April 4, 1944. H. P. ELLIOTT 2,345,965

MACHINE FOR AND METHOD OF APPLYING INDICATING TABS TO ADDRESS-PRINTING DEVICES

Filed Aug. 3, 1940 5 Sheets-Sheet 1

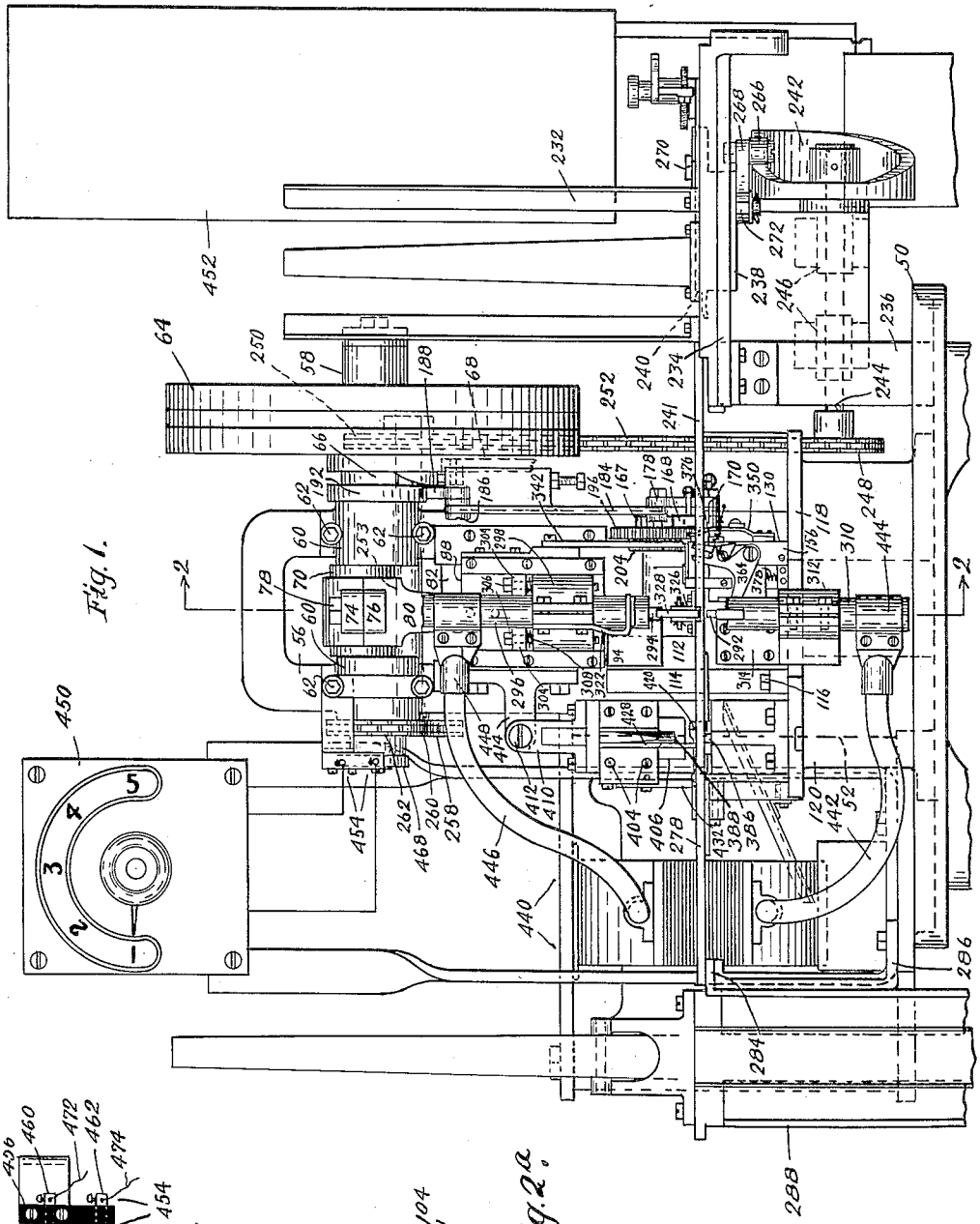


Fig. 1.

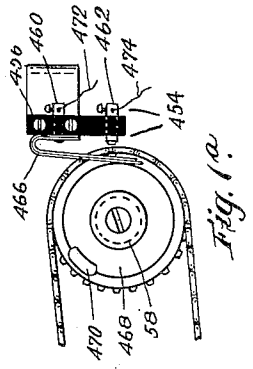


Fig. 1a.

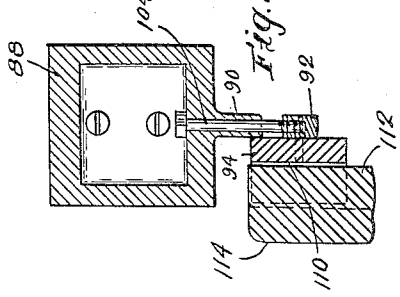


Fig. 2a.

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MACHINE FOR AND METHOD OF APPLYING INDICATING TABS TO ADDRESS-PRINTING DEVICES

Filed Aug. 3, 1940 5 Sheets-Sheet 2

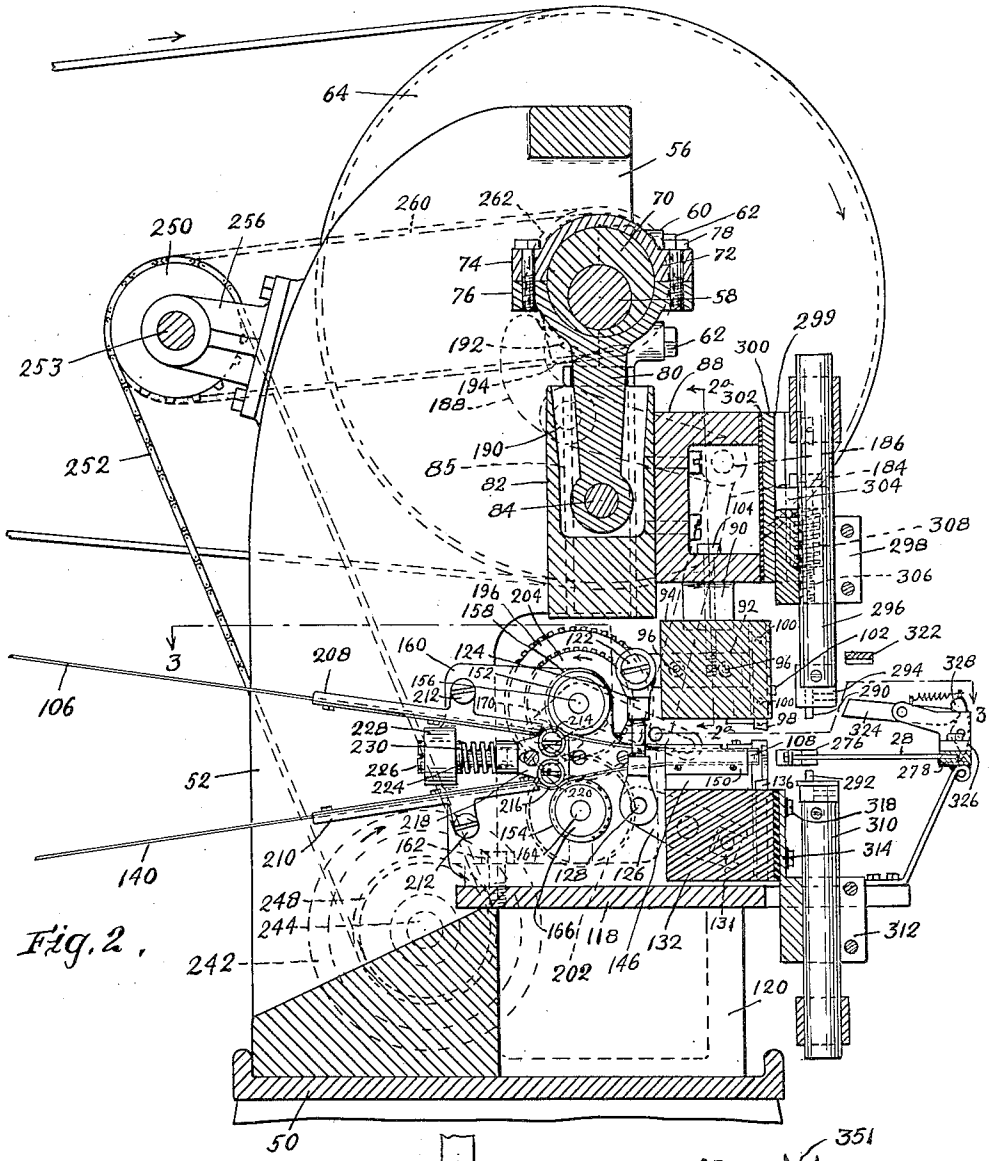


Fig. 2.

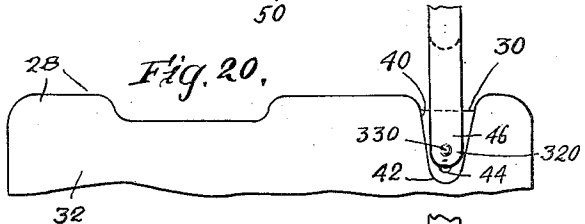


Fig. 20.

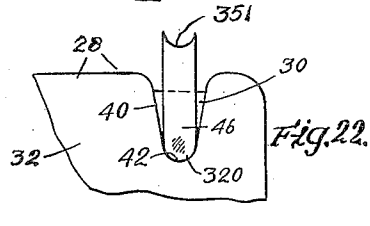


Fig. 22.

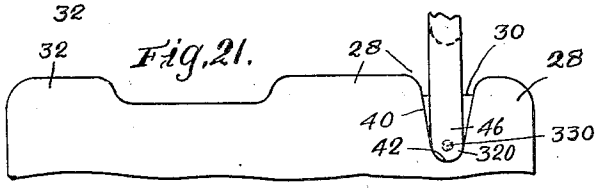


Fig. 21.

