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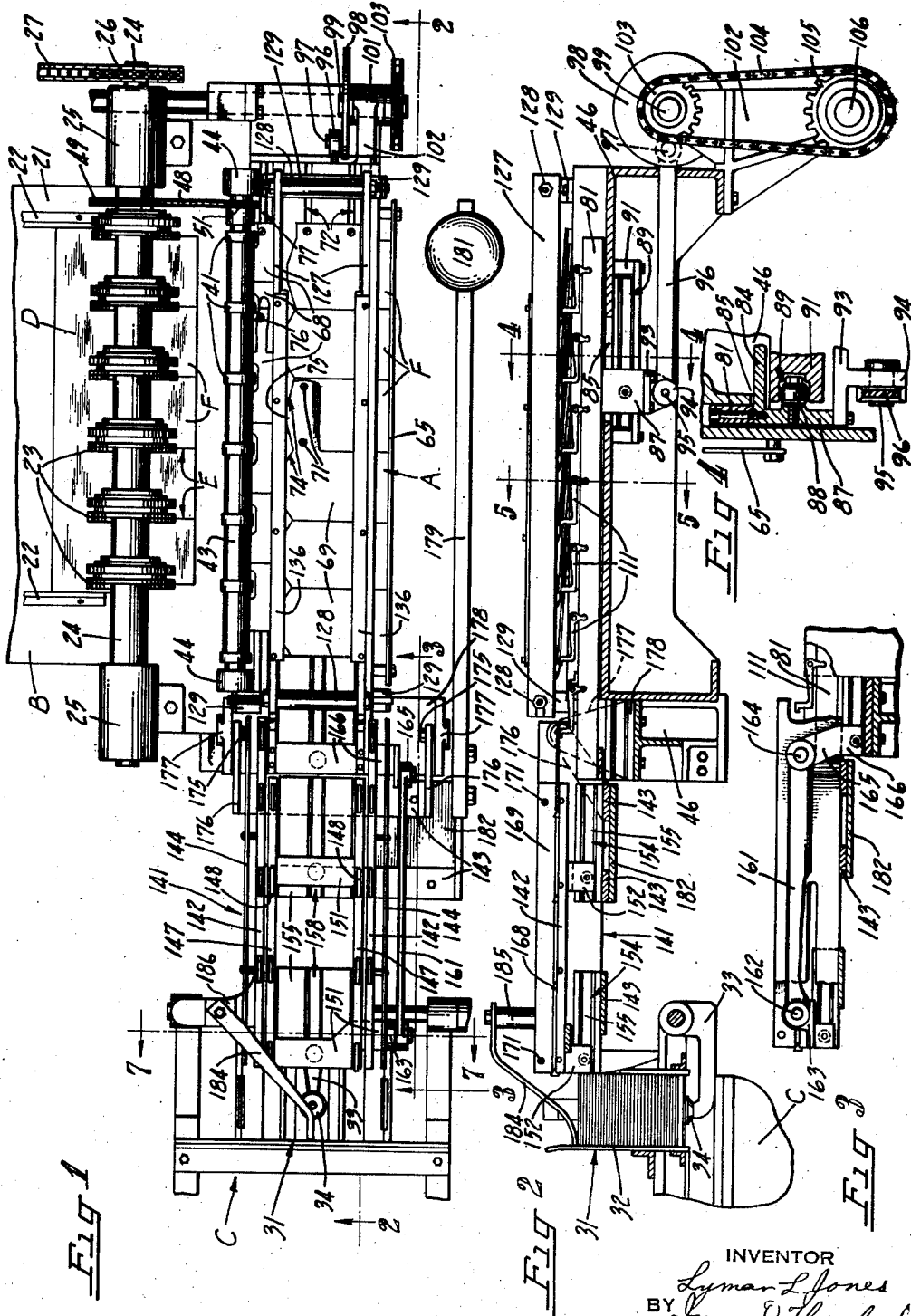
L. L. JONES

