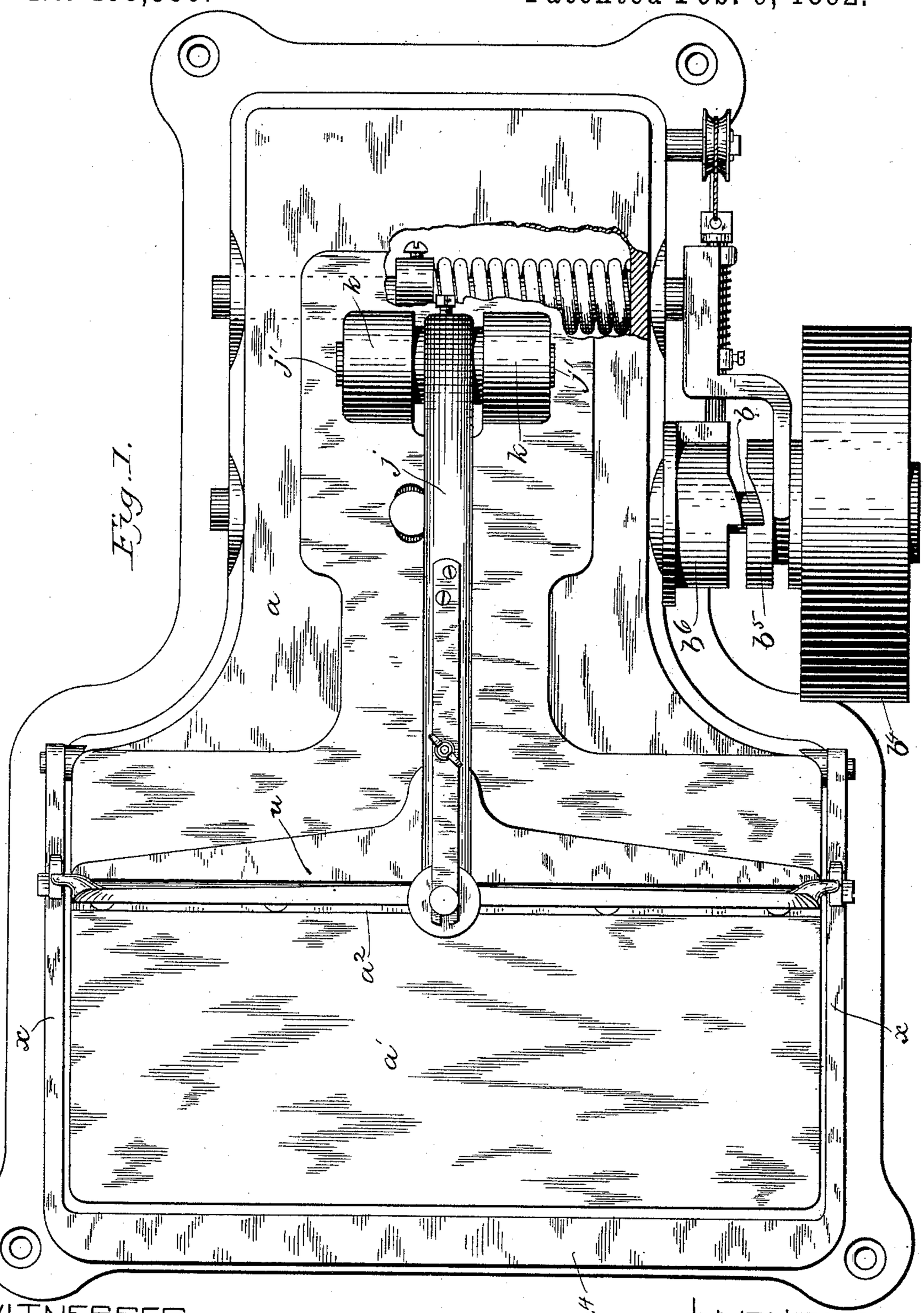
(No Model.) 3 Sheets—Sheet 1.