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MACHINE FOR AND METHOD OF APPLYING INDICATING TABS TO ADDRESS-PRINTING DEVICES

Filed Aug. 3, 1940 5 Sheets-Sheet 3

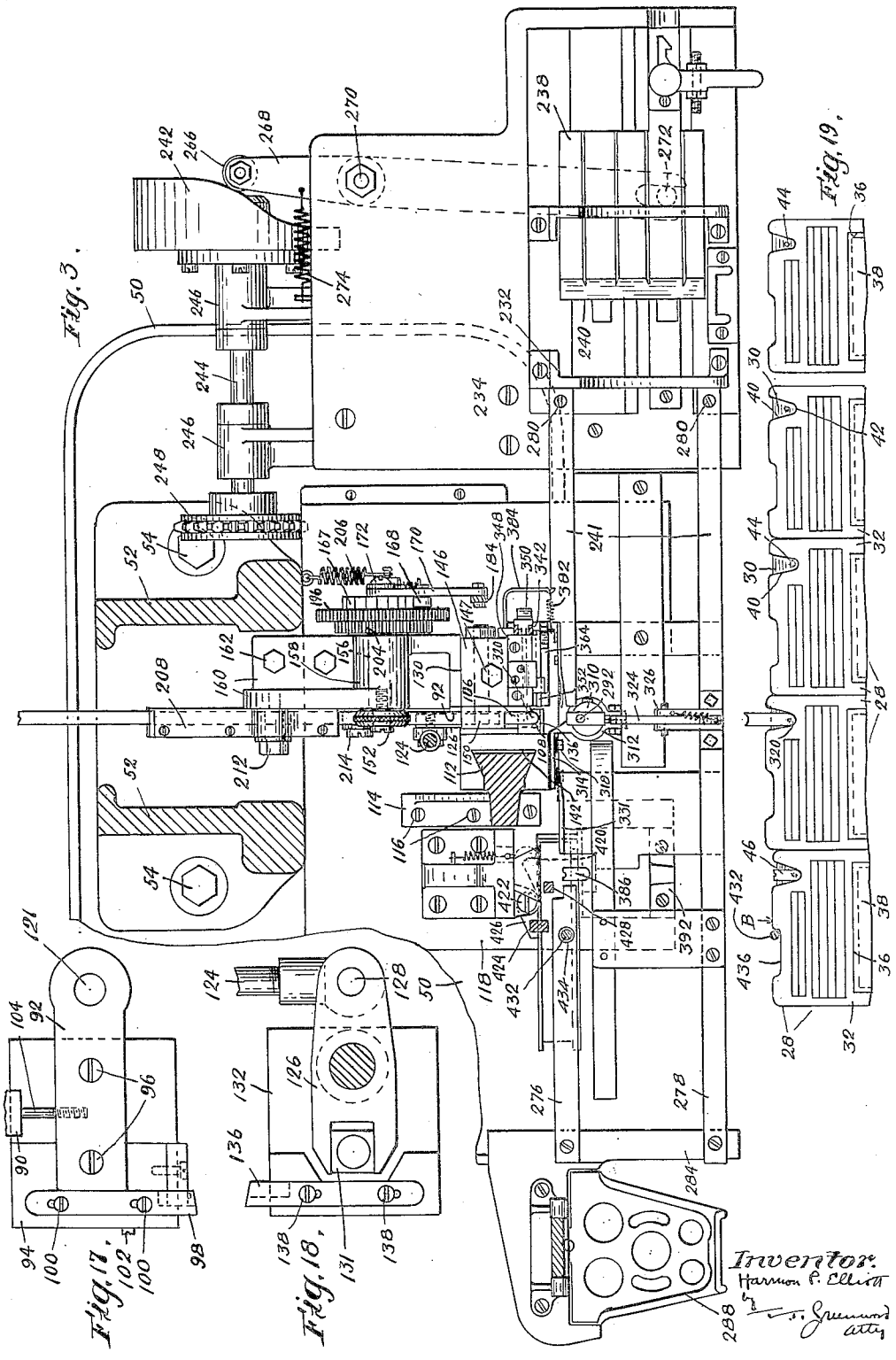


Fig. 3.

Fig. 17.

Fig. 18.

Fig. 19.

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MACHINE FOR AND METHOD OF APPLYING INDICATING TABS TO ADDRESS-PRINTING DEVICES

Filed Aug. 3, 1940 5 Sheets-Sheet 4

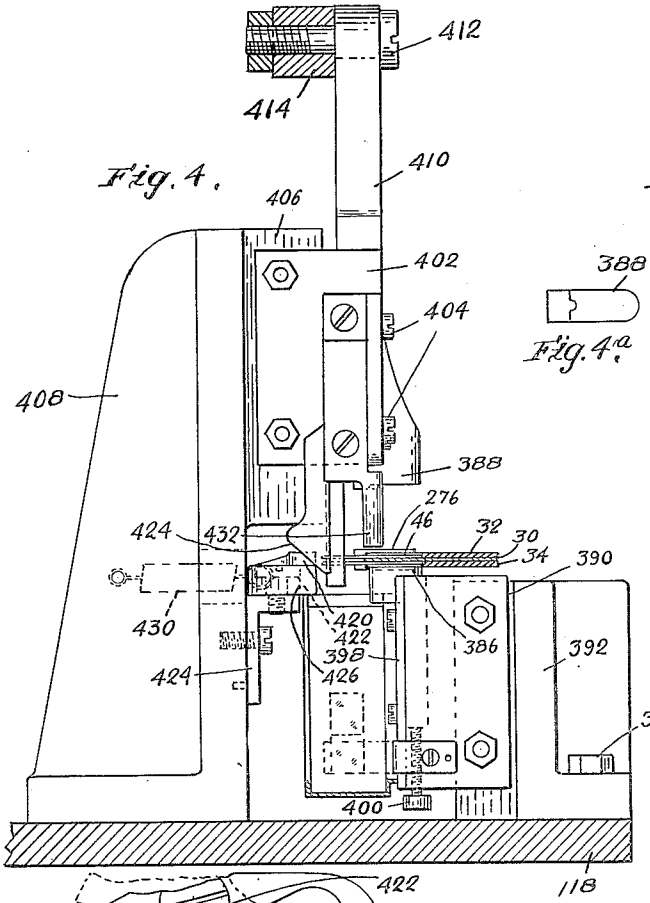


Fig. 4.

Fig. 4a.

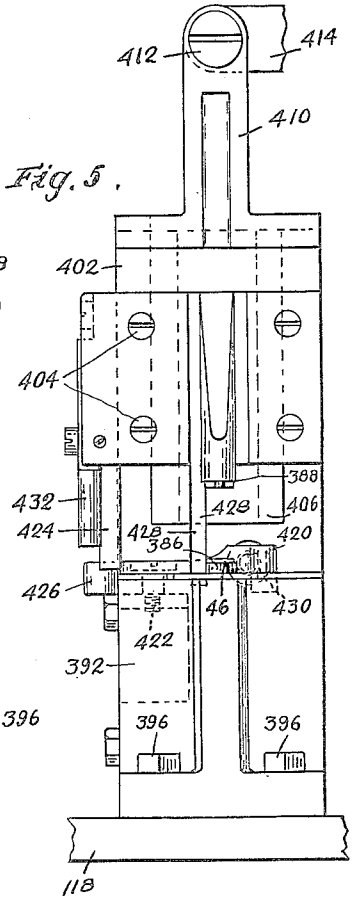


Fig. 5.

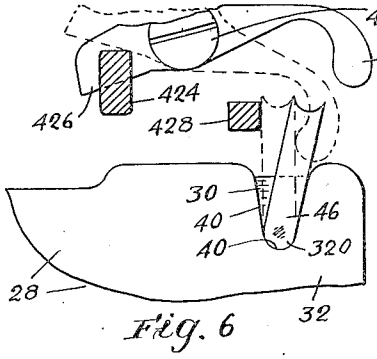


Fig. 6

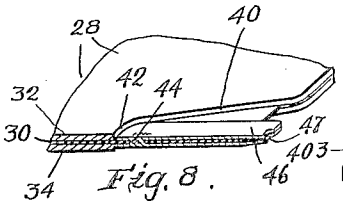


Fig. 8.

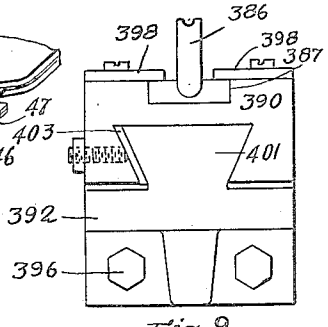


Fig. 9.

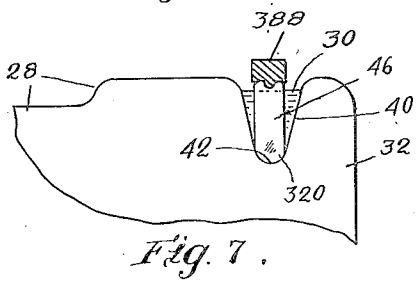


Fig. 7.

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MACHINE FOR AND METHOD OF APPLYING INDICATING TABS TO ADDRESS-PRINTING DEVICES

Filed Aug. 3, 1940 5 Sheets-Sheet 5

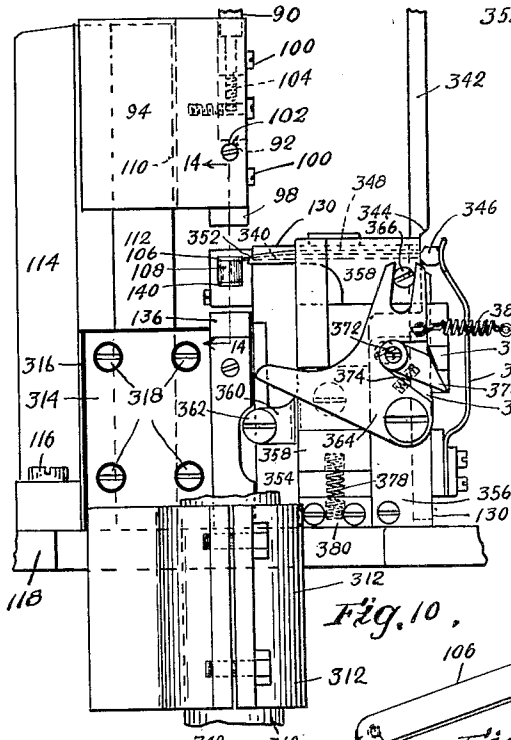


Fig. 10.

