April 15, 1947. D. R. McNALLY 2,418,949

ARTICLE GAGING, EJECTING, AND REFEED MECHANISM FOR DIE PRESSES

Filed Oct. 3, 1944 3 Sheets-Sheet 1

Fig. 1.

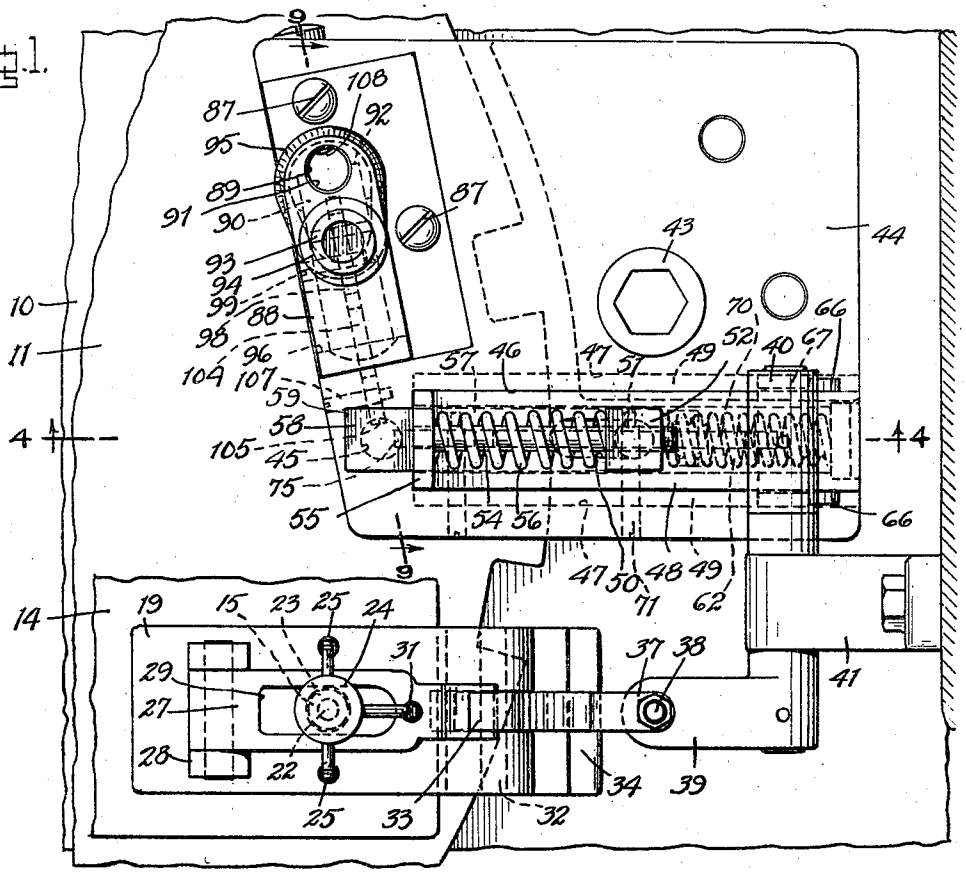


Fig. 2.

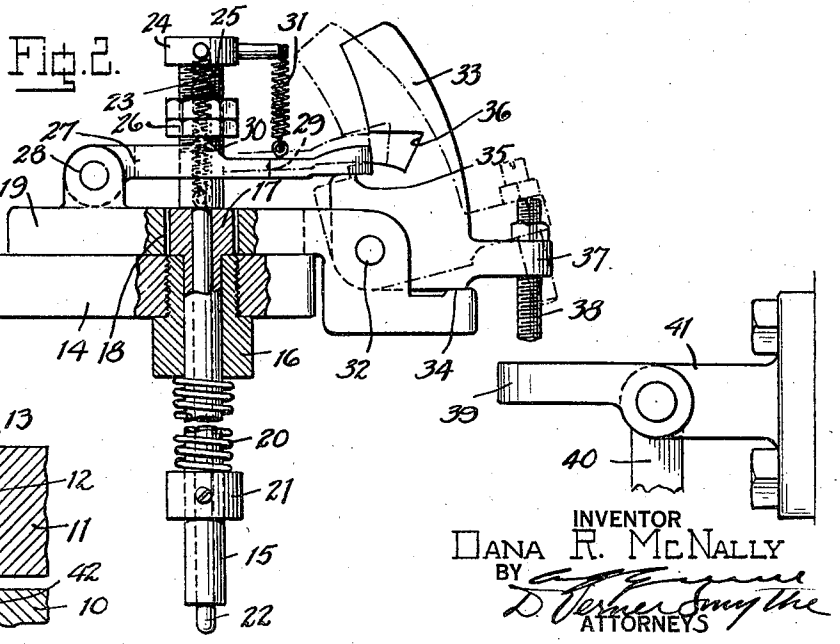
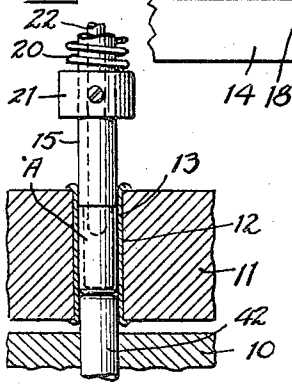


Fig. 3.



