J. E. MAYO.

MACHINE FOR ATTACHING CATCH PLATES TO STRIPS.

APPLICATION FILED JAN. 22, 1912.

1,084,219.

Patented Jan. 13, 1914.

3 SHEETS—SHEET 1.

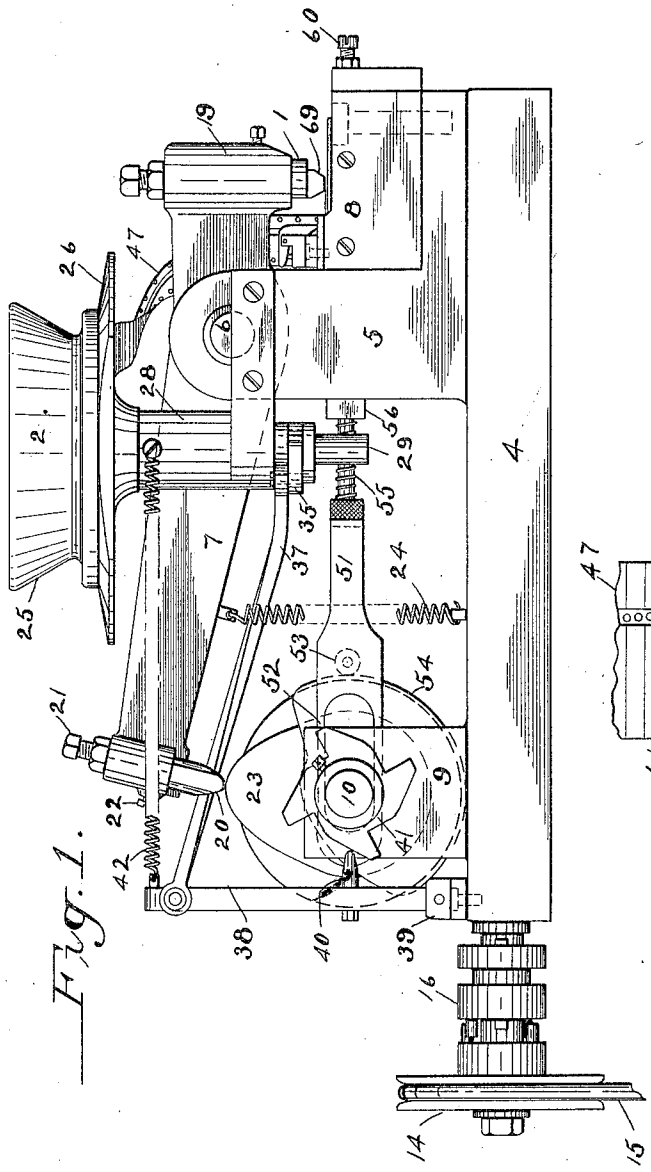


Fig. 1.

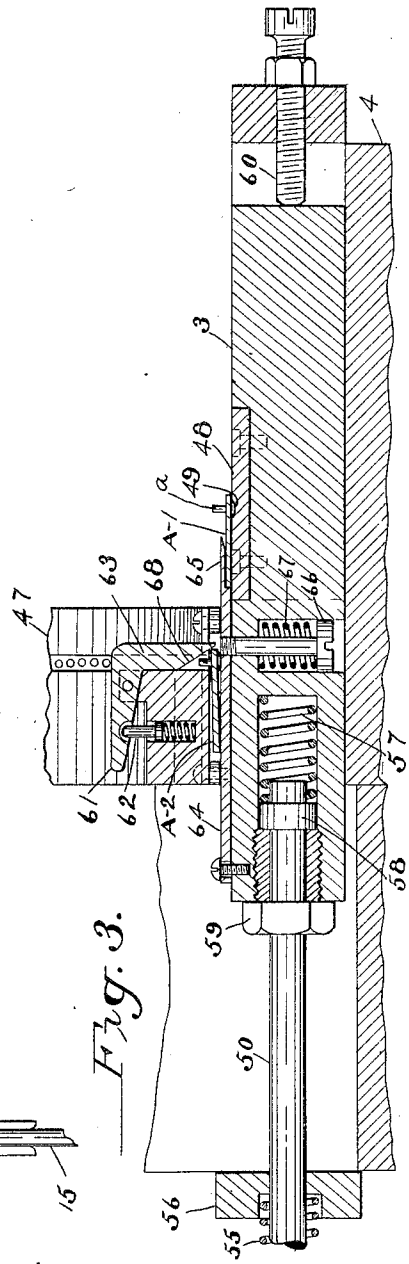


Fig. 3.

