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J. C. BOWERS & H. P. TOWNSEND.

CAN SEALING MACHINE.

APPLICATION FILED JULY 22, 1909.

1,052,032.

Patented Feb. 4, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

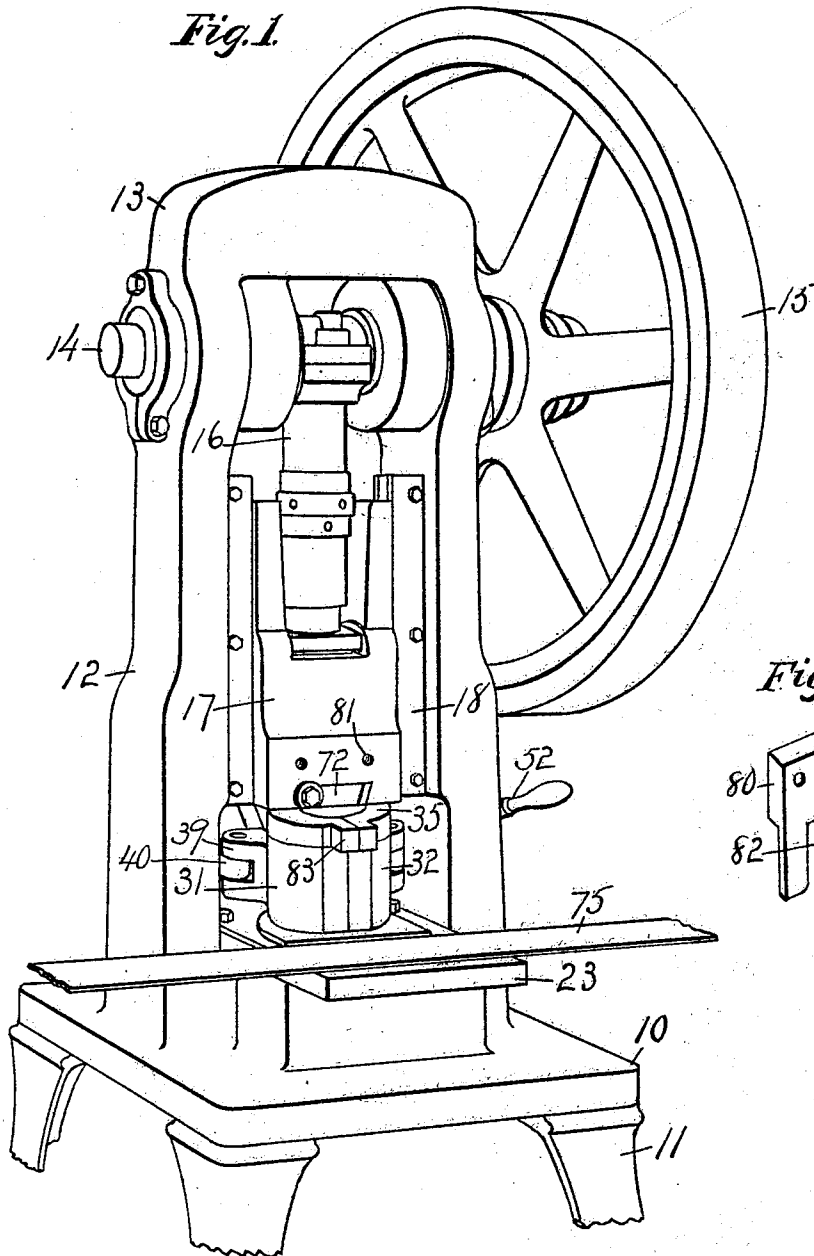
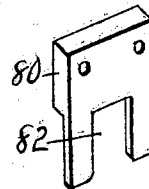


Fig. 9.



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3 SHEETS—SHEET 2.

