

Feb. 14, 1933.

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1,897,125

MEANS FOR STRIPPING AND TRUING ADDRESS PLATES

Filed Feb. 8, 1930

3 Sheets-Sheet 2

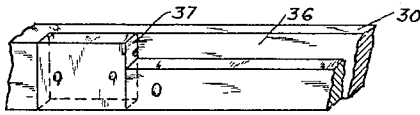


Fig. 5.

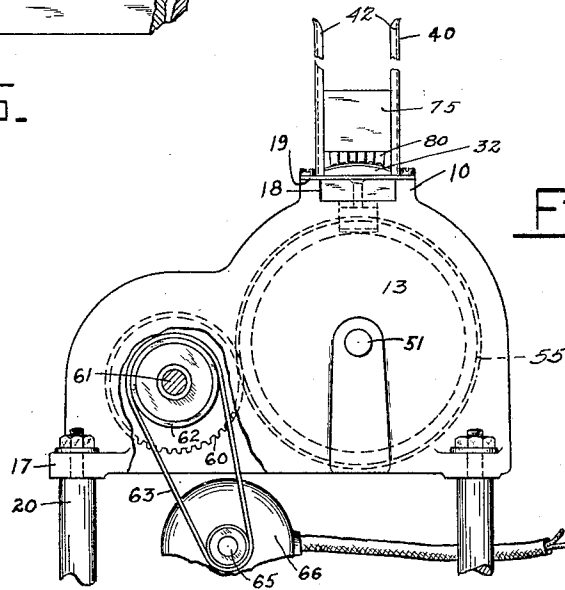


Fig. 3.

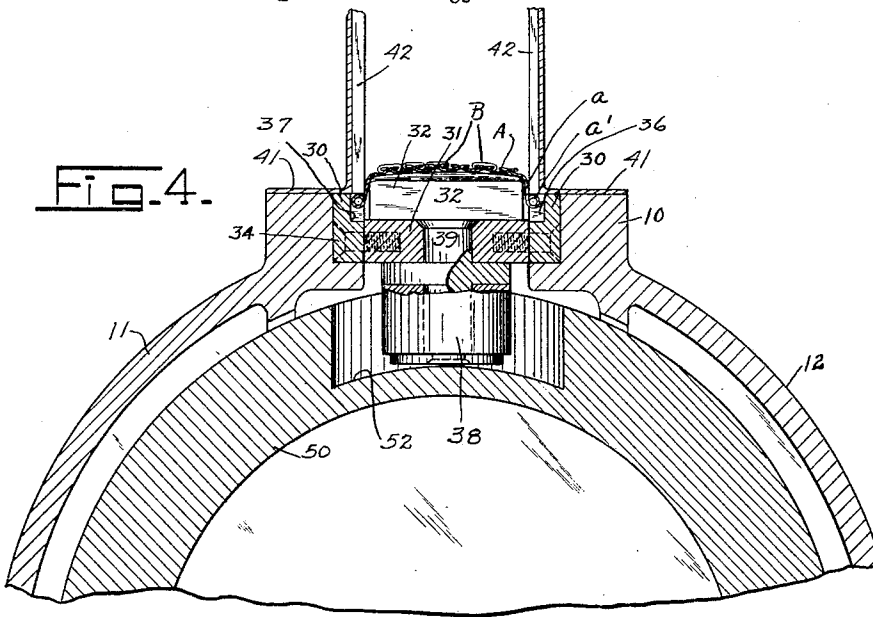


Fig. 4.

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3 Sheets-Sheet 3

Fig. 6.

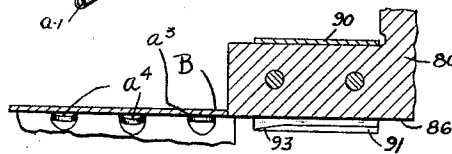
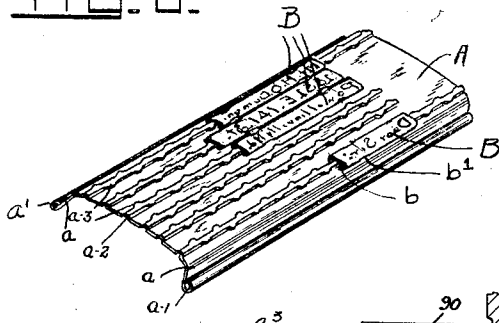


Fig. 8.