2,409,631

CAN MAKING MACHINE

Filed May 6, 1941

3 Sheets-Sheet 1



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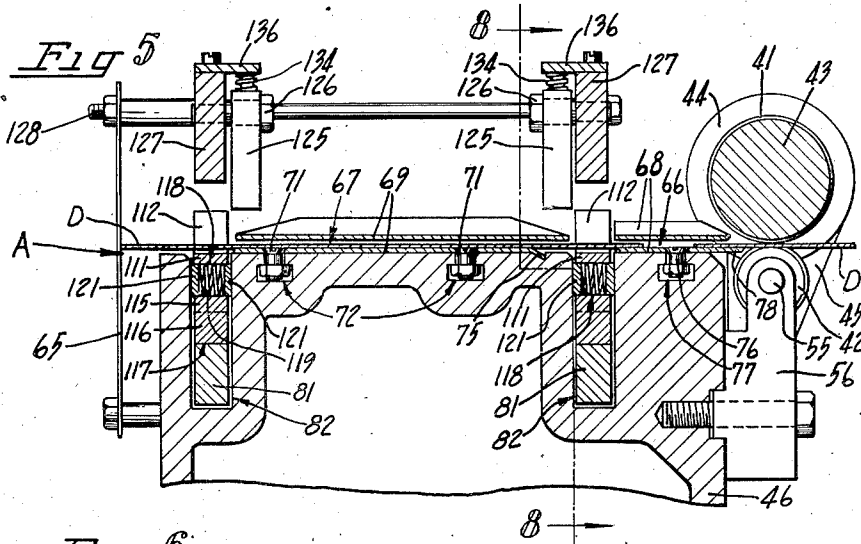
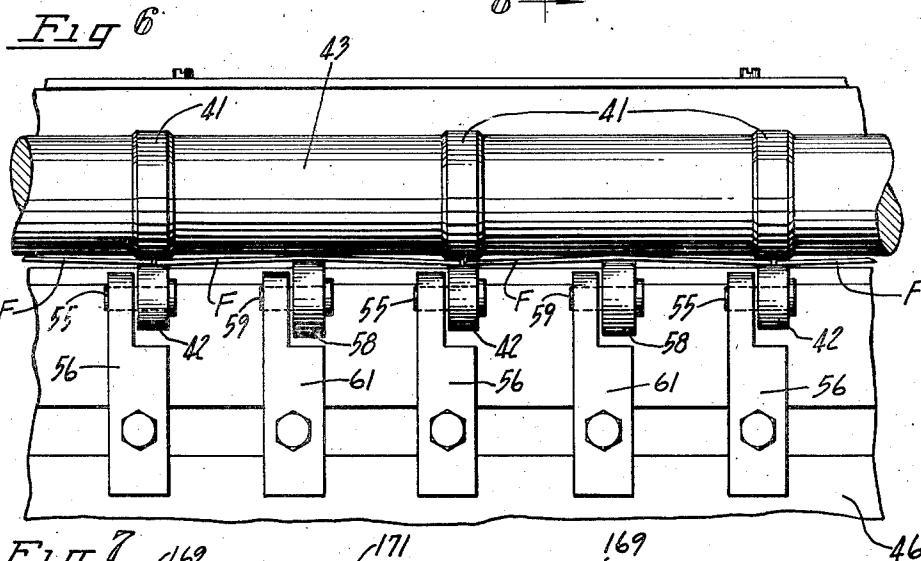
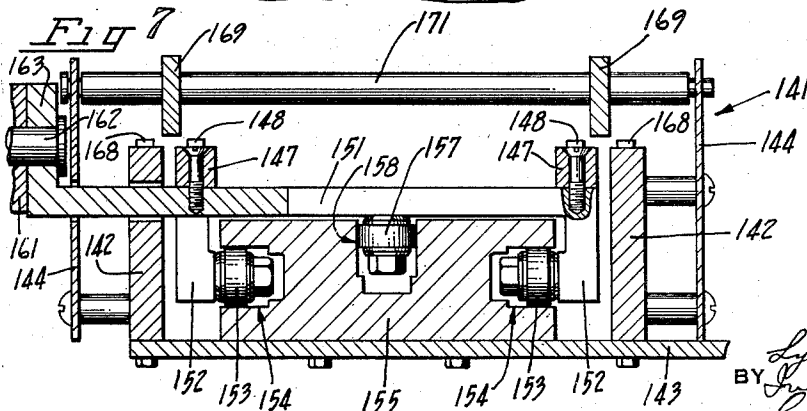
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CAN MAKING MACHINE