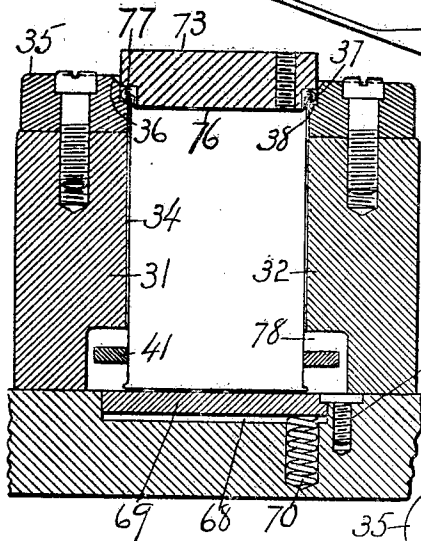
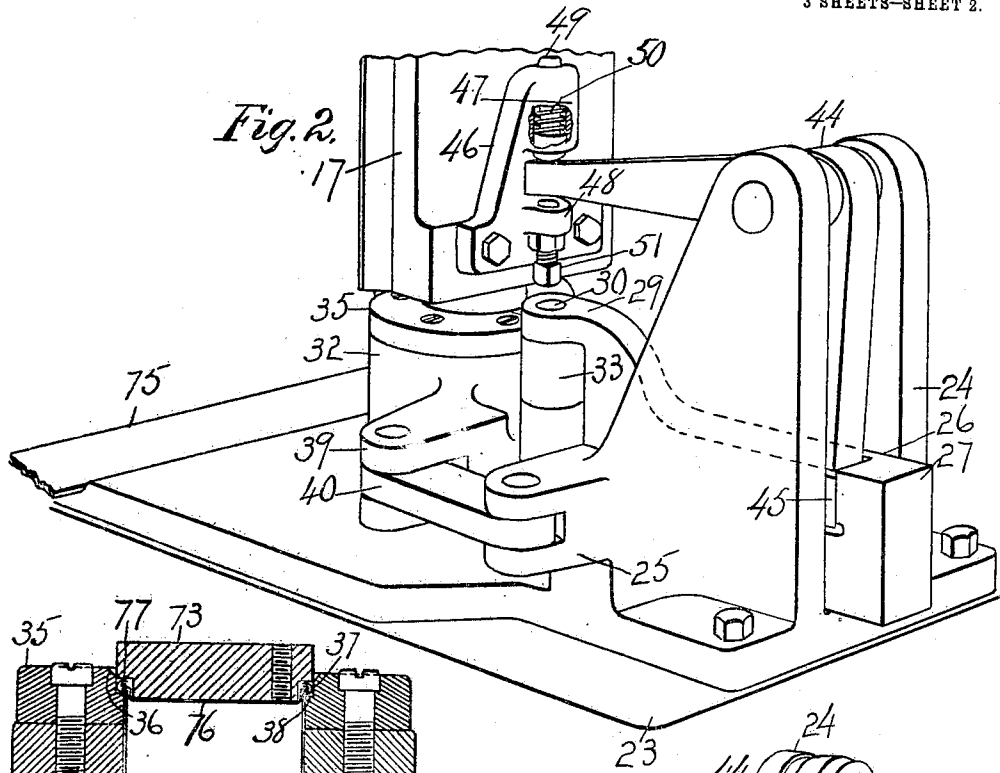


