May 3, 1960 F. W. BRAUN ET AL 2,935,212

FEED MECHANISM FOR AN AUTOMATIC MACHINE

Filed Jan. 20, 1958 5 Sheets-Sheet 1

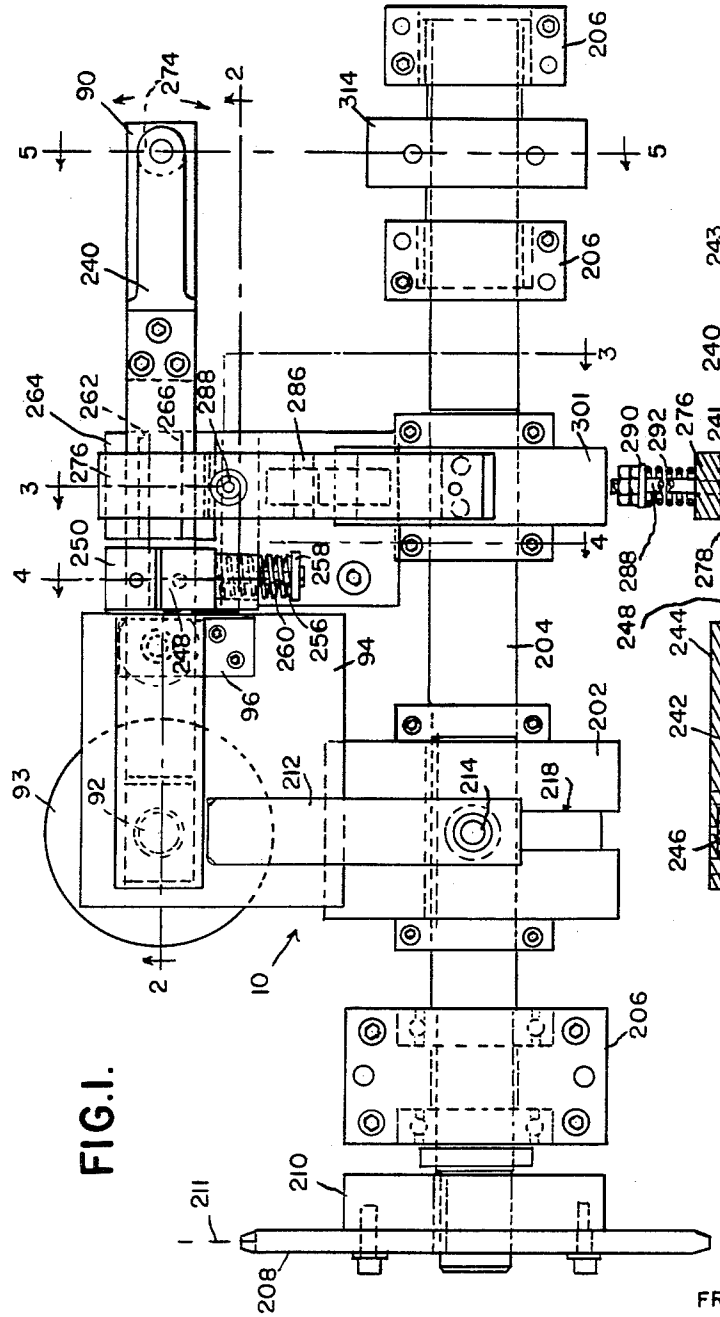


FIG. 1.

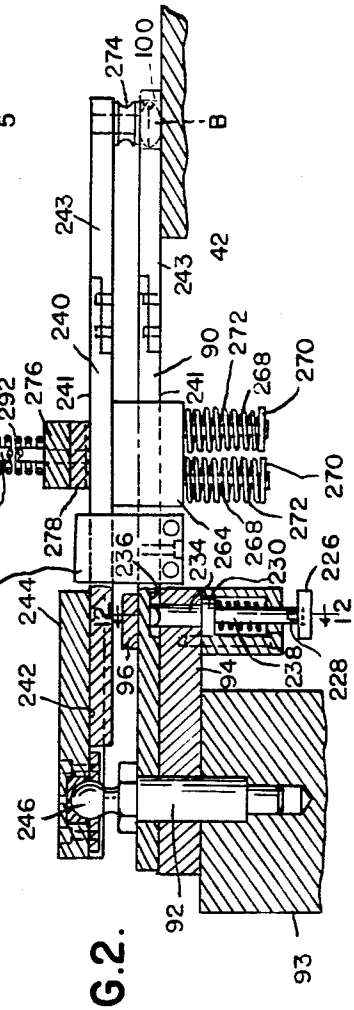


FIG. 2.

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FEED MECHANISM FOR AN AUTOMATIC MACHINE

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FIG.3.

