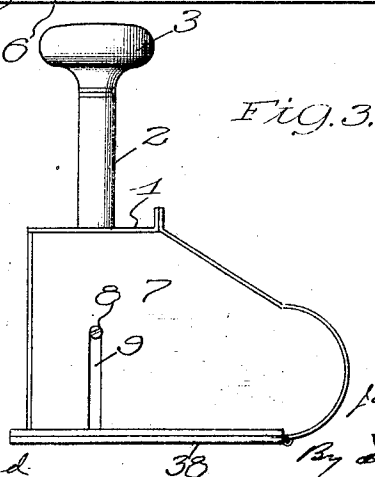
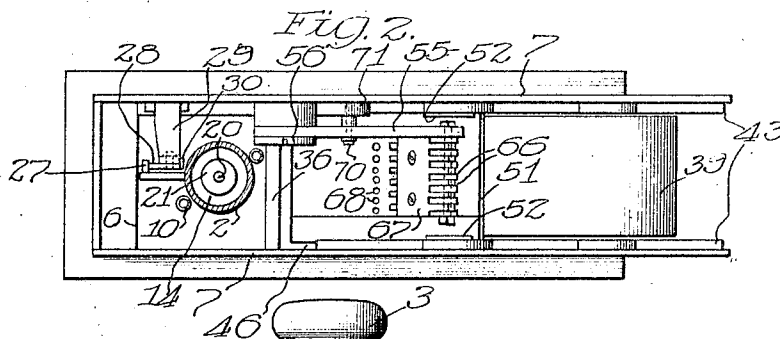
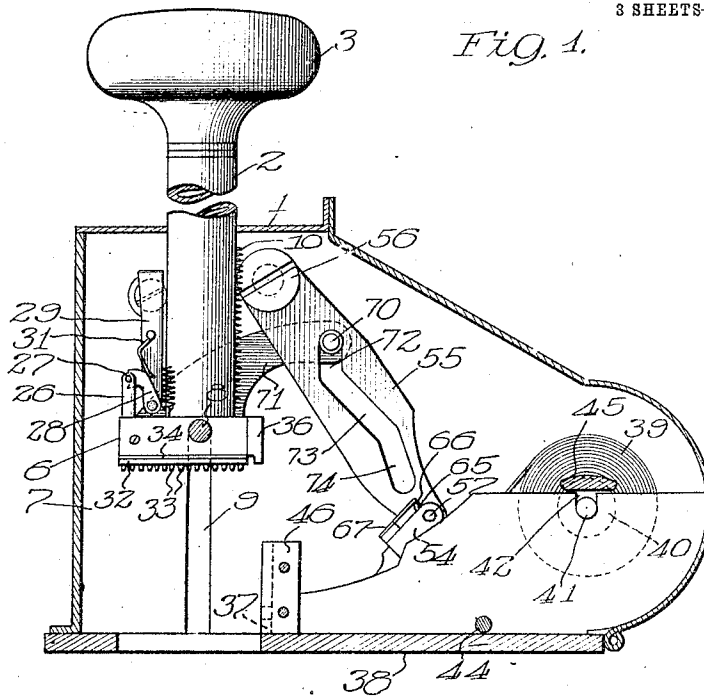


J. W. SMALL.
STAMP AFFIXER.
APPLICATION FILED OCT. 20, 1911.

1,047,317.

Patented Dec. 17, 1912.