Filed May 6, 1941

3 Sheets-Sheet 2



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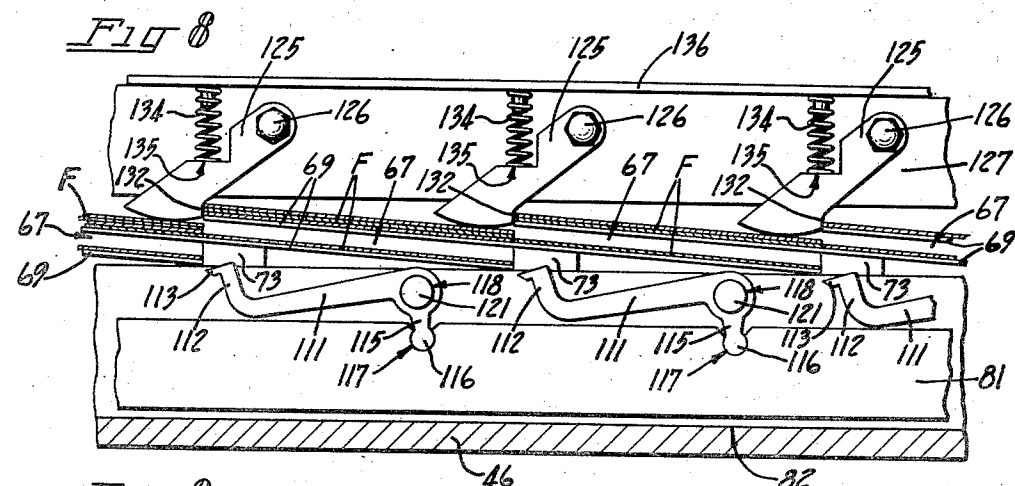
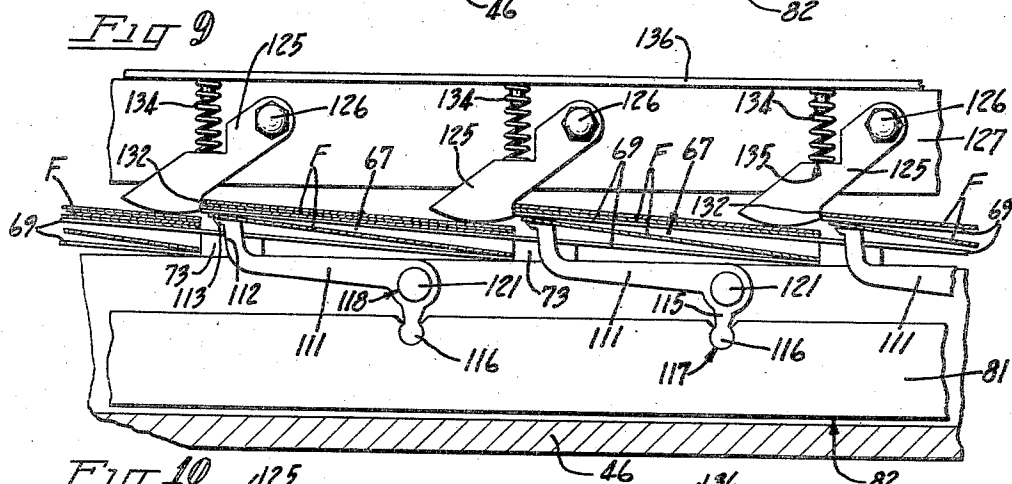
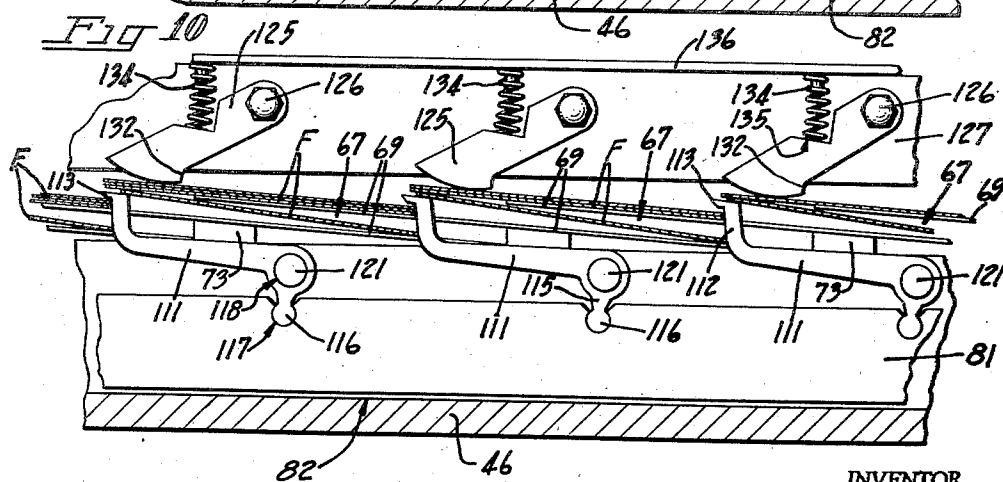
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2,409,631

CAN MAKING MACHINE

Filed May 6, 1941

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,409,631

CAN MAKING MACHINE

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Application May 6, 1941, Serial No. 392,131

7 Claims. (Cl. 271—84)

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The present invention relates to container or can making machines and has particular reference to conveying and simultaneously stacking sheet material blanks from which can parts subsequently are produced.

In the manufacture of certain can parts which are made preferably from flat blanks, the latter usually are cut from large sheets of material in a machine designed for this purpose. The blanks are removed manually from the machine and are arranged in a stack. This stack then is deposited by hand in a magazine of another machine from which they are fed individually for the performance of one or more operations incident to forming them into can parts.

The instant invention contemplates the automatic stacking of such blanks as they leave the first operation machine and the conveying of the stacks so formed, into place in the magazine of the subsequent operation machine.

An object therefore of the invention is the provision of a stacking and conveying mechanism wherein blanks of sheet material are piled one on top of the other to produce a stack of such blanks and the stack is conveyed into position in a subsequent operation machine so that immediate feeding of the blanks through the machine may be effected without manually handling them.