WITNESSES

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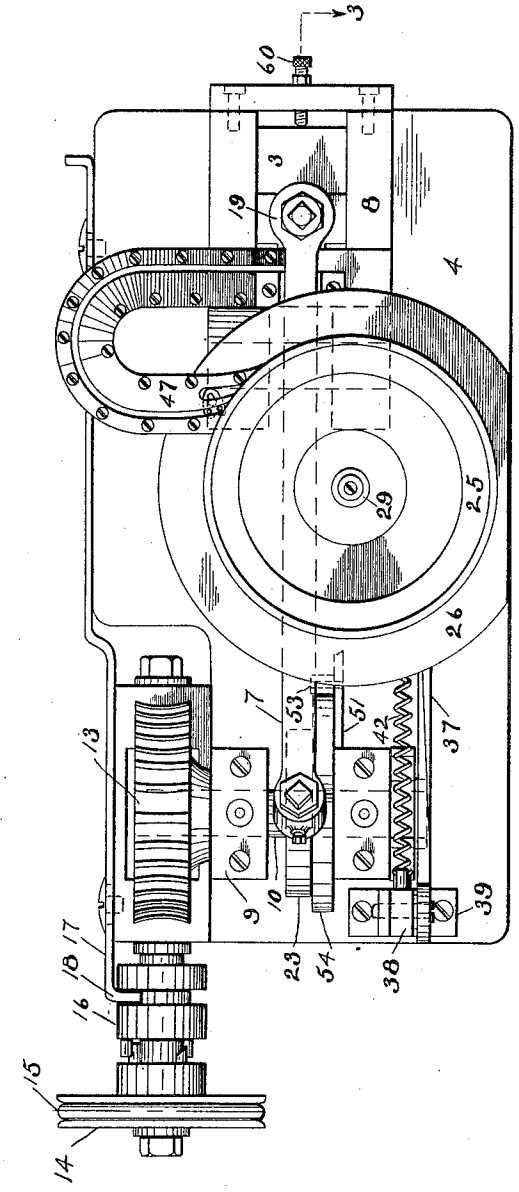


Fig. 2.

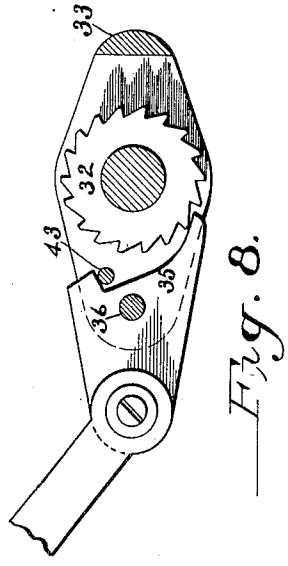


Fig. 8.

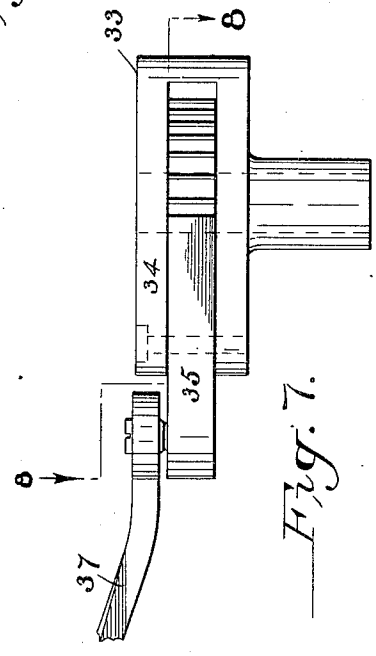


Fig. 7.