3 SHEETS—SHEET 1.

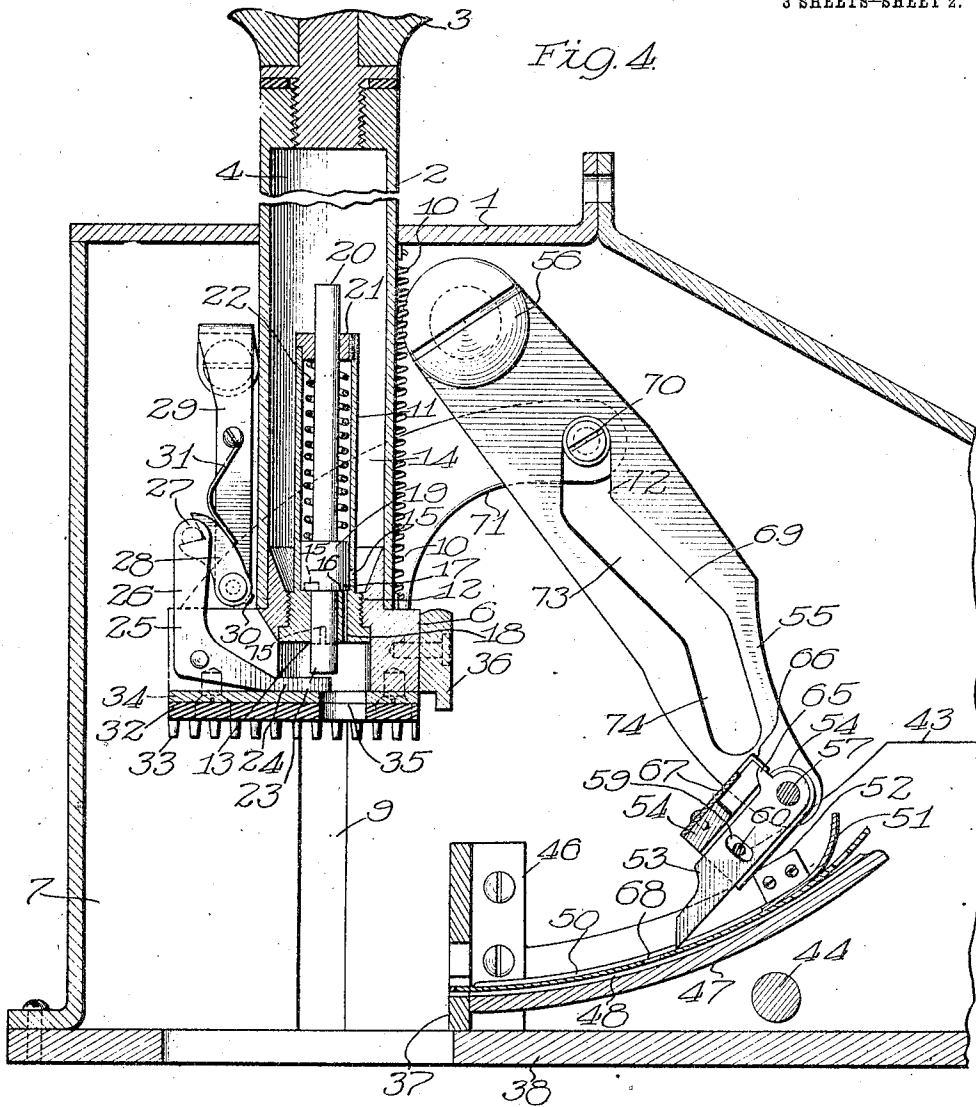


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1,047,317.

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3 SHEETS—SHEET 2.