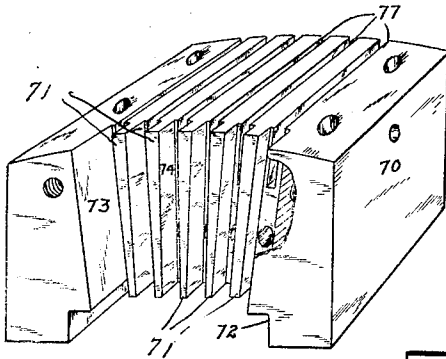


Fig. 9.

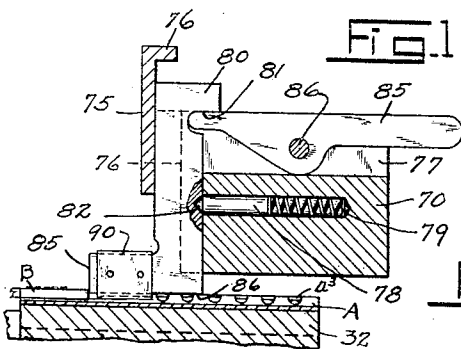


Fig. 16.

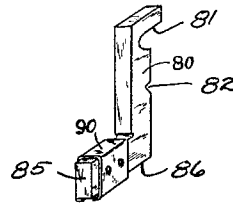


Fig. 7.

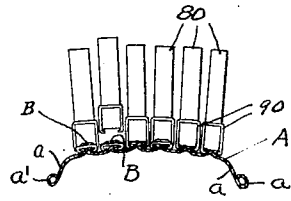


Fig. 10.

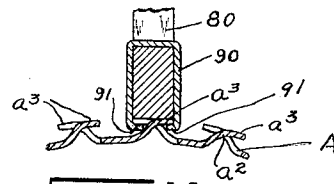


Fig. 11.

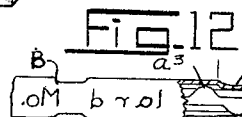


Fig. 12.

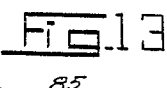


Fig. 13.

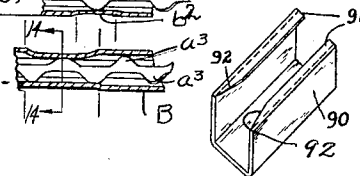


Fig. 15.



Fig. 14.

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UNITED STATES PATENT OFFICE

JOHN A. HULT, OF CLEVELAND, AND PETER M. COLQUHOUN, OF LAKEWOOD, OHIO, AS-SIGNORS, BY MESNE ASSIGNMENTS, TO MULTIGRAPH COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE

MEANS FOR STRIPPING AND TRUING ADDRESS PLATES

Application filed February 8, 1930. Serial No. 426,819.

This invention relates to a machine for removing printing strips from a holder thereof, and at the same time restoring to proper position displaced portions of the holder. More particularly, our machine is adapted to act on embossed strips of metal which overlie raised projections on a stamped metal holder. The strips underhang such projections and must engage them with sufficient tightness so that they will not become displaced in use. It is desirable however to remove the strips of any obsolete address plate so that the holder may be used for a fresh address, and our machine is adapted to effect such removal expeditiously, notwithstanding the normal tight engagement of the strip on the holder.

Now in effecting the tight engagement of the strips in the holder the projections of the latter are sometimes distorted from their normal position, and they are likewise sometimes displaced by the action of the strip as it is being removed. The present machine as it removes the strips from such holder, is adapted to restore any displaced projection, so that the stripped plate is, at once, in condition for receiving fresh printing strips.