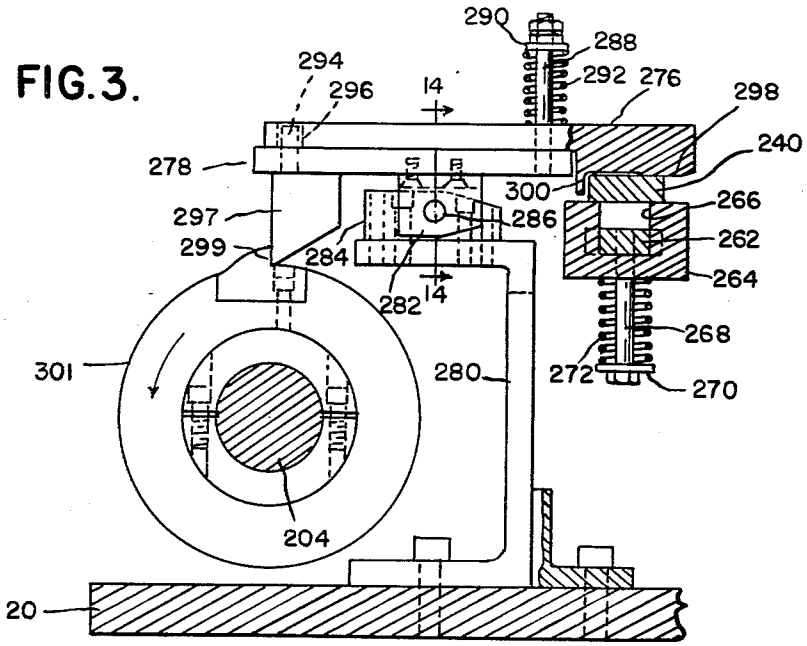
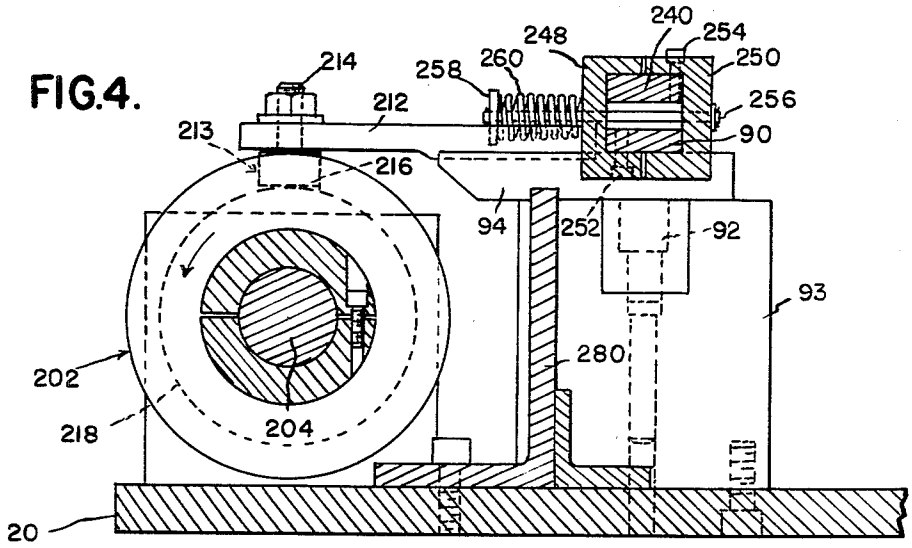


FIG.4.



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FEED MECHANISM FOR AN AUTOMATIC MACHINE

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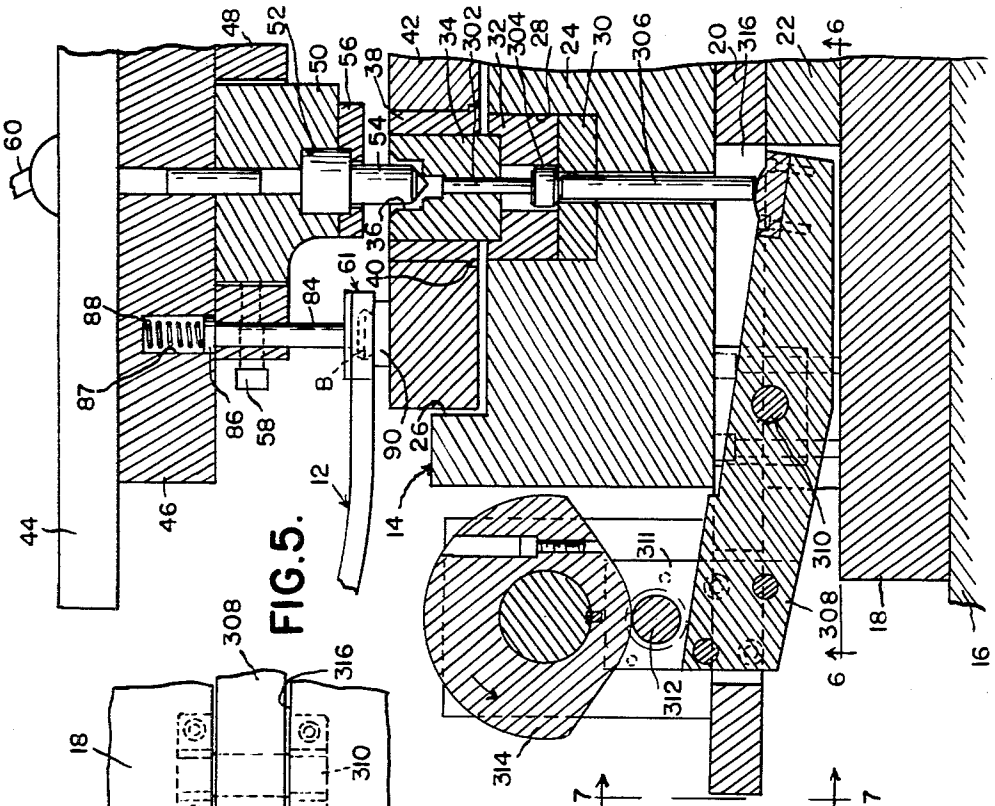


FIG. 5.