C. E. WILLIAMS.

UPPER FOLDING MACHINE.

No. 468,590. Patented Feb. 9, 1892.

Fig. 1.



WITNESSES.
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(No Model.) 3 Sheets—Sheet 2.

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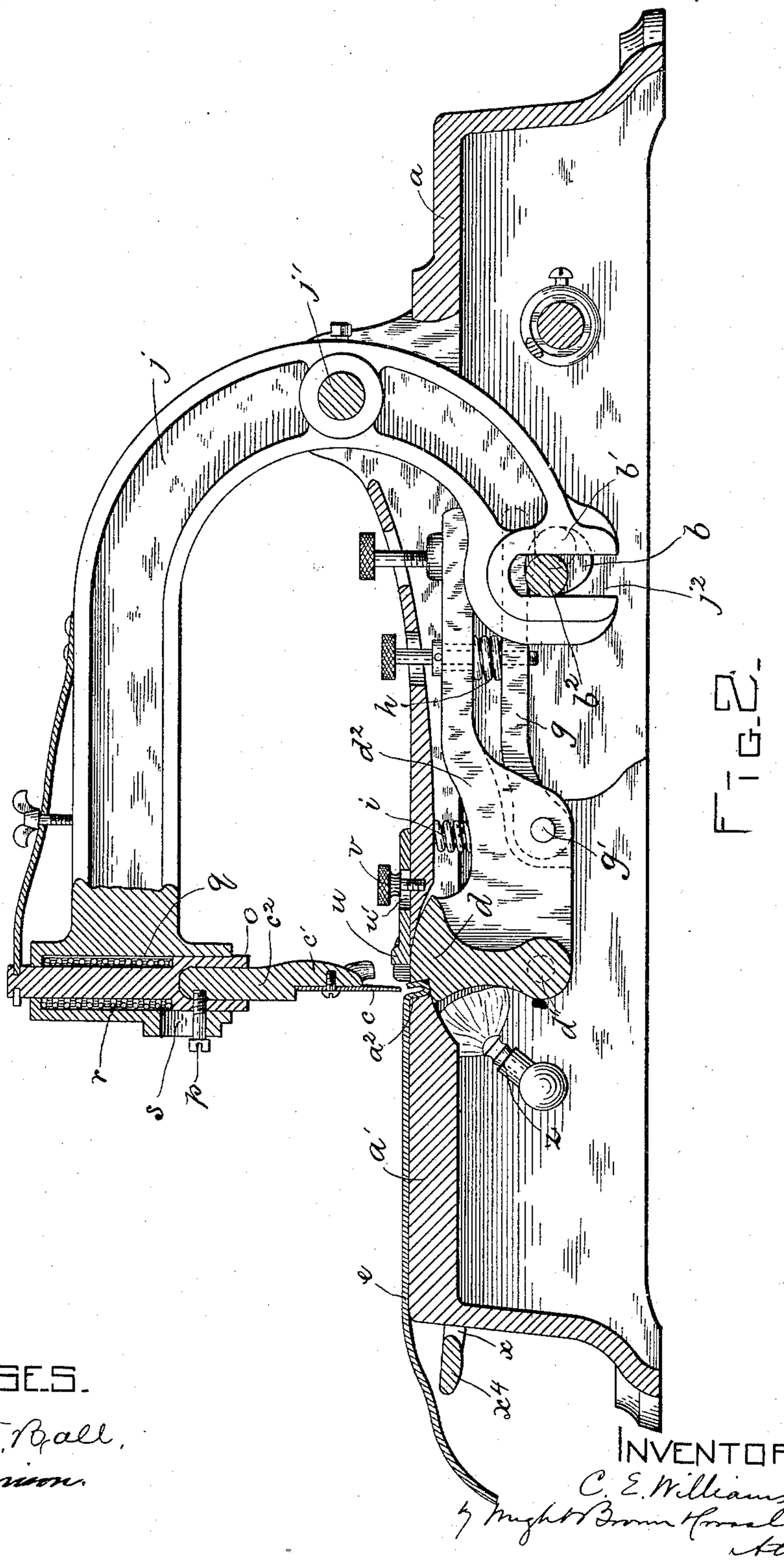

FIG. 2.