Our invention is in the nature of an improvement on Patent No. 1,644,773 of William J. Demming, granted October 11th, 1927, to the assignee The American Multigraph Company for an apparatus for removing printing strips from holders. The Demming machine however is a hand operated device, and it has been found that if the printing strips are tightly pinched onto the holder projections, too much power is required in stripping them to enable a hand machine to be rapidly operated.

A preferred embodiment of our invention is illustrated in the drawings, and is hereinafter described in detail, and the essential novel features of the invention are summarized in the claims.

In the drawings, Fig. 1 is a plan of our improved machine; Fig. 2 is a vertical longitudinal section of the same; Fig. 3 is an end view from the right hand end of the machine shown in Figs. 1 and 2; Fig. 4 is an enlarged vertical cross section parallel with Fig. 3,

the plane being indicated by the line 4—4 on Fig. 2; Fig. 5 is a fragmentary perspective of a portion of the plate feeding slide; Fig. 6 is a perspective of a plate which our machine is adapted to strip and true; Fig. 7 is a perspective of one of the stripping plungers with the truing device carried thereby; Fig. 8 is a vertical section of the stripping plunger and truing device showing a portion of a plate in position to be acted on; Fig. 9 is a perspective of a frame block which carries the stripping and truing plungers; Fig. 10 is an end elevation of a set of the plungers, all but one of which are in position to coact with strips on the plate; Fig. 11 is a detail in vertical section through one of the plungers in its active position and an adjacent portion of the plate; Figs. 12 and 13 are fragmentary sectional plans illustrating the indenting of the strip edge to hold it in place on the plate; Fig. 14 is a fragmentary cross section through a plate and strip, illustrating the distortion of the plate which may result from the indenting of the strip; Fig. 15 is a perspective of the truing device inverted for clearness of illustration; Fig. 16 is a substantially vertical section illustrating one of the stripping and truing plungers and its support, the plunger being shown in an active position; Fig. 17 (Sheet 1) is a diagrammatic development of the driving cam.

As shown in Figs. 1, 2, 3 and 4, the frame of the machine comprises a suitable bed 10 with a narrow flat top, merging in the right hand portion with downwardly curving sides 11 and 12. This frame also has a substantially vertical end plate 13 and various cross webs as 14, 15, 16. The curved sides 11 and 12, and the end plate 13 and web 14 terminate at their lower extremities in feet 17 to support the machine in a horizontal position. As shown in Fig. 3, the machine rests on a suitable stand indicated at 20, to which the feet 17 are bolted.

In the narrow flat top of the bed 10 is a longitudinal channel 18 extending from one end of the frame to the other end of a width somewhat greater than that of the address plate to be stripped. This channel 18 near the right hand end of the machine is covered

by a plate 19. Slightly at the left of this cover plate and over the open channel 18 is the plate magazine 40, and beyond that the stripping fingers to be later described.

5 Longitudinally slidable in the frame channel 18 is a slide comprising a pair of longitudinal bars 30 spaced apart, and two intermediate blocks 31 and 32 which lie between the bars and are held rigidly to them by
10 screws or pins 34 and 35. The block 32 lies above the bars 30 and provides a saddle for carrying the address plate. The block 31 provides means for attaching the power device as hereinafter described. Between these
15 blocks is a space through which the removed strips may drop. At the extreme left hand of the machine is a suitable receptacles designated 100 adapted to receive the discharged address plates.

20 The reciprocating slide, operated by a power device hereinafter described, furnishes means for moving an address plate from the magazine 40 beneath certain stripping plungers to be hereinafter described.
25 The holder portion of such plates may well be of the form shown in Fig. 10 comprising a sheet metal holder A having downwardly turned edges a with outward curled flanges a' and having on its intermediate face upwardly
30 extending corrugations a^2 from which extend lateral lips a^3 . The lips shown extend alternately in opposite directions. Embossed printing strips indicated at B and having inwardly flanged edges b may be slid into place
35 on the face of the corrugations and lips and have their flanges extend beneath the lips. Such strips are usually tightly clamped in place by indentations of their edges as shown and claimed in Patent No. 1,651,185 of Clifton Chisholm, issued November 29th, 1927, to
40 The American Multigraph Company.

