

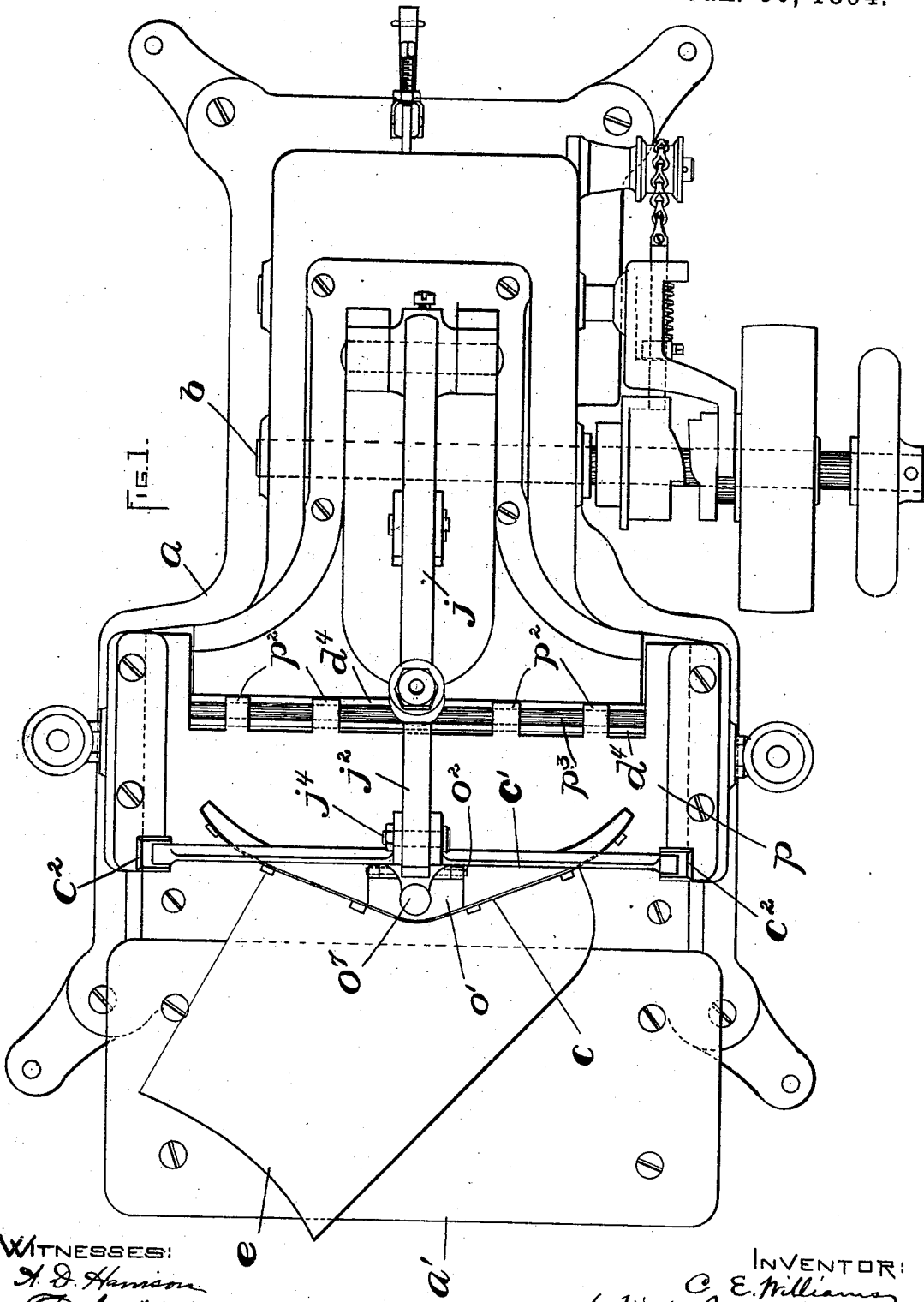
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5 Sheets—Sheet 1.

C. E. WILLIAMS.
UPPER FOLDING MACHINE.

No. 513,852.

Patented Jan. 30, 1894.



WITNESSES:
A. D. Harrison
Parker Davis.

INVENTOR:
C. E. Williams
by Wright Brown & Crossley
Atty.