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Fig. 4

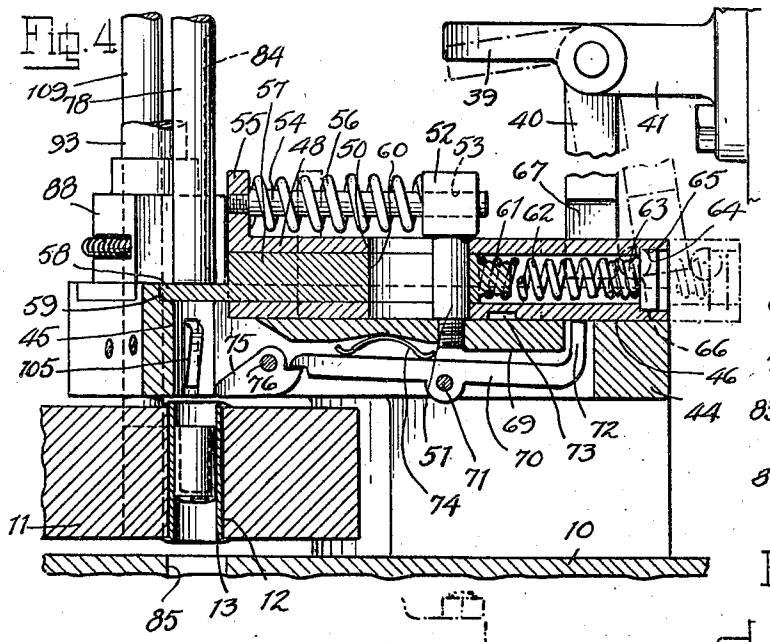


Fig. 5.

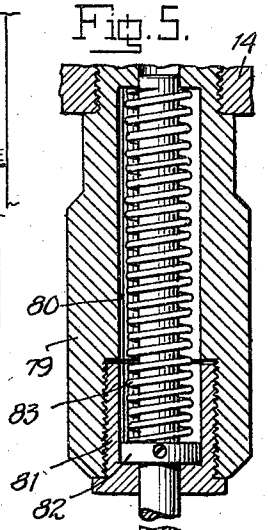


Fig. 6.

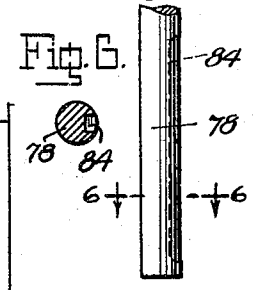


Fig. 7.

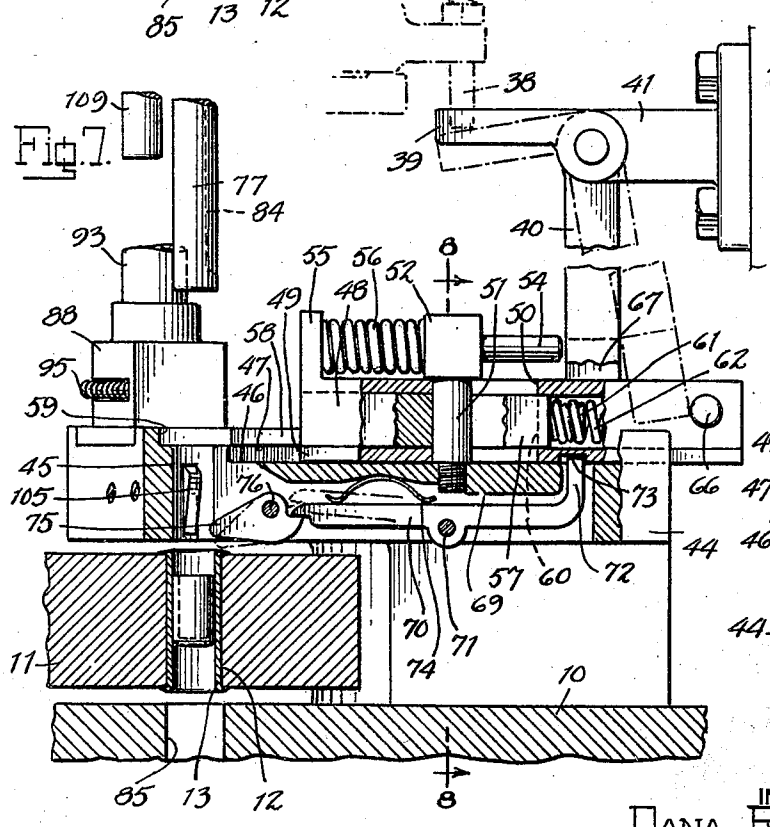
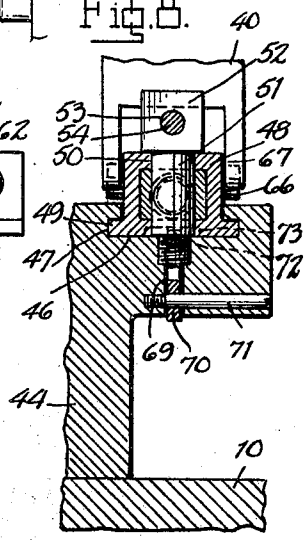


Fig. 8.



