

(No Model.)

5 Sheets—Sheet 1.

C. SCHÜTZ.
FOLDING MACHINE.

No. 569,355.

Patented Oct. 13, 1896.

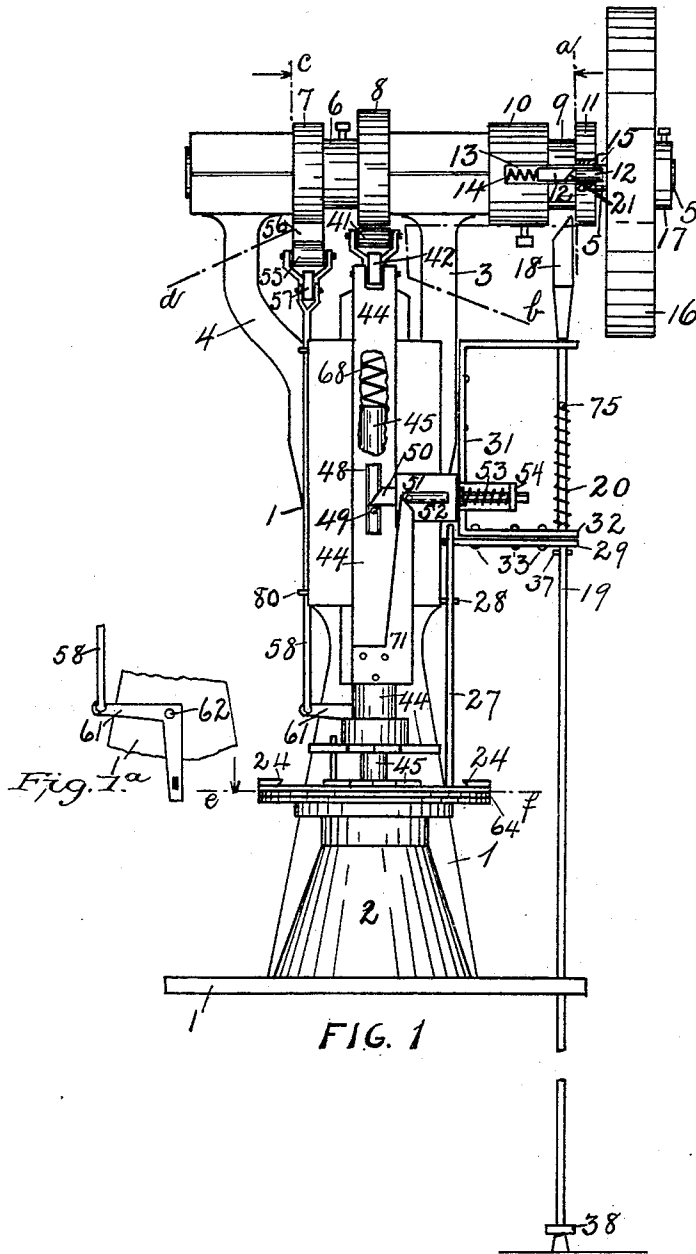


FIG. 1

WITNESSES:

Joseph W. Hunter.
David Wallenstein

INVENTOR.