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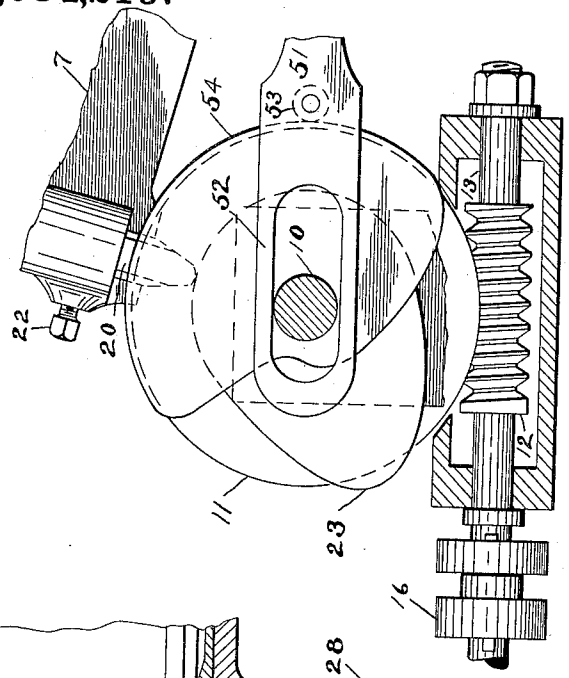


Fig. 6.

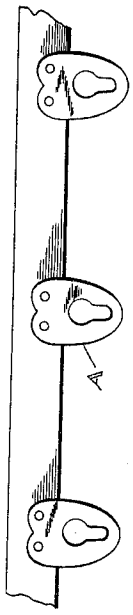


Fig. 9.

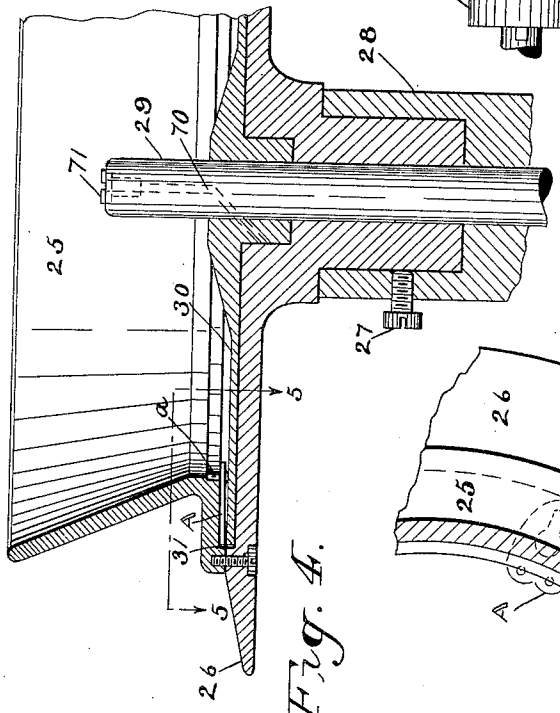


Fig. 4.

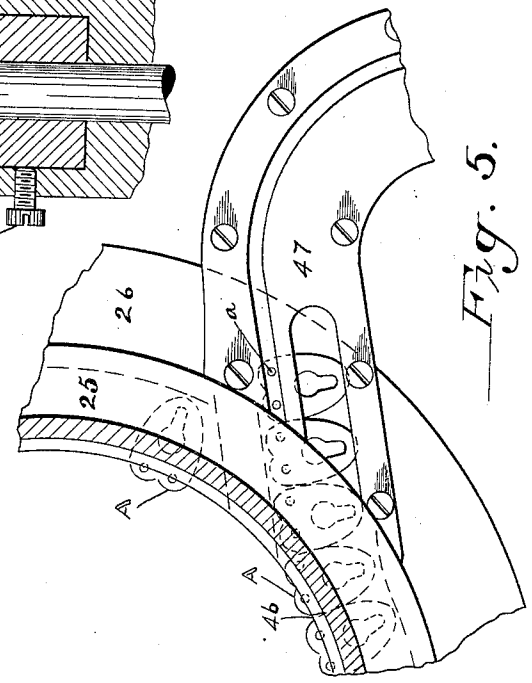


Fig. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

JUNIUS EMMETT MAYO, OF MEADVILLE, PENNSYLVANIA, ASSIGNOR TO THE SPIRELLA COMPANY, OF MEADVILLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

MACHINE FOR ATTACHING CATCH-PLATES TO STRIPS.