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Fig. 9.

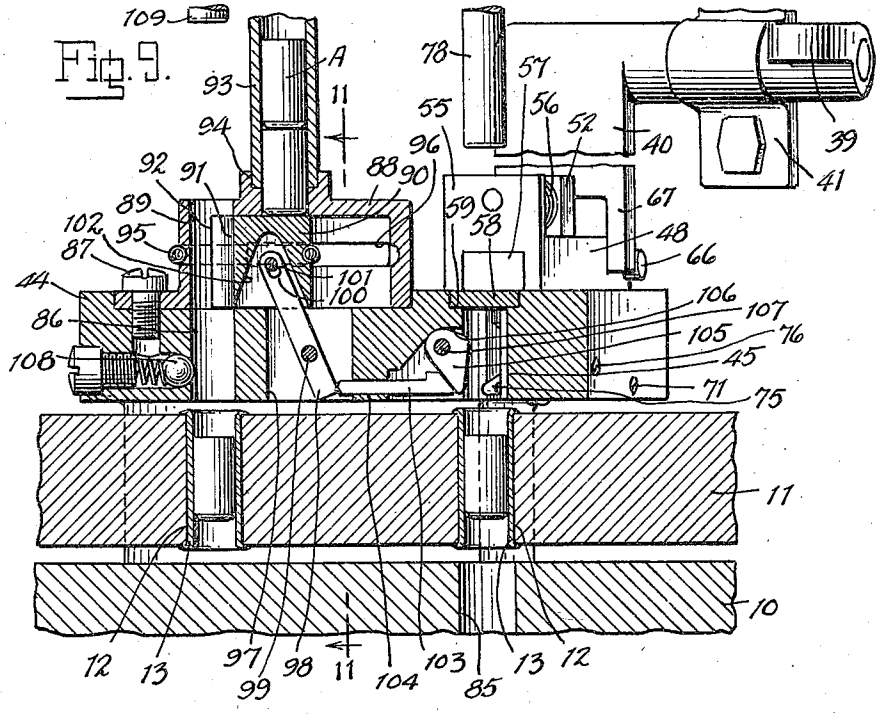


Fig. 10.

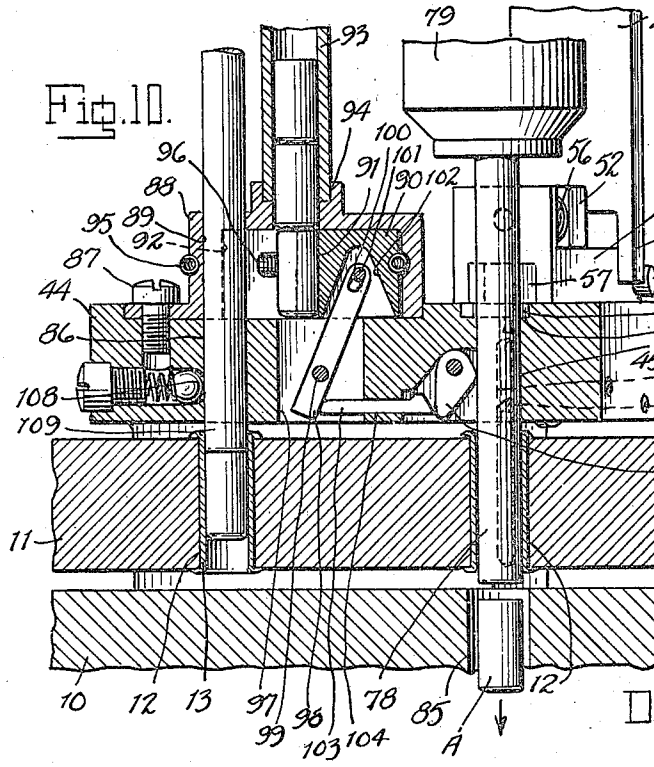
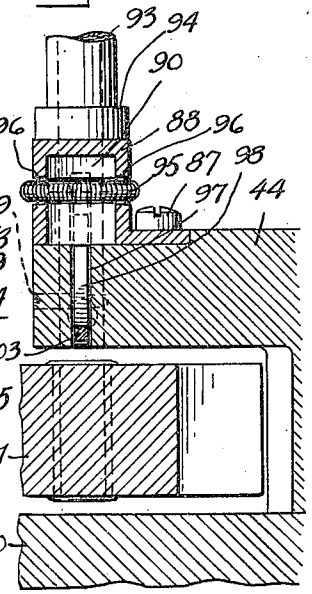


Fig. 11.



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UNITED STATES PATENT OFFICE

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ARTICLE GAGING, EJECTING, AND REFEED MECHANISM FOR DIE PRESSES

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Application October 3, 1944, Serial No. 557,003

10 Claims. (Cl. 209—88)

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The present invention relates to a die press, particularly of the type performing a series of operations upon articles placed therein, as for instance bullet jacket components, and relates especially to automatic ejector and refeed means for ejecting a defective component that has been gauged and found to be either long, short or in upside down relation, and to thereupon feed a replacement component of proper size into the pocket from which the defective component has been ejected.

