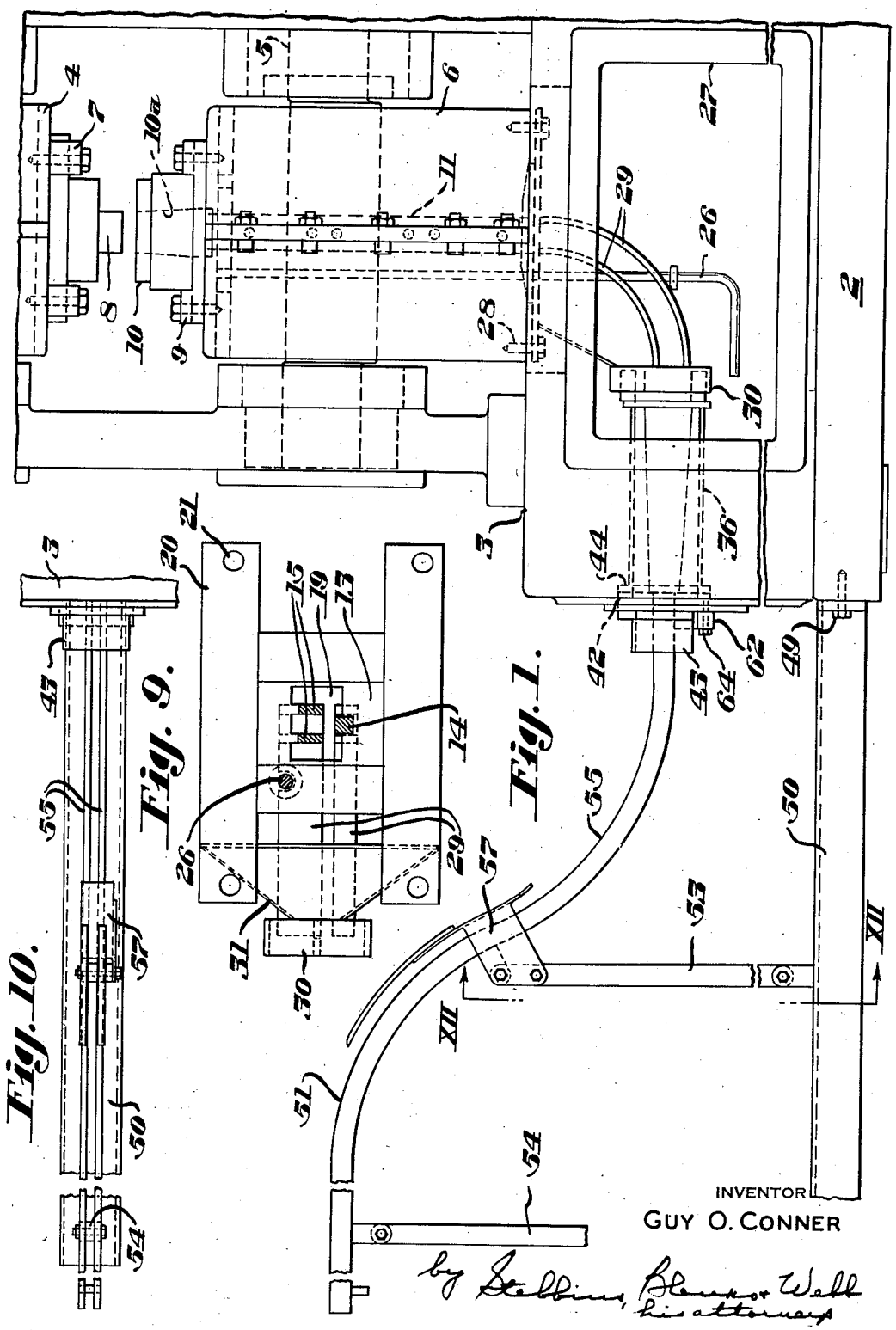
July 13, 1954 G. O. CONNER 2,683,487

FORMING MACHINE AND STACKER THEREFOR

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July 13, 1954 G. O. CONNER 2,683,487

FORMING MACHINE AND STACKER THEREFOR

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Fig. 2.

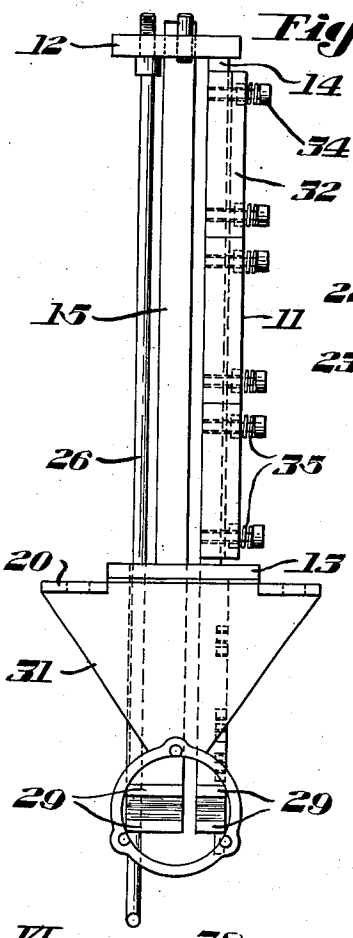


Fig. 4.