Conrad Schütz
BY
Charles N. Butler
ATTORNEY

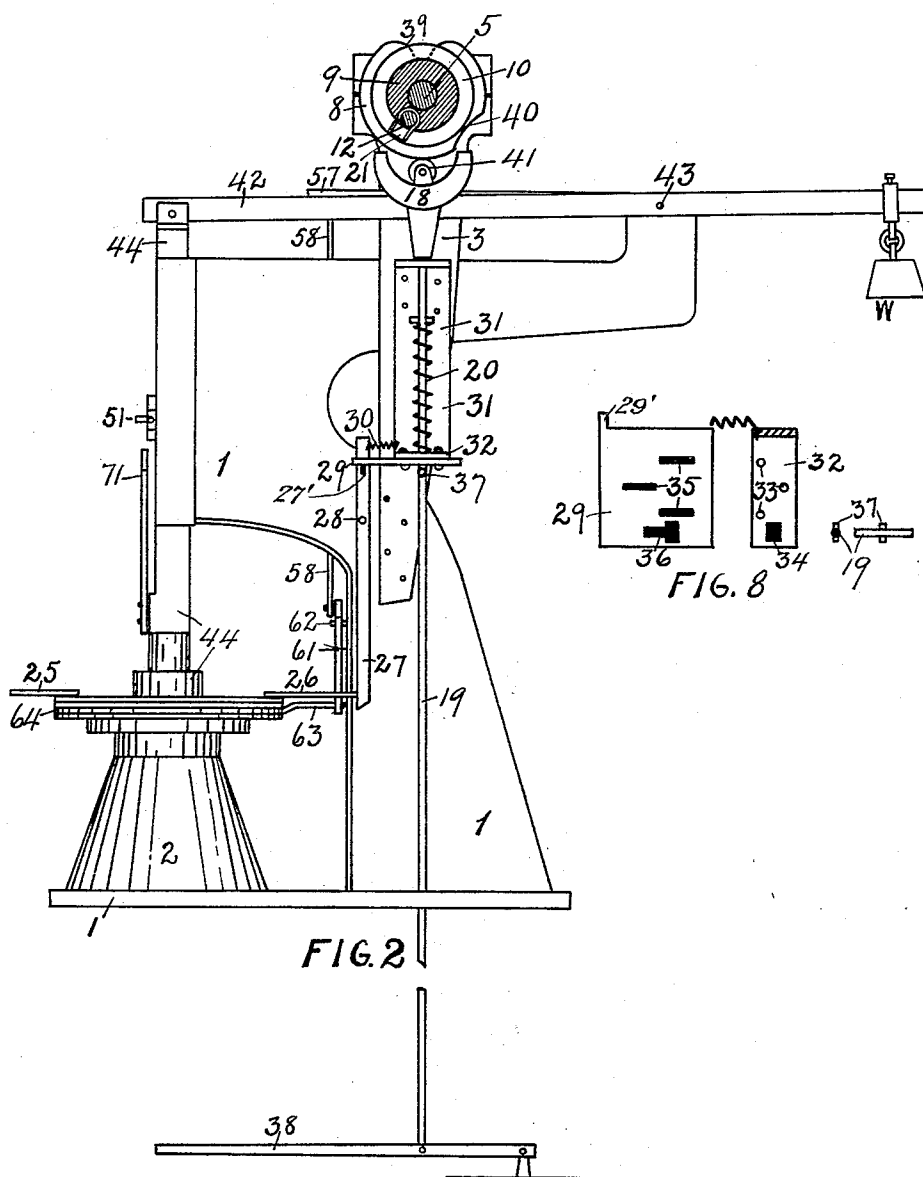
(No Model.)

5 Sheets—Sheet 2.

C. SCHÜTZ.
FOLDING MACHINE.

No. 569,355.

Patented Oct. 13, 1896.



WITNESSES :