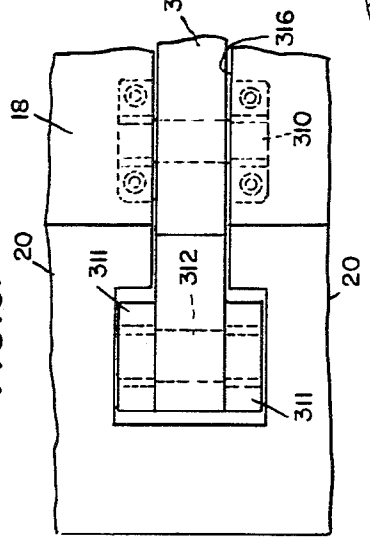


FIG. 6.

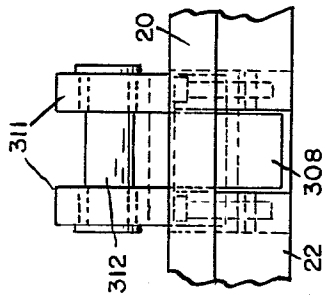


FIG. 7.

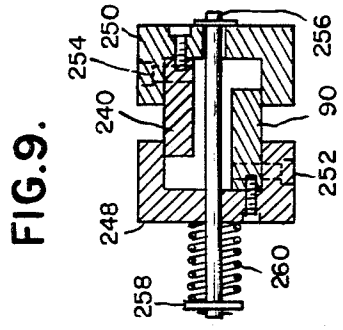


FIG. 9.

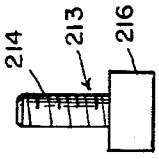


FIG. 8.

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FEED MECHANISM FOR AN AUTOMATIC MACHINE

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FIG.11.

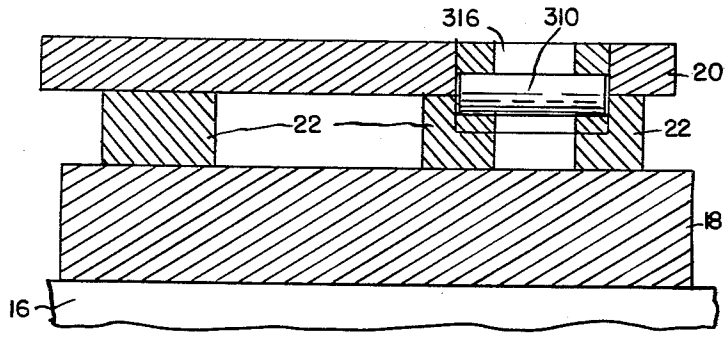


FIG.12.

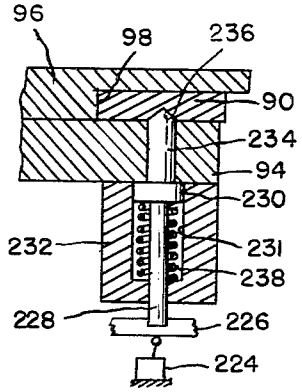


FIG.10.

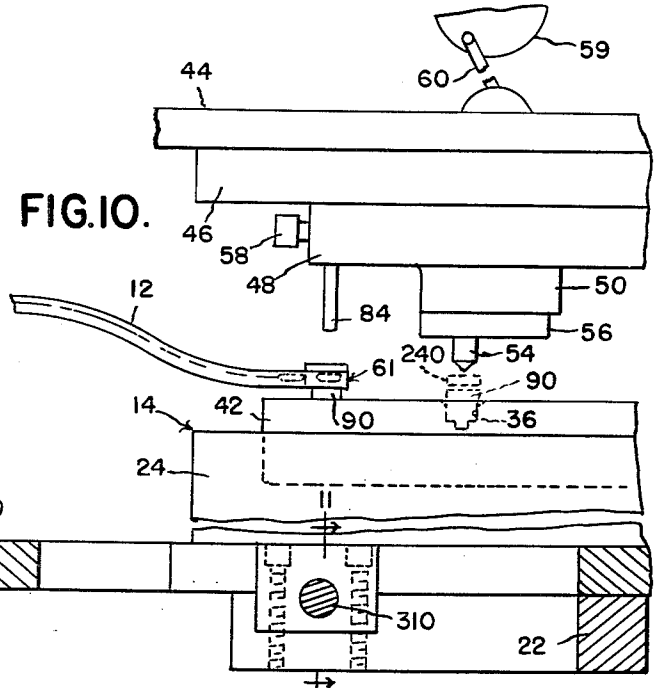
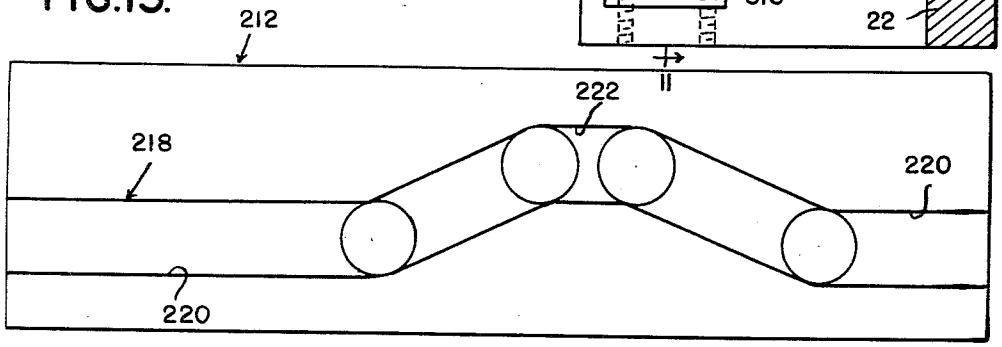


FIG.13.