Another object is the provision of such a mechanism wherein the blanks progressively are arranged into a stack while being conveyed toward the subsequent operation machine and the completed stack is deposited in a magazine of the subsequent operation machine so that individual blanks may be fed from the magazine as desired.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a top plan view of the apparatus embodying the instant invention, with parts broken away;

Fig. 2 is a longitudinal section taken substantially along the broken line 2—2 in Fig. 1, with parts broken away;

Fig. 3 is an enlarged sectional detail taken substantially along the longitudinal line 3—3 in Fig. 1, with parts broken away;

Fig. 4 is an enlarged transverse sectional detail taken substantially along the line 4—4 in Fig. 2, with parts broken away;

Fig. 5 is an enlarged transverse section taken substantially along the line 5—5 in Fig. 2, with parts broken away;

Fig. 6 is a side elevation as viewed from the right in Fig. 5, with parts broken away;

Fig. 7 is an enlarged transverse section taken

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substantially along the line 7—7 in Fig. 1, with parts broken away; and

Figs. 8, 9 and 10 are enlarged fragmentary sectional views taken substantially along the broken line 8—8 in Fig. 5, the different views showing the moving parts in different positions, and showing blanks of sheet material being arranged into stacks.

As a preferred embodiment of the instant invention, the drawings illustrate a stacking and conveying mechanism A (Fig. 1) interposed between and connecting with a sheet slitting machine B and a can body making machine C. The slitting machine B is of the usual character utilized in can making practice, such as the machine disclosed in United States Patent 1,868,707, issued July 26, 1932, to John M. Hothersall.

In such a slitting machine sheets D of tin plate or the like sheet material are conveyed across a table 21 between a pair of guide rails 22 and are fed into the grip of a plurality of upper and lower rotary cutters 23. The cutters are mounted on a cross shaft 24 journaled in bearings 25 secured to the table 21. The shaft is rotated in any suitable manner such as for example, by a sprocket 26 and chain 27.

As the sheet D passes between the rotating cutters 23 it is cut along lines of severance E and this divides the sheet into a plurality of flat rectangular blanks F from which can bodies are subsequently produced. The flat blanks F immediately advance into the stacking and conveying mechanism A. In this mechanism the blanks are shifted sidewise (toward the left as viewed in Fig. 1) along a path of travel which is disposed preferably at right angles to the direction in which they entered the device.

During this travel of the blanks F, they are piled one on top of the other to form a stack of blanks. Such a stack moves along the sidewise path of travel and is deposited into a magazine 31 of the can body making machine C. The can body making machine may be a conventional body maker such as that disclosed in United States Patent 1,770,041, issued July 8, 1930, to J. F. Peters.

In such a can body making machine, the stack of blanks F are retained in the magazine 31 by a plurality of vertical guide posts 32 which are secured to the machine main frame. The blanks are fed individually from the bottom of the magazine in the usual manner, as for example, by a rocker arm 33 having a suction cup 34 which draws the blanks down from the magazine.

The stacking and conveying mechanism A now will be explained in more detail. The severing of the blanks F from the sheet D leaves the edges of the blanks with a slight burr and it is desirable to eliminate these burrs as much as possible before the blanks enter the stacking mechanism. This is to prevent the blanks from being scratched.

This elimination of the burrs is effected preferably by cooperating upper and lower edge flattening or ironing-out rollers 41, 42 (Figs. 1, 5 and 6) between which the newly cut edges of the blanks pass.

There are a plurality of the upper rollers 41, as many in fact as there are lines of severance E. Such rollers are located in alignment with the longitudinal edges of the blanks being cut and these rollers are formed on a roller shaft 43 which is parallel with the cutter shaft 24. The ends of the roller shaft are journaled in a pair of spaced bearings 44 formed in brackets 45 secured to a side of a bed block 46 which constitutes the main frame of the stacking and conveying mechanism. This bed block is bolted to the frame 21 of the splitter B.

The roller shaft 43 is rotated continuously by an endless chain 48. The chain operates over a driving sprocket 49 which is carried on the cutter shaft 24 and over a driven sprocket 51 which is mounted on the roller shaft. The lower rollers 42 individually are mounted on short pivot pins 55 carried in brackets 56 bolted to the bed block 46. There are a plurality of these lower rollers 42 and they are located directly below but not quite touching the upper rollers 41.

Hence as the blanks F leave the cutters 23, the severed edges of the blanks pass between the flattening or deburring rollers 41, 42. This smooths or presses the burrs so that they are ironed out flat.

In order to effect this burr flattening operation with the best results, the cut edges are separated by a slight space during the time the blanks are passing between the rollers 41, 42. This is brought about by temporarily bowing or bending the blanks into an arch shape by bowing rollers 58 (Fig. 6) which are located between the lower flattening rollers 42. These bowing rollers are slightly larger in diameter than the flattening rollers and are mounted on pivot pins 59 carried in brackets 61 bolted to the bed block 46.

The flattening rollers 41, 42 while eliminating the burr on the blank edges, also advance the blanks into the stacking and conveying mechanism proper. The momentum of the entering blanks, as they leave the flattening rollers, carries them across the top of the bed block 46 and into position against a stop plate 65 (Figs. 1 and 5) which is bolted to the bed block. This plate locates the blanks for further cross feeding.

The blanks F thus far advanced are received in pockets or compartments 66, 67 which are set off by two sets of overlying vanes or shingles 68, 69 (see also Fig. 8) which are arranged in two spaced rows extending longitudinally of the bed block. The shingles 68 are immediately adjacent the flattening rollers while the shingles 69 are located nearer the stop plate 65.