Joseph W. Center.
David M. Weinstein

INVENTOR

Conrad Schütz
Charles N. Butler
ATTORNEY

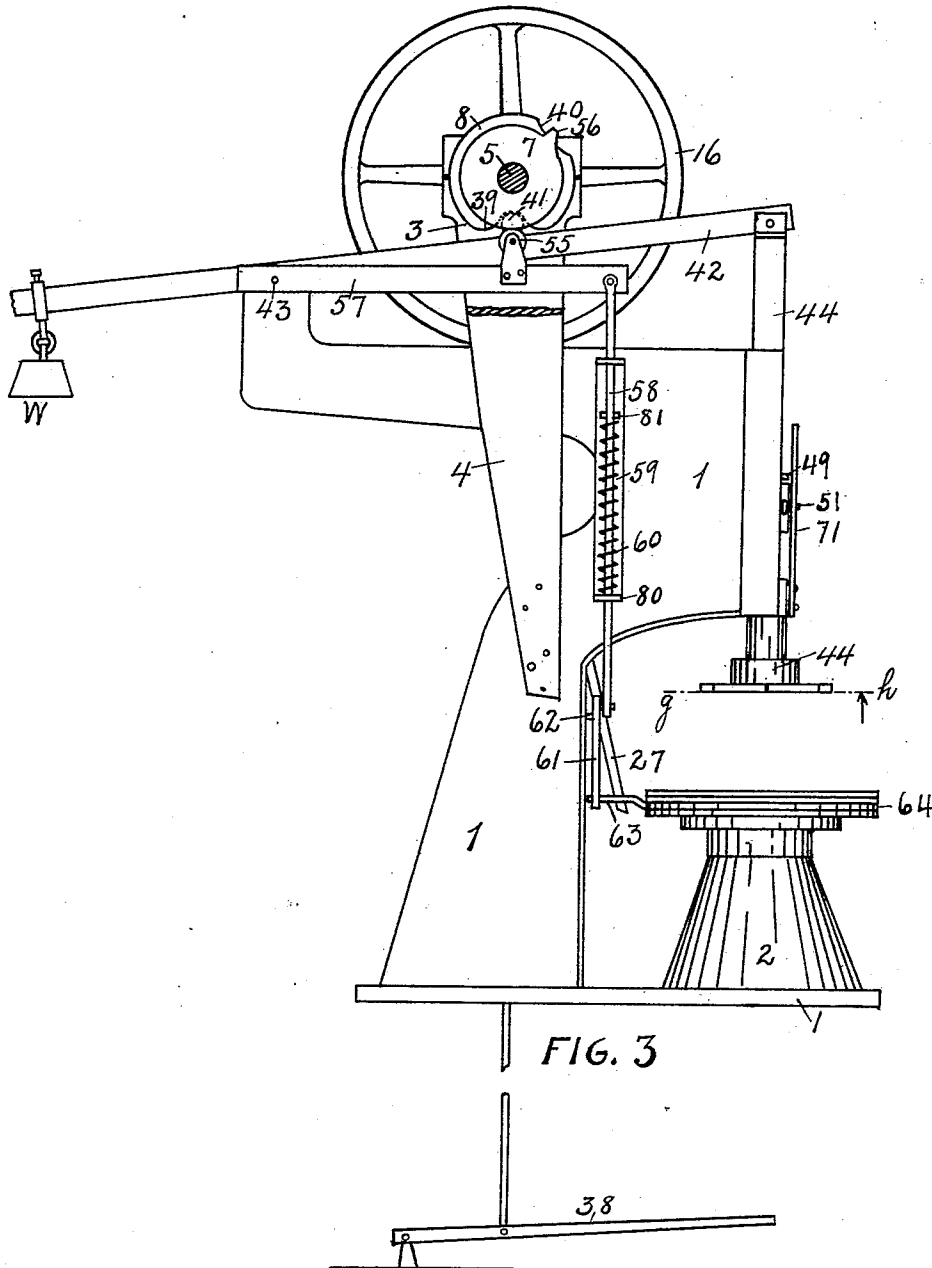
(No Model.)

5 Sheets—Sheet 3.

C. SCHÜTZ.
FOLDING MACHINE.

No. 569,355.

Patented Oct. 13, 1896.



WITNESSES:

Joseph W. Senter.
David Hallstrom

INVENTOR

Conrad Schütz
BY
Charles N. Butler
ATTORNEY

(No Model.)

5 Sheets—Sheet 4.

C. SCHÜTZ.
FOLDING MACHINE.

No. 569,355.

Patented Oct. 13, 1896.

FIG. 4



FIG. 5

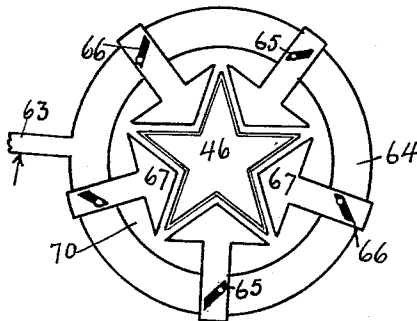


FIG. 6

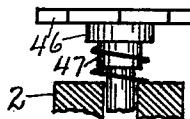
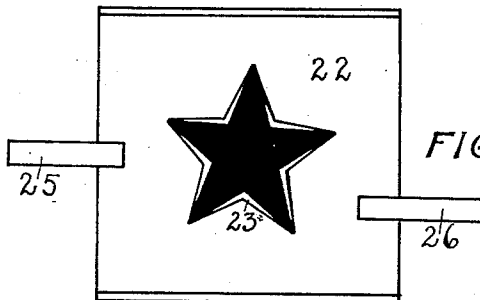


FIG. 7



WITNESSES:

Joseph W. Hunter.
David M. Hunter.