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FEED MECHANISM FOR AN AUTOMATIC MACHINE

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FIG.14.

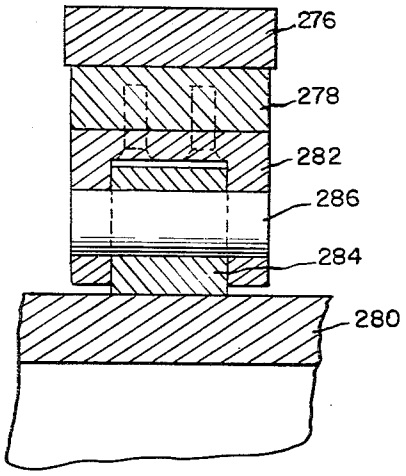


FIG.15.

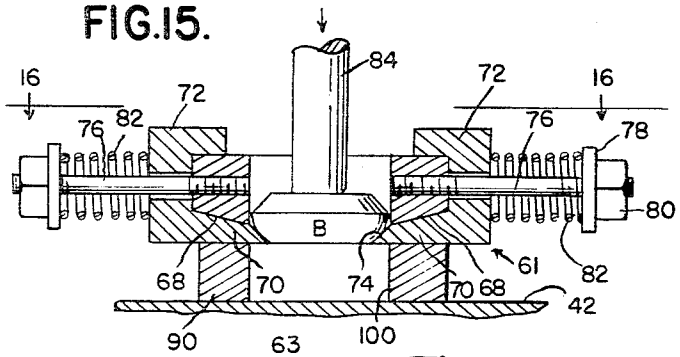
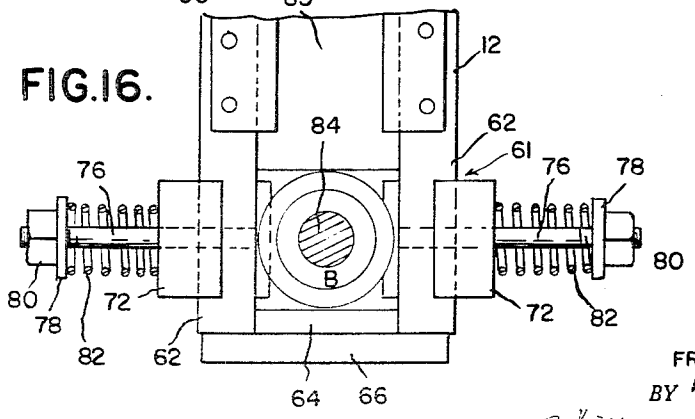


FIG.16.



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United States Patent Office

2,935,212

Patented May 3, 1960

2,935,212

FEED MECHANISM FOR AN AUTOMATIC MACHINE

Frederick W. Braun, Dearborn, and Alfred Braun, Birmingham, Mich.

Application January 20, 1958, Serial No. 709,986

9 Claims. (Cl. 214—1)

This invention relates to feed mechanism and refers more particularly to mechanism for feeding metal blanks to an automatic machine.

It is one of the objects of this invention to provide mechanism for feeding blanks to a machine for forming finished articles, said mechanism being automatically operated in timed relation with the machine and capable of high-speed, substantially fool-proof operation.

It is another object of this invention to provide mechanism for feeding blanks to an automatic machine, including a transfer arm for delivering blanks from a magazine chute to the automatic machine, and an ejector arm for ejecting the blank from the transfer arm when the transfer arm is in register with the automatic machine.

The foregoing as well as other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings wherein:

Fig. 1 is a top plan view of feed mechanism embodying the invention;

Fig. 2 is a sectional view taken along the line 2—2 of Figure 1;

Fig. 3 is a sectional view taken along the line 3—3 of Figure 1;

Fig. 4 is a sectional view taken along the line 4—4 of Figure 1;

Fig. 5 is a sectional view taken along the line 5—5 of Figure 1, showing portions of the automatic machine;

Fig. 6 is a fragmentary view of the structure shown in Figure 5, taken along the line 6—6 of Figure 5;

Fig. 7 is a view taken along the line 7—7 of Fig. 5;

Fig. 8 is a detail view of a roller cam follower;

Fig. 9 is a view of a portion of Fig. 4 with the parts in another postion;

Fig. 10 is a view partly in elevation and partly in section of the automatic machine including portions of the transfer arm and delivery chute with parts removed;

Fig. 11 is a sectional view taken along the line 11—11 of Fig. 10;

Fig. 12 is a sectional view taken along the line 12—12 of Fig. 2;

Fig. 13 is a development of the grooved periphery of a rotary cam;

Fig. 14 is a sectional view taken along the line 14—14 of Fig. 3;

Fig. 15 is a sectional view of the delivery chute showing the transfer arm in position to receive a blank;

Fig. 16 is a view taken along the line 16—16 of Figure 15.

Referring now more particularly to the drawings, the feed mechanism is generally indicated at 10 and is provided for transferring circular metal blanks B from a magazine chute 12 to an automatic die forming machine generally indicated at 14.

In the present instance, the machine 14 is provided for the mass production of relatively small metal parts. More specifically, the article adapted to be mass produced by the machine 14 may constitute a housing for an electric switch which when assembled with other mechanism or electric parts is used on automobiles for controlling a so-called stop light.