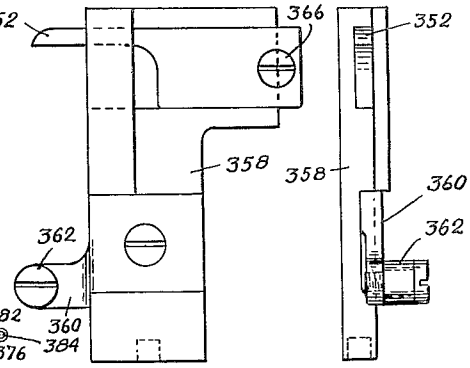


Fig. 11. Fig. 12.

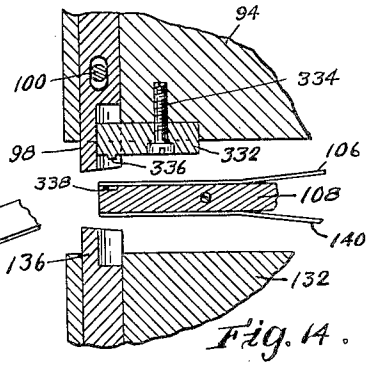


Fig. 14.

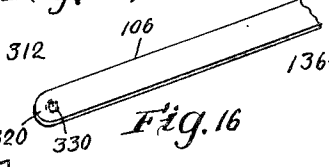


Fig. 16

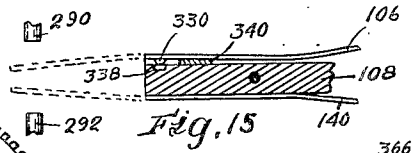


Fig. 15

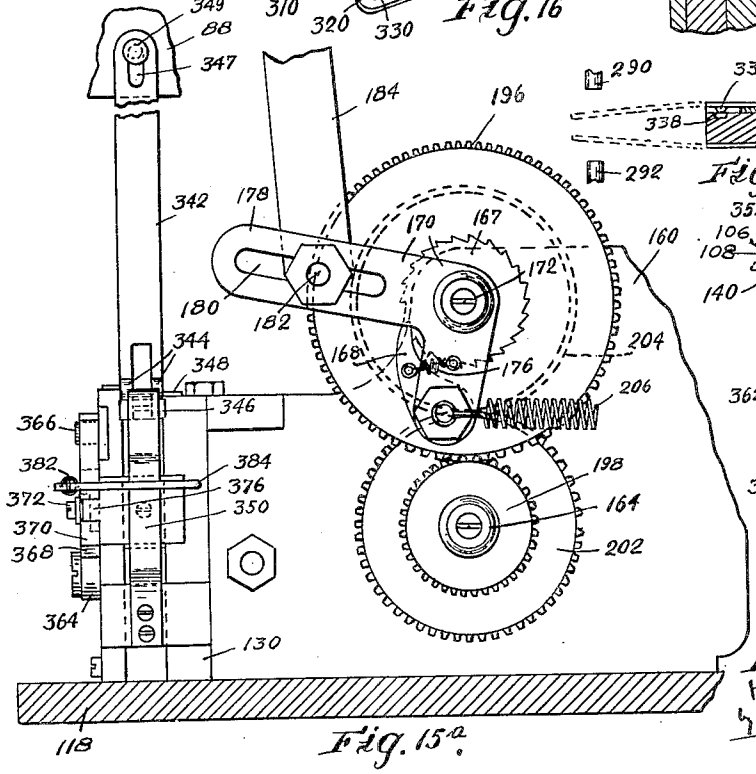


Fig. 15a.

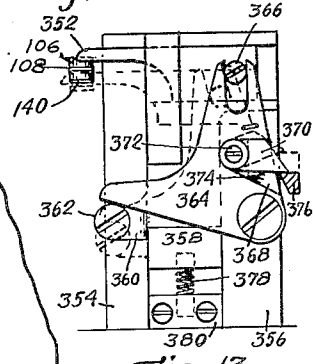


Fig. 13.

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Patented Apr. 4, 1944 2,345,965

UNITED STATES PATENT OFFICE

2,345,965

MACHINE FOR AND METHOD OF APPLYING INDICATING TABS TO ADDRESS-PRINTING DEVICES

Harmon P. Elliott, Watertown, Mass.

Application August 3, 1940, Serial No. 350,484

37 Claims. (Cl. 29—33)

The present invention relates to machines for securing tabs to articles and, as illustrated herein, relates more particularly to a machine for applying swinging tabs to address-printing plates and especially to address-printing stencil frames.

Address-printing stencils are oftentimes provided with metal tabs which are pivotally connected to the stencil frame and are capable of being swung into different positions to indicate different meanings. For example, one position of the tab may indicate that the account represented by the address on the stencil has been paid and the other position may indicate that the account has not been paid. These tabs, which are formed of metal, cooperate in one position with circuit terminals of a stencil selecting mechanism of an addressing machine with the result that a printing operation will be performed on a stencil and in another position cause the stencil to be passed through the printing position without a printing operation being performed thereon.

Heretofore, the metal tabs have been formed from a single length of metal which is folded upon itself to form a U-shaped member, one of the end portions of the tab being located substantially under the other end portion of the tab and substantially in engagement therewith due to the inherent resiliency of the metal strips from which the tab is made. The tab, at one end thereof, is provided with an opening for receiving a detent formed in the other underlying end portion, the detent passing through an opening in a stencil in such a manner that the opening in the tab and the detent cooperate with each other to hold the tab releasably and hingedly in position on the stencil. This construction permits the tab to be swung from one position to the other on the stencil to indicate different meanings, as above set forth.

Tabs constructed in the manner described above, under ordinary conditions, remain in position on the stencil and are effective to close the controlling circuit of an addressing machine. Under some conditions, however, particularly where the stencils are subjected to careless use, the metal tabs may become detached from their stencils or become loose so that they will not remain in the desired position. When this occurs, it is apparent that the proper stencils may not be selected for printing therefrom or impressions may be printed from stencils which it was desired to pass through printing position without printing therefrom.

An object of the invention is to provide a method and a machine for forming and applying such tabs to address-printing, and particularly, stencil frames. As illustrated, the present machine is provided with means for feeding successive stencil frames from a holder into a position where the tabs may be secured in proper position relatively to the stencil frames. The illustrated machine is provided with means for feeding metal tab strips, means for welding the ends of the tab strips together and means for severing the tabs from separate metal tab-forming strips.

A still further object of the invention is to provide an improved method of applying tabs to stencil or printing frames. In accordance with this object, a feature of the invention resides in a method of applying tabs to printing frames which includes the step of permanently connecting together the superposed portions of a tab through an opening formed in the printing frame.

A still further object of the invention is generally to improve the construction of address-printing devices and indicating tabs therefor and to improve upon machines and methods of making such devices and tabs.

Although the present invention has been illustrated with particular reference to a machine for applying swinging metal tabs to address stencil frames, it is apparent that the present invention is not limited thereto since the invention could be used in connection with other types of address printing devices.

With the above and other objects and features in view, the invention will now be described with reference to the accompanying drawings in which—

Fig. 1 is a view in front elevation of a machine illustrating a preferred embodiment of the invention;

Fig. 1*a* is a detail view of a switch for controlling the operation of the welding mechanism;

Fig. 2 is a view in section taken along the line 2—2 of Fig. 1;

Fig. 2*a* is a detail view in cross section taken along the line 2*a*—2*a* of Fig. 2;

Fig. 3 is a plan view of the machine, partly in section, taken along the line 3—3 of Fig. 2;

Fig. 4 is a view on a somewhat enlarged scale in side elevation of mechanism for cutting surplus metal from the metal tab after it has been secured in position on a stencil frame;

Fig. 4*a* is a bottom plan view of the movable tab trimming die;

Fig. 5 is a view in front elevation of the mechanism illustrated in Fig. 4;

Fig. 6 is a plan detail, partly in section, illustrating the operation of mechanism for moving a tab into position substantially at right angles with the edge of a stencil frame prior to trimming the end of the tab;

Fig. 7 is a view similar to Fig. 6 but illustrating the positions of the parts after the end of the tab has been trimmed;

Fig. 8 is a view on an enlarged scale, in section, showing the construction of an address stencil frame taken along a line extending longitudinally of the tab;

Fig. 9 is a plan view of the tab cutting mechanism illustrated in Figs. 4 and 5;

Fig. 10 is a view in front elevation illustrating the mechanism for severing the tabs from the tab strips;

Fig. 11 is a view in front elevation of a slide member associated with the metal severing mechanism for moving the severed ends of the tabs downwardly below a stationary cutter to prevent interference of the tab ends with said cutter during feeding operation of the stencil after the tabs have been attached thereto;

Fig. 12 is a view in side elevation of the mechanism shown in Fig. 11;

Fig. 13 is a view in front elevation illustrating the mechanism for operating the parts shown in Figs. 11 and 12;

Fig. 14 is a view in cross-section taken along the line 14—14 of Fig. 10;

Fig. 15 is a view in section similar to Fig. 14 but illustrating the position of the welding electrodes relatively to the stationary cutting anvil member;

Fig. 15*a* is a view on a somewhat enlarged scale in end elevation of the ratchet mechanism for operating the tab-strip feed rolls of the present machine;

Fig. 16 is a view on an enlarged scale of a tab strip showing the end of the upper tab strip after the tab severing operation;

Fig. 17 is a view in side elevation, on a somewhat enlarged scale, of the upper strip-cutting member;

Fig. 18 is a view similar to Fig. 17 illustrating the construction of the lower strip-cutting member;

Fig. 19 is a plan view illustrating the relative position of the stencil cards or frames during operation of the machine;

Fig. 20 is a plan view of a portion of the stencil illustrating a step in the positioning of the tab forming members in the tab notch of the stencil;

Fig. 21 is a view similar to Fig. 20 but showing the tab parts and the card in their proper positions prior to affixing the tab to the card; and

Fig. 22 is a view similar to Figs. 20 and 21 showing the tab affixed to the card and severed from the strips from which it is formed.