1,084,219. Specification of Letters Patent. Patented Jan. 13, 1914.

Application filed January 22, 1912. Serial No. 672,588.

To all whom it may concern:

Be it known that I, JUNIUS EMMETT MAYO, a resident of Meadville, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Attaching Catch-Plates to Strips, of which the following is a specification.

This invention relates to a machine for securing catch-plates to strips, particularly corset stays.

The object of the invention is to provide a semi-automatic machine of the character stated, which is of simple construction and rapid and effective in operation.

The invention comprises the construction and arrangement of parts herein described.

In the drawing, Figure 1 represents a side elevation of a machine constructed according to my invention; Fig. 2 is a plan view of the same; Fig. 3 is a vertical longitudinal section on the line 3—3, Fig. 2, the hopper or reservoir being omitted; Fig. 4 is a vertical cross section through the supply reservoir; Fig. 5 is a plan view of a portion of the same; Fig. 6 is a detail view of the main shaft and its driving means; Figs. 7 and 8 are detail views of a ratchet mechanism; and Fig. 9 is a plan view of a portion of a completed stay.

The machine shown in the drawing comprises essentially three parts, an upsetting plunger 1, catch-plate feeding mechanism 2, embodying a hopper and chute, and a slide 3 for carrying catch-plates into position beneath the plunger 1 for treatment thereby. These parts are all mounted upon a base 4, having at the forward end thereof a standard 5, forming a support for the pivot 6 of the plunger-carrying lever 7. At its forward portion, the standard 5 is of less height than where it supports the lever, and mounted upon it are guides 8 in which the die-carrying transfer slide 3 moves.

Projecting upwardly from the rear end of the base 4 are pillow blocks 9, supporting rotatably therein a main shaft 10, which carries fixed thereon a number of cams for causing operation of the various parts of the machine. Mounted at one end of the shaft 10, for rotation therewith is a worm gear 11, driven by a worm 12 on a shaft 13 rotatable thereunder in bearings in the main frame. At the outer end of shaft 13, a pulley or wheel 14 is provided, loosely mounted on the shaft, and grooved to receive a belt or chain 15 for driving the same. A clutch 16 is splined or otherwise suitably mounted for rotation with the shaft 13 to engage with the clutch teeth on the pulley 14 for connecting the latter to drive the shaft. A controlling rod or bar 17, slidably mounted upon the side of the frame and projecting forwardly to the front of the machine, is provided, with an inturned end 18 engaging with an annular groove in the clutch for moving the latter to couple and uncouple the machine from its driving means, as will be understood.

The upsetting plunger is mounted in an enlargement 19 at the forward end of the lever 7 which, at its rearward end, is provided with a bearing block 20 adjustably mounted in the bore of a boss on the lever, a screw 21 being provided for adjusting the block and a set screw 22 for holding it in adjusted position. The bearing block 20 bears upon the periphery of an oval cam 23, mounted upon main shaft 10, and is held in engagement therewith by a tension spring 24 connected at one end to the lever and at its other end to a suitable fixed point on the frame. As is obvious, the rotation of cam 23 moves the rear end of lever 7 upwardly and the spring 24 retracts it downwardly, thus causing the upsetting plunger 1 to move up and down around the stud 6 as a pivot.

The catch-plate collecting and feeding mechanism is illustrated in detail in Figs. 4 and 5. As shown, it comprises a hopper or reservoir 25, circular in form and having sloping side walls. The reservoir 25 is screwed or otherwise fixedly secured to the rim of a table or plate 26 having a downwardly projecting hollow boss suitably fastened, as by screw 27, in a support 28, rigidly connected with the standard 5. Mounted for rotation in the support 28 and in the hollow boss of table 26, as bearings, is a vertical rod or shaft 29 having a selecting and feeding plate 30 suitably secured for rotation therewith and to the upper end thereof. Preferably the plate 30 has a driving fit on the rod 29 and forms the bottom of reservoir 25. A channel 70 is provided in the shaft 29, having a cover screw 71, for lubricating the bearing of the shaft. As shown in Fig. 4, the hopper 25 has an outwardly turned flange or rim, and this rim and the rim of

table 26 are cut away on their adjacent faces to provide an annular groove 31 into which the edge of the plate 30 projects, there being a space, however, between the upper face of plate 30 and the reservoir 25 to receive the flat portion of the catch-plates A, as shown.