Fig. 4

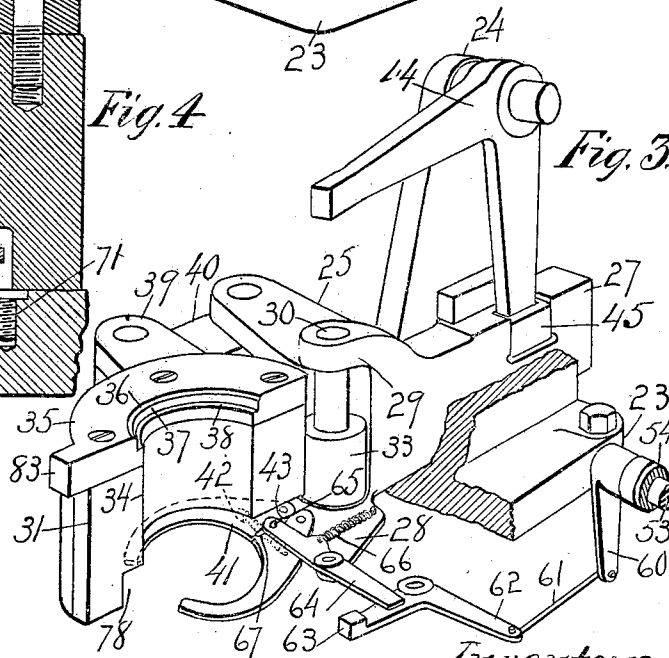


Fig. 3

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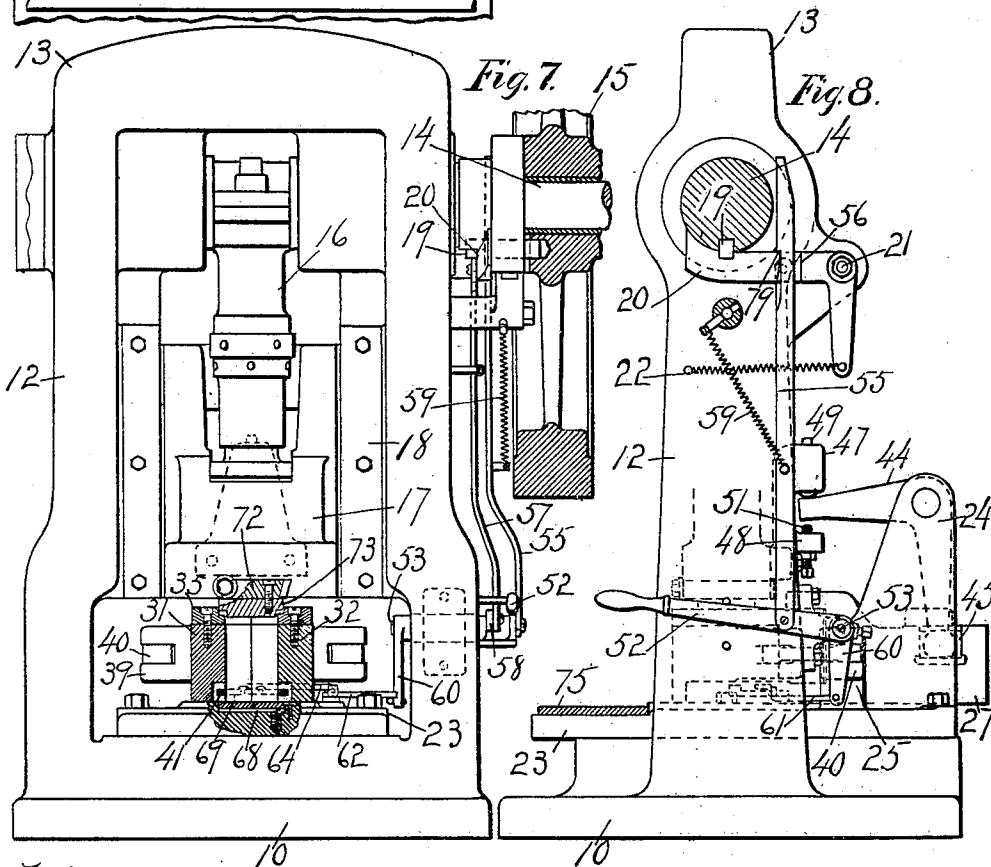
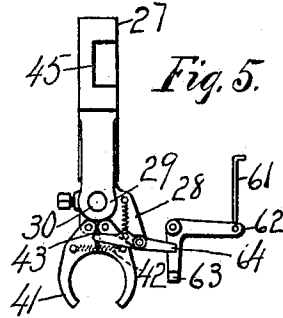
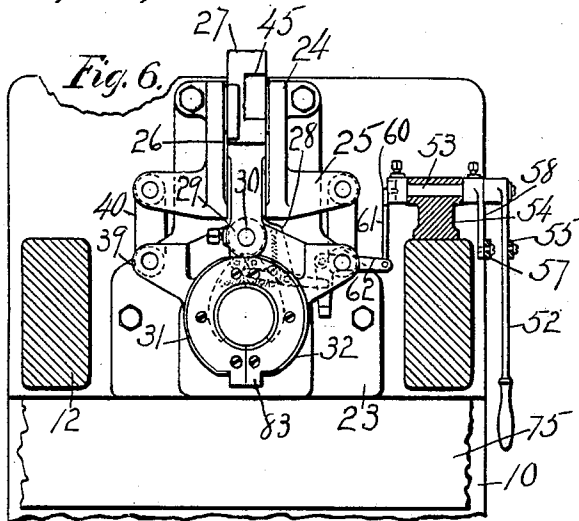
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3 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

JOHN C. BOWERS, OF BOSTON, MASSACHUSETTS, AND HARRY P. TOWNSEND, OF WATERBURY, CONNECTICUT, ASSIGNORS TO WILLIAM H. EMERSON, OF NEWTON, MASSACHUSETTS, AND ARTHUR H. PARKER, OF BEDFORD, MASSACHUSETTS.

CAN-SEALING MACHINE.

1,052,032.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed July 22, 1909. Serial No. 508,924.