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(No Model.) 3 Sheets—Sheet 3

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FIG. 3.

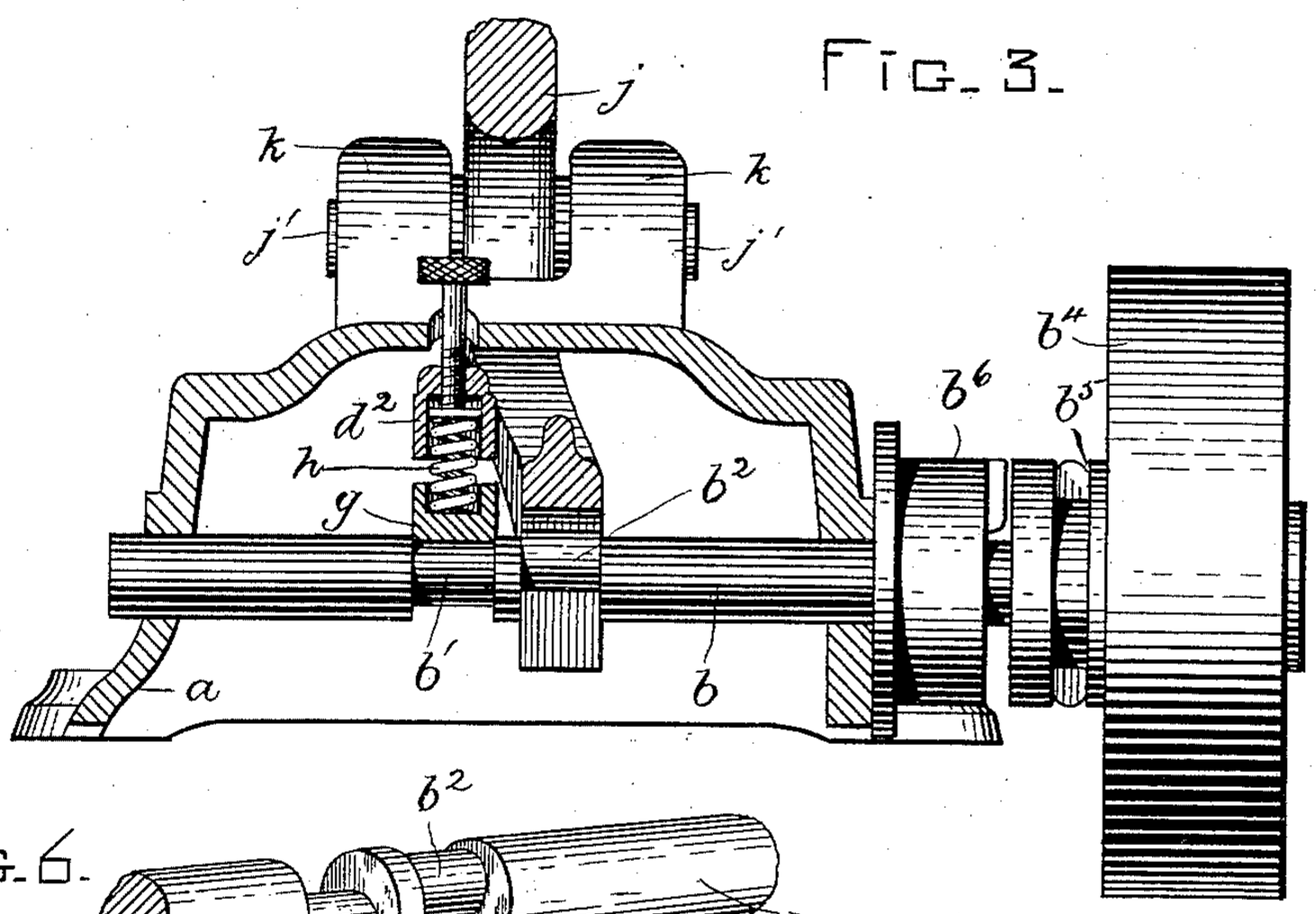


FIG. 6.