The shingles 69 are disposed in an inclined position, sloping with the high end toward the left, as viewed in Fig. 1. The lower end of each shingle is secured to the bed block by flat head bolts 71 (Figs. 1 and 5) which are threaded into nuts disposed in a pair of spaced and parallel T slots 72 formed in the bed block. Near the middle, the shingle is provided with a transverse supporting member 73 (Fig. 8) which is secured to the bottom of the shingle and which rests on the top of the bed block. This member holds the shingle in its inclined position so that its upper end will overlap the lower end of the next adjacent shingle and leave a space or pocket 67. The support member 73 also provides a stop element adjacent

the lower end of the next adjacent shingle to block off the lower end of the pocket.

The length of the shingles 69 is substantially twice the width of the blanks F. It follows therefore that a full one half of the shingle overlaps the next shingle so that the dimension of the underlying pocket 67 from the stop member 73 to the upper edge of the shingle is just the right length to receive the width of a blank F, as shown in Fig. 8. The inner edge of each shingle 69 is cut away in a pair of spaced notches 74 (Fig. 1). This forms a lip 75 between them. This lip is bent down into a recess in the bed block 46 (as shown in Fig. 5) and provides a beveled surface to facilitate entrance of a blank F into a pocket 67.

The shingles 68 which are disposed adjacent the edge flattening rollers 41, 42 are also disposed on an angle to correspond with the inclined position of the shingles 69 so that an entering blank may pass readily from one to the other. These shingles 68 are secured to the bed block 46 by flat head screws 76 (Figs. 1 and 5) which are threaded into nuts disposed in a T slot 77 formed in the bed block.

The inner edge of each shingle 68 is also notched out to form a lip 78 which however is not bent down but extends into close position adjacent the lower flattening rollers 42 and the bowing rollers 58. The width of the lip of the shingle is substantially less than the width of the blank.

Hence as the leading edge of a bowed blank leaves the flattening and bowing rollers, the raised or bowed portion of the blank comes into overlapping position relative to the lip 78 of the adjacent shingle. As the blank continues to move under the advancing action of the flattening rollers its leading edge rides up on the shingle lip and is deflected by the lip into an angular position which corresponds to the angularity of the shingles. It is this deflection of the blank that directs it into position into a shingle pocket 66 as the blank is propelled by the flattening rollers and from this pocket into the aligning and adjoining pocket 67 of the shingles 69.

The angularly disposed blanks F in the pockets 66, 67 and between the shingles 68, 69 next are shifted side-wise or longitudinally of the bed block 46. This is toward the left as viewed in Figs. 1 and 2. Such a sidewise movement effects the stacking of the blanks, as hereinbefore mentioned. This side-wise shifting of the blanks is brought about preferably by a pair of spaced and parallel feed bars 81 one being disposed on each longitudinal side of the row of shingles 69. The feed bars are located within deep slide grooves 82 formed in the bed block 46.

The feed bars 81 are reciprocated in unison through a forward or blank stacking stroke and thence through a return stroke. For this purpose the feed bars are secured to a tie bracket 84 (Fig. 4) which extends across the bottom of the bed block and which projects through horizontal slots 85 formed in the block. Adjacent each feed bar, the tie bracket is formed with a depending lug 87 (see also Fig. 2) which carries a roller 88. The two rollers operate in runway grooves 89 formed in the outer edges of a support block 91 secured to the bottom of the bed block. The rollers thus vertically support the feed bars and provide easy sliding movement for them with a minimum of friction.

An actuating plate 93 is bolted to the lugs 87 and this plate is formed with a depending actuating lug 94. This lug carries a pivot pin 95 on

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which the inner end of a link 96 is mounted. The outer end of the link is mounted on a pivot stud 97 (Figs. 1 and 2) which is carried eccentrically on a crank disc 98 mounted on a short shaft 99 journaled in a bearing 101 formed in a bracket 102 secured to the bed block 46.

The shaft 99 carries a sprocket 103 which is rotated continuously by an endless chain 104. The chain operates over this sprocket and over a driving sprocket 105 mounted on a drive shaft 106 journaled in a suitable bearing formed in the bracket 102. This drive shaft may be rotated in any suitable manner in time with the other moving parts of the apparatus.

Hence the rotating drive shaft 106, through the sprocket and chain connection, revolves the short shaft 99 and the crank disc 98. Rotation of the crank disc reciprocates the link 96 and thus slides the tie plate 84 and the feed bars 81 mounted thereon, back and forth through the forward and return strokes, hereinbefore mentioned.

Reciprocation of the feed bars 81, brings into play a plurality of feed or blank stacking dogs 111 (Figs. 2 and 8). These dogs are located within the slide grooves 82 and are loosely connected to the feed bars. There are a plurality of the feed dogs 111, one being located in each feed bar for each stacking shingle 69. They are spaced at suitable intervals along the length of the bars. Each feed dog preferably is formed as a long, substantially horizontal lever arm having, at its forward end, an upright leg 112 which terminates in a hook 113.