INVENTOR

Conrad Schütz
BY
Charles N. Butler
ATTORNEY

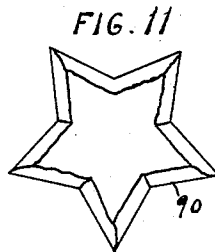
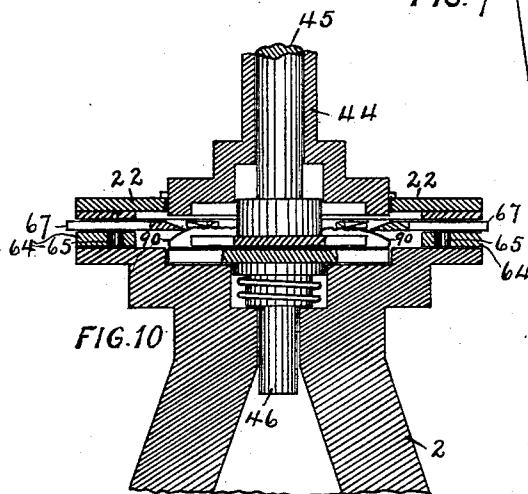
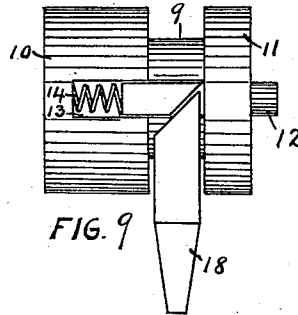
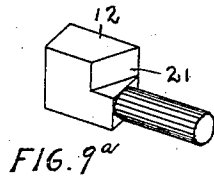
(No Model.)

5 Sheets—Sheet 5.

C. SCHÜTZ.
FOLDING MACHINE.

No. 569,355.

Patented Oct. 13, 1896.



WITNESSES:

Joseph W. Hunter.
M. D. Miles

INVENTOR

Conrad Schütz
BY
Charles N. Butler
ATTORNEY

UNITED STATES PATENT OFFICE.

CONRAD SCHÜTZ, OF PHILADELPHIA, PENNSYLVANIA.

FOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,355, dated October 13, 1896.

Application filed June 27, 1895. Serial No. 554,183. (No model.)

To all whom it may concern:

Be it known that I, CONRAD SCHÜTZ, a citizen of the United States, residing in the city of Philadelphia, State of Pennsylvania, have invented a new and useful Folding-Machine, of which the following is a specification.

My invention is more particularly a machine for turning in and creasing the edges of stars that are to be sewed on cloth in making flags, but it is equally applicable to use in the manufacture of collars and cuffs or wherever it is necessary to fold an edge.

Heretofore the operation has been performed by hand at considerable expense. By my invention the folding can be accomplished much more rapidly than by hand, and the outline of the figure resulting is perfectly symmetrical.

The mechanism is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 1^a is a view of a detail partly hidden in Fig. 1. Fig. 2 is a side elevation on the line *ab* of Fig. 1. Fig. 3 is a side elevation on the line *cd* of Fig. 1. Fig. 4 is a bottom view of the compound plunger on the line *gh* of Fig. 3. Fig. 5 is a top view of the spring-anvil and folding-blades on the line *ef* of Fig. 1. Fig. 6 is a side elevation of the spring-anvil, the anvil-block being shown in section with its cap removed. Fig. 7 is a plan view of the holder. Fig. 8 is a detail. Fig. 9 illustrates the position of the half-collar when elevated in the path of the revolving clutch-bolt in position to unclutch the mechanism, and Fig. 9^a is a perspective view of the clutch-bolt. Fig. 10 is a vertical sectional view through the plungers and the mechanism supported by the anvil-block, illustrating the folding operation; and Fig. 11 illustrates the appearance of the under side of a star after the folding operation.

The frame 1 supports the anvil-block 2 and the struts 3 and 4, the latter providing suitable bearings for the journals of the shaft 5. A sleeve 6 is held on this shaft between the bearings by means of a set-screw or other suitable fastening. A simple cam 7 and a compound cam 8 are integral with the sleeve. A second sleeve 9 is held on the end of the shaft by means of a set-screw or other conventional fastening and has rings or collars

10 and 11 on its opposite ends. A groove 13 is formed in this sleeve parallel with the axis of the shaft and extends through the collar 11 and but part way through the collar 10. The purpose of this groove is to guide a bolt 12, which is adapted to be moved forward and backward to clutch and unclutch the mechanism. The forward end of this bolt is reduced, so that its outer part is flush with the bottom of the groove formed at 9 by the parts 10 and 11, the obvious object of this construction being to avoid interference between the forward part of the bolt and the half-collar 18. The rear end of this bolt projects outward and is provided with a beveled face 21, which is adapted to be engaged by the half-collar. A spring 14 lies behind the bolt and tends to thrust the latter forward into engagement with a knob or stud 15 on the hub of a constantly-rotating pulley 16, from which the mechanism is operated. It will be understood that this pulley is loose on the shaft 5, the collar 17, secured on the end of the shaft, holding it in position, and that the function of the bolt 12 is to clutch the pulley to this shaft.