While the invention may find application in various types of presses and in the formation of various articles, the present disclosure is illustrated by way of example in connection with a multiple type press having an article transfer dial adapted to transfer the articles along a succession of operative stations. In this type of press the articles are moved out of the dial into relation with forming dies, which may be disposed either above or below the dial, depending upon the particular operation, being thereupon moved back into the dial for transfer to the next station. The articles are fed into the dial at one station, and according to the invention automatic gauging or detector means is provided at a successive station for engaging the article to determine whether it is of proper length and in an upright position, automatic ejector means is provided at the following station for ejecting an article found to be defective in the detector station, and automatic refeed means is provided at the next following station for supplying the empty pocket of the dial with a replacement article.

With the usual known type of press the gauging or detector means operates to automatically throw the press out of operation when a defective article is detected. This periodic stoppage in the operation of the press not only results in a very considerable production loss, but requires the constant attention of an operator to restart the press after it has been automatically stopped and the defective article removed and replaced.

It is proposed according to the invention to provide actuating means cooperating between the detector, ejector and refeed stations whereby the ejection and refeed mechanism is rendered operative upon detection of a defective article, so that upon the successive dialing of the feed dial the defective article is ejected upon the following operative cycle of the press and a properly gauged replacement article is fed into the dial to take its place upon the next following operative cycle. Thus there is an uninterrupted operation of the

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press and each successive pocket of the dial is provided with a properly positioned article of perfect length as the dial carries the articles into relation with the operative stations of the press.

With the above and other objects in view, an embodiment of the invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a fragmentary plan view of the three stations of the dial press with which the mechanism of the invention is associated.

Fig. 2 is a side elevation, partially in section, of the detector mechanism carried by the reciprocating gate of the press for cooperation with the detector station of the dial.

Fig. 3 is a fragmentary vertical sectional view showing the detector punch in engagement with an article carried in the dial.

Fig. 4 is a vertical sectional view, taken along the line 4—4 of Fig. 1, showing the ejector mechanism in relation to the ejector station of the dial, the same being shown in its normal position following the transfer from the detector station of an article found to be of perfect height and in proper position, the gate of the press being in its downwardly moved position.

Fig. 5 is a vertical sectional view of the ejector punch carried by the gate of the press.

Fig. 6 is a horizontal sectional view, taken along the line 6—6 of Fig. 5.

Fig. 7 is a sectional view, similar to Fig. 4, and showing the ejector mechanism moved to its operative position, following the transfer from the detector station of an article found to be defective, the gate of the press being in its upwardly moved position.

Fig. 8 is a vertical sectional view, taken along the line 8—8 of Fig. 7.

Fig. 9 is a vertical sectional view, taken along the line 9—9 of Fig. 1, showing the re-feed mechanism in its normal position, the gate of the press being in its upwardly moved position.

Fig. 10 is a similar view, showing the re-feed mechanism in its actuated position wherein an article is about to be fed into feeding relation of the dial to replace a defective article ejected at the ejector station, the gate of the press being in its downwardly moved position.

Fig. 11 is a vertical sectional view, taken along the line 11—11 of Fig. 9.

Similar reference characters indicate corre-

sponding parts throughout the several figures of the drawings.

Referring to the drawings, the press, illustrated by way of example, comprises a table 10 mounting an intermittently rotatable transfer dial 11 disposed at its marginal portion in spaced relation above the table, and provided with a series of equally spaced circumferentially arranged article receiving pockets 12 having yieldable split sleeve article gripping members 13 therein, these gripping members being open at both ends and extending entirely through the dial. The press includes a vertical reciprocating gate 14 disposed above the dial, as well as a vertically reciprocating undercarriage (not shown) disposed below the table 10, this under carriage adapted to have up and down movement in timed relation with the reciprocating gate during the raising movement of the latter. The dial is adapted to be moved intermittently to transfer the articles inserted in its pockets from one to another of a series of stations, where a succession of progressive operations is performed thereon, this intermittent feeding movement of the dial taking place during the latter part of the upstroke of the gate, and following the up and down movement of the under carriage, so that the several punches carried by the gate and the carriage are clear of the dial during its transfer movement. The particular press illustrated is of the type wherein certain operations which require down pressure of a punch upon the article are performed in dies carried in die blocks below the dial, while other operations which require upward pressure upon the articles are performed in dies mounted above the dial, the articles being moved by means of the punches from the dial into the respective dies, and then back into the dial during the stationary periods of the dial.

The present invention is particularly concerned with the gauging of the articles, the ejection of defective articles, and the refeed of articles to replace the ejected articles. Three successive stations of the dial are involved, these being located ahead of the several operative stations of the dial, the articles being fed into the dial by any suitable means at a station ahead of these three stations.