The opposite end of the lever arm of each feed dog 111 is formed with a depending tail leg 115 which terminates in a round head 116. Each head is disposed in a circular socket 117 formed in the top edge of the feed bar. Where the lever arm joins with the tail leg of the feed dog a hole 118 (see Fig. 5) is cut through the dog. A compression spring 119 is located in this opening and is interposed between a pair of friction discs 121. The spring presses the discs outwardly against the side wall surfaces of the bed block 46 adjacent the interior walls of the slide grooves 82 and this provides a pivotal mounting for the dog and a friction hold within the block.

When the feed bars 81 move through a return stroke, the feed dogs 111 remain in the position shown in Fig. 8, with the upright leg 112 of each dog resting on the top edge of the moving feed bar and the hook 113 is below the corresponding blank F in the pockets 65, 67 of the shingles 68, 69. However, the finger moves bodily with the bar and the friction plates 121 slide along the bed block surfaces or side walls of the slide groove 82.

When the feed bars come to rest at the end of the return stroke, the hooks 113 of the several upright legs 112 of the feed dogs are located just behind the rear or lower edge of the several individual blanks F disposed in their shingle pockets 67. It is during this return stroke of the feed bars that the blanks move into the pockets.

The feed bars 81 immediately begin to move through a forward or feeding stroke. The first part of the forward movement of the feed bars does not advance the dogs 111 but only rocks them upwardly (as shown in Fig. 9) about the friction plates 121 which serve as pivots for such a rocking motion. This rocking of the dogs lifts their forward ends out of the slide grooves 82.

The lifting of a dog 111 first brings its hook 113 into engagement with the bottom of the blank next above in the pocket 67. This hook end en-

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gages the forward edge of such a blank and raises it until it strikes against the bottom of the overlying shingle 69 as shown in Fig. 9. This engagement arrests further upward movement of the dog at that time and the dog moves forward with the blank under the action of the moving feed bars 81. However, as the blank slides forward, its forward edge passes beyond the front edge of the shingle and both blank and the hook end of the dog continue to rise up further for the full time of the forward stroke. The friction plates 121 slide along the bed block surfaces adjacent the slide grooves and permit this forward movement of the dogs as well as their slight rocking movement.

The rocking of the feed dogs 111 while raising the forward end of the blank F, also brings the upright leg 112 of each dog in alignment with and behind the rear edge of the next forward blank, as shown in Fig. 9. Hence it is only a moment after the feed dogs begin to move forward with the feed bars that the upright legs 112 of the dogs are at a sufficient elevation so that the hook ends are above the adjacent blank or blanks. After engagement the legs of the dogs slide the blank or blanks up the incline of the shingle on which it or they rest as shown in Fig. 10.

The blank or blanks are thus shifted the width of the blank with each forward stroke of the feed bars. Such a distance of travel slides the blank entirely out of its pocket 67 and leaves it positioned on the overhanging forward exposed half of the shingle.

Following each advance movement, the feed bars 81 retreat through their return stroke and other features will now be observed. At the beginning of this return stroke, the dogs move back with the feed bars until the hooks 113 are clear of the advanced blank or blanks whereupon the friction plates 121 again provide sufficient holding power to rock the dogs. This rocking movement again brings the entire dog down into its slide groove 82 and as the dogs thereupon move back, they clear the advanced blanks. This prevents carrying the blanks back with the feed bars.

It will now be observed that as the first blank F (at the right Fig. 1) is cut from the sheet D it lands on the lower half of its shingle. At the same time all of the blanks which are cut at that time also land on the lower halves of their respective shingles. Before the next sheet is cut, however, the feed bars 81 move through a forward or feeding stroke. During this feeding stroke, the feed dogs 111 move up against the cut blanks F as hereinbefore mentioned and lift them into engagement with the under surfaces of their respective shingles and thereafter slide them along the shingles and deposit them upon the upper halves of the shingles. This leaves the lower halves of the shingles free to receive the next group of blanks.

During the return stroke of the feed bars 81, the next sheet is cut, and the cut blanks F are deposited on the cleared lower halves of the shingles. The second cut blanks are thus located along side the first cut blanks on the same shingle and are also disposed directly under the first cut blanks on a preceding shingle. This return stroke is followed by a second feed stroke of the feed bars.

The second forward movement of the feed bars again brings the dogs 111 against the second cut blanks and lifts them up into engagement with the under surfaces of the shingles and slides these

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second cut blanks and the first cut blanks on the upper halves of the preceding shingles onto the upper halves of their respective shingles, but at this time each blank excepting the first or end blank, moves under the previously fed blank as such blank advances in unison therewith. Fig. 10 shows how this is done, the lowermost or last fed blank engaging under the blank next above as soon as its forward edge clears the forward upper edge of the shingle.

Each subsequent feeding movement in addition to clearing the lower halves of the shingles while bringing the newly fed blanks under the previously fed blanks also transfers all of the blanks on the upper half of each shingle onto the upper half of the shingle just ahead. Each blank, therefore is on the lower end of a shingle only once, but in the case of one of the blanks it will be successively moved over the upper ends of all of the shingles which carry blanks. This will be further explained.