To rotate the plate 30 and cause the feeding of catch-plates, shaft 29 is provided on its lower end with improved pawl and ratchet mechanism, illustrated in detail in Figs. 7 and 8. As shown, a ratchet 32 is secured for rotation with the shaft. Rotatably mounted upon the shaft is a box or frame 33 having upper and lower arms or plates 34 embracing the ratchet and between which is pivotally secured a pawl 35 on pivot 36. Pivotally connected to the pawl 35 is a rod 37 extending rearwardly and pivotally connected at its rearward end to a lever 38 which is pivoted in a support 39 on the base 4. A bearing block 40 is mounted on the forward face of lever 38 which engages with a cam 41 having one or more lobes and mounted for rotation with main shaft 10. A spring 42 connects one end of lever 38 to any suitable fixed point, as the support 28, for holding the bearing block 40 against the cam 41. As is obvious, as each lobe of the cam 41 engages with the block 40, the link 37 withdraws the pawl 35 from engagement with the teeth of ratchet 32 and oscillates the frame 33 around the shaft 29 as an axis. When any one of the lobes of cam 41 passes the bearing block 40, the spring 42 snaps the lever 38 quickly forward. This causes the link 37 to oscillate the pawl 35 about the pivot 36, in a counter-clockwise direction in Fig. 8, engages its tooth with the ratchet 32 and rotates the shaft and plate 30 for part of a revolution. Pin or stop 43 is provided to engage with a shoulder on the pawl 35 and prevent it from being withdrawn too far from engagement with the teeth of the ratchet. The cam 41, as shown, is provided with four lobes to make the same rapid in operation and it is intended that the plate 30 shall move by a succession of quick jumps thus causing the catch-plates A in the reservoir to be thrown outwardly by centrifugal force until their flat portions project into the groove 31, their studs or pins *a* engaging with the shoulders on the inner wall of the reservoir 25. The further rotation of the plate 30 causes the catch-plates to move around the periphery of the reservoir 25 until they slide laterally through an opening 46 in the side wall thereof into a chute 47 which leads downwardly by a curved path to a position adjacent to the position of slide 3 when retracted. When the catch-plates reach the end of chute 47 they are admitted one by one to a socket in the feeding slide and are moved thereby into position underneath the upsetting plunger. The feeding slide 3 is illustrated in detail in Fig. 3 and is provided with a die plate 48, mounted upon its upper face and preferably formed of a hardened steel block having a pair of depressions or sockets 49 therein to receive the lower heads of the studs *a*. The socket on the slide for receiving the catch-plates comprises the space beneath the lip or overhang 65 on the forward edge of a cover or socket plate 64, loosely connected at its rear end to the slide and yieldingly held thereagainst. As shown, a spring 67 is provided, seated in a socket in the under face of the slide, and bearing against the upper face of the head of a screw or stud 66 secured to the stud, for holding the plate down. It is intended that the space between the lip 65 and the die 48 shall be slightly less than the thickness of a catch-plate so that as the slide moves forwardly, the catch-plate will be forced rearwardly into the socket, the cover plate 64 holding it in proper position. The slide is moved forwardly by a rod or bar 50 connected to its rear end and which is adjustably connected to a yoke 51, the arms or straps 52 of which embrace the shaft 10 in such manner as to guide the bar 50 in its movement. A pin or roller 53 is provided, projecting laterally from the yoke 51, and engaging with the peripheral face of a cam 54 on shaft 10 for moving the rod or bar and the slide forwardly. To retract the slide, a spring 55 is provided bearing at one end on a collar on the bar and at its other end against a wear plate 56 secured to the rear face of the standard 5. I prefer to provide yielding connection between the bar or rod 50 and the slide. As shown, this connection comprises a spring 57 seated in a bore in the rear end of the slide and bearing at its rear end against the forward face of a collar 58 mounted on the rod 50. The rod or bar 50 is slidably mounted in a bearing secured to the slide and comprising a hollow bolt or screw 59 threaded therein. It is intended that the cam 54 shall be so formed as to tend to move the slide beyond proper position, and a stop 60, comprising a screw secured to the forward face of the standard 5, is arranged to engage with the end of slide 3 to prevent further forward movement of the same when properly positioned.