At the detector or gauging station a detector mechanism is carried by the gate 14 in vertical alignment with the detector station, and comprises a tubular detector punch 15, slidably mounted at its upper end in a bushing 16 carried by the gate, and provided at its upper end with a shouldered head 17 disposed in a passage 18 of a bracket member 19 secured upon the upper side of the gate. A helical spring 20 is engaged about the punch 15 between the bushing 16 and a collar 21 secured to the punch and normally exerts downward pressure upon the punch while permitting it to yield upwardly. Within the tubular punch there is slidably engaged a feeler rod 22 projecting at its lower point end below the lower end of the punch, and provided at its upper end with a shouldered shaft extension 23 normally seated upon the upper side of the head end 17 of the punch. A collar 24 is secured upon the upper end of the shaft extension 23, and is connected by helical springs 25—25 to the bracket 19, these springs normally drawing the shaft extension 23 and the rod 22 downwardly against the head of the punch 15 while permitting upward movement of the rod relatively to the punch.

Beneath the collar 24 the shaft extension 23 is threaded and is engaged by a nut 26 against the under side of which a stop lever 27 engages, this lever being pivotally mounted at 28 upon the bracket 19 and having a slot 29 through which the shaft extension extends. Bearing projections 30 are provided upon the upper side of the lever at each side of the slot for bearing engagement with the nut 26. The stop lever is drawn upwardly into engagement with the nut by means of a spring 31 secured between the collar 24 and the lever, so that as the shaft extension 23 is moved upwardly the lever swings upwardly in correspondence therewith.

Upon the outer end of the bracket 19 there is pivotally mounted at 32 a cam lever 33, normally seated against an abutment stop 34 of the bracket 19, the lower side of the cam lever 33 being provided with a seating shoulder 35 upon which rests the forward end of the stop lever 27, its inner side above said seating shoulder being curved in an arc concentric to the pivotal axis of the lever 27, and provided in spaced relation above the shoulder with a clearance notch 36 adapted upon a predetermined upward swinging movement of the stop lever to register with the end of the stop lever to permit inward swinging movement of the cam lever. Movement of the stop lever either short of the notch 36 or beyond it causes the stop lever to block swinging movement of the cam lever.

The cam lever 33 is provided with a projection 37 carrying an adjustable contact screw 38 disposed in vertical line with the laterally projecting arm 39 of an actuator lever 40 pivotally mounted in a bracket 41 secured to the frame of the press, this actuator lever adapted upon being operated to actuate the ejecting means at the next station, as will presently more fully appear.

In the operation of the detector or gauging mechanism the tubular punch 15 is brought into contact with the article A carried in the dial through the downstroke of the gate 14, as shown in Fig. 3, a supporting punch 42 carried by the under carriage moving upwardly into the dial beneath the article to support it during the gauging operation. While the machine is adapted for use with any suitable type of article, a cup shaped ammunition component is illustrated by way of example, this being provided with a cylindrical wall of predetermined height and a closed bottom, the component having its open end up in its proper position in the dial.

In the case of a normal height component the projecting point end of the feeler rod 22 engages within the open end of the component, while the end of the punch engages its upper edge, the gate 14 continuing its down movement relatively to the spring loaded punch, the punch and the rod 22 being raised relatively to the gate and causing the stop lever 27 to move upwardly into register with the notch 36 of the cam lever 33. Thereupon, as the gate continues its down movement, the cam lever swings inwardly as its contact screw 38 engages the arm 39 of the actuator lever 40, as shown by the dot-and-dash lines of Fig. 2, and no movement is imparted to the actuator lever.

In the case of an under height or an over height component, however, the upward movement of the punch relative to the gate will be such that the end of the stop lever 27 is either slightly below or slightly above the notch 36, and consequently the stop lever acts as a block to the swinging movement of the cam lever, so that as the gate 14 continues its downward move-

ment the cam lever is rigid, and as the contact screw 38 engages the arm 39 the actuator lever 40 is actuated. This causes actuation of the ejector mechanism of the next station, as will presently more fully appear.

In the case of an inverted component, which may or may not be of proper height, the projecting point end of the feeler rod 22 engages the closed upwardly disposed end of the inverted component, causing the feeler rod to be moved upwardly relatively to the punch 15 for a distance calculated to cause the stop lever 27 to move above the notch 36, thus blocking movement of the cam lever 33 and causing actuation of the actuator lever 40.

Thus, in the case of a properly positioned component of standard height the detector mechanism does not cause actuation of the ejector mechanism of the next station, and consequently this component continues in its normal travel with the dial to the operating stations. In the case of an inverted component, or one of under or over height, the detector mechanism causes operation of the actuator lever 40 and actuates the ejector mechanism of the next station, so that when the defective component reaches this station it is ejected through the next cycle of operation of the press.