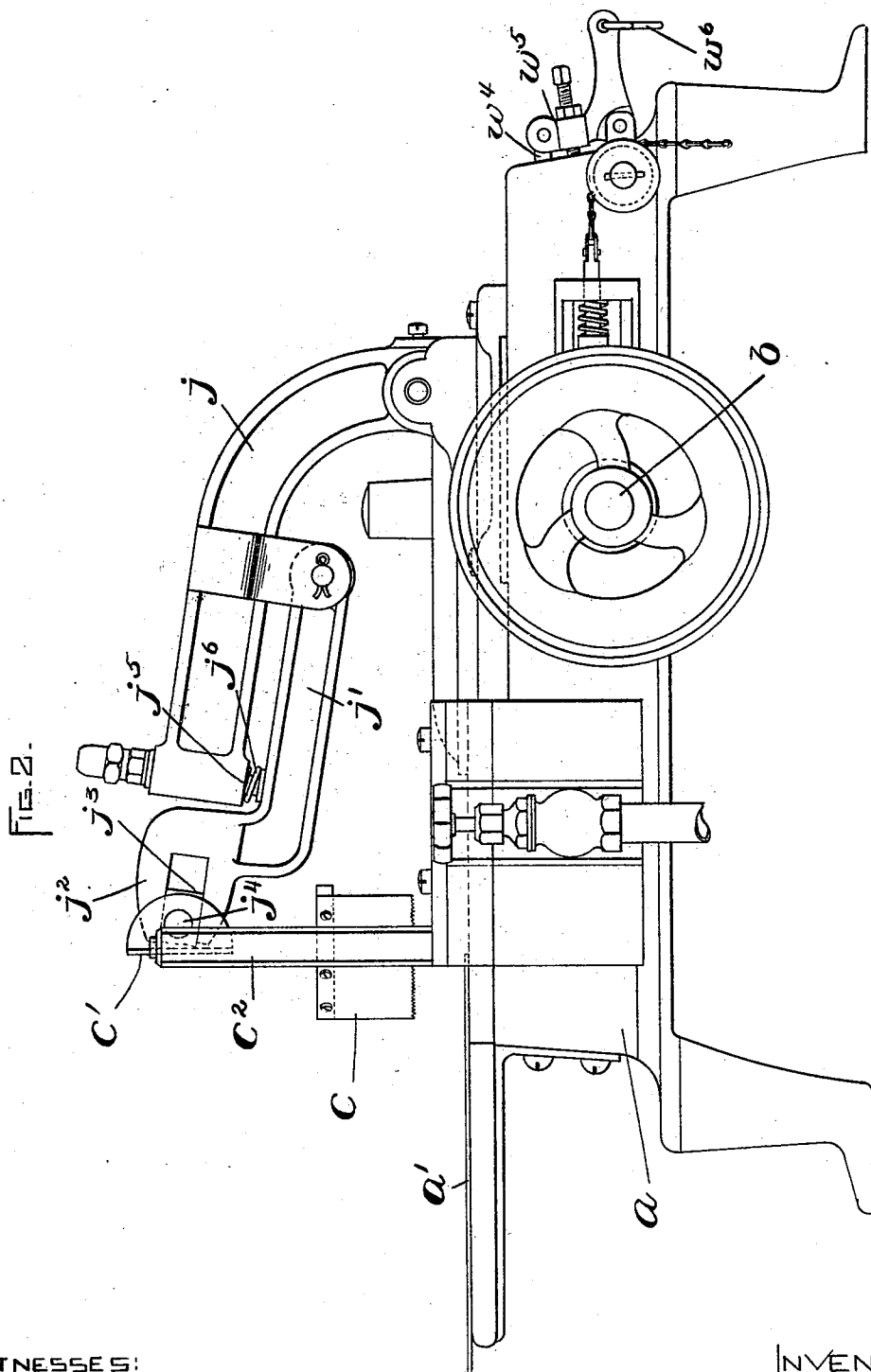
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