To all whom it may concern:

Be it known that we, JOHN C. BOWERS and HARRY P. TOWNSEND, each a citizen of the United States, and residents, respectively, of Boston, in the county of Suffolk and State of Massachusetts, and Waterbury, in the county of New Haven and State of Connecticut, have invented a new and Improved Can-Sealing Machine, of which the following is a specification.

Our invention relates to the class of machines employed for sealing cans, more especially those composed of thin metal, and the object of the invention among others is to provide a machine of this class with which cans may be effectually sealed in an expeditious manner and with little labor.

One form of machine in the use of which the objects sought may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view showing the front of a machine embodying our invention. Fig. 2 is a perspective view, scale enlarged, of the lower part of the machine showing the rear and side. Fig. 3 is a detail perspective view, scale enlarged, of a portion of the lower part of the machine with the parts broken away to show construction. Fig. 4 is a detail view in central vertical section, scale enlarged, over Figs. 2 and 3, through the holding die, showing especially its cap and the removable end of the presser. Fig. 5 is a detail top or plan view showing the holding fingers and their connections. Fig. 6 is a view in horizontal section through the machine, the die clamp being removed. Fig. 7 is a view in front elevation, partially in vertical section, cut through the holding dies. Fig. 8 is a side view of the machine, the main shaft being cut away and the fly wheel removed.

In the accompanying drawings the numeral 10 denotes the bed or base of the machine that may be supported upon any suitable standard, as legs 11 or the like. A frame including side parts 12 and a head 13 rises from and is supported on the base, and a driving shaft 14 to which a fly-wheel 15 is secured is rotatably mounted in said head. The driving shaft may be driven from any suitable source of power and is formed be-

tween the side parts of the head into a crank on which a pitman 16 is mounted to connect the crank with a sliding block 17 mounted in slide-ways between the straps 18 secured to the side parts 12 of the frame.

A shouldered clutch bolt 19 is slidably mounted in the driving shaft 14 and is spring-pressed in a manner well-known in devices of this kind toward the fly-wheel 15, a socket in which wheel the bolt engages to connect said wheel with the driving shaft. A clutch lever 20 is pivotally supported as at 21 on the head 13, the end of this lever being cam-shaped and terminating in a narrow edge, so that it may engage behind the shoulder on the clutch bolt as the latter approaches the lever in the rotation of the driving shaft, and force said bolt from engagement with the fly-wheel. This lever is held pressed toward the driving shaft as by means of a spring 22 and when the lever is pressed down it is disengaged from the clutch bolt and the latter, under the influence of its spring, is forced toward the fly-wheel and engages the recess therein when the latter in the rotation of the fly-wheel arrives opposite the end of the bolt. This clutches the fly-wheel to the driving shaft and causes the two to rotate together, it being understood that the fly-wheel is continuously rotated.

All of the parts above described are of well-known construction in what are known as pillar presses and further description is therefore deemed unnecessary herein, as the construction and operation of the parts will be readily understood by those skilled in the construction and operation of machines of this class.

A base plate 23 is secured to the bed of the machine and supports 24 rise from the base plate near the rear. Ears 25 project laterally from the supports. A slide-way 26 is formed between the supports, in which slide-way a slide 27 is located for reciprocating movement. A slide plate 28 projects from the forward end of the slide, and a lug 29 also projects from this forward end, which lug is located opposite said plate. A pivot 30 is secured to the slide plate 28 and lug 29, and two sections 31, 32 of a holding die are mounted on this pivot as by means of

knuckles 33 through which the pivot extends. Each section of the holding die contains a portion of an opening 34 extending depthwise through the holder, and a holding die cap 35 is secured to each of the holding die sections. This cap as a whole has a central opening of about the size of the opening in the cap 34, the edge of this opening being beveled as at 36, which beveled part terminates in a straight wall 37 at the bottom of which is located a shoulder 38. Lugs 39 project from the sides of each of the sections of the holding die and these lugs are pivotally connected by links 40 with the ears 25.

A pair of holding fingers 41 are pivotally mounted upon the slide plate 28 underlying the holding die. These fingers are so formed that the space between them corresponds in shape to the opening through the holding die. Each of the sections of the holding die is undercut forming a recess 78 in which these fingers are located. The fingers are pressed toward each other as by a spring 42 and a space 43 is formed between the fingers, this space being located immediately forward of the pivotal support for the fingers.