The die forming machine comprises a bed 16 and a bolster 18 supported thereon. A mounting plate 20 is supported on the bolster by a plurality of spacers 22, and the mounting plate supports a die shoe 24. The die shoe is formed with an upwardly opening recess 26 having at the base thereof a cup-shaped socket 28 in which is located a thrust block 30 supporting a die retainer 32. A die 34 is located in a recess in the top surface of the die retainer and has a die cavity 36 in the upper surface. A sleeve 38 encircles the die and has a radially outwardly extending collar 40 at the lower end for supporting an annular retainer ring 42 which encircles the sleeve 38 and fits within the recess 26 in the die shoe.

The machine also includes a vertically reciprocable ram 44 having die shoe 46 secured to the under surface thereof. An annular retainer ring 48 is secured to the underside of the die shoe 46, and a punch retainer 50 is secured against the bottom of the die shoe within the retainer ring 48. The punch retainer has a socket 52 in the underside for receiving the head of a vertically disposed punch 54, and the punch is clamped in position in the socket by the punch holder 56.

An adjusting screw 58 threads through a wall of the retainer ring 48 for engagement with the punch retainer 50 to adjustably locate and lock the punch retainer in position with the punch accurately aligned with the die cavity 36. Suitable power means including a bull gear 59 and crank arm 60 pivoted to the gear and ram 44 are provided for reciprocating the ram from an upper or retracted position shown in Fig. 10 to the lower position shown in Figure 5 in which the punch 54 enters the die cavity to form a blank in the die cavity to the desired shape of the finished article.

The blanks B are delivered in succession through the elongated magazine chute 12 which is inclined downwardly and terminates in a position spaced above the retainer ring 42 of the machine. At the end of the chute there is a discharge mechanism indicated at 61 in Figures 15 and 16. The chute includes a pair of laterally spaced guides 62 and a bottom plate 63 which extends between the guides beneath the latter to form a channel for slidably guiding the blanks. The end of the chute is defined by the plates 64 and 66 which provide a stop for the blanks B at the end of the chute. The guides 62 are formed at the discharge end with transverse slots 68 shaped to receive the lower legs 70 of the generally C-shaped detents 72. The slots 68 are in the form of recesses in the bottoms of the guides, and the top legs of the detents slidably engage the guides to support the detents. These detents are normally urged to the innermost position illustrated in which the ends of the legs 70 project into the space between the guides to support a blank thereon. The supporting surfaces 74 of the legs are bevelled so that they will retract and release the blank when sufficient downward force is applied against the blank. The bottom plate 63 terminates short of the detents. The rods 76 are threaded to and project laterally outwardly from the respective rails 62 through openings in the detents 72, and have abutments 78 near the outer ends thereof retained in position against outward movement by the nuts 80 threaded on the ends of the rods. Coil springs 82 are compressed between the abutments and the detents normally urging the latter inwardly to the positions shown.

A vertical plunger 84 is slidable in the retainer ring 48 of the ram of the machine and has an enlarged head 86 vertically slidable within a socket 87 in the underside of die shoe 46. A coil spring 88 compressed between the closed end of the socket and the head 86

urges the plunger to the lower position shown in Figure 5, limited by engagement of the head with the retainer ring 48. The lower end of the plunger 84 is positioned on the ram to extend downwardly and between the guide rails 62 of the magazine chute during downward movement of the ram 44 to engage a blank B supported by the legs 70 of the detents 72 with sufficient force to cam the detents laterally outwardly and discharge the blank from the chute. The spring 88 is provided to apply a yielding force on the plunger 84 in case the blank should jam.

The feed mechanism 10 is provided for transferring a blank B from the chute 12 to the automatic die forming machine 14. The transfer mechanism includes a transfer arm 90 which is supported on the vertically extending pivot pin 92 for rotation about the axis of the pivot in a horizontal plane. Pivot pin 92 is secured to a block 93. The free end of the transfer arm is slidably supported on the retainer ring 42 of the automatic machine 14 and is supported at its pivoted end by the plate 94. The plate 94 is also supported on the pivot pin 92 for horizontal swinging movement, and normally the plate 94 and transfer arm 90 swing as a unit. An L-shaped holder 96 is bolted to the top surface of the plate 94 and defines a recess 98 with plate 94 which forms a shoulder abutting one side of the transfer arm to positively move the latter with plate 94 in a counterclockwise direction as viewed in Figure 1. The transfer arm is caused to move clockwise with the plate 94 by reason of the frictional engagement of the recessed holder 96 with the top surface of the transfer arm.

The transfer arm is shown in Figure 1 in a position midway between the magazine chute and the die cavity of the automatic machine. The transfer arm has a vertically extending hole 100 in its free end of a diameter slightly greater than the diameter of the blank B and the hole is adapted to register with the blank B supported by the detents 72 at the end of the chute 12 beneath the latter when swung through a small arc in a clockwise direction from the position shown in Figure 1 to that shown in Figs. 10 and 15. In this position of the transfer arm, it is adapted to receive a blank from the chute. Upon movement of the transfer arm over retainer ring 42 through a small arc in a counterclockwise direction from the position shown in Figure 1, the hole 100 in the transfer arm will move into register with the die cavity 36 of the automatic machine.