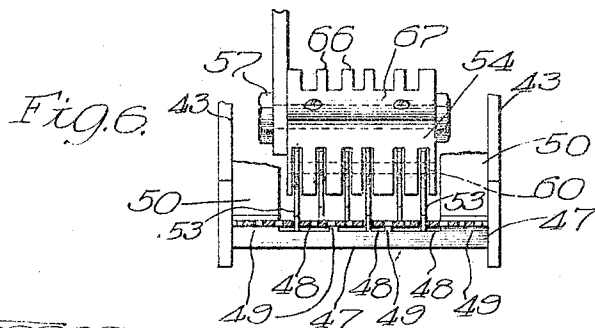
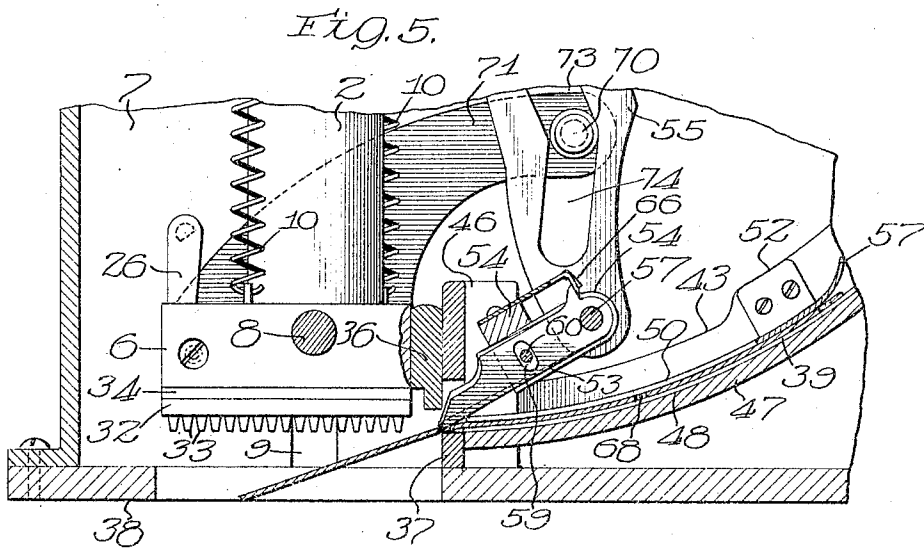
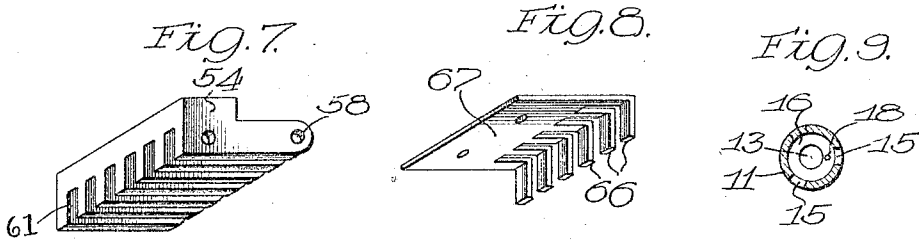
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STAMP AFFIXER.
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JAMES WILEY SMALL, OF ROCHESTER, NEW YORK.

STAMP-AFFIXER.

1,047,317.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed October 20, 1911. Serial No. 655,672.

To all whom it may concern:

Be it known that I, JAMES WILEY SMALL, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Stamp-Affixers, of which the following is a specification.

The present invention relates, primarily, to a device by which postage or other stamps or labels may be easily, quickly and securely affixed to envelopes, containing mail matter, or other packages, postal cards or other articles, which device may be stationary and adapted to have the article to be stamped presented to it, or may be light, portable and provided with a handle or other prehensible part by which it may be easily and quickly moved about, from place to place, after the manner of a hand stamp, and presented to the article to be stamped.

While all of the features of the invention are applicable to such a device, some of them are also applicable to devices used for other purposes and particularly for severing tickets or the like, one at a time, from a strip of indefinite length comprising a number of such tickets printed in a continuous series, and delivering them, one at a time, as they are severed.

The object of the invention, generally stated, is to provide an improved device for any of the above named purposes.

More particularly stated, one important object of the invention is to provide an improved mechanism for feeding forward, step by step, the strip of stamps, tickets, labels, or other devices in position to have said stamps, etc., severed, one at a time, and delivered. (Since the invention relates, primarily, to a stamp affixer, the term "stamp" will, for the sake of brevity, be hereinafter used alone, with the understanding that any other terms for a similar device may be read for it.)

Another important object of the invention is to provide improved mechanism for moistening the contacting surfaces of the stamp and article to which it is to be affixed.

Still other objects of the invention will appear hereinafter.

The invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings,

which are made a part of this specification and in which:

Figure 1 is a side elevation, full size, of a stamp affixer embodying the invention, with the near side plate of the casing omitted. Fig. 2 is a plan view thereof with the top of the casing omitted. Fig. 3 is a side elevation on a smaller scale of a portable stamp affixer embodying the invention. Fig. 4 is a sectional elevation of a stamp affixer embodying the invention, the section being taken on different vertical planes, Fig. 2, showing the parts on a scale of 2 to 1. Fig. 5 is a vertical section, in the same plane as Fig. 4, showing some of the parts on a still larger scale and in the positions which they occupy when the feed dogs are at the limit of their forward movement. Fig. 6 is a front elevation of some of the parts shown in Fig. 5 when in the positions last above stated. Fig. 7 is a perspective view of a block to which the feed dogs are jointed. Fig. 8 is a perspective view of a spring-metal plate having comb-like teeth which form individual springs for engaging the respective feed dogs. Fig. 9 is a horizontal section of the plunger of the cylinder of the liquid ejector.