The present invention is illustrated as embodied in an address stencil frame 28 which is substantially rectangular in shape and is composed of three superimposed paper sheets or laminations, and having a thin middle sheet 30, commonly termed a welt sheet, combined between two thicker outer or facing paper sheets 32 and 34 (Fig. 8). The outer sheets 32 and 34 are formed with aligned rectangular openings or windows 36 therein, Fig. 19. The welt sheet 30 extends into the space between the aligned windows 36 and is itself provided with a window. A stencil sheet 38, adapted to bear the address-printing characters, is located within one of the windows 36 and overlies the window of the welt sheet, and is suitably fixed to the edges of the welt sheet. As shown in Figs. 6, 7, 8, and 19, for example, the thicker facing sheets 32 and 34 are provided with aligned notches 40 which extend inwardly from the top edge of the frame and pass completely through the facing sheets, thereby exposing a portion of the welt sheet 30. The two notches 40 in the outer of the facing sheets 32, 34 are in superposed alignment and are generally triangularly shaped with the inner end of the notches having a rounded portion 42. The exposed portion of the welt sheet 30 is provided, adjacent to the rounded portion 42, with a perforation or hole 44 (Fig. 19) through which a tab 46 is adapted to be secured. The tab 46 is thus rotatably or hingedly secured to the welt sheet and may be swung from one side to the other of the notch 40 to denote different meanings.

As shown most clearly in Fig. 8, the tab 46 is formed of two relatively thin flat pieces of springy metal, preferably steel, and these pieces of metal are substantially thinner than the cover or facing sheets 32, 34 so that the tab 46 does not extend above the outer surfaces of the sheets and thus the tab 46 does not interfere in any way with the feeding of the stencil frames laterally from a vertical stack of such superimposed frames. The outer or free ends of the tabs 46, as shown most clearly, for example, in Fig. 7, terminate short of the outer edge of the stencil so that the tabs do not project beyond the confines of the notch 40. During the tab forming operation, the upper metal strip is provided with an upset portion or projection extended from a face thereof and into the hole 44 in the welt sheet 30 and this upset projection is long enough so that it contacts with the lower tab strip. These contacting portions of the tab 46 are welded together as will later be described in detail. The outer ends of the tab strips are free from attachment with each other and are provided with aligned finger-engaging notches 47, Fig. 8.

The illustrated machine for forming and applying the metal tabs 46 comprises a horizontal machine bed 50, Figs. 1, 2, and 3, on the upper surface of which is mounted a vertically extending U-shaped frame member 52 which is secured to the bed 50 by bolts 54, Fig. 3. As shown most clearly in Fig. 2, the U-shaped frame 52 is provided at its upper end portions with forwardly extending portions 56 in which the power shaft 58 of the machine is mounted. The upper end portions of the forwardly extending portions 56 are cut away to form bearing surfaces for the shaft 58 and cooperating bearing members 60 are secured to the portions 56 by suitable machine screws 62. The right hand end of the shaft 58 has loose thereon a pulley or flywheel 64 which is driven from any suitable source of power (not shown) and which is operatively connected to the shaft 58 by a one-revolution clutch 66 of a type well-known in the art. The clutch 66 is connected by a downwardly extending substantially vertical link 68 to a foot treadle (not shown) for initiating the operation of the machine. As is well known with this type of clutch, a momentary depression of the foot treadle causes the flywheel to rotate the shaft one complete revolution and then to be disengaged from the shaft until the treadle is again depressed.

The shaft 58 intermediate the bearing members 60 has fixed thereto an eccentric 70. As

shown most clearly in Fig. 2, an eccentric strap 72 surrounds the eccentric 70 and is formed of a cap part 74 and a connecting rod part 76 secured together by suitable machine screws 78. The eccentric strap part 76 has formed integrally therewith a connecting rod 80 which is pivotally secured to the inside of a hollow slide member or block 82 by a pin 84. The slide block 82 is arranged to be reciprocated by the eccentric 70 in suitable dovetail ways 85, Fig. 2, formed in the inner surfaces of the forwardly projecting portions 56 of the vertical U-shaped bracket 52. As shown in Fig. 2, the reciprocating block 82 has fixed to its forward vertical face a hollow block or bracket 88. This hollow bracket member is arranged to carry the upper tab strip severing mechanism and the upper electrode of the welding apparatus as will be explained hereinafter.

The lower portion of the bracket 88 is provided, aa about its middle lower portion, with a downwardly extending rib 90, Figs. 2, 2a, 10, and 17, which is arranged to engage a flat bar 92 fixed in a recess formed in the right hand end of a vertically movable block 94 by suitable screws 96. The block 94 carries a tab strip severing cutter 98 which is adjustably secured in a slot in the right hand end of the block 94 by suitable machine screws 100. In order to insure that the severing member or cutter will be maintained in its adjusted position, the forward face of the block 94 is provided with a threaded opening through which passes a locking screw 102 for engaging the forward surface of the severing member 98.

The block 94 is supported by a screw 104 which is threaded into the upper surface of the bar 92 and extends upwardly loosely through an opening formed in the rib 90 and through the lower portion of the bracket 88. Thus, when the block 88 is moved downwardly by the connections to the eccentric 70, the block 94 is permitted to drop downwardly until it engages the upper surface of a tab strip 106 which overlies the top surface of a stationary cutter member or anvil 108, see also Figs. 14 and 15. As the member 88 continues its downward movement, the lower surface of the rib 90 engages the upper surface of the bar 92 thus forcing the block 94 downwardly and causing the cutter member 98 to cooperate with the stationary cutter member 108 to sever the top tab from the strip 106.

The upper cutter carrying block 94 at its left hand end portion is provided with a dovetail groove 110, corresponding with the dovetail groove 142 of block 132, shown in Fig. 3, into which fits a dovetail member 112 formed as a patr of a vertically upstanding bracket member 114, which is fixed by machine screws 116 to a base 118 supported above the machine bed 50 by suitable brackets 120.

The bar 92 in the upper cutter carrying block 94 is provided at its rear end with a hole 121 for receiving a pivot screw 122 by which the upper end of a link 124 is pivotally secured to the bar 92. The lower end of the link 124 is pivoted to the rear end of an approximately horizontally extending lever 126 by a pin 128. The lever 126 is pivoted to a supporting block or bracket 130, Fig. 3, secured by suitable fastenings to the sub-base 118. The forward end of the lever 126 is forked to receive a block 131, Figs. 2 and 18, which is pivoted to the right hand surface of a lower cutter-carrying block 132.

The block 132 has a groove at the forward end portion of its right hand surface to receive a lower cutter member 136 which is adjustably secured in position by set screws 138 extending through slots in the cutter member 136 and threaded into the block 132. Thus when the block 88 is moved downwardly, the block 132 is moved upwardly because of motion transmitted thereto by the arm 92 through the link 124 and the lever 126. The upper end of the cutting member 136 cooperates with the lower surface of the stationary cutter member or anvil 108 to sever the lower tab strip 140 which underlies the under surface of the stationary cutter member 108. The block 132 at its left hand end portion is provided with a dovetail groove 142 which slides on the dovetail member 112 formed on the bracket 114.

The stationary cutter member 108 is rigidly secured to the left hand side of a supporting block 146 which is secured to the sub-base 118 by a cap screw 147. The stationary cutter 108 has secured thereto a cover plate 150 which is bent over the top and around the side and bottom of the cutter member 108 and is spaced above the top surface and below the bottom surface thereof to provide guideways for the upper and lower tab strips which are fed to the stationary cutter member 108 by feeding mechanism.

Said feeding mechanism includes upper and lower feed rolls 152 and 154 respectively, Figs. 2 and 3. The upper feed roll 152 is mounted on a horizontal shaft 156 which is journalled in a bearing 158 formed in the forward end of a bracket 160, see also Fig. 15a, secured to the sub-base 118 by screws 162. The feed roll 154 is fixed to a shaft 164 which is journalled in a bearing 166 formed as a part of the lower front portion of the bracket member 160.

The right hand end of the shaft 156 has rotatably mounted thereon a ratchet wheel 167 which is rotated step by step by a pawl 168 pivotally fixed to a pawl carrying arm 170 which is rotatably mounted on the right hand end of the shaft 156 and is held against displacement on the shaft 156 by a cap screw 172. As best shown in Fig. 15a, the pawl 168 is normally held in engagement with the teeth of the ratchet wheel 167 by a spiral spring 176 which is fixed at one end to the pawl 168 and at its other end to the pawl carrying arm 170. The pawl carrying arm 170 is provided with a substantially horizontal forwardly extending arm 178 having a longitudinal slot 180 therein which is arranged to receive a bolt 182 for pivotally connecting the arm 178 to a substantially vertical link 184. The bolt may be fixed in adjusted position in the slot 180 to vary the length of feed of the feed rolls, as will later become apparent.

The upper end of said vertical link 184 is pivotally connected by a pin 186, Fig. 2, to the forward end of the forwardly extending arm of a bell crank lever 188 which is pivotally secured to the right hand surface of the right hand vertical portion of the bracket 52 by a cap screw 190. The other arm of the bell crank lever 188 is arranged to engage a cam member 192 fixed to the power shaft 58 of the machine adjacent to the right hand bearing 60. The cam member 192 has a raised portion 194 thereon which engages the end of the bell crank lever 188 and causes the bell crank lever to rotate in a counter clockwise direction, as viewed in Fig. 2, which, consequently, imparts a clockwise movement to the pawl carrying arm 170 which in turn rotates

the ratchet wheel 167 in a counterclockwise direction, as viewed in Fig. 2, and in a clockwise direction as viewed in Fig. 14.