Means are provided for swinging the transfer arm 90 from a position in register with the chute 12 to a position and register with the die cavity. Such means includes a rotary cam 202 which is rigidly secured on a driven shaft 204 supported for rotation in the bearing blocks 206. The shaft 204 is driven by a sprocket 208 bolted to a hub 210 which is keyed to the driven shaft. The sprocket 208 is driven by a chain 211 from the bull gear of the mechanism for reciprocating the ram 44 so that the rotation of the driven shaft 204 is at all times synchronized with the vertical reciprocation of the ram. The driven shaft 204 is in this manner driven through a full revolution of 360° for each full cycle of the ram in which the ram moves from its upper limiting position downwardly on a forming stroke and returns to its starting position.

A connecting arm 212 is fixed with the top surface of plate 94 and extends laterally therefrom. The outer end of the connecting arm carries a cam follower 213 which comprises a shank 214 secured to the arm and a roller 216 rotatable on the lower end of the shank beneath the arm about the vertical axis of the shank. The roller is of a diameter to fit closely within the peripheral endless cam groove 218 which extends circumferentially about the outer cylindrical surface of the rotary cam 202. Figure 13 is a development of the peripheral surface of the rotary cam 202 illustrating the full length of the cam groove 218. The cam groove is designed to swing the transfer arm through its full arc of movement between the magazine chute and the die cavity of the machine. When the roller cam follower 216 is in the portion of the groove indicated at 220, the hole 100 through the free end of the transfer arm is in register with the discharge end of the magazine chute, as shown in Figs. 10 and 15, and when it is in the portion of the groove indicated at 222, the hole in the transfer arm lies over the die cavity, as shown in dotted lines in Fig. 10.

In the event that a blank becomes wedged between the die cavity 36 and the hole 100 in the transfer arm, the transfer arm will be positively withheld against clockwise movement away from the die cavity. In this event, the plate 94, which is positively controlled by the action of the cam 202, will move relative to the transfer arm in a clockwise direction. In the position of the plate 94 in which the hole 100 in the transfer arm overlies the die cavity, a limit switch 224 (Fig. 12) is disposed directly beneath the foot 226 on the actuating plunger 228. Plunger 228 has an intermediate enlargement 230 guided for vertical reciprocation within a socket 231 in the housing 232. The housing is secured to the underside of the plate 94, and the portion 234 of the plunger above the enlargement reciprocates within an opening in plate 94 aligned with the socket 231. The upper end of the portion 234 is V-shaped for engagement in a V-shaped recess 236 in the under side of the transfer arm. Hence any relative rotation between the plate 94 and the transfer arm will depress the plunger 228, against the action of the compression spring 238 within the socket which bears upwardly on the enlargement, to actuate the limit switch. Actuation of limit switch 224 opens a circuit to the power means for driving the automatic machine 14, thereby immediately shutting down the machine and the transfer mechanism.

The transfer mechanism also includes an ejector arm 240. The inner end of the ejector arm 240 is fixed within a groove 242 in the under side of a supporting plate 244. The supporting plate 244 is universally supported on the ball-shaped upper end 246 of the pivot pin 92. Hence the ejector arm is capable of swinging movement in a horizontal plane and of vertical oscillation about a horizontal axis.

The ejector arm 240 swings as a unit with the transfer arm from the intermediate position shown in Figure 1 counterclockwise to a position in register with the die cavity 36.

The arms 90 and 240 each have an inner portion 241 of steel and an outer portion 243 of aluminum which is softer than the steel. Any damage to the outer portions therefore will require replacement of such outer portions only.

The means for causing the ejector arm 240 to swing as a unit with the transfer arm is illustrated in Figs. 4 and 9. As there shown a pair of opposed C-shaped members 248 and 250 cooperate to embrace the arms. The member 248 is secured to the transfer arm 90 by fasteners 252, and the member 250 is secured to the ejector arm 240 by fasteners 254. A rod 256 is secured to the member 250 and extends between the arms and through an opening in the member 248, having an abutment 258 on the outer end. A coil spring 260 encircles the rod and is compressed between abutment 258 and member 248, normally urging members 248 and 250 toward one another to the position shown in Fig. 4 in which the ejector arm 240 overlies the transfer arm 90. When the transfer arm 90 moves from the mid-position, shown in Fig. 1, clockwise to a position in register with the magazine chute, shown in Figs. 10 and 15, the ejector arm 240 is positively withheld against movement with the transfer arm, causing the C-shaped members 248 and 250 to spread apart as illustrated in Fig. 9. The means for thus holding the ejector arm against movement with the transfer arm will be described more fully hereinafter. When the transfer arm 90 moves from the position of Fig. 1

counterclockwise, the members 248 and 250 resiliently cause the ejector arm 240 to move as a unit therewith.

The transfer arm is formed with an intermediate portion of reduced width indicated at 262 in Figs. 1 and 3. A generally C-shaped block 264 of a thickness substantially equal to or slightly greater than the length of the reduced portion 262 partially embraces the reduced portion 262 and is open at the top as shown at 266 to permit relative vertical movement between the transfer arm and the block. The block 264 cannot move longitudinally of arm 90, because it abuts shoulders at opposite ends defining the reduced portion. Spaced rods 268 are secured to the transfer arm and depend therefrom through openings in the block, having abutments, 270 at the lower end. Coil springs 272 encircle the rods and are compressed between the abutments and block 264 to urge the latter to the upper limiting position shown in Fig. 3. The block 264 is provided to resiliently support the ejector arm 240 in the elevated position shown in Figs. 2, 3 and 4.