The present machine engages the plate A and shoves it along while the plungers to be described engage such strips B as it is desired to remove, so that the plate is shoved
45 out from under them, while the strips drop between the bars 30 of the slide.

The plates to be stripped are stacked in a vertical magazine comprising a pair of upright plates 40 which have base flanges 41 by which they are secured to the bed and have inwardly turned vertical edge flanges 42 which overhang the ends of the address plates. The plates normally stand in this
55 magazine on top of each other with the edge beads a' of each plate resting on the edge beads of the plate next below, except the bottom plate, the edge beads of which rest on the bars 30. The forward portion of the
60 bars 30 are recessed, as shown at 36 in Fig. 5 for a length as great as the length of the plate and to a depth corresponding to the thickness of the beads a' . The end walls 37 of these recesses form abutments for shoving
65 the plate resting in the recesses.

To reciprocate the frame 30, 31, 32 by power, we provide the cam drum 50 having its shaft 51 journaled in the end plate 13 and the web 14 of the bed. This drum carries an inclined groove 52 which is occupied by a
70 roller 38 on a stud 39 depending from the block 31 of the reciprocating frame. This cam groove makes a complete circuit about the drum from a region near one end of the drum to a region near the other end so that one rotation
75 of the drum gives a complete reciprocation forward and back to the slide.

To rotate the drum, we form it with a gear 55 on its end which is shown as meshing with a gear 60 on a lay shaft 61. This shaft carries a pulley 62 from which a belt 63 is shown as leading to a pulley on the armature shaft
80 65 of a motor 66, carried in a suitable manner (not shown) as for instance by the stand 20. When the machine is in operation, the continuous rotation of the motor thus gives reciprocations to the slide without substantial pauses as the direction of stroke changes.

It results from the construction described, that when the reciprocating slide is moved to its extreme outward position bringing the saddle block 32 beneath the magazine 40, the stack of plates drops so that the beads of the bottom plate come into recesses 36 in the bars in opposite sides of the saddle block; then as the slide moves toward the left (Fig. 2) the shoulders 37 at the right hand end of such recesses shove the bottom-most plate toward the left, while the magazine members 40 retain all of the address plates except the bottom-most plate.
100

Near the right of the magazine, as shown in Figs. 1 and 2 is a transverse block 70 secured to the bed by screws passing through the block. On its under side, this block is
105 recessed at 72 to allow the passage of the reciprocating frame and plate. Mounted in a recess 73 in the left hand vertical face of the block are a set of plungers 80 (as many as the total number of lines which may be carried to the plate) which are shown as separated by webs 71 of the block and held in place by a front plate 75 secured to the block 70 and having an overhanging top flange 76. Any of these plungers may be held in place to engage the corresponding strip and prevent its advancement while the plate is advanced beneath the block.
115

Mounted in kerfs 77 in the upper face of the block 70 are series of levers 85 pivoted by means of a transverse pin 86. There is one lever for each plunger 80, such lever engaging a notch 81 in the upper portion of the plunger. Mounted in horizontal cavities 77 in the block 70 are short latch rods 78, one
120 for each plunger 80, and pressed toward them by springs 79. The plungers 80 are provided with suitable V-shaped recesses 82 in which noses of the respective latch rods are engaged.
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When any plunger 80 is intended to be ac-
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tive, it is substantially in the position shown in Figs. 3 and 16, the latch 78 engaging its notch 82 and holding it in place. When, however, it is desired to move any plunger to idle position, this is readily effected by depressing the outer end of the corresponding lever 75 which moves the plunger upwardly until it abuts the flange 76 of the front plate. The spring latch engaging the face of the plunger will hold it in this elevated idle position until the plunger is depressed by its lever.

Assuming that the plungers are depressed to engage the strips to be removed, then as the reciprocating frame carries a plate toward the right out of the magazine, the plungers will engage the strips without engaging the plate and thus prevent advancement of the strips, so that the plate is shoved out beneath the strips. The plate is thus advanced beyond the plungers and is thereby cleared of such strips as it is desired to remove, the removed strips dropping through an opening in the bed.