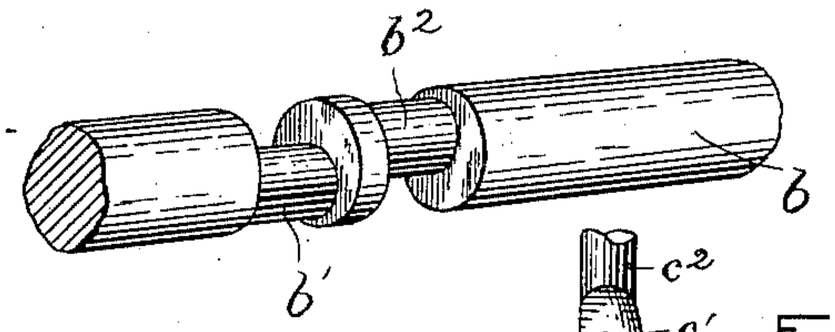
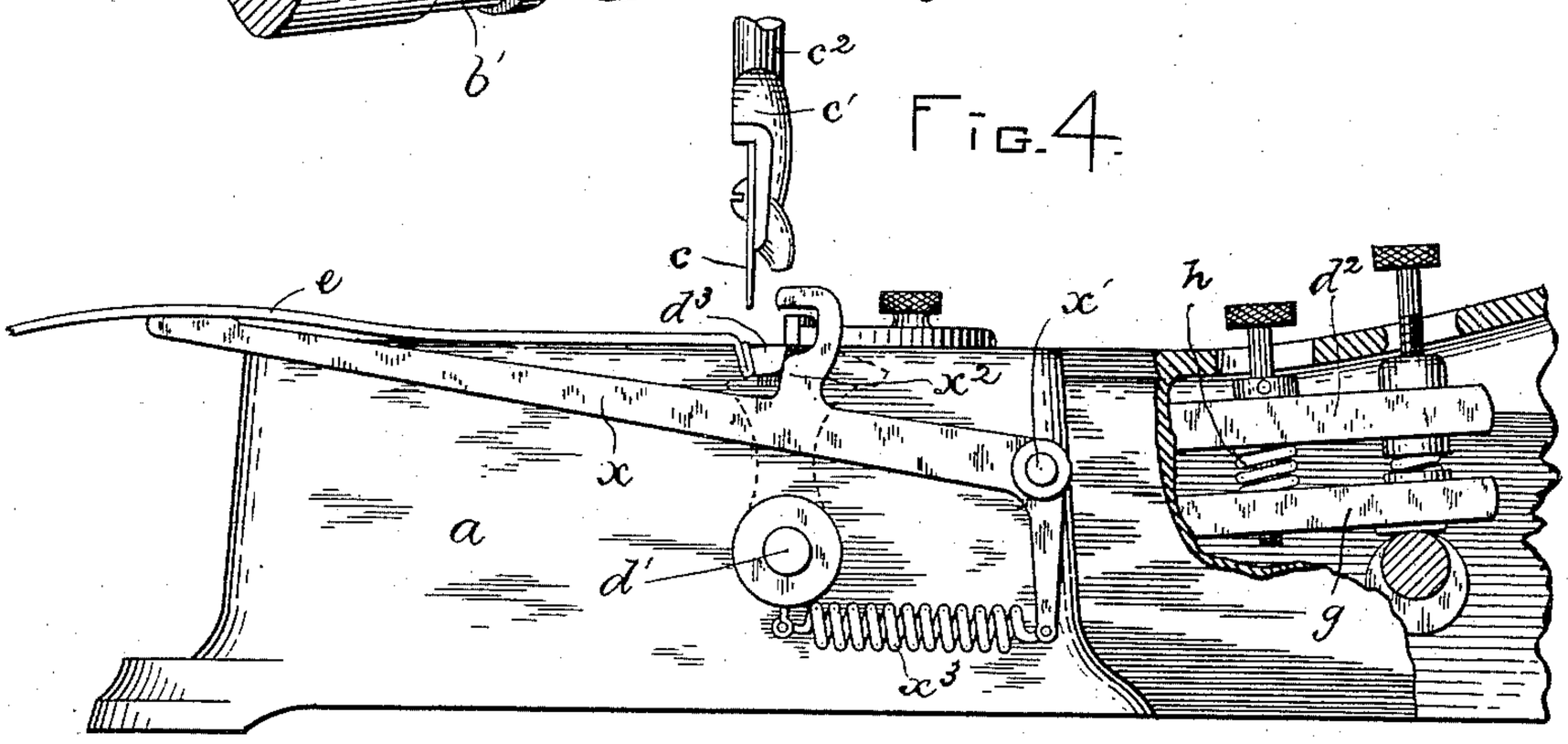