As shown particularly in Fig. 2, the outer end of the ejector arm 240 has an ejector part 274 secured to and depending therefrom which is of a diameter slightly less than the diameter of the hole 100 in transfer arm 90. When the ejector arm is disposed in direct overlying relation to the transfer arm, as shown in Figs. 2, 3 and 4, the ejector part 274 is positioned directly above the hole 100 in the transfer arm. When the transfer arm and ejector arm are located at the discharge position over the die cavity 36, the ejector arm is rocked downwardly about the swivel joint 246 causing the ejector part 274 to enter the hole 100 and eject the blank B.

The means for rocking the ejector arm downwardly is best illustrated in Figs. 3 and 14. Such means includes an actuator arm 276 and a supporting arm 278. The supporting arm is mounted on a channel 280 in turn carried by the mounting plate 20. More specifically, the supporting arm 278 is carried by a bracket 282 of inverted U-shape which straddles a supporting block 284 secured to the upper horizontal flange of channel 280. A pivot pin 286 connects the supporting block 284 with the legs of the bracket 282 to permit swinging movement of the supporting plate 278 about the horizontal axis of the pivot pin. A rod 288 is secured to plate 278 and extends upwardly therefrom loosely through an opening in the actuator arm 276, having an abutment 290 at the upper end portion thereof. A coil spring 292 encircles the rod and is compressed between the abutment and the actuator arm normally constraining the latter to move as a unit with the supporting arm. A dowel pin 294 is secured to the supporting plate at the inner end thereof and projects upwardly into an enlarged hole 296 in the actuator arm.

The outer end of the actuator arm has a head 298 which overlies the ejector arm when the latter is positioned over the die cavity 36. The transfer and ejector arms are shown in the mid-position in Fig. 3 in which the head 298 of the actuator arm is not exactly over the ejector arm. The inner end of arm 276 has a lug 297 secured thereto engageable with the trip 299 on rotary cam 301 secured to shaft 204 to rock the outer end of the actuator arm downwardly to eject a blank from the transfer arm. The pin 294 has a certain amount of clearance in the hole 295, and the rod 288 has a certain amount of clearance in the hole in the actuator arm through which it passes to permit relative movement between arms 276 and 278, against the action of spring 292, in case a blank jams and will not eject.

The actuator arm 276 has an integral lug 300 which depends therefrom and is engageable with the ejector arm to positively prevent clockwise movement of the ejector arm beyond the mid-position shown in Figs. 1 and 3. Hence the transfer arm moves by itself to the receiving position at the magazine chute, the C-shaped members 248 and 250 expanding as shown in Fig. 9 to accommodate this relative movement.

Referring back to Fig. 5, a vertically slidable knockout pin 302 extends upwardly through the die 34 and into the die cavity 36. The die retainer 32 has an enlarged vertical passage in which a pad 304 is supported for vertical sliding movement and which supports the lower end of the knockout pin. A plunger 306 is slidable in the aligned vertical passages in the thrust block 30 and die shoe 24 and engages the lower end of the pad. A knockout lever 308 is pivoted on a horizontal pivot pin 310 jointly carried by the mounting plate 20 and the spacers 22. One end of the lever is in supporting engagement with the plunger 36 and the other end of the lever has secured thereto a pair of laterally spaced plates 311 connected by a horizontal roller 312. The roller 312 is engaged by a cam 314 secured to the driven shaft 204. The lever 308 extends between the spacers 22 and a recess 316 is provided in the mounting plate 20 to clear the lever 308. The lever is weighted so that it normally assumes the position shown in Fig. 5. Rotation of the driven shaft causes the lever to be rocked by the cam 314 in a counterclockwise direction raising the knockout pin to eject an article after it has been formed in the die.

The operation of the apparatus should be apparent from the foregoing. The power means including the bull gear 59 is operable to lower and raise the ram 44 and hence punch 54 away from and toward the upper limiting position of the ram. For each such complete cycle of the ram, the driven shaft 204 completes one full revolution, being driven by the bull gear 59 from the chain 211. During the downward movement of the ram, the transfer arm 90 is in the position shown in Fig. 15 and shown in solid lines in Fig. 10 in which it is disposed directly beneath the magazine chute at the discharge end thereof. Continued downward movement of the ram causes the plunger 84 to engage a blank in the magazine chute and force the same from the chute into the hole 100 in the transfer arm. At the same time, a blank previously delivered to the die cavity 36 is formed to the shape of the finished article by the punch 54. The ejector arm is at this time held in the mid-position of Fig. 1 by the lug 300 on the actuator arm 276.

As the ram 44 moves upwardly and clears the punch 54 from the die cavity, the cam 314 is effective to rock the knockout lever 308 in a counterclockwise direction to eject the finished article from the die 36. At the same time, the shape of the cam groove 218 in the rotary cam 202 moves the supporting plate 94 counterclockwise as viewed in Fig. 1, transfer arm 90 moving as a unit therewith and carrying with it a blank B. When the transfer arm reaches the mid-position of Fig. 1, it picks up the ejector arm 240 and from there the arms move as a unit to the discharge position in register with the die cavity. When the arms reach a position in register with the die cavity, the rotary cam 301 is operative to rock the supporting arm 278 clockwise from the position shown in Fig. 3 to force the ejector arm 276 downwardly toward the transfer arm causing the ejector part 274 to enter the hole in the transfer arm 36 and eject the blank therefrom into the die cavity.