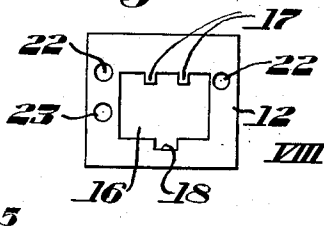


Fig. 3.

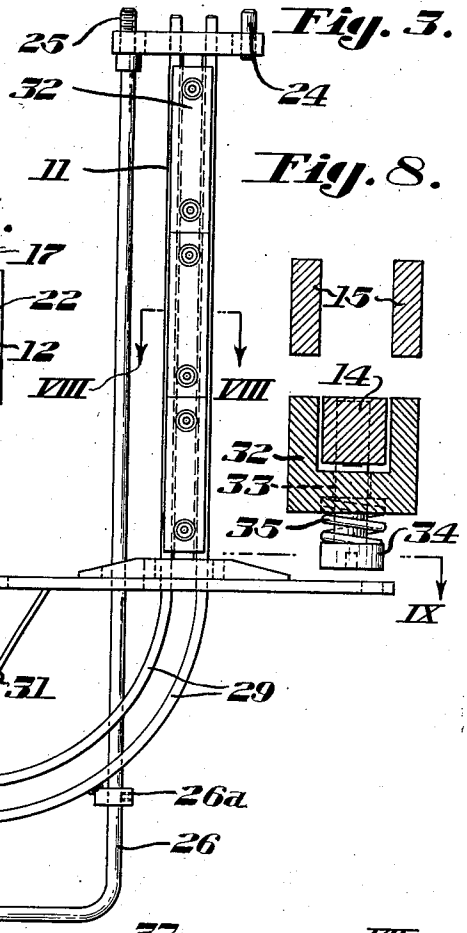


Fig. 8.

Fig. 5.

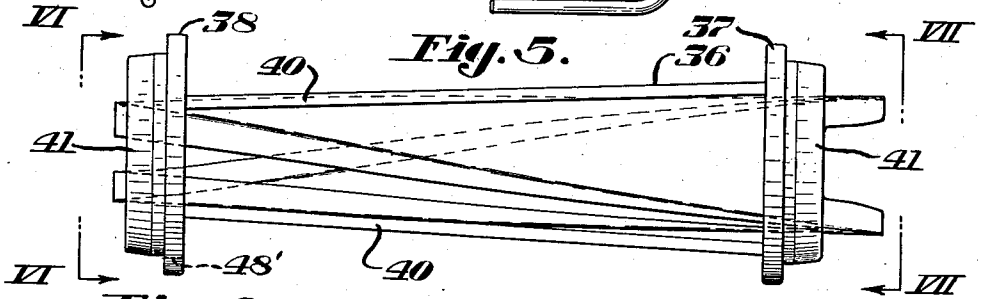


Fig. 6.

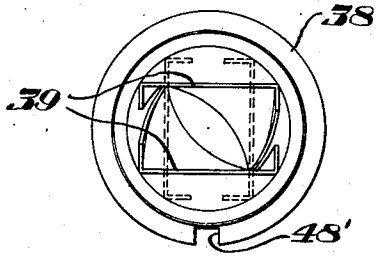
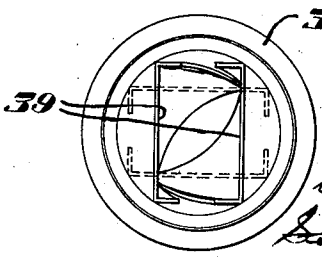


Fig. 7.



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FORMING MACHINE AND STACKER THEREFOR

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Fig. 11.