Contiguous to the two stations following the detector station, namely the ejector and refeed stations, there is secured upon the base 10 by a bolt 43, a mounting block member 44 consisting of a supporting pillar portion outwardly of the periphery of the dial 11, and a horizontal platform portion projecting inwardly over the dial. A vertical passage 45 is provided in the platform portion of the block member in vertical line with the pocket 12 of the dial disposed in register with the ejector station, and in its upper side there is provided a horizontal guide channel 46 terminating at its inner end in spaced relation to the passage 45, and having undercut retaining grooves 47 in each side. Within the channel there is slidably engaged a slide carrier 48 of rectangular tubular form, provided with retaining flanges 49 at each side engaged in the undercut grooves 47 of the channel, being provided with a longitudinal slot 50 engaged by a post 51 secured in the base of the channel 46. The upper end of this post is provided with a head 52 having a longitudinal passage 53 in which is slidably engaged a rod 54 secured at its forward end in an upwardly projecting lug 55 at the forward end of the carrier slide, a helical spring 56 being engaged upon the rod between the head 52 and the lug 55 and normally pressing the carrier slide forwardly against the forward end of the channel 46, the slot 50 permitting limited rearward retracting movement of the carrier slide, as will presently more fully appear.

Within the tubular carrier slide there is engaged a punch stopping slide 57 of rectangular cross section, provided at its forward end with a foot extension 58 normally engaged within a pocket 59 at the upper end of the passage 45 for the purpose of closing the upper end of this passage. The punch stopping slide is provided with a slot 60 normally registering with the slot 50 of the carrier slide, and at its rearward end is provided with a threaded stud 61 upon which is screwed one end of a helical spring 62, the other end of this spring being screwed upon the threaded stud 63 of a nut 64 seated in a shouldered recess 65 in the rearward end of the carrier slide passage.

Near the rearward end of the carrier slide there are provided projecting pins 66 at each side, engaged by the lower yoke end 67 of the actuator lever 40, so that upon actuation of the latter by the detector mechanism the carrier slide is moved to its retracted position, as shown by the dot-and-dash lines in Fig. 4.

Beneath the channel 46 the platform portion of the block member 44 is provided with a slot 69 extending to the passage 45, and in which a latch lever 70 is pivotally mounted upon a pin 71, being provided at its rearward end with an upwardly extending latch finger 72 normally bearing upon the under surface of the carrier slide 48 and adapted in the retracted position of the slide to engage in a notch 73 therein. An arch-shaped leaf spring 74, disposed between the upper wall of the slot 69 and the forward arm of the latch lever, exerts pressure upon the latch lever to press the latch finger 72 upwardly. At its forward end the lever is engaged with a lifting pawl 75, pivotally mounted within the slot 69 upon a pivot pin 76, and normally projected within the passage 45. Actuation of the pawl 75 is adapted to impart disengaging movement to the lever 70 to release the carrier slide from its retracted position as shown in Fig. 7.

A spring loaded ejector punch 78 is carried by the gate 14, being mounted for upward yielding movement in a punch holder 79 secured in the gate. The punch holder is provided with a cylindrical pocket 80, closed at its lower end by a ferrule 81, a collar 82 being secured upon the ejector punch and normally pressed downwardly against the ferrule by a spring 83 disposed within the pocket 80 in surrounding relation to the punch. A vertically extending groove 84 is provided in the side of the ejector punch having its lower end slightly spaced above the lower end of the punch, and in position to be engaged by the end of the latch lifting pawl 75 following actuation of the pawl by the punch rod, as will presently more fully appear. Within the base 10, in vertical line with the ejector punch 78, and the passage 45 of the dial, there is provided an ejection passage 85 through which the ejected components drop, as will presently more fully appear.

In the normal operation of the ejector mechanism, following the transfer of a properly positioned component of correct height from the detector or gauging station, and the gauging of which has not resulted in actuation of the ejector actuator lever 40, the foot extension 58 of the punch stopping slide 57 remains in its covering position at the upper end of the passage 45, so that as the reciprocating gate 14 moves downwardly, the spring loaded ejector punch 78 engages the foot extension, as shown in Fig. 4, and remains stationary as the gate 14 continues its downward movement. Consequently, this component remains in the dial and is carried thereby to the operating stations. In case an inverted component or a component of under or over height has been gauged at the gauging station, causing actuation of the actuator lever 40, the carrier slide 48 is moved to its retracted position, as shown in Fig. 4 by the dot-and-dash lines, whereupon the latch lever 70 engages its notch 73 and retains it in retracted position. This action occurs during the downward movement of the gate, and at which time the ejector punch 78 is engaged with the foot extension 58 under the pressure of its compressed spring 83, and consequently as the carrier slide 48 is retracted

the punch stopping slide remains in its projected position, the spring 63 secured to its rearward end being stretched as the carrier slide is retracted. As soon as the ejector punch 78, through the upward movement of the gate 14, is disengaged from the foot extension, the stretched spring 63 draws the punch stopping slide 57 to its retracted position, as shown in Fig. 7, thus uncovering the upper end of the passage 45. Thus, during the cycle following the cycle at which the defective component has been detected at the detector station, and following which this defective component has been moved from the detector station to the ejector station, the ejector punch 78 moves downwardly through the passage 45 and into the dial pocket, ejecting the defective component therefrom into the ejection passage 85. During the downward movement of the punch it engages the projecting end of the pawl 75 causing it to move the latch lever 70 to its unlatching position to release the slide 48, which thereupon moves to its forward position, the forwardly released punch stopping slide 57 abutting the surface of the ejector punch 78 while the latter is in its downwardly moved position and moving to its projected closing position over the passage 45 as the punch is moved to its upper position.