A slide operating lever 44 is pivotally supported upon and located between the supports 24, one end of this lever loosely engaging within a socket 45 in the slide 27 and the opposite end of the lever projecting toward the sliding block 17. A bracket 46 is secured to the block 17, and a lug 47 projects from said bracket, which lug is located opposite an ear 48 also projecting from the bracket. A plunger 49 is located in the lug 47 and is forced downward as by means of a spring 50. An adjusting screw 51 is located in the ear 48 and one end of the slide operating lever 44 is located between the spring plunger 49 and the adjusting screw 51. This construction provides for a movement of the sliding block, and consequently the presser carried thereby independently of the slide operating lever 44 and therefore the slide 27. The slide in its backward movement is arrested by a stop of any suitable construction, and after it has encountered this stop the sliding block is permitted to move still farther without movement of the slide and for a purpose to be hereinafter described.

A starting lever 52 is pivotally mounted in any suitable position, as herein shown this lever being pivoted upon a rock shaft 53 supported in a bracket 54 secured to the frame. This lever is connected by an actuating rod 55 with the clutch lever 20 which has a recess 56 within which the actuating rod extends. This rod has a shoulder 79 engaging the upper end of the clutch lever at the edge of the recess, and said rod lies in position to be struck by the clutch bolt 19 as the driving shaft rotates, which operation moves the rod to disengage the shoulder

from the clutch lever. A spring 59 tends to hold the rod at the upper limit of its play and also with the shoulder 79 in engagement with the upper edge of the clutch lever.

A connecting rod 57 pivoted to the clutch lever 20 extends to and is pivotally connected with an arm 58 secured to one end of the rock shaft 53. An arm 60 is also secured to this rock shaft, preferably at the opposite end, which arm is connected by a link 61 with a bell crank lever 62, pivotally supported on a stationary part of the machine, as on the base-plate 23. This bell crank lever has a lug 63 adapted to engage the end of a holding finger operating lever 64 pivotally supported on the slide plate 28 and having a stud 65 arranged to lie within the space 43 between the fingers. A spring 66 exerts force upon the holding finger operating lever to hold said lever with the stud at the backward limit of its play. The space 43 is narrowed at its front portion as at 67, this narrow portion decreasing in width toward the front or can receiving space between the fingers.

A recess 68 is formed in the base-plate 23 and a can rest 69 is located in this recess, being yieldingly supported as upon springs 70. This rest may be held in its recess in any convenient manner, as by means of holding screws 71 the heads of which overlie the rest to retain it in position.

A presser 72 is secured to the lower end of the block 17 and the face or end 73 is removable and secured in place in any suitable manner as by means of a screw 74.

A carrier 75, preferably in the form of a belt, travels in front of the machine, and the cans to be sealed are placed upon this carrier and moved by it to position in front of the holding dies.

In order to secure the holding dies against swinging movement while the presser is securing the seal a lock is provided, this consisting of a lock plate 80 secured to the front of the block 17 as by means of screws passing through the plate into holes 81 shown in Fig. 1 of the drawings. This plate has a lock recess 82 at its lower edge of a size to receive lock lugs 83 projecting from the front of the cap 35, as shown in Figs. 3 and 6 of the drawings.

The operation of the device briefly described is as follows: The parts of the machine being at rest, that is, with the block 17 up and the holding dies and holding fingers open, the slide being in this position at the forward limit of its play, and the fly-wheel rotating but disconnected from the driving shaft 14, a can filled with material is carried to a position immediately in front of the holding dies. The cover 76 of the can and the sealing strip 77 being in position on the can, the operative moves the can from the carrier 75 on to the base-plate 23 and be-