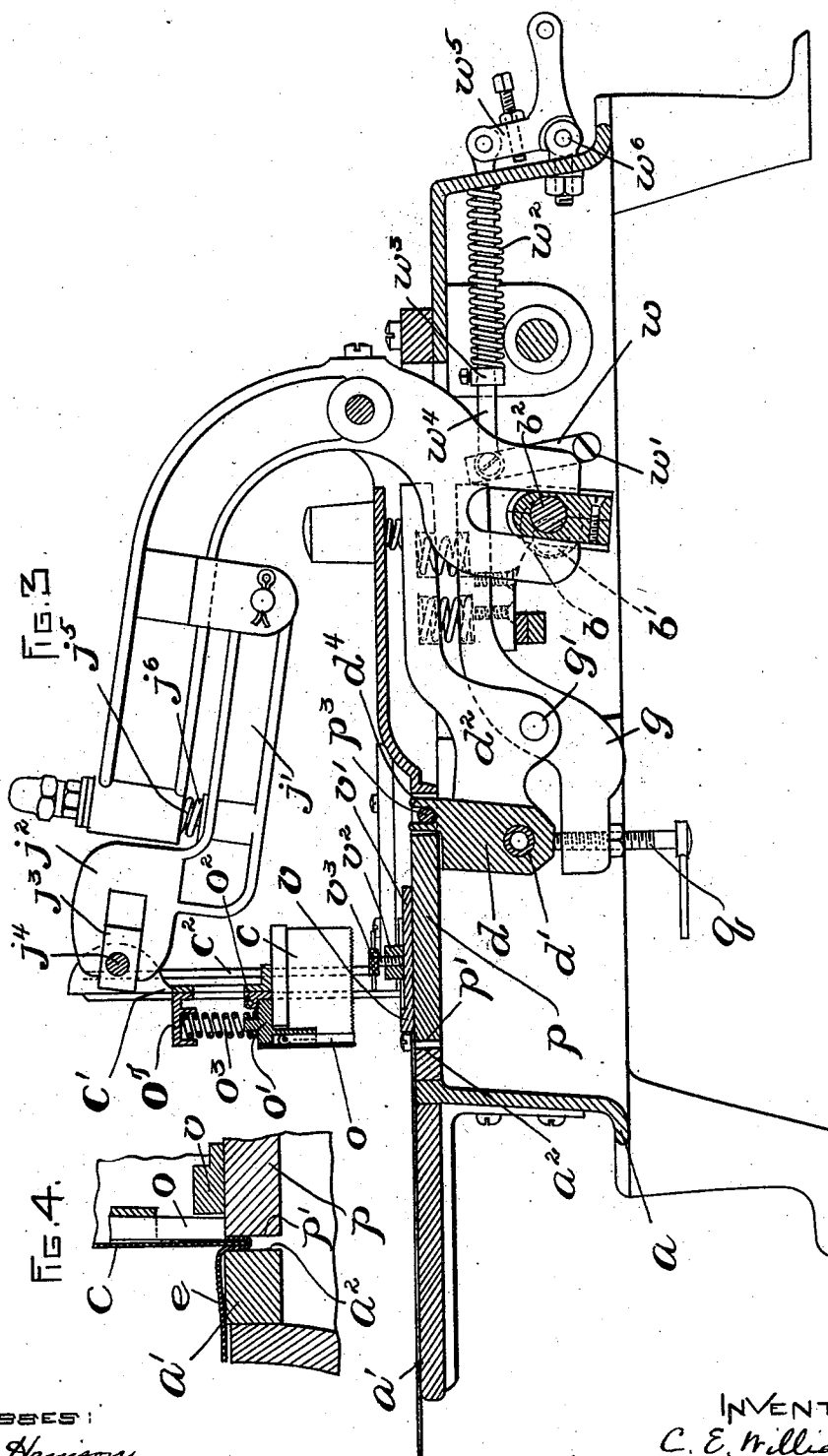
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No. 513,852.

