shall have a series of spiral grooves considered necessary for the roll of the roller C.

It will be noticed that wheel A drives the crank-wheel F' by means of an intermediate gear and pinion. It is obvious that this is only one form of driving the wheel F' and that more intermediate gearing could be used, or that the wheel A could drive the crank-wheel F' directly instead of indirectly, and it is also obvious that whether the intermediate gearing were used or not the combination of the driving-wheel A and the crank-wheel F' would be an equivalent combination.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. The combination, in a roller-gin, of the driving-wheel A, the shaft driven thereby, the roller C, mounted upon said shaft, the crank-wheel F', driven from said wheel A, the gearing connecting said wheel A with said crank-wheel F', the link F², reciprocating from said crank-wheel F', the rocker-arm F, driven by the link F², the clearer D, driven by said rocker-arm, and the presser-bar E, all arranged and operating substantially as and for the purpose described.

2. In a roller-gin, the combination, with the clearer D, of the rocker-arm F, having slots f therein, and with means for adjusting said rocker-arm F around the center of motion common to said clearer D and rocker-arm F,

and with the boss f⁴, and clamping-screws f', substantially as and for the purpose described.

3. The roll containing the combination of the head G, firmly fastened to the shaft, the thimbles H and head K, not fastened to the shaft, but provided with a ratchet, the pawl-carrying plate L, fastened to the shaft, the pawl P, the shaft C², and the covering applied in parallel strips, substantially as and for the purpose described.

4. The roll containing the combination of a shaft, a head fixed upon the shaft, another head not fastened to the shaft, but provided with a ratchet, a pawl-carrying plate fastened to the shaft, a pawl, a series of thimbles between the heads, and a covering applied in parallel strips and fastened to the heads, the said covering being stretched and arranged in spiral form around the thimbles by twisting the movable head, substantially as herein shown, and for the purpose stated.

5. The combination of the clearer D and rocker-arm driving the same, the said rocker-arm being provided with means for angular adjustment with relation to the said clearer D with the crank-wheel F', and with the slotted arm F², which drives said rocker-arm F, whereby the angular adjustment of the clearer D to the rock-shaft may be varied without varying the length of the arc of motion of the clearer-blade, substantially as and for the purpose described.

6. The combination of the clearer D, the arbor on which it oscillates, the wheel F', and the rocker-arm F, which drives said clearer D by means of said arbor on which the clearer D oscillates, which rocker-arm F is slotted at its lower end and there combined with the slotted link F², which connects with the wheel F', whereby the angular adjustment of the clearer D with the rocker-arm F may be varied and the length of arc described by the clearer-blade may also be varied, substantially as and for the purpose described.

7. The combination of the slotted link F² with a wrist-pin box mounted in a slot of said slotted link F², which wrist-pin box takes hold of a crank-pin in the face of the crank-wheel F', and with the spring f⁹, interposed between said wrist-pin and the body of the slotted arm F², and with the adjusting-screw f¹⁰, adapted to adjust the position of said wrist-pin box in the slot of said slotted arm F² against the tension of the spring f⁹, substantially as and for the purpose described.

WYMAN DEARBORN.

In presence of—

F. F. RAYMOND, 2d,
J. M. DOLAN.