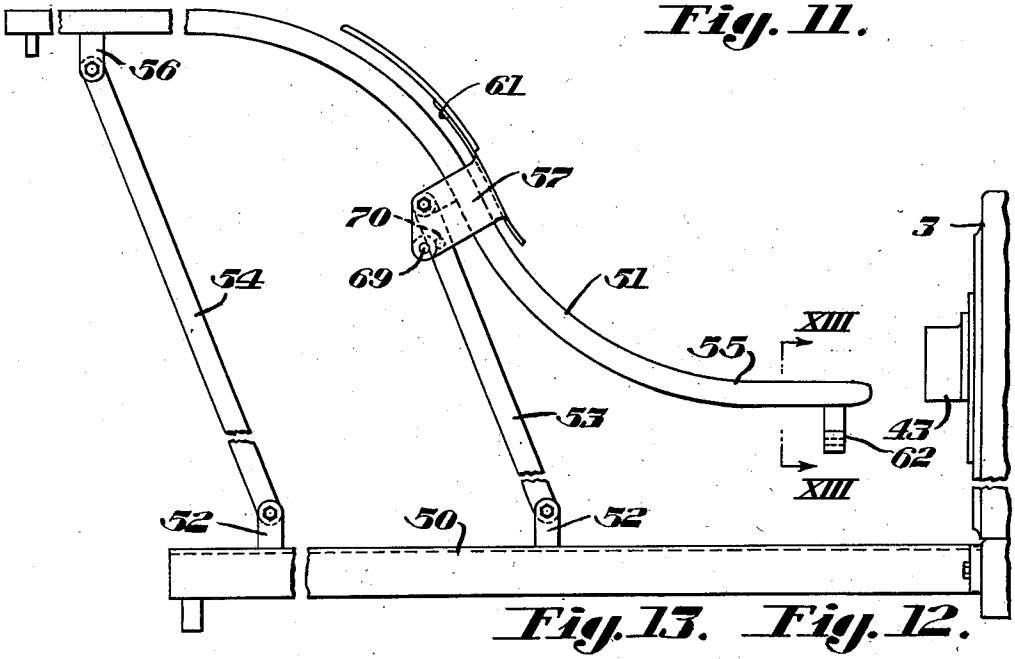


Fig. 13. Fig. 12.

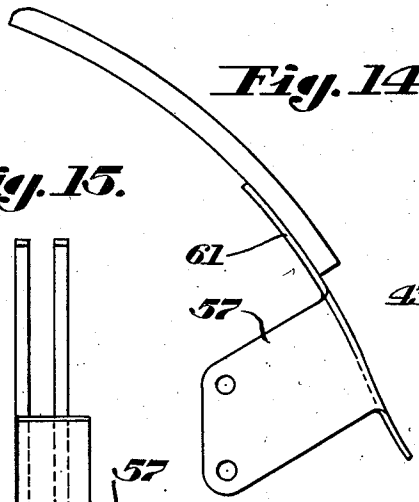


Fig. 14.

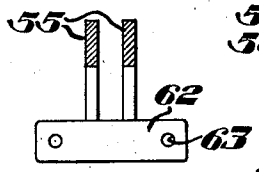


Fig. 16.

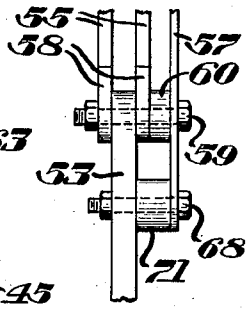
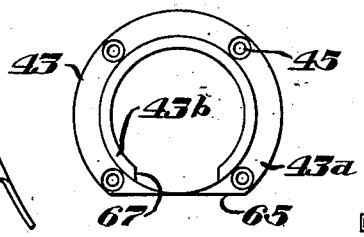


Fig. 15.



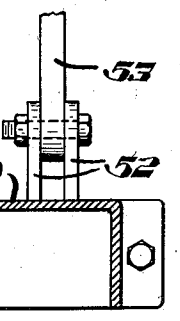
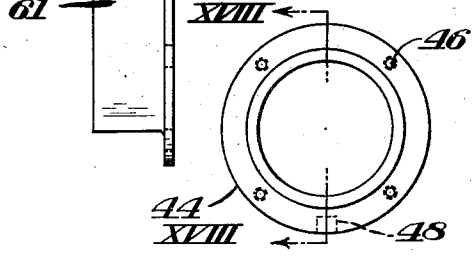
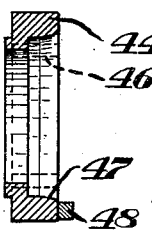


Fig. 17. Fig. 18.





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Patented July 13, 1954 2,683,487

UNITED STATES PATENT OFFICE

2,683,487

FORMING MACHINE AND STACKER THEREFOR

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Application April 30, 1947, Serial No. 744,969

5 Claims. (Cl. 164—25)

1

This invention relates to forming machines and stackers therefor. It has to do particularly with stackers for forming machines in which stackable articles are formed in rapid succession. The invention has to do still more particularly with stackers for forming machines in which the lower forming head is movable.