The improved machine has a suitable frame or casing several parts of which will be designated by reference numerals as occasion requires. The top, 1, of the casing has an opening through which passes, freely, the stem, 2, of the plunger, having at its upper end a knob or handle, 3, which is removable for filling purposes and which may be grasped for moving the plunger vertically or for moving the entire affixer bodily from place to place. The stem, 2, is hollow so as to form a reservoir, 4, for containing water or other liquid used for moistening the stamps as they are affixed, as hereinafter described. To the lower end of the plunger is permanently secured a block, 6, which will hereinafter be called the foot, or presser foot. The plunger and foot may be fixedly secured together, watertight, in any suitable manner, a screw thread-connection being shown in the drawings. The foot fits snugly between the sides, 7, of the casing whereby said sides act as guides, and the foot is further guided by studs or pins, 8, which project from its opposite sides and occupy vertical slots, 9.

formed in the sides, 7, the slots being extended downward far enough to permit of the ample downward movement of the foot while they terminate at their upper ends in positions to form stops for limiting the upward movement.

The plunger, as a whole, is, as already intimated, movable vertically, its downward movement being produced by pressure upon the knob, 3, and its upward movement by one or more coiled springs, 10, the lower ends of which are secured to the foot of the plunger while their upper ends are secured to the top of the casing. The plunger has, as a part thereof, or has attached to it, the reservoir, 4, the means for ejecting at each operation a drop or small quantity of liquid at each downward movement, a knife-blade for severing the stamp to be affixed and a presser-pad for pressing the stamp firmly against the article to which it is to be affixed, and these several instrumentalities operate and perform their respective functions in the order stated.

The ejector comprises a cylinder, 11, having at its lower end an externally screw threaded enlargement, 12, which is adapted to be screwed into the correspondingly threaded lower end of the stem, 2, said enlargement being provided with a centrally located opening, 13, the diameter of which is somewhat less than the internal diameter of the cylinder proper. The object of this construction is to provide an annular space, 14, between the cylinder and the tube, 2, so that the liquid may reach a lateral port or ports, 15, through which the annular space and the interior of the cylinder communicate. One or more of these ports are located some distance above the bottom of the main bore of the cylinder, or, in other words, some distance above the shoulder, 16, resulting from the contracted bore or hole, 13, so that so much of the main bore of the cylinder as is located below the ports forms, when all of the parts are assembled, a sort of well or chamber, 17, below the ports, which chamber is closed excepting for a minute orifice or perforation, 18, which is formed through the end of the cylinder, immediately adjacent the bore, 13. Within the cylinder is a piston, 19, which has a sufficiently loose fit to permit of its free longitudinal movement therein and is sufficiently long to provide an ample bearing surface for confining the piston to a strictly rectilinear movement and prevent it from binding in the cylinder. Projecting upward from the piston is a stem, 20, the upper end of which passes loosely through an opening formed centrally through a ring, 21, which is secured to the upper end of the cylinder, the opening through the ring being of smaller diameter than the bore of the cylinder so as to provide an inwardly projecting

