The objects of this invention are:
First, to provide an automatic structure which will handle a plurality of label strips, and print, cut, fold, crease, and pack the same.
Second, to provide improved equalizing means for the feed jaws whereby the folding and feed jaws will grasp evenly and effectively a plurality of label strips in feeding and folding the same.
Further objects and objects pertaining to details and economies of construction and operation will definitely appear from the description to follow.
A machine embodying my invention is illustrated in the accompanying drawings, in which:
Fig. 1 is a reduced diagrammatic elevation view of the entire machine structure forming a complete automatic printing, cutting, folding, creasing and packing machine for labels with the feed and delivery jaws advanced to the packing position.
Fig. 2 is an enlarged detail diagrammatic sectional elevation similar to Fig. 1, showing the feed and label delivery jaws in initial position before advancing the label strip to the cutter and with the label delivery jaws engaging a creased and finished label ready to carry it forward and deliver it to the packer means.
Fig. 3 is a detail plan view of the printing part of the structure with the counter omitted, showing the feeding and the printing of a plurality of label strips.
Fig. 4 is a detail plan view of the feeding, cutting, folding and packing parts appearing in elevation in Figs. 1 and 2 with the feed and label delivery jaws in the initial position.
Fig. 5 is a detail plan view similar to Fig. 4 of the label feed, cutting, folding, and packing means, the label feed jaws being shown in position to cooperate with the label folder and creaser and the delivery jaws being in position over the packer means, portions of the packer being omitted.
Fig. 6 is a perspective view showing in detail all of the operative parts and cams shown in plan in Fig. 4 and taken from the lower left hand of that view, the driving pulley and clutch being omitted and other parts being broken away.
Fig. 7 is an enlarged detail sectional elevation of the auxiliary label feed means and cutter device taken in initial position on line 7—7 of Figs. 4, 5 and 9, the cutter being in elevated position and the label feed jaws being omitted for the sake of clearness, the auxiliary feed fingers being in initial depressed engaging position and the feed control lever finger elevated.
Fig. 8 is a similar section view to Fig. 7 with the auxiliary feed advanced to the right, with the auxiliary feed fingers in elevated position ready to be returned to initial position and the feed control lever finger and cutter means in depressed position, clamping the end of the label strip as a label is being cut by the shears and holding it until the feed returns to initial position.
Fig. 9 is an enlarged detail sectional elevation view of the shear structure on line 9—9 of Figs. 4, 5, 7, 8 and 11 from the right hand end of Fig. 7, the cutter blade being elevated into the position when the label strip is being advanced, a fragment of the actuating cam and spring being shown.
Fig. 10 is a detail sectional elevation of the shear with cutter in elevated position as seen in Fig. 9 from the opposite side, taken on line 10—10 of Figs. 4, 5, 7, 8 and 11 or on the left hand side of Fig. 7, parts being broken away to show details of cutter and label strip clamps also elevated.
Fig. 11 is an enlarged detail sectional elevation on a line corresponding to line 11—11 of Figs. 4, 5, 9, and 10 showing the position of the parts appearing in Fig. 8 with the feed label clamps in closed position and the upper shear blade down.
Fig. 12 is a detail sectional plan on line 12—12 of Figs. 7, 9, 10 and 11 showing details of the independently adjustable clamp slides of the label holding and feed means.
Fig. 13 is an enlarged detail sectional view on line 13—13 of Figs. 1, 4 and 6 showing the equalized label feeding, folding, and creasing jaws for handling a pair of label strips at once.
Fig. 14 is an enlarged section like Fig. 13 showing the structure equalized and adapted to the handling of four parallel label strips at once.

The parts of the drawings will be identified by their numerals of reference which are the same in all the views.

In the consideration of the drawings, Fig. 1 is a reduced diagrammatic elevation of the essential parts of the entire structure. In Fig. 6 a tracing from a photograph of the part of the machine which feeds, cuts, folds, creases and packs the labels is shown. As this invention does not relate to the particular cam means by which the different movements are accomplished, these parts are not lettered and described but only those parts which enter into the operation.