Removal of stackable articles from forming machines in which such articles are formed in rapid succession presents a problem in modern high-speed presses which form articles at the rate of several thousand a minute. From the standpoint of economy the articles should be removed from the machine in stacked relation as if they are simply discharged in unstacked relation into a receptacle the labor incident to stacking or arranging the articles for packaging may offset the gain in economy due to high speed production. The problem is especially vexing when the lower head of the forming machine is movable, as, for example, in a Conner type machine as disclosed in my Patent No. 2,406,808. In such a machine both the upper and lower heads partake of orbital movement in a generally vertical plane and the articles may be discharged downwardly from the lower head. For example, in a stamping or like machine the punch or male die may be mounted in the upper head and the female die may be mounted in the lower head and the articles produced may be discharged either downwardly through the female die by the action of the punch or laterally therefrom by the action of suitable mechanism. However, due to the fact that the lower head moves during formation of the articles it is difficult to convey the articles in stacked relation away from the moving lower head and to a position remote from the machine where they may be packaged. If the portion of the stacker initially receiving the articles is stationary it is virtually impossible to control the articles as they pass from the moving lower head into the stacker to insure their assuming proper stacked relation. Moreover, a problem is presented in the delivery in gnerally horizontally stacked relation and in desired orientation at a point such as a packaging station remote from the machine of articles formed between relatively vertically movable dies.

I have solved all of the above mentioned problems by the provision of a novel stacker and a new combination of a forming machine and stacker which insure proper delivery in stacked relation of stackable articles from a forming machine and desired orientation of those articles at a point remote from the machine where they may be packaged.

I provide a stacker having a portion for receiving stackable articles adapted to be fastened

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to the lower head of a forming machine. While my stacker may be employed with any forming machine producing stackable articles it is especially designed for use and has especial advantages when used with a forming machine having a moving lower head, either of the Conner type or of other type. When the stacker is used with a forming machine having a moving lower head the article receiving portion of the stacker partakes of the movement of the lower head. Such portion of the stacker preferably extends downwardly from the lower head to a position adjacent the bottom of the machine where it may have a curved portion which guides the stacked articles from generally vertically stacked relation to generally horizontally stacked relation. Means are provided for guiding the stacked articles generally horizontally from the machine to a packaging station. The articles are preferably guided to move outwardly and somewhat upwardly from the bottom portion of the machine to the packaging station and at the packaging station are preferably arranged in a generally horizontally disposed stack.

The curved lower end of the article receiving portion of the stacker preferably has its outlet disposed with its axis substantially perpendicular to the vertical plane in which the lower head operates. The stacker preferably has a transfer section cooperating with the outlet of the curved lower end of the article receiving portion thereof to receive and guide stacked articles therefrom, the transfer section having a swivel or universal joint connection with said outlet. The transfer section also preferably has a swivel or universal joint connection with the portion of the stacker leading away from the machine. Thus the transfer section may swivel with its article receiving end partaking of generally orbital movement and its article delivering end partaking of universal movement substantially about a point if, as is ordinarily the case, the delivery portion of the stacker, i. e., the portion delivering the articles away from the machine, is stationarily mounted.

The outlet of the curved lower end of the article receiving portion of the stacker preferably has its axis arranged perpendicular to the vertical plane in which the lower head operates, as above mentioned, to provide for the swiveling movement above referred to without danger of the transfer section becoming disconnected therefrom during highspeed operation of the machine. The orbit of the outlet of the curved lower end of the article receiving portion of the stacker is roughly equidistant from the center of the swivel joint at the article delivering end of the transfer section.

Since the articles are delivered from the moving lower head in a direction perpendicular to the vertical plane in which that head operates and are turned in that direction from generally vertically stacked to generally horizontally stacked position the articles may sometimes not be oriented properly, when they reach generally horizontally stacked position, to be supported upon the portion of the stacker extending generally horizontally from the machine to the packaging station. In such cases I form the transfer section of the stacker as a twist tube. While the articles pass through the twist tube they are turned through a desired angle about the axis of the twist tube. In this way articles may be oriented as desired as they are delivered to the generally horizontal portion of the stacker which guides the articles to the packaging station.

My stacker also embodies other novel features which together with various details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment of the invention proceeds.

In the accompanying drawings I have shown a present preferred embodiment of the invention, in which

Figure 1 is a fragmentary elevational view of a forming machine provided with a stacker;

Figure 2 is a detail elevational view of the article receiving portion of the stacker as viewed from the left in Figure 1 but to enlarged scale;

Figure 3 is a view similar to Figure 2 of the article receiving portion of the stacker as viewed from the right in Figure 2;

Figure 4 is a plan view of the top plate of the article receiving portion of the stacker;

Figure 5 is a side elevational view of the transfer section of the stacker which is shown as in the form of a twist tube;

Figure 6 is an elevational view of the twist tube as viewed from the left in Figure 5;

Figure 7 is an elevational view of the twist tube as viewed from the right in Figure 5;

Figure 8 is a horizontal cross-sectional view to enlarged scale taken on the line VIII—VIII of Figure 3;

Figure 9 is a horizontal cross-sectional view taken on the line IX—IX of Figure 3;

Figure 10 is a fragmentary plan view of the delivery portion of the stacker;