The refeed mechanism is associated with the ejector mechanism, so that it is actuated whenever the ejector mechanism is actuated and the ejector punch 78 is moved downwardly through the passage 45 to eject a component from the dial, so that as the empty pocket of the dial from which the component has been ejected is moved to the refeed station the refeed mechanism is operative to feed a component therein.

Within the platform portion of the supporting block member 44 a vertical refeed passage 86 is provided in vertical line with the dial pocket 12 disposed at the refeed station. Upon the upper side of the block member there is secured by screws 87 a guide member 88 of box like form, provided at one end with a vertical passage 89 in vertical line with the passage 86. A feed slide 90 is engaged within the guide member 88 and is provided at its forward end with a semi-cylindrical pocket formation 91 normally engaged within a cut-out 92 in the passage 89, the upper flat surface of the feed slide being normally disposed at the base of a feed tube 93 secured in a pocket 94 at the upper slide of the guide member 88, and in which is placed a supply of gravity fed pre-gauged components. The feed slide is normally retained in its forward position by a loop spring 95 extending about the forward end of the guide member 88 and the inner end of the slide member, being engaged through slots 96 in each side of the guide member.

Beneath the guide member 88 the platform portion of the block member 44 is provided with a slot 97 in which is engaged a lever 98, pivotally mounted upon a pin 99 and provided at its upper end with a slot 100 engaging a pin 101 disposed in a pocket 102 in the slide member 90. The lower end of the lever 98 is engaged by a push rod 103, slidable in a passage 104 and engaged at its forward end with an actuating pawl 105 pivotally mounted within a slot 106 upon a pivot pin 107, this pawl being normally projected into the ejector passage 45.

A spring pressed retaining ball member 108 is provided in the refeed passage 86, for the purpose of retaining a component fed therein preliminary to the feed of the component into the dial. The

gate 14 is provided with a refeed punch 109 in vertical line with the passages 86 and 89, and which moves through these passages during the down movement of the gate.

The refeed mechanism is actuated each time the ejector mechanism is actuated and through the downward movement of the ejector punch to eject a component, as shown in Fig. 10. During this ejecting movement of the punch it rotates the pawl 105, causing the slide rod 103 to move inwardly, and which in turn swings the lever 98, causing the feed slide 90 to be retracted to bring its forward semi-cylindrical pocket end 95 into register with the feed tube 93, whereupon the lowermost replacement component in the feed tube drops into this pocket end. Thereupon as the ejector punch and the refeed punch 109 are moved upwardly through the upstroke of the gate, the feed slide 90 is projected through the action of its spring 95, feeding the replacement component into the passage 89 where it drops downwardly to the point where it is arrested by the retaining ball 108, thus being in position to be fed into the empty pocket of the dial as the latter is moved from the ejector station to the refeed station. During the next operative cycle of the press the refeed punch 109 moves the replacement component into the dial in position to be carried by the dial to the operating stations of the press.

The form of the invention illustrated in the drawing and described herein is typical and illustrative only, and it is evident that the invention is capable of embodiments in other forms, all falling within the scope of the appended claims.

What is claimed is:

1. In a die press or the like, a transfer member intermittently movable to transfer a succession of articles successively along a plurality of operating stations; a reciprocating tool carrying gate; detector means on the gate in cooperative relation with one station for cooperation with an article carried by the transfer means to determine defectiveness thereof; an ejector punch on the gate in cooperative relation with the following station for ejecting a defective article; actuating means cooperating between the detector means and the ejector punch for rendering the ejector punch operative through detection by the detector means of a defective article; refeed means in cooperative relation with the next following station; and actuating means for the refeed means engageable by the ejector punch during its ejection movement for rendering the refeed means operative in response to the rejection of a defective article.

2. In a die press or the like, a transfer member intermittently movable to transfer a succession of articles successively along a plurality of operating stations; a reciprocating tool carrying gate; an ejector punch on the gate in cooperative relation with one station for ejecting a defective article from the transfer member; refeed means in cooperative relation with the following station; and actuating means for said refeed means engageable by the ejector punch during its ejection movement for rendering the refeed means operative in response to the rejection of a defective article.

3. In a die press or the like, a transfer member intermittently movable to transfer a succession of articles successively along a plurality of operating stations; a reciprocating tool carrying gate; detector means carried by the gate in cooperative relation with one station for cooperation

with an article carried by the transfer means to determine defectiveness thereof; an ejector punch on the gate for ejecting a defective article from the transfer member; refeed means in cooperative relation with a following station; and actuating means for said refeed means engageable by the ejector punch during its ejection movement for rendering the refeed means operative in response to the rejection of a defective article.