Patented Jan. 30, 1894.



WITNESSES:
H. D. Harrison.
J. H. Davis.

INVENTOR:
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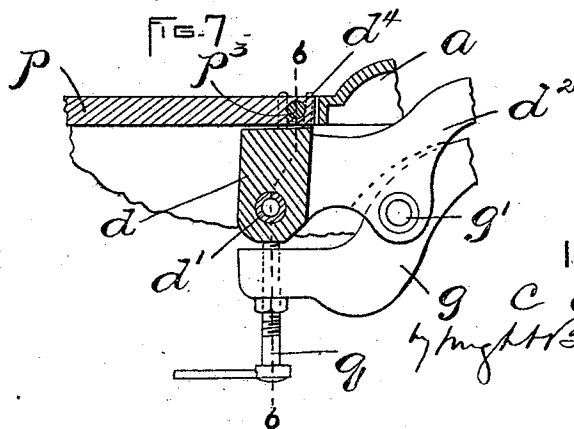
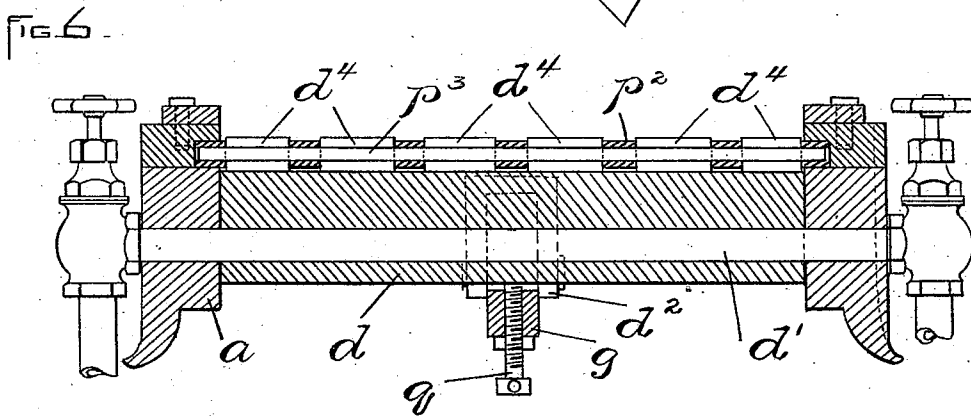
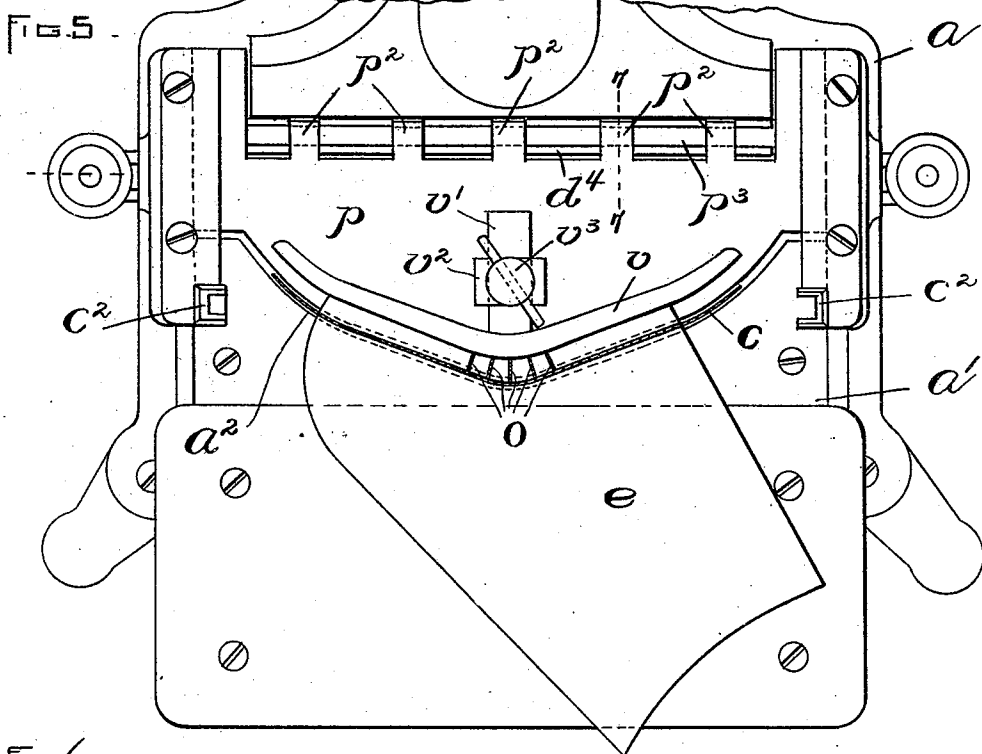
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C. E. WILLIAMS.
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Patented Jan. 30, 1894.