Figure 11 is a fragmentary elevational view of the delivery portion of the stacker showing the same moved out from cooperative relationship with the forming machine and the transfer section of the stacker;

Figure 12 is a fragmentary vertical cross-sectional view to enlarged scale taken on the line XII—XII of Figure 1;

Figure 13 is a vertical cross-sectional view to enlarged scale taken on the line XIII—XIII of Figure 11;

Figure 14 is a side view to enlarged scale of a part of the delivery portion of the stacker;

Figure 15 is an edge view of the portion of the stacker shown in Figure 14;

Figure 16 is a face view of a fitting which is connected to the outside of the machine frame where the transfer section and the delivery portion of the stacker meet;

Figure 17 is a face view of a fitting which is connected to the inside of the machine frame opposite the fitting of Figure 16; and

Figure 18 is a central vertical cross-sectional view taken on the line XVIII—XVIII of Figure 17.

As indicated above, my invention is broadly applicable to any forming machine but has especial advantages when used in connection with a forming machine having a movable lower head. For purposes of explanation and illustration I have shown the invention in the drawings in connection with a Conner type machine in which both the upper head and the lower head partake of orbital movement. Since the operating mechanism of the forming machine does not constitute the present invention and is known from my prior patents it is not shown and will not be described in detail. The forming machine shown is mounted upon a base 2 and comprises a frame 3 carrying four parallel horizontal shafts. There are two upper shafts and two lower shafts, the axes of the upper shafts being disposed in a common horizontal plane and the axes of the lower shafts being disposed in a common horizontal plane. The axis of each upper shaft and that of the corresponding lower shaft are disposed in a common vertical plane. Both upper shafts rotate in the same direction and carry through eccentric mounting means the upper working head of the machine. Both lower shafts rotate in the same direction opposite the direction of rotation of the upper shafts and carry through eccentric mounting means the lower working head of the machine. Thus the two working heads partake of orbital movement during operation of the machine. The eccentric mounting means are so adjusted that the two heads simultaneously approach each other and when closest together move laterally in the same direction and at the same speed. Each head carries a die, the dies cooperating with each other to act on work passed through the machine.

The present invention is concerned with the stacking of stackable articles produced in a forming machine. Such articles may be flat or cup-shaped or of any other shape permitting of the articles lying directly against one another in similar relationship or nested. By way of example I have shown in the drawings a forming machine embodied as a high-speed stamping machine provided with dies for stamping E-shaped steel laminations.

The upper shafts of the forming machine are not shown in the drawings, but the lower portion of the upper head is shown at 4 in Figure 1. The lower shafts are shown at 5, those shafts carrying the lower head 6. In operation of the machine both the upper head 4 and the lower head 6 partake of orbital movement in a vertical plane perpendicular to the plane of the paper, viewing Figure 1. In Figure 1 the heads are shown in their farthest apart position.

Clamped to the upper head 4 by clamps 7 is a punch or male die 8. Clamped to the lower head 6 by clamps 9 is a female die 10 adapted to cooperate with the punch 8 to form E-shaped stampings. The work fed to the machine is preferably a strip of steel, although other suitable material may be employed, which is fed in a direction normal to the plane of the paper, viewing Figure 1, suitable feeding means as disclosed in my prior patents being provided for feeding the strip. At each cycle of the machine the punch 8 punches an E-shaped lamination out of the strip. In the structure shown the punch pushes the lamination down through the die 10. The die 10 has a cavity 10a extending completely therethrough from top to bottom. The present invention is concerned with the stacking and delivery in stacked relation of the laminations formed.

Connected with the moving lower head 6 of the forming machine is the article receiving portion of the stacker, such portion being designated generally by reference numeral 11, being shown to enlarged scale in Figures 2 and 3 and comprising in the structure shown a single downwardly and laterally extending guideway. The article receiving portion comprises a top plate 12 (Figure 4), a bottom plate 13 (Figure 9) and three parallel bars extending between and welded to each of the top and bottom plates. There is one front bar 14 of generally rectangular cross-section and two relatively flat rear bars 15. The bars 15 are spaced apart and the bar 14 is disposed generally opposite the ends of the spaced apart bars 15 but spaced some distance therefrom as shown in Figures 8 and 9. The upper plate 12 has therein an opening 16 of generally rectangular shape but having at one side two inward projections 17 and at the opposite side a recess 18. The lower plate 13 has a similar opening 19. The bars 15 are disposed opposite the inward projections of the upper and lower plates and the bar 14 enters the recesses in the plates and projects somewhat inwardly therefrom. The three bars and the two plates are welded together at any convenient places to form a rigid unit.

Welded to the lower plate 13 are two opposed bars 20, each having therein two bolt holes 21, one adjacent each end. The upper plate 12 has three holes drilled therein, two dowel pin receiving holes 22 and a bolt hole 23. A dowel pin 24 is driven into each of the holes 22 and projects upwardly therefrom.