When the mechanism is to be stopped, the half-collar 18 on the rod 19 is elevated by a coiled spring 20, one end of which bears upon the fixed arm 32, while the other end engages a cross-bar 75 or other suitable fixed part of the rod. The half-collar, when elevated, lies in the path of the beveled end 21 of the projecting part of the bolt 12 as it revolves and forces the latter back against the action of the spring 14, thus unclutching the shaft and pulley.

When the mechanism is to be operated, a star of the desired material, cut with a suitable die, is placed in the frame 23 of the holder 22, which has a star-shaped aperture, as shown. The holder is then slipped into the guides 24 by means of the handle 25 and pushed in until it occupies the position shown in Fig. 2, its aperture registering with the spring-anvil 46, while its arm 26 has engaged the lower end of the lever 27 and rocked it about its pivot 28, thus drawing forward the slide 29 through the engagement between the lever and the slide. The lever 27 is provided with a slot 27', which engages a projection 29' on the plate 29. The function of this slide is

to lock the mechanism. It is provided with slots 35, through which bolts 33, supported by the arm 32, are passed, permitting the slide a movement equal to the length of the slots. An opening 36 in the slide registers with the opening 34 of the arm, and through these openings the rod 19, provided with the cross-bar 37, passes. When the rod is elevated through the action of the spring 20, the cross-bar 37 lies above the slide, and when the latter is drawn back by the spring 30 (having one end connected with the plate 31 on the strut 3 and the other end connected to the top of the lever 27 and therethrough to the narrow part of the aperture 36 will not permit the cross-bar 37 to pass. Hence the rod 19 cannot be moved down and the spring-actuated clutch is held out of engagement.

When the slide is drawn forward and the treadle 38 depressed, the half-collar 18 disengages the bolt 12, which is immediately thrown forward, clutching the shaft 5 to the rotating pulley and revolving the cams 7 and 8. When the roller 41 lies in the depression 39 of the cam 8, the lever 42, to which it is attached, occupies the position shown in Fig. 3, the weight W on the end of the lever turning the latter about its pivot 43 and holding the compound plunger 44 elevated. As this cam rotates, the compound plunger is depressed to the position shown in Fig. 2, the lower end of the plunger, Fig. 4, pressing the star through the aperture of the holder or guide-plate and forcing it down on the spring-anvil 46. As the compound plunger moves down a pin 49, projecting through a slot 48 of the primary plunger 44 and secured to the secondary plunger 45, strikes the beveled face of a latch 50 on the machine-frame, forcing it back and thus passing it. A spring 53, having one end in engagement with a hub on the latch while the other end bears against a fixed member 54, through which the rear end of the latch-bolt slides, throws the latch forward again into the path of the pin, thus holding the secondary plunger down. When in the revolution of the cam the depression 40 reaches the roller 41, the weight W is permitted to elevate the primary piston to the height permitted by the depth of the depression 40, the parts taking the position shown in Fig. 1. As the pin 49 of the secondary plunger 45 is still engaged by the latch 50 the secondary plunger remains down and continues to press the star 90 on the spring-anvil. At the instant the depression 40 of the cam 8 reaches the roller 41 and the primary piston begins to rise the knob 56 on the cam 7 reaches the roller 55 on the lever 57 and forces it down against the action of a spring 60, having its lower end supported on a lug 80 of the plate 59, secured to the machine-frame, while its upper end engages a fixed cross-bar 81 of the rod 58. This rod has its upper end pivoted to the lever 57, while its lower end is pivoted to the horizontal arm of a bell-crank 61, piv-

oted on the pin 62 of the machine-frame. The vertical arm of the bell-crank engages an arm 63 of a ring 64 and turns it in the direction of the arrow about the hub 70 when the lever 57 is depressed. (See Fig. 5.) Pins 65 on this ring project through slots 66 of the blades 67, and by reason of the angular position of the slots with respect to the axes of the blades as the ring moves in the direction of the arrow the blades are thrust in and fold the edge of the star 90. These blades are withdrawn by the action of the spring 60 when the knob 56 has passed the roller 55, and at the same instant the depression 40 of the cam 8 leaves the roller 41 and the primary piston is driven down, creasing the folded edge of the star. When the depression 39 of the cam 8 reaches the roller 41, the weight W lifts the plunger 44, and as it rises the beveled top of the finger 71, secured to the plunger, engages the pin 51 of the latch 50, forcing the pin back in the slot 52, thus withdrawing the latch from engagement with the pin 49 of the secondary plunger 45. A coiled spring 68, having its upper end attached to the primary plunger and its lower end connected with the secondary plunger, now elevates the latter and the parts resume the position shown in Fig. 3.