The ratchet wheel 167 has secured thereto a spur gear 196 which meshes with a small spur gear 198 fixed to the shaft 164 carrying the lower feeding wheel 154. The shaft 164 also has fixed thereto a second spur gear 202 which meshes with a spur gear 204 of the same size fixed to the shaft 156 which carries the feed roll 152. Thus movement of the ratchet wheel in a clockwise direction, as viewed in Fig. 15a, imparts rotary movement to the feed roll 154 through the spur gears 196 and 198 and to the feed roll 152 through the spur gears 202, 204. This construction is designed to impart a relatively great feeding movement to the feed rolls upon a relatively small movement of the bell crank lever 188. After the feeding movement has been completed, the pawl arm 170 is returned to its original position by a spring 206 fixed at one end to the lower end of the bell crank lever 170 and at its other end to the right hand upwardly extending portion of the bracket 52.

Upper and lower strip-guide members 208 and 210 having guideways which are of substantially the shape and size of the tab strips 106, 140 are secured to the bracket 160 by screws 212. The forward ends of the guides 208 and 210 terminate just rearwardly of the feed rolls 152 and 154. The tab strips 106 and 140 are normally held against the feed rolls 152 and 154 by idler rolls 214 and 216 which are rotatably mounted in a plate 218 which is provided with a substantially horizontal slot arranged to receive a cap screw 220 which is threaded into the bracket 160. By this construction, the idler rolls 244 and 216 can be moved horizontally toward and away from the feed rolls 152 and 154.

The plate 218 at its rear end is provided with a rearwardly extending and substantially horizontal shaft or rod 224 which is slidable in a hollow screw 226 threaded into a hole formed in a boss 228 formed on the left hand rear surface of the bracket 160. A compression spring 230 is interposed between the end of the hollow screw 226 and a cap formed on the forward end of the rod 224 which operates to urge the plate 218 and the idler rolls 214 and 216 thereon into engagement with their respective tab strips 106, 140, thus holding the strip firmly against their respective feed rolls 152, 154. It is to be noted that the respective strips 106 and 140 are curved away from each other as they pass between their respective idler rolls and feed rolls which imparts a permanent set to the tab strips 106 and 140 and, when the strips have been secured in position on their respective stencil frames, this permanent set will cause the outer or free ends of the strips to remain closely adjacent to or in contact with each other without the necessity of securing these ends together.

The present machine is provided with mechanism for feeding the stencil frames 26 to the tab affixing mechanism. This mechanism, Figs. 1 and 3, includes a suitable vertical holder 232 located at the right hand end of the machine and fixed to a suitable base plate 234 which is mounted on and spaced above the bed 50 of the machine by a forwardly and rearwardly extending bracket member 236. The holder 232 is provided with a pusher member 238 which is slidably mounted in the plate 234 below the bottom of the holder 232. The pusher member 238, at its forward end portion, is provided with a shoulder 240 which is arranged to engage the right hand edge of the lowermost stencil frame 26 in the holder 232 and, upon movement toward the left, is arranged to remove the lowermost stencil from the stack of stencils in the holder 232 and to feed the stencil into a guideway 241 fixed to the forward end of the frame.

The pusher member 238 is arranged to be reciprocated by an edge cam 242 mounted at the right hand end of a horizontal shaft 244 which is journalled in suitable bearings 246 formed as rearward extensions of the bracket member 236. The left hand end of the shaft 244 has secured thereto a sprocket wheel 248 which is driven from a sprocket 250 by an endless sprocket chain 252. The sprocket wheel 250, see also Fig. 2, is fixed to the right hand end of a horizontal shaft 253 journalled in bearings formed in rearwardly extending bracket members 256 fixed to the rear surfaces of the upstanding portions of the bracket member 52. The left hand end of the shaft 253 has fixed thereto a sprocket wheel 258 which is driven by an endless sprocket chain 260 from a sprocket wheel 262 fixed to the left hand end part of the shaft 58 of the machine.

The cam member 242 is engaged by a cam roll 266 which is rotatably mounted on the rear end of a cam lever 268 which is pivotally secured by a bolt 270 to the lower surface of the sub-base 236. The forward end of the cam lever 268 is slotted to receive a pin 272 fixed to and projecting downwardly from the lower surface of the pusher member 238. The cam roll 266 is normally held in contact with the cam member 242 by a spiral tension spring 274 which is fixed at one end to the cam lever 268 and at its other end to the right hand bearing 246 of bracket 236. Thus the pusher member 238 is reciprocated once during each rotation of the power shaft 58 to feed a stencil 26 from the lower portion of the holder 232.

The guideway 241 comprises a pair of guide rails or tracks 276, 278 having confronting grooves to receive the front and rear edges of the stencil frames to guide them into operating position. The right hand ends of the guide rails 276 and 278 are fixed adjacent to and in alignment with the lower end of the holder 232 by screws 280. The extreme left hand end of the rails 276, 278 are fixed to a forwardly extending bracket member 284 which is supported above the machine bed 50 by brackets 286. The bracket 284 also supports a receiving holder or hopper 288 of usual construction. The stencil feeding mechanism above described is of the type commonly used in addressing machines and need not be described in further detail herein.

As shown most clearly in Fig. 3, the tab severing mechanism hereinbefore described is located two stencil-feeding steps from the left hand end of the holder 232. Thus, three stencils must be fed from the bottom of the holder 232 before a stencil is brought into position to have a tab affixed thereto.

The tab securing mechanism includes a pair of upper and lower welding electrodes 290, 292. The upper electrode 290 projects downwardly from the lower surface of a block 294 which is secured to the lower end of a vertically extending rod or holder 296. The rod 296 has fixed thereto a slide member 298 which is clamped to the rod 296 and is provided at its rear portion with ways which fits into dovetail slots 299 formed in a block 300. The block 300 is fixed by suitable machine screws to the hollow block 88 and is in-

sulated therefrom by means including an electrical insulating strip 302. The machine screws for securing the block 300 to the hollow block 88 are also suitably insulated from said block 300 so that there is no electrical connection between the block 300 and the hollow block 88.

The block 300 is provided with a pair of substantially horizontal forwardly extending bosses 304 which are provided with holes to receive bolts 306 which extend downwardly through the bosses 304 and are threaded into the clamping member 298. Compression springs 308 are located on said bolts between the lower surface of the bosses 304 and openings formed in the clamping member 298. With this construction, the slide 82 with the block 98 fixed thereto and the electrode holder 296 move downwardly as a unit until the lower end of the electrode 290 strikes the metal tab. The spring connection between the clamping member 298 and the member or block 300 then yields upon further downward movement of the block 88 to permit the operation of the strip severing mechanism.

The lower electrode 292 is fixed to the upper end of a rod or holder 310 which is received in a clamping member 312 provided with a substantially vertical upstanding portion 314 by which the clamping member 312 is secured to the lower cutter carrying block 132. The clamping member 312 is electrically insulated from the lower cutter carrying block 132 by a strip of insulating material. The machine screws 316 hold the clamping member 312 fast to the block 132 and are also insulated to prevent electrical connection between the clamping member 312 and the block 132.

When the machine is put into operation, the upper cutter carrying member 94 and the lower cutter carrying block 132 are moved toward each other and cooperate with the cutting surface of the stationary cutter member 108 to sever two tabs from the ends of each of the tab strips 106, 140. During this cutting operation, the electrodes 290, 292 also move toward each other and, shortly before the strip severing operation takes place, the electrodes 290, 292 are in contact with the leading ends of the tab strips 106 and 140 and thus firmly hold the tab strips against displacement during the severing operation and at the same time weld the contacting portions of the two tab strips together.

The upper electrode 290 bears against the upper surface of the end portion of the upper tab strip 106 and the projection 330, which is slightly longer than the thickness of the welt sheet 30, passes through the opening 44 in the welt sheet and is pressed into contact with the lower tab strip 140. The electrodes 290, 292 are then energized and the tab strips welded together through the projection 330. It is to be noted that the welding operation is very fast and is controlled by timing mechanism which will hereinafter be referred to in describing the electrical connections to the welding electrodes. The pressure applied to the projection 330 and the fusing of the metal during the welding operation shorten the projection slightly so that the end portions of the tab strips are in close engagement with opposite surfaces of the welt sheet 30.

As shown most clearly in Figs. 20, 21, and 22, the tab strips are so severed that they are provided with rounded end portions 320 which fit into the rounded end portion of the notches 40 of the stencil frames.

In order to insure that the rounded end of the tab strip 320 will be brought into engagement with the rounded end portions of the notches 40, mechanism is provided for moving the stencil rearwardly from the position shown in Fig. 20 to the position shown in Fig. 21. This operation takes place just prior to the tab severing and affixing operations. As the cutter members and the electrodes move toward each other, as just described above, a member 322, Figs. 1, 2, and 3 fixed to the upper clamping member 298 engages the rear end portion of a substantially horizontal lever 324 which is pivoted in a bracket 326 fixed to the forward stencil guide rail 278. The forward end of the lever 324 engages the upper end of a generally vertical lever 328 which is also pivoted in the bracket 326. The lower end of the lever 328 is provided with a portion which engages the forward edge of the stencil 28 in tab affixing position and pushes the stencil rearwardly from the position shown in Fig. 20 to the position shown in Fig. 21, thus bringing the stencil frame into its proper position relatively to the tab strips and assuring that the projection 330 formed on the upper tab strip 106 is aligned with the hole or opening 44 formed in the welt sheet 30 and projects therethrough and into contact with the lower tab strip 140. A leaf spring on the rearmost track of guide 241 in the region of the tab affixing position may engage the rear edge of the stencil for steadying it.