The lower head 6 of the forming machine has a vertical bore in alignment with the die cavity 10*a* into which the upper part of the article receiving portion 11 of the stacker is introduced. The lower die is provided with three bores positioned about the cavity 10*a* in the same pattern and spacing as the holes 22 and 23 are positioned about the opening 16 in the upper plate 12. When the portion 11 of the stacker is applied to the machine the dowel pins 24 enter two of the holes in the lower die 10. The third hole in the die 10, that corresponding in position to the hole 23 in the upper plate, is tapped and a bolt 25 passes through the hole 23 in the upper plate and is screwed into the corresponding tapped bore in the die block. An L-shaped handle 26 is welded to the head of the bolt 25 and projects downwardly therefrom to a point where it may easily be oeprated through an access opening 27 in the machine frame. Through the handle 26 the bolt 25 is tightened, drawing the plate 12 up against the bottom of the lower die. The orientation of the plate is fixed by the dowel pins 24. Bolts 28 pass through the holes 21 in the bars 20 and enter tapped bores in the bottom of the head 6 to fasten the part of the portion 11 of the stacker in the region of the lower plate 13 to the head. Thus the portion 11 of the stacker is firmly fixedly positioned with respect to the lower head 6.

Welded to the bottom of the plate 13 and extending downwardly therefrom are four curved bars 29, two forming a continuation of the bars 15 and the other two being generally opposite and spaced somewhat from the first two as shown in Figure 2. The bars 29 are curved through an angle of 90°. Welded to their lower ends is a collar 30, the lower ends of the bars entering the collar as shown in Figure 3. A strengthening plate 31 is welded to the collar 30 and to the plate 13 and the bars 20 to maintain the integrity and rigidity of the lower part of the stacker portion 11. A guide 26*a* for the handle 26 is welded to one or two of the bars 29.

Straddling the bar 14 are three shoes 32, each of U-shaped cross-section and whose legs are somewhat longer than the dimension of the bar 14 parallel thereto. The base of each shoe has two holes 33 drilled therethrough and a bolt 34 passes loosely through each of those holes and is threaded into the bar 14. A compression coil spring 35 is disposed between the head of each bolt 34 and the corresponding shoe 32. Thus the shoes are resiliently urged so that the ends of their legs which are opposite the bars 15 are in position to resiliently press the stampings against the bars 15.

The upper ends of the bars 15 project somewhat above the upper surface of the plate 12 so as to enter the lower die cavity 10*a*. As each E-shaped stamping is stamped out of the strip it is pushed down through the lower die cavity by the punch. The stamping initially lies in horizontal position with the legs of the E disposed upwardly, viewing Figure 9. The center leg of the E is disposed between the bars 15 and the top and bottom legs of the E are disposed outside the respective bars 15. The upright of the E is disposed between the bars 15 and the bar 14. Thus the bars 14 and 15 orient and maintain in uniform position the E-shaped stampings as they move downwardly in the stacker.

The stampings are placed under frictional restraint by the shoes 32 which as above described are mounted on the bar 14 and are resiliently urged by the compression coil springs 35 toward the bars 15. The legs of the shoes 32 engage the back of the upright of the E of each stamping and press the stamping lightly but firmly against the bars 15, the ends of the bars 15 nearer the bar 14 entering and bearing against the inner ends of the recesses between the legs of the E. Thus undesired movement of the stampings either up or down past the shoes 32 is prevented. The stampings are positively fed downwardly by the action of the high-speed stamping machine, the punch 8 forcing each stamping as it is formed down through the lower die cavity. That stamping engages the next previously formed stamping and pushes it down a distance equal to the thickness of the stock of which the stampings are made. That stamping in turn pushes down the next previously formed stamping and in that way the entire stack of stampings is pushed down through the portion 11 of the stacker step by step. Sometimes there may be a tendency of the stampings to hang up in the stacker, as when a cut edge of a stamping engages a portion of the stacker guideway, and this may in turn cause a tendency at times for the stampings to spring back or upwardly in the portion 11 of the stacker. That tendency is counteracted by the resiliently mounted shoes 32. Thus the shoes insure that the uniform feed of stampings through the stacker as determined by the operation of the machine will not be interfered with.

The stack of stampings passes through the opening 19 in the plate 13, the legs of the stampings straddling the bars 29 which form continuations of the bars 15. The other two bars 29 take the place of the bar 14 and are disposed in guiding relationship with respect to the backs of the uprights of the E's of the stampings. Thus the stampings are guided downwardly by the bars 14 and 15 and in a curved path through an angle of 90° by the bars 29 so that the stack which was

originally vertical is transformed into a horizontal stack as the stampings leave the lower ends of the bars 29. The stampings are maintained in uniform orientation and in stacked relation by the bars 29 as the stack turns from the vertical to the horizontal position.