The various cams and structures are illustrated in patents to which this improvement is particularly directed, i.e.: No. 1,618,138, Feb. 15, 1927, to Arthur Rosenthal for label folding and packing machine;
No. 1,528,611, Mar. 3, 1925, to Arthur and Martin Rosenthal for label cutting and folding machine;
No. 1,552,648, Sept. 8, 1925, to Arthur and Martin Rosenthal for label packing means.

1 is an intaglio printing press with double plate and counters to print labels step by step. 2 is the double die plate. 3 is the counter actuated in the usual way.

4, 4 are a pair of label strips. 5, 5 are the plurality of identical supply reels, seen in end view in Fig. 1, only one appearing. 6, 6 are the blotter strips. 7 is the supply reel means for the plurality of blotter strips. 8, 8" (see Figs. 1 and 3) are the guides for the plurality of label strips to and from the printing press, there being a pair of strips in each instance. 9 are the take-up reels for the blotter strips which feed the same along at a different rate, preferably slower, than the label strip. 10 are the overlay strips of glazed paper. 11 are the supply reels for said overlay strips.

12 are guideways for label and overlay strips delivered together therethrough. 121 are the yielding shoes for the printed label and overlay strips in the said guides 12. 13 are the auxiliary feed fingers in adjustable guideways 132 secured to the frame by screws 131. The auxiliary feed fingers 13 advance the label strips through the guides 132, avoiding strain and thus making even delivery of the plurality of strips possible.

14 is the cutting shear. 15 are the label feed jaws for feeding and folding and creasing the labels. 16 is the label folding and creasing means which cooperates with the broad upper jaw of the feed jaws. The folder is provided with a heater 161.

17 are the label delivery jaws carried by the feed jaw member for delivering the finished label to the packer. 18 is the label packing device to which the finished labels are delivered by the delivery jaws. 19 is the reciprocating carriage for the feed jaws and delivery jaws. The feed jaws 15 and the delivery jaws 17 are connected together and open and close simultaneously in the same manner.

By use of these devices it will be seen that the plural line of labels are printed, blotted, delivered with overlay strips, engaged and fed by the feed jaws, cut to the proper length, delivered by the feed jaws to the folder where the same are creased and folded upwardly on the broad upper jaw under heat, and then delivered by the label delivery jaws from the folder to the packing device. Thus is provided complete automatic operation in printing, feeding, cutting, folding, creasing and packing of the labels from a plurality of label strips.

Auxiliary feed fingers 13 for the label strips are carried by the feed carriage 19. 191 is an adjustable bracket secured to said carriage 19. 20 is an adjustable supporting arm carried by said bracket and supporting the auxiliary feed fingers 13. 201 is the feed finger bracket secured to said arm 20. 21 is a hinge member carrying the serrated feed fingers 13. 211 is the rockshaft carrying the hinge member 21 for controlling the engagement of the feed fingers 13. 212 is a rocker arm secured thereto. 213 is a roller carried by said arm 212. 22 are a pair of independent pressure springs holding the auxiliary feed fingers 13 each yieldingly against a label strip.

The feed fingers 13 are lowered to feed and elevated on the return by raising and lowering the way on which roll 213 travel. 24 is a bell crank pivoted at 241 to a depending frame bracket. 242 is the upward extending arm of said bell crank. 25 is a reciprocating cam bar recessed at 251 to form a pair of cam faces 252 and 253. It is operated by the bell crank arm 242 having the pivot connection 254. 255 is a coil spring to return the cam bar 25 to its initial position. (See Figs. 7 and 8.) 26 is a recessed bracket supporting the cam bar 25. 261 are guides. 262 is a projecting flange carrying the cam bar.

27 is an opposed cam bar recessed at 271 to form the cam faces 272 and 273 to cooperate with cam faces 252, 253 of bar 25. The straight upper side 274 of the cam bar 27 is the guide support or way for the roller 213 on the rocker arm 212 which controls the feed fingers 13.

With this arrangement the possibility of the label slipping through the feeding jaws is reduced to a minimum. As the carriage 19 is operated the bracket supporting the feed fingers also travels. The gripping fingers 13 under the tension of the spring 22 are held yieldingly against the label strip. Previous to the operation of the carriage, the cutter is...
operated and its actuating lever likewise actuates the bell crank lever 24. The operation of the bell crank 24 reciprocates the cam bar 25, having the cam faces 251 and 252, to a position opposite the opposed cam faces 271 and 272 on the cam bar 27 and elevates the same for the return of the auxiliary feed fingers 13 to initial position.