To permit the admission of but a single catch-plate to the socket on the slide 3, I provide suitable gate mechanism shown in Fig. 3. As illustrated, this comprises an L-shaped plate or latch 61 pivotally mounted above the slide and provided with a spring pressed pin 62 engaging its horizontal leg to cause its vertical leg 63 to normally have the position shown in Fig. 3. In Fig. 3, the slide is shown in its forward or advanced position with a catch-plate A^1 in position beneath the lip 65 of the plate 64. A second catch-plate, A^2, is shown as having advanced into position above the plate 64, the beveled

rear face 68 of the latch 61 permitting such movement. When the catch-plate A^1 is secured to the strip, the slide 3 begins to move rearwardly and the catch-plate A^1 is manually withdrawn by the operator. As the slide moves to its rearward position, the lip 65 moves to a position beyond the rear end of the catch-plate A^2 at the end of the chute 47. This then drops into position on the die plate 48 in advance of the lip 65. As the slide moves forward, the studs *a* on the catch-plate engage with the end of the latch or gate 61 and the catch-plate A^2 is shoved into position under the lip 65. When it has reached seating position on the slide, its studs oscillate the gate 61 to permit the studs to pass. At the same time, a third catch-plate moves into position upon the upper face of the plate 64, the engagement of its studs with the latch 61 preventing it from being carried forward with the slide.

The operation of my improved machine will be obvious from the foregoing description taken in connection with the accompanying drawings. As each catch-plate is fed into position underneath the lip 65 of the plate 64, it is moved forwardly with the feeding slide 3, which is operated by the cam 54 on the main shaft 10. The stop 60 prevents forward movement of the slide when the catch-plate is properly positioned under the upsetting plunger 1, the yielding connection between the bar or rod 50 and the slide 3 permitting such action. The operator now takes a corset rib or stay, which may be of any desired form, but in the present instance comprises a flat metal strip having a series of pairs of apertures previously punched therein, and places the same in position over the catch-plate A with the studs *a* projecting through the apertures in the strip. This manual operation must be rapid and skilled to keep pace with the machine. The lever 7 is now operated by the cam 23 to cause the upsetting plunger 1 to be moved downwardly to bring its die 69 into engagement with the studs *a* to upset the same, thus securing the catch-plate rigidly to the strip or rib.

I prefer to mount the die 69 movably in the upsetting plunger 1, in such manner that during the end of the movement of the plunger downwardly the die 69 will move in a substantially vertical path, notwithstanding the oscillation of the plunger 1 about the pivot 6. To accomplish this purpose, I prefer to use the construction described and illustrated in my co-pending application, filed concurrently herewith, Serial No. 672,587, for a machine for attaching studs to strips, although other arrangements may be used if desired.

This machine is simple in construction and, as stated, is semi-automatic in nature. The catch-plates are thrown in quantities into the reservoir and the intermittently rotating bottom 30 thereof arranges, selects and feeds the catch-plates constantly into the chute 47. The machine may be readily started and stopped when desired by operation of the rod or bar 17 and clutch 16 and the only manual operation required is that of placing the stay in position over the catch-plates.

What I claim is:—

1. In a machine of the character described, the combination of an upsetting plunger, means having a socket for feeding catch-plates thereto, and a chute for admitting catch-plates to said socket, said chute being provided with a latch at its end arranged, upon movement of said means, to seat a catch plate in the socket thereof.

2. In a machine of the character described, the combination with an upsetting plunger, of a catch-plate supply chute and means for feeding catch-plates from said supply chute to said plunger, comprising a movably mounted die slide, a cover plate thereon, said slide being provided with a socket between said cover plate and the die for holding a catch-plate.

3. In a machine of the character described, the combination of an upsetting plunger, a catch-plate supply chute, and means for feeding catch-plates from said supply chute to said plunger comprising, a slide, a cover plate loosely mounted thereon and having a projecting lip, and means for admitting catch-plates from said chute into position beneath said lip.