between the holding fingers 41. The handle of the starting lever 52 is now pushed downward by the operative, moving the actuating rod 55. This causes the clutch lever 20 to be moved downward, disengaging it from the shoulder on the clutch bolt 19 and the latter under the influence of its spring immediately moves inward and engages the clutch recess in the fly-wheel when said recess arrives opposite the bolt. This clutches the fly-wheel to the driving shaft, causing the latter to rotate. As the actuating rod 55 is moved downward it moves the connecting rod 57 and arm 58, rocking the shaft 53 and moving the arm 60, which movement through the link 61 rocks the bell crank lever 62 and disengages the lug 63 from the holding finger operating lever 64. Said lever 64 is thus allowed to move backward under the pull of the spring 66, so that the stud 65 is moved from the narrow part 67 of the space between the fingers into the larger part, allowing the fingers to close together under the pull of the spring 42 and tightly holding the can which has been placed in position. This operation of releasing the holding fingers to enable them to grasp the can of course takes place before the driving shaft is started, as hereinbefore described. As the driving shaft rotates the clutch bolt 19 strikes the end of the actuating rod 55 knocking it from engagement with the clutch lever 20. Said lever then immediately springs back to its former position under the pull of the spring 22 and with its nose in position to engage the shoulder on the clutch bolt when the latter is rotated around to this point. In this upward movement of the clutch lever the rock shaft 53 is returned to its former position, which movement causes the bell crank lever 62 to be swung so that the lug 63 will lie in the path of movement of the holding finger operating lever 64. When pressure upon the holding lever is released by the operative the spring 59 will pull the operating rod 55 upward and also laterally, reengaging it with the clutch lever 20. The starting of the driving shaft moves the block 17 downward swinging the slide operating lever 44 and moving the slide 27 to the backward limit of its play, said slide carrying with it the holding die and the holding fingers. By reason of the connection of the swinging holding dies with the stationary support as by means of the links 40, as the slide moves back the dies are caused to swing together to inclose and support the can therein. The dies are closed together as the slide reaches the backward limit of its play and before the presser has engaged the can top and seal. The yielding engagement of the lever 44 with the plunger 49 allows the sliding block, however, to continue its travel and the presser is thus brought into contact

with the can top or cover and seal. As the presser continues its downward movement the can also moves slightly downward, which is permitted by its support upon the yielding can rest 69. This causes the edge of the can to travel along the beveled portion 36 of the cap 35 rolling the edge inward until the edge or lip is finally seated on the shoulder 38. This movement of the presser closes the folded edge of the cover downward and pinches the folded edges of the seal tightly against the cover and the lip, thus effectually and hermetically sealing the can. In the movement of the slide 27 and plate 28 forward the lever 64 is carried against the lug 63 forcing the pin on the lever into the narrow portion 67 of the slot, thus opening the fingers 41, it being noted that the lever 64 is carried away from the lug 63 in the backward movement of the slide 27. The fingers are thus opened in position to receive a can. As the driving shaft continues its rotation the clutch bolt 19 is brought into engagement with the clutch lever 20, the nose of which is thrust in behind the shoulder on the bolt, withdrawing it from the recess in the fly-wheel, thus disconnecting the fly-wheel and shaft and causing the operation of the latter to cease.

While we have shown and described herein the preferred form of mechanism for accomplishing the desired results, the construction and operation may be departed from to a greater or lesser extent without avoiding the invention, and we do not therefore limit ourselves to the exact construction and operation of parts as herein shown and described.

It will be understood that the beveled portion 37 of the cap 35 acts to roll the edge of the cover and seal inward whenever they are of a size to encounter the beveled portion, but such parts are generally of a size to fit nicely within the recess bounded by the straight wall located immediately under said beveled edge.

We claim—

1. A sectional holder die, a plunger arranged to operate upon an article held in said die, a holder die operating member to move the die underneath the plunger and to remove it therefrom, a connection between said plunger and die operating member for actuating the latter, and means connected with the holder die to open and close the die sections through the medium of the reciprocating movement of the sections.

2. A plunger with means for reciprocating it, a die support, a sectional holder die mounted on said support and having a reciprocating movement in a plane at right angles to that of the plunger, and a pivoted, angularly formed lever engaging the plunger and die supporting means whereby

movement of the plunger is imparted to cause movement of the holder die.

3. A plunger with means for operating it, a sectional holder die, means for mechanically moving said holder die forwardly to position underneath the plunger and for withdrawing it backwardly therefrom, and means operable from said moving means for opening and closing the die sections.

4. A plunger with means for operating it, a sectional holder die, a die operating member, a connection between the plunger and die operating member for operating the latter, a connection between said die operating member and holder die to move the latter to position under the plunger and to withdraw it therefrom, and means operable from said die moving connection for opening and closing the die sections.

5. A plunger with means for operating it, a holder die composed of sections each pivotally mounted at one side, means for moving said holder die to position beneath the plunger and to withdraw it therefrom, and a connection between each of the die sections and a fixed part whereby said movement of the holder die causes an opening and closing movement of the die sections.

6. A plunger with means for operating it, a holder die composed of sections pivotally mounted at one side, means for moving the die to position beneath the plunger and to withdraw it therefrom, and a link pivotally connecting each of said sections with a fixed support.