Fig. 12 illustrates at b' an indentation of the edge flange b of a printing strip B by a comparatively narrow tool which makes an indentation b' coming between two plate-lips a^3 , and on the opposite side an indentation b^2 coming against a single lip. As there is less resistance to the indentation between the lips, the most of the strip-distortion takes place on that side, resulting in a considerable inward bend. This inward bending not only requires relatively large power to remove the strip from the plate, but has a camming action on the lips of the plate as the strip is being removed, thus frequently distorting several of those lips.

The distortion of the plate by the camming action of the strip being removed, as just referred to, may to a certain extent be relieved by lengthening the indentation as illustrated in Fig. 13, but in this case, assuming that the indentation is long enough to bridge the difference between one lip to the next, the indentation is comparatively slight on the side where the two lips are engaged but is greater on the other side where one lip only is engaged, with the result that the single lip is bent inwardly by the act of distorting the strip as indicated in Fig. 14.

This indenting of the printing strip may be effected in any suitable manner, as for instance by the hand tool shown in Patent No. 1,720,318 granted July 9th, 1929, which operates on each strip individually, or the multiple acting power machine of Patent No. 1,734,707 granted November 5th, 1929, both patents to the assignee The American Multi-graph Company. But however, the indentations are applied, or whatever their form, the ultimate result on the plate is substantially the same; namely the retention is so effective that much power is required for removal of

the strips, and after a strip has been removed, several lips on the plate are so distorted from true position, that it is not feasible to slide a fresh printing strip onto the plate. We have, therefore, provided means about to be described to true the lips of any row as the strip of that row is being removed.

Mounted on the L-shaped lower end 85 of each plunger 80 is a stirrup 90. This stirrup has inwardly projecting bottom flanges 91 a suitable distance below the bottom face 86 of the plunger, so that the plate projections if properly positioned may readily slide between the two. As the plate lips may be distorted sideways as well as up and down, we taper off the end of the flanges 91 laterally as shown at 92 in Fig. 15, while to lift depressed lips we taper the upper surface of these flanges as shown at 93 in Fig. 8. Such downwardly extending bevelled portion is adapted to slide beneath any distorted projection as indicated at a^4 in Figs. 8 and 14, and raise it to the proper level as indicated by the projection a^3 in Fig. 8. Accordingly, the mere act of discharging a strip from the plate automatically trues any distorted projection.

It should be noted that in the truing action described, the truing stirrup is entirely stationary, while the plate is positioned while being definitely guided parallel with the truing flanges 91. This guiding action of the plate-propelling slide is of importance in insuring accurate operation of the truing flanges. The under face of the plunger 80 forms a top abutment limiting the upward bending of the lips, by the bevels 93. These lips therefore come into the confining channel provided by the under face of the plunger and the upper horizontal face of the flanges and the vertical inner sides of the stirrup, which necessarily produces a true lip as the same passes out of this guide.

The address plate which the particular embodiment shown is designed to strip has its intermediate region arc-shaped so that it may be readily mounted for printing action on a rotary drum. To enable the truing flanges 91 to properly engage beneath the plate lips of such a plate, while the under face 86 of the plunger 80 stands close to the top of those lips, we mount the plungers 80 radially about the same center as that of the arc of the plate, as shown clearly in Fig. 10. To accommodate these radially positioned plungers, we make the grooves 74 in the block 70, which they occupy, radial as shown in Fig. 9.

As the machine operates with considerable rapidity, momentum tends to carry the stripped plate to some extent beyond the end of the saddle 32; as the slide reaches the end of its stroke; then as the slide reverses its movement and moves in the opposite direction, the inertia of the plate tends to hold it from following the slide, so that the latter pulls out from under the plate. These two

forces of momentum on the stripping stroke and inertia on the return stroke are ordinarily sufficient to entirely discharge the plate so that it passes down off the end of the bed into the receptacle 100. However, if for any reason the plate remains on the saddle, no harm results for it will be retarded by the frictional engagement of its buttons with any active truing stirrups, so that it can never pass back under the magazine.