shoulder against which bears the upper end of a coiled spring, 22, which surrounds the stem, 20, and bears at its lower end against the top side of the piston, 19, whereby the piston is normally held down so that it covers the ports, 15, and bears at its bottom side upon the shoulder, 16. Projecting downward from the under side of the piston is a stem, 23, which fits the bore, 13, snugly and is adapted to be engaged by one arm, 24, of an elbow lever, 25, fulcrumed to the block, 6, the other arm, 26, of which lever extends upward and carries a pin, 27, adapted to be engaged by the notched end of a tappet 28, the other end of which is pivoted to a bracket, 29, fixedly secured to the side wall, 7, of the casing. This tappet is in the form of a gravity latch provided with a suitable stop, 30, which is adapted to arrest its downward movement, under the influence of gravity and hold it in a substantially horizontal position after the pin, 27, disengages it during the downward movement of the plunger. As the plunger moves upward the pin, 27, will engage the under side of the tappet and lift it and a spring, 31, secured to the bracket, 29, will move the notched end of the tappet into engagement with the pin, as shown in Figs. 1 and 4, this being the normal positions of the parts when the device is not in operation. As the plunger moves downward, with the pin occupying the notch in the end of the tappet, it will move about its fixed pivot and cause the lever, 25, to rock about its fulcrum and in doing so the arm, 26, of the lever will be forced outward while the arm, 24, will be forced upward, forcing the stem, 23, and piston, 19, upward within the cylinder, 11. This upward movement of the piston is permitted by the escape of the liquid from the annular space above the piston into the reservoir, 4, the fit between the stem, 20, and the ring, 21, being sufficiently loose for this purpose. As the piston rises (relatively) in the cylinder it will gradually uncover the ports, 15, and permit liquid to flow or be drawn into the chamber, 17, in proportion to the speed of its upward movement which gradually increases from start to finish by reason of the horizontal arcuate downward movement of the pin, 27, and as soon as the pin disengages the tappet the spring, 22, will react and force the piston downward, thereby ejecting the liquid from the chamber through the orifice, 18, and on to the surface to be moistened, suddenly and with great force which tends to spread it out over a considerable area. To this end the axis of the orifice is perpendicular, or, at any rate, at a very obtuse angle to the surface to be moistened, it being understood that this surface is substantially perpendicular to the axis of the plunger. Of course, a portion of the liquid which flows into the cylinder as

the piston rises will be expelled through the ports, 15, but the ports, the capacity of the chamber and the capacity of the orifice are such that the quantity of liquid admitted to the chamber is just sufficient to meet all of these conditions.

I am aware that stamp affixers have been provided with reservoirs and liquid ejectors operated by the reaction of a spring, but I am not aware that the orifice of the ejector has ever been placed at an obtuse angle to the surface to be moistened so that the liquid ejected will, by its impact, be spread out or distributed more or less evenly over the surface to be moistened. Nor am I aware that it has ever been proposed to provide a chamber in the nature of a supplemental reservoir of just sufficient capacity to contain the exact quantity of liquid required so that the exact quantity needed for moistening the surface will be ejected from the chamber under the full pressure of the spring. In this connection it will be observed that, as shown in the drawings, the piston and the chamber are cylindrical, but this is immaterial and they may be of any desired shape so long as the piston operates after the manner of a plunger which slides with a more or less tight fit into and out of the chamber.

In a portable stamp affixer the entire device is placed upon the article to which the stamp is to be affixed with the plunger over the place for the stamp. The plunger is then moved downward and during the early part of its movement the liquid is ejected on to the article in the manner described. The continued downward movement of the plunger will cause a stamp to be cut off and delivered over the moistened spot, by mechanism presently to be described, and the final movement of the plunger downward will press the stamp firmly on to the article. To this end the foot is provided on its under side with a facing of soft rubber, 32, having downwardly presented projections, 33, said facing being secured by screws or other suitable means to a plate, 34, which, in turn, is secured to the under side of the block, 6, said plate and facing being provided with registering openings, 35, centrally located opposite the discharge end of the orifice, 18. This plate, 34, also forms a stop for limiting the downward movement of the horizontal arm, 24, of the lever, 25.

For cutting the stamps from the strip, one at a time, a blade, 36, is secured to the rear side of the block, 6, and this blade co-operates with a ledger blade, 37, secured at the bottom, 38, of the casing. The cutting edge of the knife, 36, is located some distance above the extreme lower surfaces of the projections, 33, so that the projections will engage one side of the stamp

slightly in advance of its engagement by the blade, 36, so that by the time the stamp is completely severed and falls on to the article to be stamped, the projections will be in position to again engage it and press it firmly on to the article. This completes the spreading of the liquid and confines its spreading to the areas of the opposing surfaces of the stamp and article.