FIG. 4.



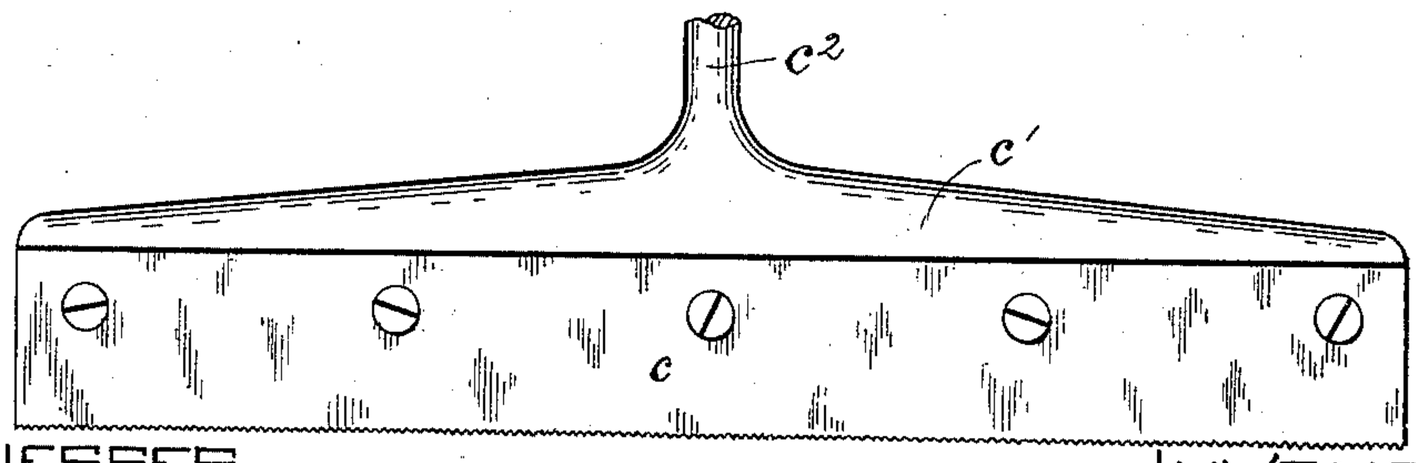


FIG. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES E. WILLIAMS, OF MILFORD, MASSACHUSETTS.

UPPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,590, dated February 9, 1892.

Application filed May 26, 1891. Serial No. 394,102. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. WILLIAMS, of Milford, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for Crimping or Folding Pieces of Cloth or other Materials, of which the following is a specification.

This invention relates, chiefly, to machines for folding or crimping linings for boots and shoes by the use of heat and pressure, the sheet or piece to be crimped being folded between two opposing surfaces which are pressed closely against the material interposed between them, so as to form a sharp crease at the folded edge, said surfaces being heated to make the fold or crease more permanent.