7. A plunger with means for operating it, a holder die composed of sections mounted to swing upon a common pivot, means for imparting rectilinear movement to said die forwardly to position beneath the plunger and backwardly therefrom, and means for opening and closing the die sections.

8. A plunger with means for operating it, a holder die composed of sections mounted to swing upon a common pivot, means for imparting rectilinear movement to the die forwardly to position beneath the plunger and backwardly therefrom, and a member attached to each of the die sections arranged to effect opening and closing movement of said sections through the agency of said movement beneath and from under said plunger.

9. A plunger with means for operating it, a holder die composed of sections pivotally mounted, a slide supporting said pivot, means for reciprocating the slide, and a connection between each of the die sections and a fixed part whereby the movement of the slide opens and closes the die sections.

10. A slide, a holder die composed of sections pivotally mounted on said slide, a plunger arranged to operate said slide, said plunger being arranged to operate upon an article held by said die, means for operating

the plunger, connections between said plunger and slide and means for opening and closing the die sections.

11. A slide, a sectional holder die pivotally mounted on said slide, a plunger with means for reciprocating it, a lever with one end engaging said slide and the opposite end engaging said plunger, and means for opening and closing the die sections.

12. A slide, a holder die composed of sections pivotally mounted on said slide, a plunger with means for operating it, connections between the slide and plunger for operating the former by the movement of the latter, and members connected with the die sections and constructed and arranged to effect opening and closing movement of said die sections through the agency of movement of said slide.

13. A slide, a holder die composed of sections each pivotally mounted on said slide, a link connection between each of the die sections and a fixed support, means for operating the slide, and a plunger with means for operating it.

14. A plunger with means for operating it, a sectional holder die including a pivoted die section, means for imparting rectilinear movement to said die forwardly to position underneath the plunger and backwardly therefrom, and means for swinging said section on its pivot through the agency of movement of the die.

15. A plunger with means for operating it, a slide operatively connected with said plunger to be operated thereby, a sectional holder die including a section pivoted to said slide, and a member attached to the pivoted die section and constructed and arranged to effect swinging movement thereof on its pivot through the agency of movement of said slide.

16. A slide, a holder die carried by said slide, a plunger adapted to operate upon an article held by the die, a connection between said plunger and slide for reciprocating the latter, and means arranged to permit movement of the plunger without movement of said slide.

17. A slide, a holder die carried by said slide, a plunger arranged to operate upon an article held by the die, a connection between said plunger and slide to reciprocate the latter, said connection including a lever engaged by said plunger, and a yielding connection between said lever and plunger allowing movement of the latter with the slide at rest.

18. A plunger with means for operating it, a slide having a forked end, means for operating the slide, a pivot extending between the prongs of said fork, a holder die including sections each pivotally mounted on said pivot, and means for opening and closing the die sections.

19. A plunger with means for operating it, a holder die composed of sections, means for opening and closing the die sections, and holding fingers arranged to grasp an article located within said die.

20. A plunger with means for operating it, a holder die composed of sections, means for opening and closing said sections, holding fingers arranged to grasp an article located within the die, and means for operating the holding fingers.

21. A plunger with means for operating it, a holder die composed of sections, means for opening and closing the sections, holding fingers arranged to grasp an article located within the die, and means for opening and closing said fingers.

22. A holder die composed of sections, means for opening and closing said die sections, a plunger positioned to operate upon an article held by said die sections and means carried by said plunger to engage and secure said die sections together when closed.

23. A holder die composed of sections, a plunger, means for operating the plunger, connections between the plunger and die sections to effect opening and closing movement of the latter, and a member carried by said plunger and arranged to secure said die sections together when closed.

24. A slide, a holder die composed of sections carried by said slide, a plunger constructed to move said slide to carry said die underneath the plunger and remove it therefrom, operative connections between the plunger and slide, means for operating the plunger, and a member carried by the plunger and arranged to secure the die sections together when closed.

25. A holder die composed of sections, means for opening and closing said die sections, a plunger arranged to operate upon an article held by said die, and a locking member carried by said plunger and arranged to engage the die sections and secure them together.

26. A plunger with means for operating it, a holder die composed of sections, means for reciprocating said die to place it underneath the plunger and for removing it therefrom, a member connected with each die section and constructed and arranged to effect opening and closing movement of said sections through the agency of movement to and from beneath the plunger, and means for securing the die sections in their closed position.