In the drawings the sheet D is shown as being cut into five blanks and there are shown five pockets 67, one for each blank. These five pockets are located at the lower ends of five double length shingles, there being a half shingle at the end which forms a top for the first pocket.

After the mechanism gets into operation, the blank which has just come into the first pocket, i. e., on the lower end of the second shingle, is advanced to the top of the second shingle. On the next forward stroke of the feed bars, the blank which has just come into the second pocket and the previously fed blank on the upper end of the second shingle are both advanced to the top of the third shingle. This makes two stacked blanks on this third shingle. On the next forward stroke the blank which has just come into the third pocket and the two blanks on the top of the third shingle are advanced to the fourth shingle, thus making a stack of three blanks on the fourth shingle.

Thus the stacking progresses, the number of the blanks on the upper end of the last or sixth shingle being five. Thus it will be seen that after the stacks are built up, there will be two blanks on the upper half of the third shingle, three on the fourth, four on the fifth and five on the sixth, each time such stacks are advanced.

During this progressive blank stacking operation the blanks as deposited on the top of the shingles, are retained in place by pressure fingers 125 (Figs. 5, 8, 9 and 10). There are a plurality of these fingers located in pairs above the feed bars 81 and disposed adjacent the upper ends of the shingles. There is one pair of fingers for each shingle. These fingers are mounted on pivot studs 126 which are threaded into longitudinal support bars 127 which extend along and above the bed block 46. The ends of the bars carry cross rods 128 (see Figs. 1 and 2) which extend out beyond the bars and are supported in brackets 129 secured to the bed block and to the stop plates 65.

The bottom surfaces of the respective pressure fingers 125 are rounded to permit the blanks to glide thereunder on each advancement. Adjacent this rounded surface, each finger is formed with a stop notch 132 (Fig. 8) against which the forward edges of the blanks engage at the end of the forward travel. The fingers 125 are held down against the uppermost of a stack of blanks by compression springs 134. These springs are interposed between a flat seat 135 formed in the finger and a flat retaining plate 136 which is se-

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cured to the top of the support bars in overhanging relation therewith.

As each stack of five blanks is deposited on the upper end of the sixth shingle 69, the stack thereafter is handled as a unit and is advanced in a step-by-step fashion toward the magazine 31 of the can body making machine C, hereinbefore explained. These stacks of blanks are advanced along a runway 141 (Figs. 1, 2 and 7) which includes a pair of spaced and parallel support rails 142 on which the blanks rest. These rails are tied together by a bottom plate 143. Side plates 144 are secured to the support rails to guide the blank stacks and to prevent endwise shifting of the blanks.

The stacks of blanks are advanced along the runway 141 by a pair of reciprocating auxiliary feed bars 147 having a plurality of spaced and parallel spring held feed dogs 148 located therein. These feed bars are mounted on a pair of transverse tie-brackets 151 located near the ends of the bars. The brackets have depending lugs 152 which extend down adjacent the feed bars and which carry support rollers 153. The rollers operate in horizontal grooves 154 cut in the outer side walls of a pair of groove blocks 155 which are secured to the bottom tie-plates 143.

The feed bars 147 are also retained against sidewise shifting. For this purpose each tie-bracket 151 carries a roller 157 which is located near the middle of the bracket. These rollers operate in a groove 158 which is formed in the top of the groove blocks 155.

The auxiliary feed bars 147 are reciprocated in synchronism with the stacking feed bars 81. This is brought about by a link 161 (see also Fig. 3). One end of the link is carried on a pivot pin 162 which is secured in an upright lug 163 formed on the forward tie-bracket 151. The opposite end of the link is mounted on a pivot pin 164 which is secured in a lug 165 formed on a cross bar 166 which is bolted to the forward ends of the stacking feed bars 81.

Hence when the stacking feed bars 81 reciprocate, the auxiliary feed bars 147 also reciprocate and thus the stacks of blanks are advanced along the support rails 142 in a step-by-step movement. Spring held stop fingers 168 are provided in the top of the support rails to engage behind an advanced stack of blanks and to prevent its being carried back with the auxiliary feed bars on their return stroke. Pressure bars 169 are also provided to frictionally engage against the top blanks in the stacks to prevent their vertical displacement. These pressure bars are carried on cross rods 171 which are located adjacent the ends of the bars. The ends of the rods are supported in the blank side guide plates 144.

In order to properly deposit a stack of the blanks into the magazine 31 when the forward stack reaches the outer end of the runway 141, the runway is made hingeable. The magazine end of the runway may rise and fall with the stack of blanks in the magazine by reason of this construction. For this purpose the runway is hinged to the bed block 46 on pivot studs 175 (Fig. 1). The studs extend through bracket arms 176 (see also Fig. 2) formed on the inner bottom plate 143 and these studs are threaded into lugs 177 formed on a bracket 178 which is bolted to the bed block 46. An arm 179 having a counter-balance weight 181 at its outer end, is bolted to an auxiliary bottom plate 182. The weight 181 is arranged on the arm to balance the weight of

the entire runway 141 with its stacks of blanks.