The stencil is moved forwardly after the tab affixing operation, to align the stencil with the other stencils in the stencil guideway. To this end, there is provided a cam plate 331 (Fig. 3) fixed to the rear stencil guide track 241. The cam plate 331, at its right hand end portion, is beveled and is arranged to be engaged by the stencil as it is moved out of tab affixing position and cams the stencil forwardly and into alignment with the other stencils.

The downwardly extending portion 330 is formed during the severing operation. The upper cutter carrying block 94, as shown most clearly in Fig. 14, carries a block 332 which is fixed to the lower surface thereof by a suitable screw 334. The lower surface of the block 332 carries a downwardly extending projection 336 which is arranged to engage the upper surface of the tab strip 106 adjacent to the forward end thereof to force a portion of the tab strip 106 into a recess 338 formed in the stationary cutter member 108.

Since the forward end of the tab strip 106 has the downwardly extending projection 330 which fits into the recess 338 of the stationary cutter member 108, means must be provided to free the downwardly extending projection 338 from the recess. To this end a blade 340, Figs. 10, 15, is provided which is arranged to be inserted between the upper surface of the stationary cutter member 94 and the strip 106 to lift the projection 330 out of the recess 338. The blade 340 is reciprocated during movement of the movable cutter members to cutting position by a substantially vertical cam bar 342 which is secured to the side of the block 88 and extends downwardly and is provided with a cam surface 344 which is arranged to engage a projection 346 fixed to the right hand end of the blade member 340. As best shown in Fig. 15a, the upper end of the cam bar 342 is provided with a slot 347 into which fits a cap screw 349 threaded into the block 88 thus providing a lost motion connection between the block 88 and the link 342. The blade 340 is mounted for sliding movement

in the top of the supporting block 130 and is prevented from being displaced upwardly out of the slot in the block by a plate 348. The blade 340 is normally maintained in the position shown in Fig. 15 by a leaf spring 350 which is fixed to the right hand end of the block 130. After the feeding operation has begun, the blade 340 is moved toward the right by the cam member 344, at which time the downwardly extending projection 330 on the strip 106 has been fed forwardly beyond and out of the recess 336.

Referring now to Fig. 22, it will be noted that the rear end of the tab has a curved recessed portion 351 formed as a result of the tab severing operation. This curved portion 351, of course, is in engagement with the stationary cutter member 108 and, consequently, will interfere with the feeding of the stencils toward the left. To overcome this difficulty, means are provided for moving the tab ends with the curved recess 351 downwardly below the cutter member 106. As shown most clearly in Figs. 10 to 13, inclusive, the block 130 at its forward portion has mounted thereon a substantially horizontally extending finger 352 which is arranged to be moved horizontally above the tab members in front of the cutter member 108, after the tab severing and affixing operation has been completed. The finger 352 is also mounted for vertical sliding movement by means of ways 354, 356 fixed to the front surface of the block 130. The finger 352 is mounted for horizontal movement in horizontal ways formed on the upper surface of a vertically reciprocable member 358 which is reciprocable in said vertical ways 354, 356 and which at its lower left hand portion carries thereon a projection 360 to the extreme left hand end portion of which is secured a roll 362. The right hand way 356 has pivotally secured thereto an operating member 364 having an arm extending toward the left which is arranged to engage the roll 362 to move the slide 358 downwardly. The upper end of the member 364 is provided with a forked end portion which surrounds a screw or pin 366 threaded into the right hand end of the sliding finger 352. The operating member 364 is provided with a recessed portion 368 which is arranged to receive a latch member 370 pivotally secured in the recess by a cap screw 372. The latch member 370 is normally urged upwardly by a spiral spring 374 mounted in recesses formed in the lower portion of the latch 370 and in the adjacent edge portion of the notch 368.

Movement of the sliding finger 352 and the slide 358 is provided by a member 376 carried on the lower end of the cam rod or bar 342. The member 376 is secured to the lower end of the cam bar 342 and, during downward movement of the cam bar, depresses the latch 370 and slides below the latch. During upward movement of the cam bar 342, the upper surface of the member 376 engages the lower portion of the latch 370 and rotates the member 364 in a counter clock-wise direction, as viewed in Fig. 10. During the first portion of this swinging movement, the finger 352 is moved toward the left to overlie the severed tab strips 106 and 140. Upon further continued clockwise movement, the member 364 engages the roll 362 causing the slide to move downwardly into the position shown in dotted lines in Fig. 13 to move the curved recessed end portion of the tab below the stationary cutting member 108 and thus leaves the tab free to be fed toward the left without interference on the part of the stationary cutting member 108. The slide 358 is returned upwardly to its original position by a spiral compression spring 378 which is mounted between the lower end of the slide 352 and a block 380 secured between the ways 354 and 356 and in front of the block 130. After the member 364 has reached the position shown on dotted lines in Fig. 13, the member 376 slides past the end of the latch 370 and continues its upward movement, the spring 378 then being free to return the slide 358 to its original or initial upper position. The operating member 364 is returned to its initial position, that is, the position shown in full lines in Figs. 10 through 13 by a spring 382 which is fixed at one end to the upper portion of the member 364 and at its other end to a forwardly extending arm 384 fixed to the right hand side of the bracket or block 130.

When the stencil having a tab fixed thereto is fed toward the left into the position shown at B in Fig. 19, the excess metal on the tab is severed by mechanism which will now be described. This tab end severing or trimming mechanism, Figs. 3 through 9, includes a stationary cutter 386 and a movable cuter member 388. The stationary cutter member 386 is adjustably secured in a vertical groove 387 formed in the rear end of a block 390 which is fixed to an upstanding bracket 392 secured to the bed 50 of the machine by suitable bolts 396. Said groove 387 is overlapped at its rear end by plates 398, Figs. 4 and 9, secured thereto by suitable machine screws. The cutter 386 is held in adjusted vertical position in the block 390 by an adjusting screw 400 which is threaded through a hole formed in the bottom of the block 390 and which engages the lower surface of the cutter member 386. Thus, by adjusting the screw 400, the top surface of the cutter member is maintained at a proper level relative to the rear stencil guide track 276. The block 390 has a vertical dovetail connection 401 with the bracket 392 by which the block is vertically adjustable, the adjustment being maintained by tightening the gib 403.

The upper trimming cutter 388 is fixed to the forward surface of a slide block 402 by suitable machine screws 404. The rear portion of the slide block 402 is provided with a dove tail groove for receiving a dove-tail way 406 formed on the front face of an upstanding bracket 408 which is fixed in any suitable manner to the subbase 118 of the machine. The slide 402 at its upper edge is provided with a substantially vertically extending portion 410 which is provided with an opening to receive a cap screw 412. The cap screw 412 also passes through an opening in the left hand end of a substantially horizontal extending boss 414 which is carried on the left hand side of the reciprocatory slide block 88. Thus when the block 88 moves downwardly during the tab strip severing operation, the trimming cutter member 388 will also be moved downwardly to sever the end of the tab.

In order to insure that the tab will be disposed substantially at right angles to the rear edge of the stencil frame when the stencil frame is in position to have a tab severing or trimming operation performed thereon, means are provided which will insure that the tab will be in proper position. As the stencil moves along its guide track the tabs tend to lag behind and may become tilted from vertical position as shown in full lines in Fig. 6, and must be moved to vertical position prior to a tab severing or trimming op-

eration thereon. As shown most clearly in Figs. 4 and 6, there is provided a finger 420 which is pivoted by a cap screw 422 to a bracket 424 fixed to the front surface of the bracket 408. The finger 420 is arranged to be rotated in a clockwise direction, as viewed in Fig. 6, by a cam member 424 which is secured to the left hand side portion of the sliding block 402. The lower portion of this cam member 424 is provided with a forwardly and downwardly inclined surface which engages the end 426 of the finger 420 during downward movement of the cutter member 388, thus moving the tab from substantially the full line position shown in Fig. 6 against a stop 428 which is also carried by the sliding block 402. During upward movement of the cutter 388, the finger 420 is moved in a counterclockwise direction from the dotted line position shown in Fig. 6 to the full line position by a spring 430 connected between the finger and the bracket 408.

It is important to insure that the stencil 28 will be stopped in the proper position for the tab trimming operation. To this end, the cutter member 388 carries a stop rod 432 which is arranged upon downward movement of the cutter 388 to enter an opening 434 formed in the rear stencil track 241 to engage a notch or shoulder 436 formed in the top edge of the stencil frame. Thus the stop rod 432 will permit the stencil to move only until the shoulder 436 engages the rod 432.

The cooperating cutters 386 and 388 shear off end parts of the tabs carried by the stencil, the waste parts dropping into a suitable receptacle below, and provide the ends of the tabs with the notch 47 and the rounded finger engaging projections on opposite sides of the notch as illustrated in Fig. 7, the ends of the tabs being inset within the line of the rear edge of the stencil. Due to the bending or setting of the tab strips by the rolls 152, 154 the welded-together tabs tend permanently to spring inwardly toward each other and thus maintain the free ends close together without the necessity for interconnecting the ends.

The electrodes 292 and 294 are supplied with electric current from a suitable transformer 440 secured by suitable bolts to the bed 50 of the machine. One terminal of the secondary winding of the transformer 440 is connected to the lower end of the rod 310 carrying the electrode 292 by a heavy flexible cable or wire 442 that is attached to a terminal 444 which is clamped to the rod or holder 310. The upper electrode carrying rod 296 is connected to the other terminal of the secondary winding of the transformer 440 by a heavy flexible cable or wire 446 which is provided with a terminal 448 clamped to the top of the rod 296.

The energization of the primary winding of the transformer is controlled by control apparatus of known construction contained in a suitable cabinet, the time of duration of secondary or welding current being variable at the will of the operator under control of the time-setting device 450 also of known construction.

The arrangement is such that, after initiation of energization of the transformer by mechanism operated by the machine, the energization continues for a predetermined time as set by the device 450 and the transformer is then de-energized independently of the machine control.