4. In a machine of the character described, the combination of an upsetting plunger, and means for carrying catch-plates into position beneath said plunger, comprising a movable slide, a cover plate mounted thereon, yielding connection between said cover plate and said slide, and means for feeding catch-plates into position between said plate and said slide.

5. In a machine of the character described, the combination of an upsetting plunger and means for feeding catch-plates into position thereunder, said means comprising a movable slide, a plate thereon having a projecting lip, said plate being loosely connected to said slide, a spring for normally holding said plate in contact with said slide, and a chute arranged to feed catch-plates into position on said slide under said lip.

6. In a machine of the character described, the combination with an upsetting plunger, of means for feeding catch-plates thereto comprising, a hopper provided with a movably mounted bottom plate, a shaft operatively connected to said bottom plate, ratchet mechanism for rotating said shaft, a slide, a chute leading from said hopper to said slide, and a cam shaft for operating said plunger, ratchet mechanism and slide.

7. In a machine of the character described, the combination with an upsetting plunger, of means for feeding catch-plates into position therebeneath comprising, a movably mounted slide, means on said slide for holding a catch-plate, means for feeding catch-plates one by one to said holding means, a yoke, a cam for moving said yoke in opposite directions, yielding connections between said yoke and slide, and a stop for securing registration between said catch-plate holding means and said plunger.

8. In a machine of the character described, the combination with an upsetting plunger, of means for feeding catch-plates into position therebeneath comprising, a movably mounted slide, means on said slide for holding a catch-plate, means for feeding catch-plates one by one to said holding means, a yoke, a cam for moving said yoke in opposite directions, and yielding connection between said yoke and slide, and an adjustable stop on the frame and arranged to engage the end of said slide at the end of its movement in one direction for securing registration between said catch-plate holding means and plunger.

9. In a machine of the character described, the combination of a hopper having a peripheral groove in its base for receiving catch-plates, a rotatable bottom in said hopper, and a chute connected to said hopper, the periphery of said hopper being cut away at said groove to form an opening leading into said chute, and means for rotating said bottom.

10. In a machine of the character described, the combination of a hopper having a peripheral groove in its base for receiving catch-plates, and being provided with a shoulder above said groove for engaging the studs on said plates, a rotatable bottom in said hopper, a chute connected to said hopper, the periphery of said hopper being cut away at said groove to form an opening leading into said chute, and means for rotating said bottom.

11. In a machine of the character described, the combination of a hopper having a peripheral groove in its base for receiving catch-plates, and being provided with a shoulder thereabove to engage the studs thereof, a rotatable bottom in said hopper, said bottom projecting into said groove, a chute connected to said hopper, the periphery of said hopper being cut away at said groove to form an opening leading into said chute, and means for rotating said bottom.

12. In a machine of the character described, the combination of a hopper, a chute leading therefrom, a rotatable bottom in said hopper and means for rotating said bottom, comprising a shaft connected to said bottom, a ratchet fixed on said shaft, a frame rotatably mounted on said shaft, a pawl pivotally mounted upon said frame and having a toothed end for engagement with said ratchet, a rod pivotally connected to said pawl, and means for reciprocating said rod.

13. In a machine of the character described, the combination of an upsetting plunger, an article supply chute, a slide having a socket for carrying articles from said chute to said plunger, and a latch at the end of the chute arranged to seat articles in said socket as the slide moves toward the plunger.

14. In a machine of the character described, the combination of an upsetting plunger, an article supply chute, a slide having a socket for transferring articles from the chute to the plunger, and a pivoted latch at the end of the chute arranged to seat an article in the socket and withdraw from the path of movement of the article on forward movement of the slide.

15. In a machine of the character described, the combination of an upsetting plunger, an article supply chute, a slide having a socket for carrying articles from the chute to the plunger, and a double armed pivoted latch at the end of the chute, one arm thereof normally in the path of movement of an article carried on said slide, and a spring engaging the other arm of said latch and yieldingly holding the first named arm in the path of movement of an article carried by said slide.

In testimony whereof, I have hereunto set my hand.

JUNIUS EMMETT MAYO.

Witnesses:
J. H. PARDEE,
F. W. WINTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."