It is found expedient when operating upon some classes of material to heat the parts of the apparatus that press the material, producing the effect of ironing. A simple gas-jet may be used to heat the desired part.

Having described my invention, I claim—

1. In a folding-machine, a compound plunger comprising a primary and a secondary plunger, a compound cam connected with the compound plunger, a support for the material to be folded, in combination with a latch which automatically engages and holds the secondary plunger depressed during the interval required for a second stroke of the primary plunger, substantially as shown and described.

2. In a folding-machine, in combination, a compound plunger comprising a primary and a secondary plunger, a revolving compound cam, mechanism connecting the plunger and the cam, a latch and a support for the material to be folded, substantially as shown and described.

3. In a folding-machine, in combination, a compound plunger comprising a primary and a secondary plunger, a revolving compound cam connected with the said plunger, an automatic latch, a device for withdrawing the latch and a support for the material to be folded, substantially as shown and described.

4. In a folding-machine, in combination, a revolving compound cam, a rock-lever, a primary plunger, a secondary plunger, a latch and a support for the material to be folded, substantially as shown and described.

5. In a folding-machine, in combination, a revolving compound cam, a rock-lever, a primary plunger, a secondary plunger, a latch,

a finger which disengages the latch and a support for the material to be folded, substantially as shown and described.

6. In a folding-machine, in combination, an oscillating ring, a cam connected therewith, a set of oscillating blades adapted to be operated by the said ring, a support for the material to be folded, a compound plunger, and a compound cam connected with the said plunger, substantially as shown and described.

7. In a folding-machine, in combination, an oscillating ring having pins projecting from the face thereof, and oscillating blades provided with angular slots adapted to engage the said pins, mechanism for oscillating the said ring, a support for the material to be folded, a secondary plunger which holds the material and a primary plunger which reciprocates in unison with the said blades to fold the material, substantially as shown and described.

8. In a folding-machine, in combination, a rotating cam, a bell-crank connected therewith, an oscillating ring, radially-moving blades, means connecting the said ring and blades for oscillating the said blades, a support for the material to be folded, a compound plunger and a rotating compound cam connected therewith, substantially as shown and described.

9. In a folding-machine, in combination, a rotating cam, a rock-lever, a bell-crank, a rod connecting the rock-lever and the bell-crank, an oscillating ring, blades connected with the oscillating ring, and means for holding the material to be folded, substantially as shown and described.

10. In a folding-machine, in combination, a

cam, a rock-lever, a bell-crank, a spring-controlled rod connecting the rock-lever and the bell-crank, an oscillating ring and oscillating blades connected therewith and means for supporting and holding the material to be folded, substantially as shown and described.

11. A compound plunger comprising a primary plunger provided with a finger and a secondary plunger, in combination with a latch adapted to engage and hold the secondary plunger and to be disengaged by the finger of the primary plunger, substantially as shown and described.

12. In a folding-machine, in combination, a primary plunger, a secondary plunger, a latch, a spring-anvil, and a set of oscillating blades, substantially as shown and described.

13. In a folding-machine, in combination, a primary plunger, a secondary plunger, a latch, a rotating cam connected with the plungers, a cushioned anvil, and a set of oscillating blades, substantially as shown and described.

14. In a folding-machine, in combination, a primary plunger, a secondary plunger, a latch, a cushioned anvil, a set of oscillating blades, and an oscillating ring, substantially as shown and described.

15. A compound plunger comprising a primary plunger and a secondary plunger, in combination with a latch adapted to engage and hold the secondary plunger during a given interval, and mechanism for disengaging the latch at the end of the interval, substantially as shown and described.

CONRAD SCHÜTZ.

Witnesses:

CHARLES N. BUTLER,
JOSEPH W. HUNTER.