

May 9, 1939.

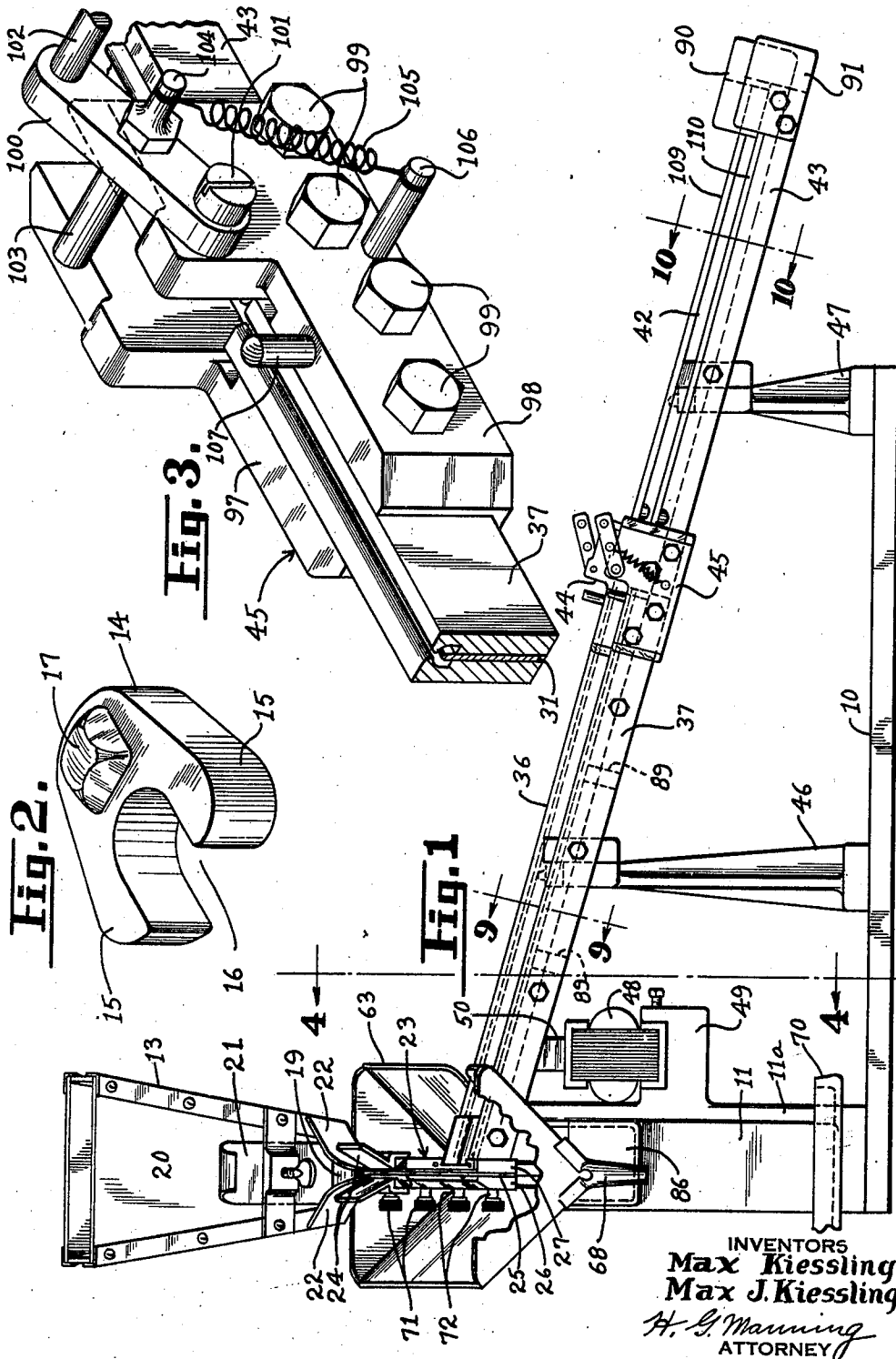
M. KIESSLING ET AL

2,157,709

HOPPER MACHINE FOR STACKING SLIDE FASTENER ELEMENTS

Filed Aug. 20, 1935

3 Sheets-Sheet 1



May 9, 1939.