The stamps, 39, are printed upon a continuous strip which is rolled upon a cylinder, 40, having trunnions, 41, which occupy notches, 42, in the parallel sides, 43, of a removable stamp rack, said sides being rigidly connected by a tie-rod, 44. The sides, 43, bear and are adapted to slide upon the bottom, 38, of the casing and they fit snugly between the sides, 7, of the casing so that the stamp rack and its accessories may be easily drawn out and inserted. It is held against vertical movement by a pair of blocks, 45, which are secured to the inner faces of the sides, 7, respectively, and also close the notches, 42, so as to prevent the escape of the trunnions, 41. The inward movement of the stamp rack is limited by stops, 46, which engage the sides, 43, and said stops may consist of flanges which are integral with the plate of which the ledger blade, 37, is made and are suitably secured to the sides of the casing. The stamp rack carries a stamp race through which the stamps are conducted from the roll, 39, to the cutter. This stamp race has a curved bottom, 47, the edges of which are permanently secured to the sides, 43. The bottom extends forward beyond the sides of the rack, and terminates with its upper side flush with the ledger blade and its top side is provided with a plurality of grooves, 48, resulting in a plurality of ribs, 49, upon which the stamps rest, directly. The sides of the stamp strip are confined and held down upon the outermost ribs, 49, of the bottom by tongues, 50, projecting from a sheet metal blade, 51, secured to the sides, 43, through the medium of angularly disposed portions, 52, so that as the stamp strip passes along the race it is prevented from buckling or bending.

The stamp strip is advanced along the race a distance equal to the width of one stamp at each operation of the machine by means of feed dogs, 53, all of which are pivotally connected to and carried by a block, 54, which is immovably secured to the lower end of a swinging or oscillating arm, 55, the upper end of which moves about a screw, 56, supported by the casing. The block, 54, may be secured to the swinging arm by a binding screw or bolt, 57, passing through a perforation, 58, formed through the block from side to side, and the dogs are pivotally mounted upon this screw so that their toe ends may rise and fall. In

order to permit this and at the same time limit the downward movement of the dogs, they are provided with slots, 59, through which pass a stop pin, 60, carried by the block. In order to properly and easily space the dogs apart the block is provided on its under side with a plurality of cuts or grooves, 61, each of which is occupied by one of the dogs and in order to press the toes of the dogs downward with a yielding force each of them is provided near its pivoted end with a lug or finger, 65, providing a shoulder which is engaged by a delicate spring tongue, 66, all of said tongues being integral and formed by cutting a series of notches in a spring-plate 67 secured to the top side of the block, 54.

Each of the stamps is separated from the next of the strip by a line of perforations, 68, the diameter or extreme width of each of which perforations is about equal to the distance between each perforation and the next. The dogs are also spaced at equal distances apart but not at the same distances apart as are the perforations of the strip. The object of this difference in the spacing of the perforations and the dogs is to insure the entering of at least some of the dogs into at least some of the perforations, or, conversely, to insure that all of the dogs shall not bear upon the upper surface of the stamp strip between the perforations, without any of the dogs entering any of the perforations, because, in this event, the dogs would advance without advancing the stamp strip. The object in providing the bottom of the stamp race with grooves and resulting ribs is to insure a firm taking hold of the stamp strip by the dogs. The paper upon which the stamps are printed is very thin and it is manifest that if the dogs came in contact with the upper surface of the bottom of the race immediately at the plane of the under surface of the strip, the dogs would have but little purchase upon the strip, but by providing the upper surface of the bottom of the race with grooves beneath the dogs, the toes of the dogs will pass completely through the stamp strip and downward below it, thus giving it a firm purchase.

For swinging or oscillating the arm, 55, and advancing the dogs, the arm is provided with a groove, 69, resulting in cams at its opposite sides and this groove is occupied by a pin or stud, 70, carried by an arm, 71, fixedly secured to the block, 6. It will be remembered that the block, 6, movable with the plunger as a whole, is confined to a strictly vertical rectilinear movement. This being so, the upper portions, 72, of the cam slot being vertical the pin will have no tendency to move the arm until it reaches the inclined portion, 73, of the slot. While this is taking place the liquid is being