The flow of current to the primary winding of the transformer 440 is initiated by a switch device 454 which is illustrated in Fig. 1a. The switch 454 comprises an insulating strip 456 which is mounted in any suitable manner at the top left hand vertical portion of the U-shaped frame 52 by suitable fastenings. Strip 456 is shown in the detail showing of Fig. 1a. Terminals 460 and 462 mounted on the forward face of the strip 456 extend through openings formed therein and are held in position by suitable fastenings. The upper terminal member 460 has fixed thereto a movable switch arm 466 formed of suitable resilient electrical conducting material and the lower free end of the strip 466 is arranged intermittently to be brought into contact with the rearwardly extended end of the lower contact member 462 to complete an electric circuit. The opening and closing movements of the strip 466 are controlled by a cam 468 mounted in the extreme left hand end portion of the power shaft 58 of the machine. The cam member 468 is provided with a raised portion 470 which is arranged to engage the strip 466 at the time that the two electrodes 290 and 292 are brought into contact with the tab strips, thus initiating the transformer energization.

Although the invention has been described in detail, it may be well, for a clearer understanding of the invention, to review briefly the operation of the present machine. The machine is started by conditioning the clutch member 66 to operatively connect the drive pulley 64 with the drive shaft 58. After the machine has been set into operation, a stencil frame 28 is fed from the holder 232 and between the guide tracks 276, 278. After the third stencil 28 has been fed from the bottom of the stack 232, the first stencil is then in affixing position. The tab strip feed wheels 152 and 154 are then actuated by rotation of the cam member 192 on the shaft 58 to feed the front ends of the upper and lower tab strips 106 and 140 into the notch 40 formed in the stencil frame 28. After this feeding operation has been completed, the stencil is moved rearwardly from the position shown in Fig. 20 to the position shown in Fig. 21 by the positioning finger or lever 328. During this rearward feeding movement of the stencil frame 28, the cutting members 98 and 136 are moved toward each other into tab strip severing position and the electrodes 290 and 292 are being moved toward the ends of the tab strip 106, 140 lying in the notches 40 of the stencil frame 28. The switch member 454 is then closed by rotation of the cam 468 after the electrodes 290 and 292 have been brought into contact with the upper and lower tab strips 106, 140. After the welding operation, which is very fast, the movable cutter members 98, 136 sever the upper and lower tab strips leaving the attached tab in the condition shown in Fig. 22. After these operations have been completed the finger 352 is moved downwardly to move the ends of the tab strips below the stationary cutter element 108.

The parts are then returned to their initial positions and another stencil frame 28 is fed from the bottom of the holder 232. The stencil to which the tab has just been affixed is then brought into position below the tab trimming mechanism which removes the metal on the tab which projects beyond the edge of the stencil. After the stencil has been brought to a stop in the proper position by the stop rod 432, the lever 420 is swung in a clockwise direction to move the tab to the dotted line position shown in Fig. 6.

The cutter member 388 then moves downwardly to sever the end of the tab to the length shown in Fig. 7. After this trimming operation has been completed the tab trimming cutter 388 and the stop 432 are returned to their initial positions. During this trimming movement, however, a tab affixing and severing operation has been completed on the next successive stencil which is then moved into tab trimming position and the first mentioned stencil 28 is fed out of the tracks 276, 278 and into the receiving hopper or holder 288.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a machine for applying metal tabs to address stencils, the combination of means for advancing successive stencils into tab affixing position, means for advancing a pair of superposed metal tab strips to overlie opposite faces of a stencil in such position, means for affixing together the tab strips through the interposed stencil, and means for severing the attached tabs from the respective strips.

2. In a machine for applying metal tabs to address stencils, means for advancing successive stencils into tab affixing position, means for advancing a pair of superposed metal tab strips to overlie opposite faces of a stencil in the tab affixing position, the strips being inherently stressed to flex toward each other and against the stencil, and means for connecting together against independent rotation the tab strips through the interposed stencil.

3. In a machine for applying metal tabs to address stencils, means for advancing a pair of superposed metal tab strips to overlie opposite faces of a stencil and for inherently tensioning said tab strips in a direction to cause the superposed tab strips to flex toward each other, means for rigidly joining the ends of the tab strips through the intervening stencil, and means for severing the joined tabs from the respective strips.

4. In a machine for affixing metal tabs to address stencils, means for advancing successive stencils in a step by step manner into and out of a tab affixing position and thence into and out of a tab trimming position, means for advancing a pair of metal tab strips to overlie opposite faces of a stencil in tab affixing position, means for securing together through the intervening stencil the free ends of the superposed tab strips, means for severing the connected tabs from the strips, and means located at the tab trimming position operative on a stencil therein to trim the free ends of the tabs.

5. In a machine for affixing metal tabs to articles, means for feeding successive articles into tab affixing position, means for feeding successive metal tab strips into affixing position on opposite sides of the successive articles, and means for affixing the ends of the tab strips that are over the articles fixedly together and pivotally to the successive articles and means for severing the tabs from the tab strips after the tabs have been secured to the successive articles.

6. In a machine for affixing metal tabs to articles, means for feeding successive articles into tab affixing position, each article having a tab-affixing opening therein, means for feeding superimposed independent metal tab strips into affixing position, means for connecting together in succession ends of superimposed tab strips through said openings in successive articles, means operative prior to the tab affixing operation to position the articles relatively to the ends of the tab strips, and means for severing the tabs from the tab strips after the tabs have been affixed to the successive articles.

7. In a machine for affixing metal tabs to successive articles, means for feeding successive articles along a predetermined path into tab affixing position, means for feeding metal tab strips into affixing position, means movable transversely of the path of movement of the articles to move the successive articles laterally of said path of movement and against the ends of the tab strips, means for affixing the ends of the tab strips to the successive articles, and means for severing the tabs from the tab strips after the tabs have been secured to the successive articles.

8. In a machine for affixing metal tabs to successive articles, means for advancing successive articles along a predetermined path into tab affixing position, means for feeding superposed metal tab strips into affixing position, means movable transversely of the path of movement of the articles to move the successive articles laterally of said path of movement and along the space between said metal tab strips, means for connecting the free end parts of said tab strips together through the article, means for severing the connected tabs from the tab strips, means for returning the displaced tab bearing article to said path of movement, and means for subsequently trimming the ends of the connected tabs.

9. In a machine for applying metal tabs to successive articles, means for feeding the successive articles into tab affixing positions, means for feeding superposed metal tab strips into affixing position, means operative at the end of the strip feeding operation to position the articles relatively to the ends of the tab strips, means for welding the ends of the tab strips through holes formed in the successive articles for securing the tab strips to the articles, and means for severing the tab strips to form tabs on the successive articles.

10. In a machine for affixing metal tabs to successive articles, means for feeding successive articles step by step into tab affixing position, means for feeding metal tab forming strips into affixing position, means operative at the end of the strip feeding operation to move the successive articles transversely relatively to the step by step feeding movement thereof to locate the ends of the tab strips in notches formed in the upper and lower surfaces of the articles, and means engaging the ends of the tab strips operative to secure the ends of the tab strips together through openings formed in the successive articles.

11. In a machine for affixing metal tabs to successive articles, means for feeding successive articles step by step into tab affixing position, means for feeding metal tab forming strips into affixing position, means operative at the end of the strip feeding operation to move the successive articles transversely relatively to the step by step feeding movement thereof to locate the ends of the tab strips in notches formed in the upper and lower surfaces of the articles, means engaging the ends of the tab strips operative to secure the ends of the tab strips together through openings formed in the successive articles, and means for severing tabs from the tab strips after the tab strips have been secured to the successive articles.

12. In a machine for affixing metal tabs to successive articles, means for feeding successive articles step by step into tab affixing position, means for feeding metal tab strips into tab affixing position on opposed sides of successive articles, welding means for securing the ends of successive pairs of the tab strips together through openings formed in the successive articles, and severing mechanism for severing tabs from the tab strips after the tab strip ends have been welded together and secured to the successive articles.

13. In a machine for affixing swinging tabs to articles, upper and lower tab severing members, a stationary severing member cooperating with the movable severing members, a reciprocable supporting member arranged to move said movable severing members toward said stationary severing member to sever tabs from continuous lengths of tab strips, a tab affixing member carried by the reciprocable supporting member and movable therewith into engagement with the ends of the tab strips to secure the ends of the tab strips to an article, and means carried by said supporting member for moving the movable severing members in a cutting direction while the tab affixing members engage the ends of the strips to secure the ends of the strips to the article.

14. In a machine for affixing swinging metal tabs to articles, an upper tab severing member, a lower tab severing member, connections between said severing members for causing movement of said members toward and away from each other, a reciprocable support for the upper tab severing member, means for intermittently reciprocating the support, an upper tab affixing member fixed to said support and arranged for movement into engagement with the end of an upper metal tab strip, a lower tab affixing member connected to said lower tab severing member, said tab affixing members being arranged to be moved toward each other into engagement with the ends of the respective tab strips for securing the tab strips to an article, and means carried by the support for engaging the upper tab severing member to move said tab severing member in a tab severing direction and actuating said lower severing member and said lower tab affixing member for movement toward said upper severing and tab affixing members to secure the ends of the tab strips to the work and thereafter to sever tabs from the continuous strips.

15. In a machine for affixing metal tabs to address-printing devices, a stationary tab severing member, upper and lower reciprocable tab severing members, means for feeding a pair of superposed metal tab strips over opposite faces of said stationary tab severing member, means for advancing a succession of printing devices into confronting relation with said stationary tab severing member and into the space between the ends of said strips, means for affixing together the front ends of said tab strips through the intervening printing device, and means operative after the affixing of said tab strips together to effect the severing operation of the affixed tabs from the strips by said upper and lower tab severing members.

16. In a machine for affixing metal tabs to address printing devices, means for advancing a printing device having a tab-affixing opening therein into position to receive on opposed surfaces a pair of superposed metal tab strips, the printing device intervening between said tab strips, means for welding together the free end parts of said tab strips through said opening in the intervening printing device, and means operative only following the completion of the welding operation to sever the welded-together tabs from the strips.