WITNESSES:

A. D. Harrison.
Darker Davis.

INVENTOR:

C. E. Williams
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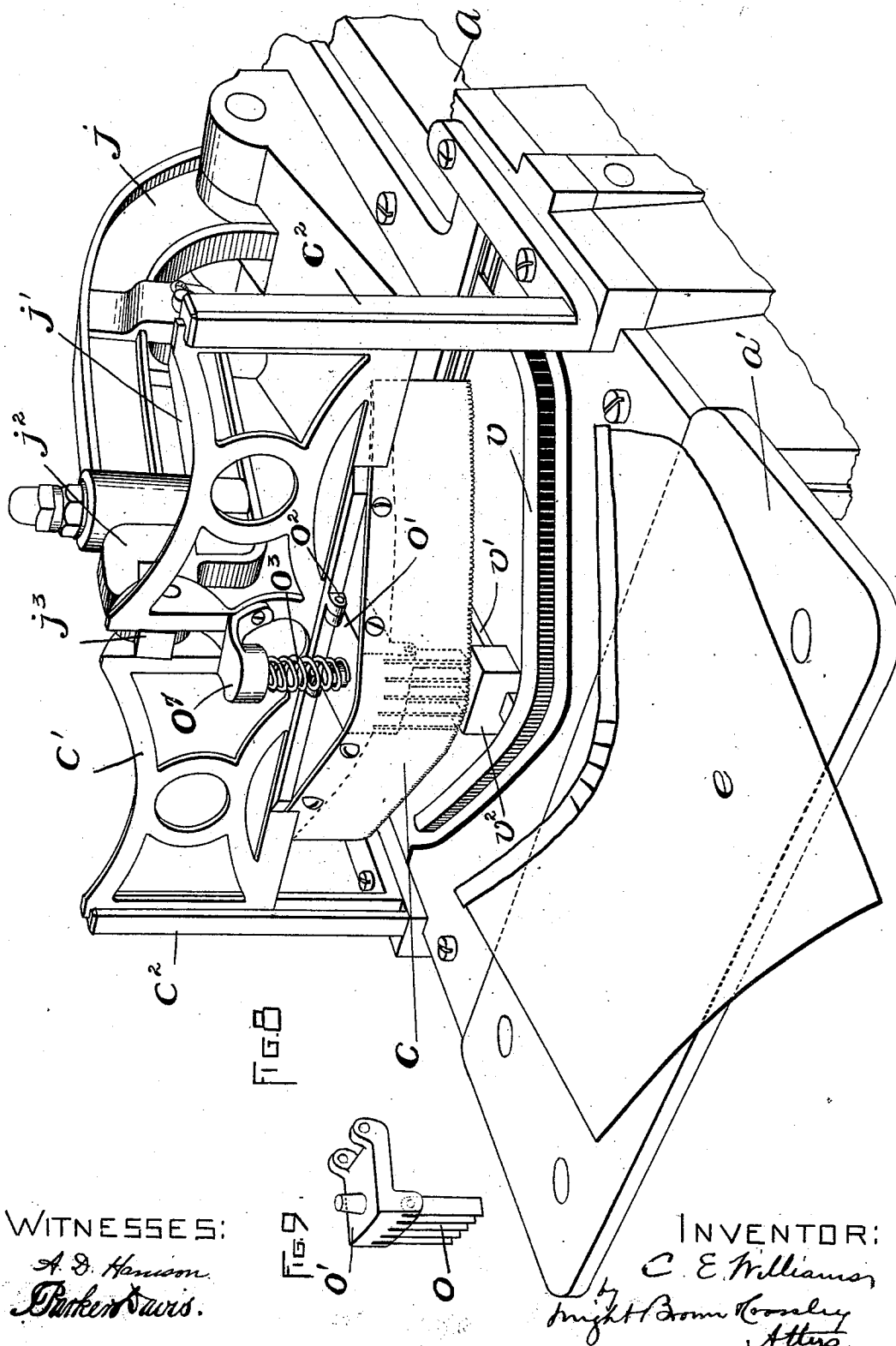
(No Model.)

5 Sheets—Sheet 5.

C. E. WILLIAMS.
UPPER FOLDING MACHINE.

No. 513,852.