The receptacle 100 may have an inclined partition 101 so that the discharged plates stand in an inclined position in the receptacle and may be readily grasped several at a time for transference to a suitable container. The inclined support 101 in the plate receptacle is in reality a spring member secured at its lower end and free at its upper end, and this acts as a shock absorber in receiving the discharged plates, insuring against injury by them to those already in the receptacle.

In order to obtain a steady action in discharging and truing the strips without reducing the speed of operation, we provide the cam drive for the slide in such manner as to give a quick return motion to the slide. This may be effected by making the cam groove 52 extend in the shoving or active direction for materially more than half the circumference of the drum, while the return is accomplished in the remaining portion. As shown the shoving stroke occupies about two-thirds of the rotation, and the return one-third; so that in this case the return is at twice the speed of the discharging movement. This is illustrated in Fig. 2 and also in the diagram of Fig. 17 which shows a development of the cam groove of Fig. 2.

It will be seen that our machine, though simple in construction, may by reason of the continuously applied rotary power, operate with rapidity and with sufficient force to remove any strips even though they are secured very tightly by their indentations to the address plate projections. The provision of means for automatic truing of each line of projections on the plate as the strip is removed insures the plate being in proper condition for the remounting of strips as soon as the plate has been cleared of the former strips.

We claim:—

1. In a machine for removing strips from address plates, the combination with one or more abutments, of a reciprocating slide adapted to carry the address plate and movable beneath the abutments in such manner that the abutments may engage strips on the address plate and retain them while the plate continues its movement, and means for driving the slide by a comparatively slow movement in the active direction, and a comparatively quick return movement.

2. In a machine of the character described,

the combination of a frame, a slide guided thereby adapted to carry an address plate, a driving drum having a diagonal groove forming a circuit about its periphery, the opposite longitudinal limits of the groove being disposed otherwise than diametrically opposite each other, whereby one reach of the groove is longer than the other, and means for causing the longer reach of the groove to act on the slide to move it comparatively slowly in the active direction, while the shorter reach acts on the slide to move it comparatively quickly in the return direction.

3. A machine for acting on address plates, the combination of a slide adapted to carry the address plate, means to cooperate with the address plate when the slide moves it, a rotary drum mounted in the base of the machine on an axis parallel with the slide, said drum having a groove making a circuit about it in an inclined path from near one end of the drum to near the other end, the slide having a roller occupying a groove of the drum, whereby the rotation of the drum reciprocates the slide to shove the plate in an active direction and then return, the cam groove being so arranged that the points thereof where it reverses the direction of rotation of the slide are materially closer to each other via one side of the drum than via the other, and a motor so connected to the drum that it may rotate it in a direction to cause the shorter reach of the groove to move past the roller in the idle direction of the movement of the slide, thus giving the slide a quick return.

4. In a machine of the character described, the combination with means for holding an address plate having raised overhanging lips, a device for truing said lips comprising flanges adapted to extend beneath them, which flanges are bevelled downwardly at their active ends, and means for causing relative movement between the address plate and flanges.

5. The combination with means for holding an address plate having raised projecting lips, a device having flanges adapted to extend beneath the lips, the entrance to the passageway between the flanges being flared by lateral bevelling of the flanges, and means for causing relative movement between the address plate and flanges.

6. In a machine for truing the lips on an address plate, the combination of means for carrying the address plate, a member having side walls adapted to stand on opposite sides of the lips and having flanges to extend beneath them, said flanges adjacent their active end having their inner faces bevelled outwardly, also having their top surfaces bevelled downwardly, and means for causing relative longitudinal movement between the address plate and flanges, whereby said bev-

els will pull inwardly laterally distorted lips and will pull upwardly downwardly distorted lips.

7. The combination, with means for carrying a trough shaped address plate having its intermediate portion arranged in an arc with upstanding overhanging lips, of a series of radial members corresponding to the arc, each member having a pair of depending parallel walls adapted to extend onto opposite sides of the plate lips, said walls having inwardly projecting flanges adapted to extend beneath said lips, and means to cause relative movement between the address plate and members whereby one moves relatively past the other, and the lips of the plate are engaged by said flanges.