The invention has for its object to provide a simple and effective machine of this class; and to this end it consists in the improvements which I will now proceed to describe and claim.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a top plan view of my improved machine. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a section on line 3 3 of Fig. 2. Fig. 4 represents a side elevation and partial section of a portion of the machine. Fig. 5 represents a side view of the creasing-blade. Fig. 6 represents a perspective view of a portion of the operating-shaft of the machine.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a suitable base or bed having bearings, in which is journaled a crank-shaft *b*, the same having the cranks or eccentric wrist-pins *b'* b^2, Fig. 6, which give motion, through the devices hereinafter described, to the creasing-blade *c* and to the rocking presser *d*. The bed *a* is provided at one end with a horizontal table *a'*, which supports the piece *e* to be folded, one end of said table forming a wall or pressing-surface a^2, which co-operates with the rocking presser *d* in folding and creasing the portion of the piece *e* that is interposed between said parts. The rocking-presser *d* is provided at its ends with trunnions *d' d'*, which are journaled in bearings in the sides of the base *a*. To said presser is affixed a lever d^2, which projects rearwardly over the crank-shaft *b*.

g represents a lever, which is pivoted at *g'* to the lever d^2 and also projects over the crank-shaft, said lever *g* being interposed between the crank-shaft and the lever d^2, and having its rear end arranged to bear on the wrist-pin *b'*. The rotation of the crank-shaft *b* causes the wrist-pin *b'* to rise and fall and impart a like movement to the lever *g*. A spring *h* is interposed between the lever *g* and the lever d^2, said spring constituting a yielding or elastic connection between the levers d^2 and *g* and exerting the upward pressure on the lever d^2, which forces the rocking presser *d* forward toward the fixed surface a^2, with which it co-operates, said spring enabling the presser *d* to conform to the thickness of the leather interposed between it and the surface or shoulder a^2.

i represents a spring which is interposed between the fixed top of the base or bed *a* and the lever d^2 and is adapted to press said lever downwardly, so as to separate the presser *d* from the shoulder a^2 when the wrist-pin *b'* recedes or falls.

j represents a curved lever, which is provided with trunnions *j'*, journaled in bearings *k k* on the base *a*. One end of the lever *j* is provided with a slot j^2, which receives the wrist-pin b^2. The revolution of said wrist-pin causes the lever *j* to oscillate and thus alternately raise and depress the creasing-blade *c*, which is supported by the opposite end of said lever. The creasing-blade *c* is arranged over the space between the presser *d* and the shoulder a^2, so that when it is depressed it enters said space and forces a part of the piece *e* thereinto, thus forming a bight or loop in said piece *e*, as shown in Fig. 2. The blade is serrated on its lower edge, as shown in Fig. 5, the object of the serrations being to prevent the piece *e* from slipping under the edge of the blade, as it might do if the blade were not serrated. The blade *c* is affixed to a holder *c'*, having a shank c^2, which is inserted in a socket in a vertically-movable rod or plunger *o* and held in engagement with said socket by a screw *p*. The rod or plunger *o* is fitted to move vertically in a socket

q in the upper end of the lever j and is normally pressed downwardly in said socket by a spring r until the screw p bears on the lower end of a slot s, as shown in Fig. 2.

The operation of the machine above described is as follows: The piece e to be creased and folded is placed upon the table a', with its inner end against an adjustable gage u, affixed to the frame a by a screw v, passing through a slot v' in said gage, the blade c being at this time raised and the presser d retracted or drawn back to its greatest distance from the shoulder a^2. The crank-shaft b is then rotated, and its wrist-pins b' b^2 act, respectively, on the levers that carry the presser d and blade c, force the blade downwardly into the space between the presser and the shoulder a^2, and then force the presser forward against the material thus tucked or folded into said space, the blade being retracted while the presser is moving forward, so that it leaves the space between the presser and shoulder a^2 unobstructed and permits the presser to force one thickness of the material closely against the other in said space. The presser remains in its projected position long enough to permit the heated surfaces of the bed and presser to give the desired result in folding and creasing the material, after which the presser is retracted and the piece e removed.

It will be seen that the serrated edge of the blade c causes it to firmly engage the material while pressing it down into the space in which it is creased, so that the piece cannot slip in either direction while it is being forced into said space. This is an important feature, because any slipping of the piece would change the width of the fold, as will be readily seen.