In the event that the blank should become wedged between the die cavity 36 and the transfer arm 90, preventing return or clockwise movement of the transfer arm from the discharge position over the die cavity, the supporting plate 94 will be moved clockwise by the positive action of the cam groove 218, and the relative movement between plate 94 and the transfer arm will operate the limit switch 224 to immediately shut down the machine and the transfer mechanism. The primary purpose of this safety means is to prevent the transfer and ejector arms from being damaged by the punch 54.

In the event that the blank will not eject, the play between actuator arm 276 and supporting arm 278 will prevent damage to the parts.

What we claim as our invention is:

1. Mechanism for transferring blanks to a discharge position comprising a transfer arm having means adjacent one end for carrying a blank, means pivotally supporting the opposite end of said transfer arm for swinging movement of said arm about an axis to and from said discharge position, an ejector arm overlying said transfer arm, swivel means supporting one end of said ejector arm for swinging movement thereof about said axis to and from said discharge position, means for swinging said arms in unison to and from said discharge position, said swivel means also supporting said ejector arm for movement toward and away from said transfer arm, said ejector arm having a part on the opposite end operative to eject a blank carried by said transfer arm upon movement of said ejector arm toward said transfer arm, spring means normally spacing said arms apart, and means automatically operated in response to movement of said arms to said discharge position for moving said ejector arm toward said transfer arm against the action of said spring means.

2. Mechanism as in claim 1 in which the means for swinging said arms has a yielding connection therewith, power means for operating said swinging means, and means responsive to a relative movement between said swinging means and said arms for rendering said power means inoperative.

3. Mechanism for transferring blanks from a receiving position to a discharge position comprising a transfer member having means for carrying a blank, means supporting said member for movement from said receiving position to said discharge position, an ejector member, means supporting said ejector member for movement to and from said discharge position, means for moving said transfer member from said receiving position to said discharge position, resilient means between said members for moving said ejector member with said transfer member to said discharge position and part way toward said receiving position, means for operating said ejector member when said members are at said discharge position for ejecting a blank carried by said transfer member, and means for preventing movement of said ejector member by said resilient means toward said receiving position beyond an intermediate position between said receiving and discharge positions.

4. Mechanism as in claim 3 in which the means for operating said ejector member comprises an actuator engageable with said ejector member to move it toward said transfer member, and a lug on said actuator constituting the means for preventing movement of said ejector member toward said receiving position beyond said intermediate position.

5. Mechanism for transferring blanks from a receiving position to a discharge position comprising a transfer arm having means for carrying a blank, means pivotally supporting said transfer arm for swinging movement from said receiving position to said discharge position, an ejector arm, means pivotally supporting said ejector arm for swinging movement to and from said discharge position, means for swinging said transfer arm between said receiving and discharge positions, resilient means between said arms for moving said ejector arm with said transfer arm to said discharge position and part way toward said receiving position, means automatically operated in response to swinging movement of said arms to said discharge position for actuating said ejector arm to eject a blank carried by said transfer arm, and means for preventing movement of said ejector arm by said resilient means toward said receiving position beyond an intermediate position between said receiving and discharge positions to clear said transfer arm for reception of a blank at said receiving position.

6. Mechanism for transferring blanks from a receiving position to a discharge position comprising a transfer arm having means for carrying a blank, means pivotally supporting said transfer arm for swinging movement about an axis from said receiving position to said discharge position, an ejector arm overlying said transfer arm, means pivotally supporting said ejector arm for swinging movement about said axis to and from said discharge position, means for swinging said transfer arm between said receiving and discharge positions, resilient means between said arms for moving said ejector arm with said transfer arm to said discharge position and part way toward said receiving position, said ejector arm being movable toward said transfer arm and having a part operative to eject a blank carried by said transfer arm upon movement of said ejector arm toward said transfer arm, means automatically operative in response to swinging of said arms to said discharge position for moving said ejector arm toward said transfer arm to eject a blank, and means for positively preventing movement of said ejector arm toward said receiving position beyond an intermediate position between said receiving and discharge positions to clear said transfer arm for reception of a blank at said receiving position.

7. Mechanism for transferring blanks to a discharge position comprising a transfer arm having means adjacent one end for carrying a blank, means pivotally supporting the opposite end of said transfer arm for swinging movement of said arm about an axis to and from said discharge position, an ejector arm overlying said transfer arm, swivel means supporting one end of said ejector arm for swinging movement thereof about said axis to and from said discharge position, means for swinging said transfer arm between said receiving and discharge positions, resilient means between said arms for moving said ejector arm in unison with said transfer arm to said discharge position and part way toward said receiving position, said swivel means also supporting said ejector arm for rocking movement toward and away from said transfer arm, said ejector arm having a part on the opposite end thereof operative to eject a blank carried by said transfer arm upon movement of said ejector arm toward said transfer arm, spring means normally spacing said arms apart, means automatically operative in response to swinging of said arms to said discharge position for moving said ejector arm toward said transfer arm to eject a blank, and means for positively preventing movement of said ejector arm toward said receiving position beyond an intermediate position between said receiving and discharge positions to clear said transfer arm for reception of a blank at said receiving position.

8. Mechanism as in claim 7 in which said means for moving said ejector arm toward said transfer arm comprises an actuating lever having a head engageable with said ejector arm to move the same toward said transfer arm, and a lug on said head constituting the means for positively preventing movement of said ejector arm toward said receiving position beyond said intermediate position.

9. Mechanism as in claim 8 in which the means for swinging said transfer arm has a yielding connection therewith, power means for operating said swinging means, and means responsive to relative movement between said swinging means and said transfer arm for rendering said power means inoperative.

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