27. A plunger with means for operating it, a holder die composed of sections, means for reciprocating said die to and from beneath said plunger, means for opening and closing said die sections through the medium of said reciprocating movement, and a member secured to said plunger and ar-

ranged to secure the die sections in their closed position.

28. A slide, a plunger with means for operating it, a connection between the plunger and slide for operating the latter, said connection including a lever, a connection between said lever and plunger to permit movement of the latter without movement of the lever, a holder die secured to said slide and composed of sections, and means for opening and closing the die sections through the movement of said slide.

29. A plunger, means for reciprocating the plunger, self-actuated means for stopping the movement of the plunger in each complete reciprocation, a lever for starting the plunger reciprocating means, a holder die, fingers arranged to grasp an article located within said die, and a connection between said lever and fingers arranged to operate the latter in the movement of the former.

30. A plunger with means for reciprocating it, a self-actuated means for stopping the movement of the plunger in each complete reciprocation, a lever for starting said operating means, a holder die, fingers located to grasp an article located within said die, means for moving said die and fingers to position beneath the plunger and for removing them therefrom, and a connection between said lever and fingers for closing the latter in the operation of the former, and for opening the fingers in their sliding movement.

31. A holder die, means for imparting reciprocating movement to said die, holding fingers to grasp an article inclosed within said die, means for opening said fingers, and means for mechanically closing them.

32. A holder die, means for reciprocating said die, holding fingers pivotally mounted to grasp an article located within said die, a holding finger operating lever, means located within the path of movement of said lever to operate said fingers, and means for withdrawing said finger operating means.

33. A holder die with means for imparting reciprocating movement thereto, holding fingers pivotally mounted to grasp an article located within said die, a holding finger operating lever, a bell crank lever having a lug located in the path of movement of the finger operating lever, and means for withdrawing said lug from the path of movement of the finger operating lever.

34. A holder die with means for imparting reciprocating movement thereto, a starting lever, fingers pivotally mounted to grasp an article located within said die, a holding finger operating lever, a bell crank lever having a lug located in the path of movement of the finger operating lever, and a connection between the starting lever and

bell crank lever arranged to withdraw said lug in a movement of the starting lever to start the die, and means for returning said lug to position in the path of movement of the finger operating lever.

35. A holder die, fingers pivotally mounted to grasp an article located within said die, means for imparting reciprocating movement to said die, a lever self-actuated in one direction to stop the reciprocating movement of said die, means for actuating said lever in the opposite direction, and connections between said lever and said fingers arranged to close said fingers in the operation of said lever to start said reciprocating movement of the die.

36. A holder die, fingers arranged to grasp an article located within said die, means for reciprocating the die, a lever self-actuated to stop said reciprocating movement, a connection between said lever and fingers for opening them, a starting lever, and a connection between said starting lever and said self-actuated lever to withdraw the latter to permit movement of the parts.

37. A sectional holder die with means for imparting reciprocating movement thereto, holding fingers mounted to reciprocate with said die, a plunger with means for operating it, connections with the die sections for opening and closing them through the agency of reciprocating movement thereof, and connections with said fingers for operating them through the agency of the reciprocating movement thereof.

38. A plunger with means for operating it, a holder die, fingers arranged to grasp an article located within said die, said fingers having a bodily reciprocating movement, a finger operating lever, a rocking lever having a lug arranged to be interposed in the path of movement of said operating

lever, means for withdrawing the rocking lever from the path of movement of said operating lever, and means for automatically returning said rocking lever to the path of movement of the operating lever.

39. A holder die constructed to grasp an article located in a recess in said die that has a finger recess at its under side, fingers located within said finger recess, and means for operating said fingers independently of said die to hold said article.

40. A plunger with means for operating it, a slide, means for operating the slide, a pivot borne by said slide, a sectional holder die having each die section mounted on said pivot, and a link pivotally connecting each die section with a fixed support.

41. A plunger with means for operating it, a slide, a lever with one end engaging said plunger and the opposite end engaging said slide, a sectional die holder pivotally mounted on said slide, and means for restraining movement of the die sections to cause the slide in its movement to open and close said sections.

42. A holder die composed of sections arranged to open and close, a plunger positioned for reciprocating movement to operate upon an article held by said die, means for operating the plunger, connections between said plunger and holder die arranged to impart the reciprocating movement of the plunger to said die to move it to a position underneath the plunger and from said position, and means apart from said connections for causing movement of the plunger to open and close the die sections.

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