As the stampings leave the lower ends of the bars 29, at which time the E's are in upright position (i. e., with the uprights of the E's vertical), they enter the transfer section of the stacker. The transfer section is illustrated as being in the form of a twist tube designated generally by reference numeral 36. The twist tube comprises spaced apart generally coaxial collars 37 and 38 and opposed elongated channels 39 which are welded into the collars. Strengthening and stiffening ribs 40 are also welded to the collars and the channels to maintain the integrity of the twist tube. The opposed channels 39 form between them a guideway of generally rectangular cross-section adapted to receive and guide the E-shaped stampings delivered by the bars 29. The channels 39 are twisted so that at one end the rectangular guideway is turned at an angle of 90° to the other end. The angle of turning is 90° in the example illustrated but may be any angle desired to meet a particular problem. Thus during their passage through the twist tube 36 the stampings are turned generally about the axis of the twist tube through an angle of 90°; in other words, their orientation is changed 90° while the stampings are still maintained in a generally horizontally positioned stack and are still advancing through the stacker.

The channels 39 project somewhat through the collars 37 and 38. Each of the collars 37 and 38 is provided with a beveled face 41 adapted to form a portion of a swivel or universal joint. The portion 41 of the collar 37 is adapted to enter the collar 30 and the projecting ends of the channels 39 are positioned by cooperation of the collars so as to be disposed opposite the lower ends of the bars 29. Thus the channels 39 form a continuation of the guideway for the E-shaped stampings which is initially formed by the bars 14 and 15 and then by the bars 29. In the twist tube the E-shaped stampings are turned from a position in which their uprights are vertical to a position in which the uprights are horizontal and disposed above the legs, which project vertically downwardly.

The delivery end of the twist tube 36 is mounted for swiveling movement about a point which will presently be described. The entrance end of the twist tube which is disposed within the collar 30 partakes of orbital movement along with the lower head of the stamping machine. The orbit of the axis of the twist tube at its receiving end is generally equidistant from the point about which the delivery end of the twist tube swivels. The axis of the twist tube is generally horizontal and approximately perpendicular to the common vertical plane in which the upper and lower heads of the stamping machine operate.

The machine frame is provided adjacent its bottom with a lateral opening 42 with which cooperate opposed coaxial fittings 43 and 44. The fitting 43 is disposed at the outer face of the frame and the fitting 44 is disposed at the inner face of the frame. The fitting 43 comprises a flange portion 43*a* and a collar portion 43*b*. The fittings 43 and 44 are maintained in place by bolts which pass through openings 45 in the flange 43*a* of the fitting 43 and are threaded into tapped openings 46 in the fitting 44. The fitting 44 presents a beveled throat 47 toward the interior of the machine frame, the beveled portion 41 of the collar 38 of the twist tube 36 entering the throat 47. The fitting 44 has a lug 48 adapted to enter a slot 48' in the collar 38 to counteract any tendency of the twist tube to turn. Thus the delivery end of the twist tube has a swivel joint with the stationary fitting 44. Since the receiving end of the twist tube partakes of the characteristic orbital movement of the lower head of the stamping machine the stacked stampings are delivered from the moving lower head in a generally horizontally moving stack through the comparatively stationary delivery end of the twist tube. At the same time they pass through the machine frame ready to be received by the delivery portion of the stacker which is disposed outside the machine frame.

Disposed outside the machine frame and connected thereto by bolts 49 is a support 50 for the delivery portion of the stacker, which portion is designated generally by reference numeral 51. The support 50 has two sets of opposed upstanding lugs 52 at different distances from the machine. Pivoted to the lugs 52 nearer the machine is a relatively short link 53 and pivoted to the lugs 52 farther from the machine is a relatively long link 54. There is provided a guideway of generally gooseneck shape made up of opposed spaced apart bars 55. The guideway comprising the bars 55 carries opposed lugs 56 projecting generally downwardly from the guideway, one of the lugs 56 being welded to each of the bars 55. The upper end of the longer link 54 is pivoted to the lugs 56. Welded to the guideway is a plate 57. Each of the bars 55 carries a lug 58, and a pivot bolt 59 passes through the plate 57 and the two lugs 58, a spacer 60 being provided between the plate 57 and the nearer lug 58 and the upper end of the shorter link 53 lying between the two lugs 58 and also receiving the bolt 59. Thus the guideway comprising the bars 55 may be moved toward and away from the machine by pivotal movement of the links 53 and 54 (compare Figures 1 and 11).

The plate 57 carries a guard 61 positioned opposite the outside of the generally upwardly convexly curved portion of the generally gooseneck-shaped guideway to insure against stampings leaving the guideway as they pass around the curve therein.