In Fig. 4 I have shown a lever x, which is pivoted at x' to the frame of the machine a and has a shoulder x^2, which is adapted to engage a lug d^3, projecting outwardly from the presser d. The engagement of the shoulder x^2 with the lug d^3 is effected when the presser is moved forward, as shown in Fig. 4, by means of a spring x^3, connected at one end to an arm on the lever x and at the other end to a collar affixed to the trunnion d', said spring normally acting to force the lever x upwardly and thus cause its shoulder x^2 to engage the rear surface of the lug d^3 when said lug has reached its forward position. The engagement of the shoulder x^2 with the lug d^3 locks the presser in its forward position and affords the desired duration of pressure on the piece e. When the pressure has been maintained a sufficient length of time, the operator depresses the lever x, the latter projecting toward the front of the machine, thus enabling the presser to be retracted by the force of the spring i. The lever x is, in fact, made double, as shown in Fig. 1, a cross-bar x^4 connecting the outer ends of the two divisions of the lever, one of said divisions being at one side and the other at the opposite side of the machine, so that the lever acts on both ends of the presser in a manner that will be readily understood by reference to Fig. 1. The shaft b is rotated by a belt running on a pulley b^4, which is normally loose upon the shaft, and has a clutch member b^5, which is adapted to be engaged with and disengaged from a corresponding clutch member b^6, affixed to the shaft, the pulley b^4 and its clutch member b^5 being laterally movable on the shaft, so as to permit it to be engaged with and disengaged from the clutch member b^6. The clutch members b^5 and b^6 are part of an automatic stop-motion, which operates to automatically disconnect the driving-pulley from the shaft after each rotation of the latter and is adapted to be connected thereto by the depression of a treadle or some other act on the part of the operator.

As automatic stop-motions operating in this way are well known, I do not deem it necessary to specifically describe any particular form of stop-motion, as my invention does not include the same. Any well-known stop-motions that are in general use in machines where the operation of the driving-shaft is automatically arrested after a complete rotation and caused to be resumed by the act of the operator may be used in this machine.

z represents a gas-burner arranged to heat the presser d and shoulder a^2, as shown in Fig. 2.

I claim—

1. In a machine for folding and creasing pieces of material, the combination of a stationary table adapted to support the piece of material to be folded and provided with a shoulder or pressing-surface a^2, a rocking presser pivotally connected to the frame at a point below the level of the table and arranged to co-operate with the shoulder a^2, and means, substantially as described, for yieldingly forcing said presser toward the shoulder a^2 and for retracting the presser, as set forth.

2. In a machine for folding and creasing pieces of material, the combination of a fixed frame provided with a shoulder or pressing-surface a^2, a rocking presser pivotally connected to said frame and arranged to co-operate with the shoulder a^2, a shaft journaled in bearings in said frame and provided with two cranks, a lever affixed to the presser and arranged to be moved by one of said cranks, a curved lever pivoted to the frame and engaged at one end with the other crank, and a folding-blade secured to the other end of said lever, as set forth.

3. In a machine for folding and creasing pieces of material, the combination of a fixed frame provided with a shoulder or pressing-surface a^2, a rocking presser pivotally connected to said frame and arranged to co-operate with the shoulder a^2, a lever, as d^2, affixed to said presser, an arm or lever g, pivoted to said lever d^2, a spring interposed between the levers g and d^2, and means for forc-

ing the lever *g* upwardly, and thereby imparting through said spring a yielding pressure to the presser, as set forth.

4. The combination of the stationary table *a'*, adapted to support a piece of material to be creased and having a pressing-surface or shoulder a^2, the rocking presser pivotally connected to the frame and arranged to co-operate with said presser, the oscillating lever *j*, pivotally connected to the frame, and the folding-blade yieldingly connected to said lever, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 6th day of May, A. D. 1891.

CHARLES E. WILLIAMS.

Witnesses:

CHARLES KNIGHT,

THOS. WELCH.