When the cutter is elevated, the cam bar 27, which is slidably mounted in the guides 261, is allowed to drop down permitting the rocker arm 21, which is secured to the shaft 211, to rock and drop the fingers 13 into feeding engagement.

To separably adjust the feed of the label strips to the proper cutting position, I provide a base block 26 having a projecting portion 251 recessed at 282. The recess 282 is back of the lower cutter 283.

29 is the shear block pivoted at 291, with the shear blade 14 attached thereto. 292 is the actuating arm thereof. 283 is an adjustable link connection thereto. 294 is the actuating lever pivoted at 295. 296 is a cam roller at the end thereof. 297 is a downwardly projecting arm having a coil spring 298 attached thereto. 30 is a cam coacting with the roller 296 to actuate the shear block to force the cutter down. This shear means is all detailed in my said former patents.

31 is a label clamping plate slidably mounted for vertical adjustment on shear block 29. 311 are recess ways therein. 312 is the cover plate thereof. 313 are slots in the cover. 314 are shouldered screws securing the supporting plate and cover to the shear block. 32 are label engaging adjusting clamp blades turned outwardly at their upper end at 321 and held yieldingly in contact with the adjusting screws 342 by spring means. 33 is a flat spring secured to the upper edge of the shear block and held yieldingly in engagement with the projecting pins 331 in the slidably mounted label clamp plate 31.

34 is an upwardly extended bracket secured to the shear block having a right angled portion 341 through which the adjusting thumb screws 342 are threaded. A finger 343 frictionally engages the serrated head of each screw and holds it in adjusted position. The feed of the plurality of label strips may thus be independently adjusted, the labels to be advanced at slightly varying rates to equalize the same.

If the plurality of strips are not being fed through the cutter in proper alinement the continual step by step movement will eventually bring one of the label strips so far out of alinement that the cutter will not cut off the strips in between the labels but will cut one of the labels thereby effecting a loss in the labels.

This device which may be adjusted by the operator while the machine is in motion is slidably secured to the shear block 29 and varies the rate of feed. As the shear cuts the labels the blades 32, having outwardly turned ends 321, contact with the adjusting screw 342 coacting with the recess 282 in the base block 28 thereby pressing the label into the recess so that that label is advanced.

The adjusting screw limits the travel of the blade upward. The lower edge of the adjusting means lies in a plane below that of the cutting edge of the knife so that on the downward stroke of the knife the adjusting means contacts with the label strip thereby holding the same before the knife after it has traveled its full stroke. The tension continues on the strip until the label strip has become in proper alinement and then the operator releases the screw, allowing the blade to recede up and out of the recess.

In Fig. 13 the label engaging jaw 35 is shown pivotally mounted at 351 at a point above and between the label strips thereby equalizing the pressure on both labels.

In Fig. 14 I show a series of label engaging jaws 35 which are employed with the equalizing means to properly grip each label, showing my invention as adapted to any number of label strips, two, as seen in Fig. 13, or more, as seen in Fig. 14.

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

1. An automatic apparatus for printing, cutting, folding and packing a plurality of label strips, the combination of a printing press with a plurality of printing means, a plurality of supply reels delivering a plurality of label strips in parallel relation thereto, a plurality of blotter strips with supply and take-up reels therefor, guides for said label and blotter strips to and from the printing press, a plurality of supply reels for delivering overlay strips, auxiliary label feed devices comprising guideways for the label and overlay strips, reciprocating spring fingers under independent pressure to engage the separate label strips in said guideways, means for elevating said spring fingers on their return movement, cut off shears the lower member of which is provided with a grooved engaging jaw surface and the pivoted member of which is provided with independently adjustable clamping jaws for engaging and holding the label strip in said groove when severing the label and to vary the feeding action of the label strips to equalize the said labels, parallel label feed jaws for grasping the label in advance of the cut off shears delivering the same to be cut, the upper member of which is broad and centrally pivoted to equalize the action on both said label strips to effectively engage each strip, folder means cooperating with said jaws to fold and crease the labels, delivery jaws in spaced parallel relation to the feed jaws for grasping the folded label and delivering the
same to the packer means, and packer means cooperating with said delivery jaws.