ejected as already described. The pin, 70, will then engage the cam surface 73, at the lower, front side of an inclined portion of the cam slot and will swing the lower end of the arm forward thus advancing the dogs. In the normal positions of the parts, as shown in Figs. 1, 2, 4 and 5, the toes of the dogs will rest upon the surface of the second stamp, or, in other words, the stamp adjacent with the end stamp of the strip. As the dogs advance from this position they will come to the line of perforations, 68, between the first and second stamps and one or more of the dogs will enter one or more of said perforations and engage the rear side of the first stamp. The continued forward movement of the dogs will advance the stamp strip until the pin, 70, reaches the bottom of the inclined portion, 73, of the slot. This will advance the first stamp entirely past the vertical plane of the cutting edge of the ledger blade so that the center of the line of perforations between the first and second stamps will be exactly in said plane, with the dogs projecting slightly beyond it so as to be within the path of the knife, 36, as shown in Fig. 5. As the pin, 70, continues downward from this position it will enter the bottom portion, 74, of the cam slot, which is inclined downward and forward slightly from the vertical. The pin, 70, will then engage the cam surface at the rear side of the portion, 74, of the slot and move the lower end of the arm backward, thus withdrawing the toes of the dogs from the path of the knife, 36. The plunger will then continue downward and sever the first stamp, allowing it to drop upon the article to which it is to be affixed after which the elastic projections, 33, will engage it and press it firmly upon the article.

There is a decided advantage in causing the dogs to engage the stamp which is to be severed and delivered, rather than engaging the second stamp. As before stated, the paper of the stamp strip is thin and will easily buckle or bend under the pressure of the feed dogs, but this tendency to bend is practically eliminated by causing the dogs to engage the stamp strip as near the end as possible. It is manifest that if two stamps intervene between the point of engagement and the cutter, the stamp strip will have a greater tendency to buckle than where the dogs directly engage the first stamp. In the one instance, one stamp must push another before it, with the weakened line resulting from the perforations intervening, while in the other instance, the pressure is applied directly to the stamp to be delivered.

It will be observed that the range of the to and fro movement of the dogs is greater than the width of a single stamp and this causes the dogs to be retracted far enough to

insure their engagement with the perforations of the stamp strip.

The ejector cylinder is provided in its lower end with sockets or other features, 75 adapted to receive a suitable wrench or tool by which the cylinder may be readily removed, and this is decidedly advantageous in that in case it should become clogged or otherwise obstructed, it can be readily removed by owner and shipped or otherwise 10 sent to the manufacturer for repairs without sending the entire machine.

The subject of the present invention has been described in the foregoing specification 15 as a stamp affixer, as all of its several features are applicable to such a device, but it is manifest that the improved feeding mechanism may be used in machines for other purposes and I reserve to myself the right 20 to so use them. For instance, the feeding mechanism may be used entirely separate and apart from the moistening and affixing features, in machines for vending tickets or other devices and especially those devices 25 that are provided with counting or registering mechanism for showing the number of tickets vended as shown in my co-pending application filed April 29, 1911, Serial No. 624,031. The accuracy of such a machine depends upon operating the counter 30 only when the ticket is actually vended or delivered by the device, and such a device is of little value if the counter is operated by the operation of the device regardless of 35 whether or not a ticket is actually vended or delivered. Hence insuring the delivery of a ticket at each operation of the device is tantamount to the operating of the counter only when the ticket is actually delivered.

40 What I claim as new is:

1. In a device of the class described, the combination with a plunger, a presser-foot carried thereby and a liquid reservoir, of a liquid ejector having a cylinder provided 45 with a port through which the reservoir and cylinder communicate and provided also with a minute discharge orifice, a piston slidably mounted in the cylinder, means for moving the piston in one direction to open 50 the port and permit liquid to flow from the reservoir into the cylinder, below the piston, and means for quickly moving the piston in the opposite direction to close the port and eject liquid through the discharge orifice.

2. In a device of the class described, the combination with a plunger, a presser-foot carried thereby and a liquid reservoir, of a liquid ejector having a cylinder provided in its end with a minute discharge orifice and 60 provided also with a port communicating with the reservoir, a piston slidably mounted in the cylinder, means for moving the piston in one direction to open the port and means for moving it in the opposite direction for closing the port, ejecting liquid 65

through the discharge orifice and subsequently closing said orifice.

3. In a device of the class described, the combination with a plunger, a presser foot carried thereby and a liquid reservoir, of a liquid ejector having a cylinder provided 70 with a port communicating with a reservoir and also with a minute discharge orifice, a piston slidably mounted in the cylinder, means for moving said piston in one direction to open the port, and a spring for moving the piston in the opposite direction for closing the port and ejecting liquid through the discharge orifice. 75

4. In a device of the class described, the combination with a movable plunger and presser-foot, and a liquid reservoir carried thereby, of a liquid ejector having a cylinder carried by the plunger and provided 80 with a port communicating with the reservoir and provided also with a minute discharge orifice, a piston slidably mounted in the cylinder, a spring for moving the piston in one direction to close the port and quickly eject liquid through the discharge 90 orifice, and means for moving the piston in the opposite direction in opposition to the force of the spring, said means having a part carried by and movable relatively to the plunger, and a tappet located in the path 95 of said part as it is carried by the plunger, whereby when said part escapes from the tappet the spring, aforesaid, will react upon the piston.