The magazine end of the run carries a foot 184 which is bolted to a vertical boss 185 formed on an extension 186 of the outer bottom plate 143. This foot rests on top of the stack of blanks in the magazine and thus maintains the runway at a predetermined level with the top level of the blanks in the magazine. The counterbalance weight 181 may be adjusted to relieve the weight of the runway and the pressure of the foot 184 from the blanks in the magazine.

With this construction of runway each stack of five blanks as it rides off the end of the runway, slides under the foot 184 and is guided into place in the magazine 31. The light pressure of the foot on the blanks thus permits easy insertion of the blanks which pass under the foot and thus become a part of the stack of blanks in the magazine.

When the magazine is empty or when the blanks in the magazine move down below a predetermined level the forward end of the runway is prevented from moving down too far by a stop foot 189 which is secured to the front end of the runway. This foot engages against the top of the body making machine.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a can making machine, the combination of a plurality of spaced inclined vanes for receiving can part blanks, and longitudinally reciprocating feeding devices continuously operative adjacent said vanes for successively advancing the received blanks from the lower portion of one vane to the upper portion of said vane and thence into superposed position upon the upper portion of an adjacent vane, whereby to ultimately arrange the blanks into a single vertical stack at a still succeeding vane.

2. In a can making machine, the combination of a plurality of spaced relatively inclined overlapping vanes setting off pockets for receiving can part blanks, and longitudinally reciprocating feeding devices continuously operative adjacent said vanes for successively feeding the received blanks from said pockets and for progressively advancing the blanks from the lower portion of one vane to the upper portion of said vane and thence into superposed position upon the upper portion of an adjacent vane, whereby to finally arrange the blanks into a single vertical stack at a still succeeding vane of said plurality.

3. In a can making machine, the combination of a plurality of spaced parallel inclined and overlapping vanes arranged to set off pockets for receiving can part blanks, each of said vanes constituting a wall portion of at least one of said pockets, and a plurality of feed fingers respectively movable adjacent said vanes for successively shifting the blanks from the lower portion of one of said vanes to the upper portion thereof while simultaneously transferring the blanks on the upper portion of said vane onto the immediately succeeding vane, thereby stacking the blanks in superposed relation on adjacent vanes.

4. In a can making machine, the combination

of a series of spaced parallel inclined and overlapping vanes arranged in a row and setting off aligned pockets for receiving can part blanks, the intermediate vanes of said series each constituting a wall portion of one of said pockets and another wall portion of an adjacent pocket, and a plurality of feed fingers respectively movable adjacent said row of vanes for successively shifting the blanks from the lower portion of one of said vanes to the upper portion thereof while simultaneously transferring the blanks from the upper portion of said vane to the immediately adjacent vane, whereby to stack the blanks on said vanes so that the number of blanks in the stacks increases progressively from one end of the row to the other, and auxiliary feeding devices for advancing the maximum stack further along a predetermined path of travel.

5. In a can making machine, the combination of a plurality of spaced and overlapping inclined vanes, the lower portion of each vane constituting a wall of a pocket partially defined by another vane, means for feeding can part blanks into said pockets, and a reciprocating feeding device having a plurality of feed fingers thereon operative between feeding actions of said feeding means for successively shifting the blanks by means of said feed fingers respectively engageable with a blank in each of said pockets, from the pockets to upper portions of said vanes while simultaneously transferring blanks from the upper portions of said vanes to the immediately adjacent vane just ahead and thence from vane to vane, thereby arranging the blanks in progressively increasing vertical stacks in the successive pockets defined by said vanes.

6. In a can making machine, the combination of a plurality of spaced and overlapping inclined vanes, the lower half of each vane constituting the bottom wall of a pocket the upper wall of which consists of the upper half of an adjacent vane, means for feeding can part blanks into said pockets, a reciprocating feed bar operative adjacent said vanes for shifting the blanks from their pockets to the upper portions of the vanes constituting the bottom walls of the respective pockets, and a plurality of frictionally held rocking feed dogs movable by said feed bar, said feed dogs when rocked lifting a blank in a said pocket while engaging against an edge of a blank in the next advanced pocket and also against an edge of other blanks on the upper halves of said vanes for arranging the blanks into progressively increasing vertical stacks while intermittently advancing them along said vanes.

7. In a can making machine, the combination of a plurality of spaced parallel inclined and overlapping vanes arranged to set off aligned pockets for receiving can part blanks, a portion of each of said vanes extending away from one of its associated pockets for receiving a blank when moved from said pocket, a plurality of feed fingers respectively movable adjacent said vanes for successively shifting the blanks from a pocket to the upper portion of its associated vane while simultaneously transferring the blanks from the upper portion of said vanes onto the upper portions of an immediately adjacent vane, thereby stacking the blanks one on top of the other on adjacent vanes, and pressure arms pivotally mounted above said vanes for holding the blanks against vertical displacement.