2. In an automatic apparatus of the class described, a printing press with a plurality of printing means, means for delivering a plurality of label strips therethrough in parallel relation comprising auxiliary label feed devices comprising guideways for the label strips, reciprocating spring fingers under independent pressure to engage the separate label strips in said guideways, means for elevating said spring fingers on their return movement, cut off shears, parallel label feed jaws for grasping the label strips in advance of the cut off shears delivering the same to be cut, the upper member of which is broad and centrally pivoted to equalize the action on both said label strips to effectively engage each strip, folder means cooperating with said jaws to fold and crease the labels, and delivery jaws in spaced parallel relation to the feed jaws opening and closing therewith for grasping the folded label and delivering the same to be packed.

3. In an automatic apparatus of the class described, a printing press with a plurality of printing means, means for delivering a plurality of label strips therethrough in parallel relation comprising auxiliary label feed devices comprising guideways for the label strips, reciprocating spring fingers under independent pressure to engage the separate label strips in said guideways, means for elevating said spring fingers on their return movement, cut off shears, parallel label feed jaws for grasping the label strips in advance of the cut off shears delivering the same to be cut, the upper member of which is broad and centrally pivoted to equalize the action on both said label strips to effectively engage each strip, folder means cooperating with said jaws to fold and crease the labels, and delivery jaws in spaced parallel relation to the feed jaws opening and closing therewith for grasping the folded label and delivering the same to be packed.

4. In an automatic apparatus of the class described, a printing press with a plurality of printing means, means for delivering a plurality of label strips therethrough in parallel relation comprising auxiliary label feed devices comprising guideways for the label strips, reciprocating spring fingers under independent pressure to engage the separate label strips in said guideways, means for elevating said spring fingers on their return movement, cut off shears, parallel label feed jaws for grasping the label strips in advance of the cut off shears delivering the same to be cut, the upper member of which is broad and centrally pivoted to equalize the action on both said label strips to effectively engage each strip, folder means cooperating with said jaws to fold and crease the labels, and delivery jaws in spaced parallel relation to the feed jaws opening and closing therewith for grasping the folded label and delivering the same to be packed.
devices comprising guideways for the label strips, reciprocating spring fingers under independent pressure to engage the separate label strips in said guideways, means for elevating said spring fingers on their return movement, cut off shears the lower member of which is provided with a grooved engaging jaw surface and the pivoted member of which is provided with independently adjustable clamping jaw blades for engaging and holding the label strip in said groove when severing the label and to vary the feeding action of the label strips to equalize the said labels, parallel label feed jaws for grasping the label strips in advance of the cut off shears delivering the same to be cut, the upper member of which is broad, folder means cooperating with said jaws to fold and crease the labels, delivery jaws in spaced parallel relation to the feed jaws opening and closing therewith for grasping the folded label and delivering the same to be packed.

8. In an automatic apparatus of the class described, a printing press with a plurality of printing means, means for delivering a plurality of label strips therethrough in parallel relation comprising auxiliary label feed devices comprising guideways for the label strips, reciprocating spring fingers under independent pressure to engage the separate label strips in said guideways, means for elevating said spring fingers on their return movement, cut off shears, parallel label feed jaws for grasping the label strips in advance of the cut off shears delivering the same to be cut, the upper member of which is broad, folder means cooperating with said jaws to fold and crease the labels, and delivery jaws in spaced parallel relation to the feed jaws opening and closing therewith for grasping the folded label and delivering the same to be packed.

9. In an automatic apparatus of the class described, a printing press with a plurality of printing means, means for delivering a plurality of label strips therethrough in parallel relation comprising cut off shears, parallel label feed jaws for grasping the label strips in advance of the cut off shears delivering the same to be cut, the upper member of which is broad, folder means cooperating with said jaws to fold and crease the labels, and delivery jaws in spaced parallel relation to the feed jaws opening and closing therewith for grasping the folded label and delivering the same to be packed.

In witness whereof I have hereunto set my hand.

ARTHUR ROSENTHAL.