5. In a device of the class described, the combination with a movable plunger and presser-foot and a liquid reservoir carried thereby, of a liquid ejector having a cylinder carried by the plunger and provided 100 with a port communicating with the reservoir and provided also with a minute discharge orifice, a piston slidably mounted in the cylinder, a spring engaging the piston for moving it in one direction to close the port and eject liquid through said discharge 110 orifice, and means for moving the piston in the opposite direction, in opposition to the force of the spring, said means having a part carried by the plunger and movable relatively thereto, a pivoted tappet located 115 in the path of said part as it is carried by the plunger, fixed means for supporting the pivot of the tappet, and a spring for holding the tappet normally in position for engaging said part as it is carried toward the 120 tappet by the plunger.

6. In a device of the class described, the combination with a plunger and presser-foot and a liquid reservoir carried thereby, of a liquid ejector having a cylinder provided 125 with a port communicating with the reservoir and provided also with a minute discharge orifice, a piston slidably mounted in the cylinder, a spring for moving the piston in one direction to eject liquid 130

through said discharge orifice, and means for moving the piston in the opposite direction, said means having a bent lever pivoted to the plunger, a pivoted tappet located in the path of said lever as it is carried by the plunger, stationary means for supporting the pivot of the tappet, a stop for limiting the movement of the tappet in one direction, and a spring engaging the tappet for yieldingly holding it normally in position to engage the lever.

7. In a device of the class described, the combination of a suitable frame or casing, a plunger reciprocally mounted therein and having a presser-foot, a reservoir carried by the plunger, a discharge orifice adapted to communicate with the reservoir, means for closing said communication and simultaneously ejecting liquid through the discharge orifice, and means for delivering stamps, one at a time, in the path of the presser-foot.

8. In a device of the class described, the combination of a suitable frame or casing, a plunger reciprocally mounted therein and having a presser-foot, a reservoir carried by the plunger, a discharge orifice adapted to communicate with the reservoir, means for ejecting liquid through the discharge orifice, and means for delivering stamps, one at a time, in the path of the presser-foot, the axis of the discharge orifice being at an abrupt angle to the working face of the presser-foot.

9. In a device of the class described, the combination of a suitable frame or casing, a plunger reciprocally mounted therein and having a presser-foot, a cylinder carried by the plunger and having a port communicating with the reservoir and having also a discharge orifice the axis of which is located at an abrupt angle to the working face of the presser-foot, a piston located in the cylinder, a spring engaging the piston, means operated by the downward movement of the plunger for compressing the

spring and means for tripping said compressing means before the plunger completes its downward movement, thereby releasing the spring and permitting it to quickly move the piston and eject liquid through the discharge orifice.

10. In a device of the class described, the combination with a suitable frame or casing, a plunger reciprocally mounted therein and having a tubular stem, forming a liquid reservoir, and having also a presser-foot, of a liquid ejector having a cylinder located within the hollow stem provided with a port communicating with the reservoir and also provided with a discharge orifice, a piston in the cylinder, a spring in the cylinder engaging the piston for moving it in one direction, means operated by the downward movement of the plunger for moving the piston in the opposite direction and means for tripping the means last aforesaid during the downward movement of the plunger and thereby releasing the spring, whereby it quickly moves the piston and ejects liquid through the discharge orifice.

11. In a device of the class described the combination with means for feeding forward, one at a time, the article to be affixed, means for affixing said article, said affixing means having a movable plunger adapted when moved in one direction to press the article to be affixed against the object to which it is to be affixed, said plunger being hollow and serving as a reservoir for liquid, and means for ejecting a small quantity of liquid at each affixing movement of the plunger, said ejecting means having a chamber communicating with the reservoir and provided with a discharge orifice and means for forcing the liquid from said chamber through said orifice.

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