Patented Jan. 30, 1894.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

CHARLES E. WILLIAMS, OF MILFORD, MASSACHUSETTS.

UPPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 513,852, dated January 30, 1894.

Application filed April 20, 1893. Serial No. 471,184. (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 Upper-Folding Machines, of which the following is a specification.

This invention relates to an improvement in machines of the character shown in Patents Nos. 468,590 and 488,593, granted to me February 9, 1892, and December 27, 1892, respectively, and designed for folding the edges of shoe-linings, bal-tops and the like.

The object of the present invention is to provide a machine which will fold over irregular edges of any flexible material.

To this end the invention consists in certain novel constructions and arrangements of parts which will be fully described hereinafter and pointed out in the claims.

The accompanying drawings illustrate a construction by which the invention may be carried out.

Figure 1 shows a top or plan view of the machine. Fig. 2 shows a side elevation. Fig. 3 shows a longitudinal section. Fig. 4 shows a sectional view on an enlarged scale illustrating the action of the folding blade on the article under treatment. Fig. 5 shows a plan view of the front portion of the machine with the plunger-frame removed, and the folding blade and slitting knives in section. Fig. 6 shows in cross-section on line 6—6, of Fig. 7. Fig. 7 shows a section on line 7—7, of Fig. 5. Fig. 8 shows a perspective view of the machine. Fig. 9 shows a detail perspective view of the slitting knives.

The reference letter, *a*, designates the supporting base or bed of the machine having bearings in which is journaled a crank-shaft, *b*, having the two cranks or wrist-pins, *b'*, *b''*, which give motion, as hereinafter explained, to the creasing or folding blade, *c*, and the rocker, *d*.

The bed, *a*, is provided at one end with a horizontal table, *a'*, which supports the piece, *e*, whose edge is to be folded, said piece in the present instance being a shoe-lining quarter. One end of the said table forms a wall or pressing face, *a''*, whose contour is irregular, corresponding with the edge of the work. The work here shown being a shoe-lining

quarter, the presser face, *a''*, is curved back toward the front of the machine at the center. The folding or creasing blade, *c*, has a shape corresponding with the contour of said presser-face and is preferably serrated on its lower edge so as to take a hold on the work. Said folding blade is fastened on the front of a frame, *c'*, which is fitted to reciprocate in vertical guides, *c''*, erected on the machine-bed. Said frame or plunger is actuated by a lever composed of two members, one of which, *j*, is pivoted to the machine bed, and extends below the same where it is bifurcated and engages a box fitting on the crank, *b''*, and the other of which members, *j'*, is pivoted to the member, *j*, and projects in front of the same where it has a bifurcated head, *j''*, engaging a box, *j'''*, on a short shaft, *j''''*, in the frame, *c'*. The members, *j*, and *j'*, are further connected by means of a rod, *j''''''*, and a spring, *j''''''''*, thereon, so that the member, *j'*, is held yieldingly away from the member, *j*, and the plunger may yield when it encounters the work.

In view of the fact that a curved edge of the work is to be folded, it is desirable to split the portion to be folded over so as to allow it to spread and to prevent the work from breaking. This is accomplished by a cutting device carried by the plunger and consisting in the present instance of a plurality of knives, *o*, depending from a head, *o'*, in which they are fastened. Said head and knives are allowed a slight upward movement so that they may yield when they encounter the work. In the present instance the said head is hinged as shown at, *o''*, and is held down by a spring, *o'''*, bearing upon it and against a projection, *o''''*, of the frame, *c'*. A follower or presser, *p*, is fitted to slide in the plane of the table and it has a front end-face, *p'*, corresponding in contour with the pressing face, *a''*, of the table and confronting the same. Said follower has ears, *p''*, formed upon it, and a rod, *p'''*, extends transversely through said ears. A rocker, *d*, is pivoted beneath the bed of the machine and has a bifurcated upper portion, *d''*, engaging the rod, *p'''*, between the ears, *p''*. Said rocker extends entirely across the follower and is journaled by means of trunnions in bearings on the machine frame, said trunnions in the present instance being ends of a steam pipe, *d'*, which

passes through the rocker, and is connected with supply and exhaust pipes provided with valves. To said rocker is affixed a lever, d^2 , which projects rearwardly over the crank-shaft b .

g represents a lever, which is pivoted to 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 . One or more springs are interposed between the lever g and the lever, d^2 , said springs 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 rocker, d , and follower, p , forward toward the fixed surface, a^2 , with which the latter co-operates, said springs enabling the follower to conform to the thickness of the leather interposed between it and the surface of shoulder, a^2 .