8. The combination with means for carrying a trough shaped address plate having its intermediate portion arranged in an arc and carrying upstanding overhanging lips, of a series of radial plungers corresponding to the arc, each plunger having on its lower end a pair of depending parallel walls adapted to extend onto opposite sides of the plate lips, said walls having inwardly projecting flanges adapted to extend beneath said lips, said flanges having downward bevels at their entrance ends and means to cause relative movement between the address plate and plungers, whereby one moves relatively past the other, and the lips of the plate are engaged by said flanges.

9. In a machine for truing the lips of address plates, the combination of a rectilinearly reciprocable slide, a set of plungers each carrying a pair of guiding walls with inwardly extending flanges, means for holding said plungers stationary so that said flanges lie parallel with the direction of the movement of the slide, means for operating the slide to move the plate so that the lips pass between the bottom face of the plunger and said inwardly projecting flanges, said flanges having their upper surfaces bevelled downwardly at their entrance end.

10. In a machine for truing the lips of address plates, the combination of a rectilinearly reciprocable slide, a member carrying a pair of inwardly extending parallel flanges, means for holding said flanges stationary so that they lie parallel with the direction of the movement of the slide, means for operating the slide to move the address plate so that the lips pass along said inwardly projecting flanges, said flanges being bevelled outwardly on their inner sides at their entrance ends.

11. In a machine of the character described, the combination with means for carrying and moving an address plate having raised overhanging lips surmounted by removable flanged printing strips, of a series of L-shaped plungers, each plunger having on its L-shaped portion an overlying stirrup

having flanges spaced apart and projecting inwardly beneath the plunger, one end portion of said flanges having their top surfaces bevelled downwardly.

12. In a machine for removing strips from address plates, the combination with means to retard the strips, of a slide to move the address plate beneath said means whereby the plate is shoved out from under the strips, a receptacle to receive the stripped plates, and a leaf spring occupying the receiving receptacle, anchored at its lower end and extending diagonally upward within the receptacle and free at its upper end.

13. In a device of the character described, the combination of a reciprocating member adapted to move an arcuate plate carrying a plurality of printing strips and a set of radial members arranged in an arc and having their ends adapted to cooperate with the plate to engage the printing strips thereon as the reciprocating member moves the plate past said radial members.

14. In a device of the character described, the combination of a frame, a reciprocating member therein adapted to move a plate carrying a plurality of printing strips, and a set of individual members each mounted in its own guideway in the frame and each having its end adapted to engage a printing strip on the plate as the reciprocating member moves the plate past said individual members.

15. In a device of the character described, the combination of a reciprocating member adapted to move an arcuate plate having upstanding projections in its ends, a set of radial guideways arranged in an arc, members mounted individually in said guideways and having their ends adapted to cooperate with the plate to engage the projections thereof as the reciprocating member moves the plate past said radial members.

16. A machine for removing strips from address plates, comprising the combination of a member adapted to engage a strip, a member for holding the address plate, and means for reciprocating one of said members relative to the other by a comparatively slow stroke in the active direction and a comparatively quick return stroke.

17. In a machine for removing strips from address plates, the combination of a member adapted to hold an arcuate plate carrying a plurality of printing strips, a member holding a set of radial abutments arranged in an arc and having their ends adapted to abut the strips, and means for reciprocating one of said members relative to the other.

18. In a device of the character described, the combination of means adapted to support a plate carrying a plurality of printing strips, a set of individual members, each mounted in its own guideway and each adapted to engage a printing strip on the

plate, and means for causing relative movement between the plate-support and the set of individual members.

19. In a machine of the character described, the combination of a member adapted to hold an arcuate plate carrying parallel rows of upstanding projections, a member holding a set of radial members arranged in an arc and having their end portions adapted to engage said projections to true them, and means for reciprocating one of said members relative to the other.

In witness whereof, we hereunto affix our signatures.

JOHN A. HULT.

PETER M. COLQUHOUN.