Connected with the receiving end of the guideway comprising the bars 55 is a bracket 62 having therein spaced bolt holes 63 through which the receiving end of the guideway is adapted to be bolted to the frame by bolts 64. When the guideway is thus bolted to the frame the right hand ends of the bars 55, viewing Figures 1 and 11, enter the fitting 43 and lie opposite the lower portion of the guideway formed by the channels 39 in the twist tube so that the E-shaped stampings are delivered from the twist tube their legs straddle the bars 55 and they continue to move as a generally horizontal stack toward the left, viewing Figure 1. They are raised by the goosenecked guideway to an elevation where they may conveniently be removed from the guideway for packaging, the left hand extremity of the guideway being of any desired length and being substantially horizontal where packaging workers may remove the stampings.

The lower portion of the flange 43*a* of the fitting 43 is cut away as shown at 65 to make room for the bracket 62. The lower part of the collar portion 43*b* of the fitting 43 is cut away at 67 to permit the ends of the bars 55 to be moved

into and out of the fitting when the portion 51 of the stacker is moved between the position of Figure 1 and the position of Figure 11.

To assist in maintaining the guideway comprising the bars 55 in operative position a bolt 68 may be passed through an opening 69 in the plate 57 and through an opening 70 in the link 53 spaced somewhat below the upper end thereof, a spacing collar 71 being interposed between the plate and the link. The bolt 68 in effect makes the link 53 integral with the plate 57, which is welded to one of the bars 55. Thus when the guideway is in operative position as shown in Figure 1 it may be maintained in that position by the bolts 64 and 68. When it is desired to move the guideway back from operative position as shown in Figure 11 this may be done by removing the bolts 64 and 68 and moving the guideway away from the machine about the lower ends of the links 53 and 54.

While I have shown and described a present preferred embodiment of the invention it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. A stacker comprising a portion adapted to be connected to a forming machine part which moves cyclically during operation of the machine to receive stackable articles delivered thereto upon operation of the machine, said portion partaking of the cyclic movement of said part, a portion mounted in fixed position and a twist tube extending between the first mentioned portion and the second mentioned portion, having a swivel connection with each thereof and delivering articles in stacked relation from the first mentioned portion to the second mentioned portion, the twist tube having means effective while guiding the articles in stacked relation to turn them through an angle generally about an axis extending in the direction of movement of the articles.

2. In a forming machine, upper and lower forming heads adapted to cooperate to form stackable articles, the lower head being movable generally in a vertical plane during article forming operations, a guideway for receiving in stacked relation stackable articles formed in the machine, the guideway being fastened to the lower head for movement therewith, a second guideway for receiving the stacked articles, the second guideway being mounted in the machine in position generally perpendicular to said plane, the article receiving end of the second guideway having a swivel connection with the article delivering end of the first mentioned guideway, a fixed third guideway for receiving the stacked articles and the article delivering end of the second guideway having means adapted to form a swivel connection with the third guideway.

3. In a forming machine, upper and lower forming heads adapted to cooperate to form stackable articles, the lower head being movable generally in a vertical plane during article forming operations, a guideway for receiving in stacked relation stackable articles formed in the machine, the guideway being fastened to the lower head for movement therewith, and a second guideway for receiving the stacked articles, the second guideway being mounted in the machine with its axis generally perpendicular to said plane, the second guideway having a swivel connection with the first mentioned guideway and being formed while guiding the articles in stacked relation to turn them through an angle generally about its axis.

4. In a forming machine, upper and lower forming heads adapted to cooperate to form stackable articles, the lower head being movable generally in a vertical plane during article forming operations, a guideway for receiving in stacked relation stackable articles formed in the the machine, the guideway being fastened to the lower head for movement therewith, extending generally downwardly therefrom and having a curved portion adjacent the bottom of the machine the axis of whose outlet is generally perpendicular to said plane, a fixed second guideway extending outwardly and upwardly to receive stacked articles from the first mentioned guideway and a connecting device mounted between the first mentioned guideway and the second guideway with its axis generally perpendicular to said plane, the connecting device having a swivel connection with each of said guideways.

5. In a forming machine, upper and lower forming heads adapted to cooperate to form stackable articles, the lower head being movable generally in a vertical plane during article forming operations, a guideway for receiving in stacked relation stackable articles formed in the machine, the guideway being fastened to the lower head for movement therewith, extending generally downwardly therefrom and having a curved portion adjacent the bottom of the machine the axis of whose outlet is generally perpendicular to said plane, a fixed second guideway extending outwardly and upwardly to receive stacked articles from the first mentioned guideway and a connecting device mounted between the first mentioned guideway and the second guideway with its axis generally perpendicular to said plane, the connecting device having a swivel connection with each of said guideways and being effective while guiding the articles in stacked relation to turn them through an angle generally about said axis.

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