The tension of the spring, h , may be adjusted by means of a screw, g , passing through the end of the lever, g , and bearing against the rocker, d .

An adjustable gage, v , conforming in shape to the edge of the "quarter," is mounted on the upper side of the follower and may be adjusted by means of an arm, v' , fitted to slide through a keeper, v^2 , and a set-screw, v^3 , in said keeper.

The operation of the machine above described is as follows: The piece e to be creased or folded is placed upon the table, a' , with its inner curved edge against the adjustable gage, v , the blade, c , being at this time raised, and the presser, p , 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 rocker, 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. When the folding blade, v , comes down, the knives, o , cut a number of slits in the portion of the "quarter" which is to be folded over, and hence when folded over this portion may be distended by the spreading of the slits, and no buckling will result. When the presser, p , is moved forward, it is locked in said position by means of a latch, w , which is arranged

to engage with the rear end of the lever, g . Said latch is pivoted to the frame at w' , and is forced forward by means of a spring, w^2 , interposed between the frame and a collar, w^3 , on a rod, w^4 , which is pivotally connected with the swinging end of the latch, w , and is adapted to slide in an opening in the frame or base, a . The spring, w^2 , normally holds the latch, w , in the position shown in Fig. 3, thus engaging it with the lever, g , and through the latter locking the presser in its forward position.

w^5 represents a bell-crank lever, pivoted at w^6 , and having one of its arms connected with the rod, w^4 . The other arm of said lever is connected by a rod, w^6 , to the treadle (not shown) whereby the operator may move the latch, w , through the described devices out of engagement with the lever, g .

The machine is provided with an automatic stop motion, which is or may be constructed like the stop motion described in my former patents and is arranged to disconnect the shaft, b , from its driving pulley, when said shaft holds the presser, p , in its forward position. Means are provided whereby the operator may re-engage the shaft b with the driving-pulley, and thus start the machine.

It is evident that the invention may be embodied in different forms of mechanism from what is here shown.

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

1. A machine of the character described comprising in its construction a stationary table or work-support having an end-surface of irregular contour against which the folded work is pressed, a reciprocating folding-blade of corresponding contour, a slitting device to slit the folded edge and a follower or presser having an end-face of corresponding contour confronting the end-face of the table.

2. A machine of the character described comprising in its construction a stationary table or work-support having an end-surface of irregular contour against which the folded work is pressed, a reciprocating folding-blade of corresponding contour, a follower or presser having an end-face of corresponding contour confronting the end-face of the table, said follower provided with ears, a rod extending through said ears, and a bifurcated rocker engaging said rod.

3. A machine of the character described comprising in its construction a stationary table or work-support having an end-surface of irregular contour against which the folded work is pressed, a reciprocating folding-blade of corresponding contour, a slitting device carried by the folding blade and a follower having an end face of corresponding contour with the end-face of the table and confronting the same.

4. A machine of the character described comprising in its construction a stationary table or work-support having an end-surface

of irregular contour against which the folded work is pressed, a reciprocating folding-blade of corresponding contour, a slitting device carried by the folding-blade and capable of movement independent of the plunger, and a follower having an end-face of corresponding contour with the end-face of the table and confronting the same.

5. A machine of the character described comprising in its construction a stationary table or work-support having an end-surface of irregular contour against which the folded work is pressed, a reciprocating folding-blade of corresponding contour, a slitting device

carried by the folding-blade and capable of movement independent of the plunger and yieldingly held down, and a follower having an end-face of corresponding contour with the end-face of the table and confronting the same.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 31st day of March, A. D. 1893.

CHARLES E. WILLIAMS.

Witnesses:

HENRY J. DEARING,
EDWARD L. TEMPLE.