17. In a machine for affixing metal tabs to articles, means for feeding successive articles into tab affixing position, means for feeding metal tab strips into tab affixing position, means movable transversely of the path of movement of the article feeding means to position the successive articles in tab receiving position, means for affixing the ends of the tab strips to the successive articles, means for severing tabs from the tab strips after the tab strips have been affixed to the successive articles, and a tab engaging finger constructed and arranged to move the free end of the severed tab beyond said severing means thereby releasing the free end of the tab strip from the severing means and preventing the tab from interfering with the step by step feeding movement of the successive articles.

18. In a machine for affixing swinging metal tabs to articles, means for feeding superposed tab forming strips into tab affixing position, means for feeding successive articles into tab affixing position, means for engaging the successive articles to move them transversely of their path of feed and lengthwise of the tab strips, a plurality of cutting members arranged for movement toward each other for severing tabs from the tab strips, tab affixing means constructed and arranged to engage the ends of the tab strips and to secure the ends of the tab strips together through holes formed in the successive articles to secure the ends of the tab strips to the successive articles during a part of the severing movement of said severing members, and means arranged to engage the free ends of the tabs at the completion of the severing operation to release the free ends of the tabs from the severing mechanism thereby preventing the tabs from interfering with successive article feeding operations.

19. In a machine for affixing swinging metal tabs to stencils, strip feeding means arranged to feed the ends of tab forming strips into position above and below a stencil in tab affixing position, a stationary cutter member between said strips, movable cutter members movable toward each other and toward said stationary cutter member for severing the strips to form a tab for the stencil, and means operated during the severing operation to hold the strips in alignment and to secure the tab ends together through an opening formed in the stencil.

20. In a machine for affixing swinging metal tabs to stencils having tab receiving notches in their upper and lower surfaces, means for feeding successive stencils into tab affixing position, feeding means for feeding said strips into the notches formed in a stencil, a stationary cutter member interposed between said strips and above and below which the strips are fed, movable cutter members cooperating with said stationary cutter member for severing the tab strips, means carried by one of said cutter members for forming a projection adjacent to the end of one of said tab strips adapted to enter an opening formed in said stencil to cause the end portions of the tab strips to be in contact with each other, and welding electrodes engaging said strips adjacent to said projection for welding the strip ends together through said projection.

21. In a machine for affixing swinging metal tabs to stencils having tab receiving notches in their upper and lower surfaces, means for feeding successive stencils step by step into tab affixing position, means for feeding said tab forming strips into the notches formed in a stencil, means arranged to engage one edge of the stencil to move the stencil transversely to bring the inner ends of the notches into engagement with the ends of the tab strips, a stationary cutter located between said strips, movable cutter members cooperating with said stationary cutter member for severing the tab strips, means carried by one of the cutter members for forming a projection adjacent to the end of one of the tab strips, said projection being adapted to enter an opening formed in the stencil to cause the end portions of the tab strips to be in contact with each other, welding electrodes engaging the end portions of said strips adjacent to said projection for welding the strip ends together through said projection, and means arranged to engage the severed ends of the tabs at the completion of the severing operation to release the free ends from the stationary cutter member to prevent the tabs from interfering with successive article feeding operations.

22. In a machine for affixing swinging metal tabs to stencils having tab receiving notches in their upper and lower surfaces, means for moving said successive stencils step by step into tab affixing position, intermittently operating means for feeding the tab strips into the notches formed in a stencil, a stationary cutter member located between the tab strips, movable cutter members cooperating with the stationary cutter member for severing the tab strips, a finger for engaging the stencil and for moving the stencil transversely to position the ends of the tab strips in the ends of the notches formed in the stencil, operating means for said finger associated with said movable cutter members for actuating the finger, and electrical welding means engaging said strips for welding the strips together through an opening formed in the stencil adjacent to the inner end of the notches.

23. A machine for affixing swinging metal tabs to stencils having tab receiving notches in their upper and lower surfaces having in combination, stationary strip severing means, cooperating movable strip severing means, said stationary severing means having a rounded end portion, means on one of said movable cutter members for forming a projection adjacent to the end of the tab strips arranged to be received in an opening formed in the stencil to which the tab strips are to be secured, and means arranged to be moved between the stationary cutter member and the strip having a projection thereon to lift the projection out of the recess in the stationary cutter member to permit the strip to be fed forwardly for another severing operation.

24. A machine for affixing swinging metal tabs to stencils having tab receiving notches in their upper and lower surfaces having in combination, means for feeding successive stencils into tab affixing position, intermittently operated means for feeding the strips into the notches formed in the stencils, a stationary cutter member interposed between the strips and above and below which the strips are fed, movable cutter members cooperating with the stationary cutter member for severing the tab strips, means operative to move the free ends of the severed strips downwardly below the stationary cutter member to free the ends of said strips from said cutter member to prevent interference of the tabs with successive article feeding operations, and means engaging the strips during the strip severing operation for securing the strips together through an opening formed in the stencil.

25. In a machine for affixing metal tabs to address printing devices, the combination of means for advancing successive printing devices in a step by step manner into and out of a tab affixing position and thence into and out of a tab trimming position, means operative to affix to a printing device a pair of metal tabs disposed on opposite sides of the printing device, means operative on said tabs to move improperly positioned tabs into a predetermined position with respect to the printing device, and means for trimming the ends of the positioned tabs.

26. In a tab affixing machine, means for feeding a succession of address printing devices in a predetermined path, means for feeding superposed tab forming strips over opposite faces of a printing device, means for advancing a printing device laterally of said path into the space between said strips, means for securing said strips together through the printing device and for thereafter severing the attached tab parts from the bodies of said strips, means for subsequently returning said advanced printing device into said path of movement, means operative on the tab of the printing device to move the tab into a predetermined position with respect to the printing device, and means for trimming the free end parts of the positioned tab.

27. In a tab affixing machine, means for advancing a pair of superposed metal tab forming strips and for imparting a stress therein to cause said strips to bend inwardly toward each other, means for advancing an article into the space between the end parts of said strips, means for affixing together the end parts of said strips through the article, and means for severing the attached end parts from the bodies of the strips whereby the attached end parts are free to bend inwardly toward each other and to snugly engage the opposite faces of the article.

28. An improvement in methods of applying tabs to stencil frames which includes locating a pair of superimposed tab-forming strips in tab affixing position over opposite sides of a stencil frame, permanently securing together the forward ends of the tab-forming strips through an opening formed in the frame, and then severing the tab from the tab-forming strips.

29. An improvement in methods of making stencil frames which includes locating the forward end portions of a pair of superposed tab-forming strips in tab affixing position over opposite faces of a stencil frame, permanently securing together the forward ends of the tab-forming strips through an opening formed in the frame, severing the tab from the tab forming strips, and subsequently trimming the end of the tab.

30. An improvement in methods of affixing metal tabs to articles which includes locating the end portions of a pair of superposed metal tab forming strips into tab affixing position over opposite sides of a sheet, welding together the superposed tab forming strips through an opening formed in the sheet, and subsequently severing the tabs from the tab strips.

31. An improvement in methods of applying swinging metal tabs to stencils having a frame

composed of an intermediate welt sheet combined between facing sheets, the welt sheet at the edge of the frame having an exposed part free from the overlying facing sheets, which method includes positioning successive stencil frames in tab-affixing position, positioning the end portions of superposed tab-forming strips over opposite surfaces of the exposed portion of the welt sheet, welding together the forward ends of the tab strips through an opening formed in the exposed portion of the welt sheet, severing the connected portions of the tap strips, locating the stencil frame with the tab thereon in tab-trimming position, and severing the free end of the tab which projects beyond the edge of the stencil.

32. The method of applying a metal tab to the frame of an address printing device comprising forming a metal tab member with a projection outstanding from a face of the member at one end part thereof, the projection being longer than the thickness of that part of the frame that is to carry the tab, superimposing said tab member upon one face of the frame and projecting said projection through a perforation of the frame, applying a second metal tab member over the opposite face of the frame thereof with the end part thereof in contact with said projection, and welding said projection to said second tab member.

33. The method of applying a tab to an address printing device which comprises forming a pair of tab members with an inherent stress to bend in one direction and also forming one of said tab members with a projection extended from a face thereof at one end part, applying said tab members against the opposite faces of the printing device with the stress of said tab members directed in a direction to bend the tab members toward each other and against the interposed printing device with said projection extended through a perforation of the printing device and in contact with the other tab member, and welding said projection to said other tab member.

34. The method of attaching a metal tab permanently to an address printing device, the metal tab having a pair of confronting legs that overlie opposite faces of said device, which method comprises forming a projection that outstands from a face of one leg at the end part thereof, the projection being higher than the thickness of the printing device, passing said projection through a perforation of the printing device and into contact with the face of the other leg, and welding said projection to said other leg.

35. The method of attaching a metal tab permanently to an address printing device, the metal tab having a pair of confronting legs that overlie opposite faces of said device, which method comprises forming a projection that outstands from a face of one leg at the end part thereof, the projection being higher than the thickness of the printing device, passing said projection through a perforation of the printing device and into contact with the face of the other leg, and welding said projection to said other leg and during the welding operation reducing the height of the projection sufficiently to cause the opposing faces to engage the opposite faces of the printing device sufficiently firmly to maintain the tab in any position in which it may be set while permitting the tab to pivot about said projection.

36. An improvement in methods of applying metal tabs to stencil frames which includes stressing a pair of superposed tab strips to cause them to flex toward each other, interposing a stencil frame between the flexed ends of the strips, securing together the forward ends of the tab forming strips through an opening formed in the frame, and severing the tab from the tab forming strips.

37. An improvement in methods of applying metal tabs to stencil frames which includes advancing a pair of superposed metal tab forming strips, flexing the ends of the tab forming strips toward each other, securing together the flexed forward ends of the tab forming strips through an opening formed in an interposed stencil frame, and then severing the forward ends of the tab forming strips to provide a tab fixed to said stencil frame.

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