4. In a die press or the like, a transfer member, intermittently movable to transfer a succession of articles successively along a plurality of operating stations, a reciprocating punch carrying gate, detector means in cooperative relation with one station for cooperation with an article to determine defectiveness thereof, ejector means in cooperative relation with the following station, comprising a spring loaded ejector punch carried by said gate, a movable punch stopping member engageable by said spring loaded punch through the down stroke of said gate whereby the punch stopping member is retained in punch stopping position while so engaged, a spring projected retraction member yieldably connected to said punch stopping member, and actuating means cooperating between said detector means and said retraction member for retracting said retraction member through detection by said detector means of a defective article, said punch stopping member adapted to be retracted from its punch stopping position through its yieldable connection with said retraction member upon release by said punch through the upstroke of said gate.

5. In a die press or the like, a transfer member, intermittently movable to transfer a succession of articles successively along a plurality of operating stations, a reciprocating punch carrying gate, detector means in cooperative relation with one station for cooperation with an article to determine defectiveness thereof, ejector means in cooperative relation with the following station, comprising a spring loaded ejector punch carried by said gate, a movable punch stopping member engageable by said spring loaded punch through the down stroke of said gate whereby the punch stopping member is retained in punch stopping position while so engaged, a spring projected retraction member yieldably connected to said punch stopping member, actuating means cooperating between said detector means and said retraction member for retracting said retraction member through detection by said detector means of a defective article, said punch stopping member adapted to be retracted from its punch stopping position through its yieldable connection with said retraction member upon release by said punch through the upstroke of said gate, latch means for said retraction member to retain it in its retracted position, and release means for said latch engageable by said ejector punch during ejection movement thereof in the retracted position of said punch stopping member.

6. In a die press or the like, a transfer member, intermittently movable to transfer a succession of articles successively along a plurality of operating stations, a reciprocating punch carrying gate, detector means in cooperative relation with one station for cooperation with an article to determine defectiveness thereof, ejector means in cooperative relation with the following station, comprising a spring loaded ejector punch carried by said gate, a movable punch stopping member engageable by said spring loaded punch through the down stroke of said gate, a spring projected retraction member yieldably connected to said punch stopping member, actuating means cooperating between said detector means and said retraction member for retracting said retraction member through detection by said detector means of a defective article, said punch stopping member adapted to be retracted from its punch stopping position through its yieldable connection with said retraction member upon release by said punch through the upstroke of said gate, refeed means in cooperative relation with the next following station, and actuating means for said refeed means engageable by said ejector punch during its ejection movement for rendering said refeed means operative through operation of said ejector means.

7. In a die press or the like, a transfer member, intermittently movable to transfer a succession of articles successively along a plurality of operating stations, a reciprocating punch carrying gate, detector means in cooperative relation with one station for cooperation with an article to determine defectiveness thereof, ejector means in cooperative relation with the following station, actuating means cooperating between said detector means and said ejector means for rendering said ejector means operative through detection by said detector means of a defective article, refeed means in cooperative relation with the next following station comprising a refeed punch carried by said gate, a reciprocating feed slide adapted to be retracted to receive a replacement article and projected to feed said replacement article into line with said refeed punch, and actuating means cooperating between said ejector means and said refeed means for actuating said refeed slide through operation of said ejector means.

8. In a die press or the like, a transfer member, intermittently movable to transfer a succession of articles successively along a plurality of operating stations, a reciprocating punch carrying gate, detector means in cooperative relation with one station for cooperation with an article to determine defectiveness thereof, ejector means in cooperative relation with the following station, actuating means cooperating between said detector means and said ejector means for rendering said ejector means operative through detection by said detector means of a defective article, refeed means in cooperative relation with the next following station comprising a refeed punch carried by said gate, a reciprocating feed slide adapted to be retracted to receive a replacement article and projected to feed said replacement article into line with said refeed punch, yieldable retaining means for supporting said replacement article in line with said refeed punch prior to refeed actuation of said refeed punch, and actuating means cooperating between said ejector means and said refeed means for actuating said refeed slide through operation of said ejector means.

9. In a die press or the like, a transfer member, intermittently movable to transfer a succession of articles successively along a plurality of operating stations, a reciprocating punch carrying gate, detector means in cooperative relation with one station for cooperation with an article to determine defectiveness thereof, ejector means in cooperative relation with the following station, including an ejector punch carried by said gate, actuating means cooperating between said detector means and said ejector means for rendering said ejector means operative through detec-

tion by said detector means of a defective article, refeed means in cooperative relation with the next following station comprising a refeed punch carried by said gate, a reciprocating feed slide adapted to be retracted to receive a replacement article and projected to feed said replacement article into line with said refeed punch, and actuating means for said feed slide disposed in the path of ejecting movement of said ejector punch for rendering said refeed means operative through operation of said ejector means.

10. In a die press or the like, a transfer member intermittently movable to transfer a succession of ammunition components successively along a plurality of operating stations; a reciprocating tool carrying gate; detector means on the gate in cooperative relation with one station for cooperation with a component carried by the transfer means to determine defectiveness thereof; an ejector punch on the gate in cooperative relation with the following station for ejecting a defective component; actuating means cooperating between the detector means and the ejector

punch for rendering the ejector punch operative through detection by the detector means of a defective component; refeed means in cooperative relation with the next following station; and actuating means for the refeed means engageable by the ejector punch during its ejection movement for rendering the refeed means operative to replace the defective component in response to ejection of the defective component.

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