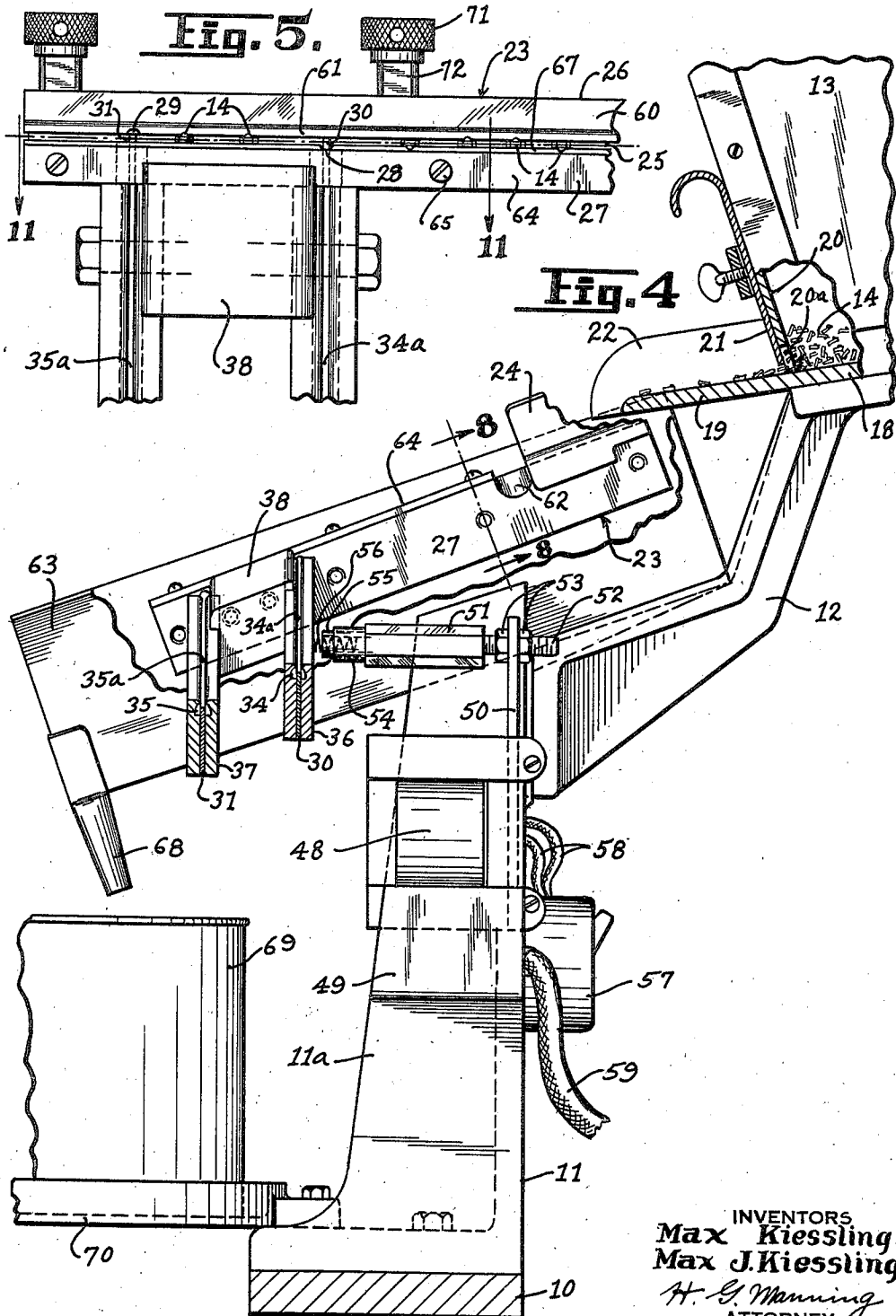
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HOPPER MACHINE FOR STACKING SLIDE FASTENER ELEMENTS

Filed Aug., 20, 1935

3 Sheets-Sheet 2



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HOPPER MACHINE FOR STACKING SLIDE FASTENER ELEMENTS

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3 Sheets-Sheet 3

Fig. 6.

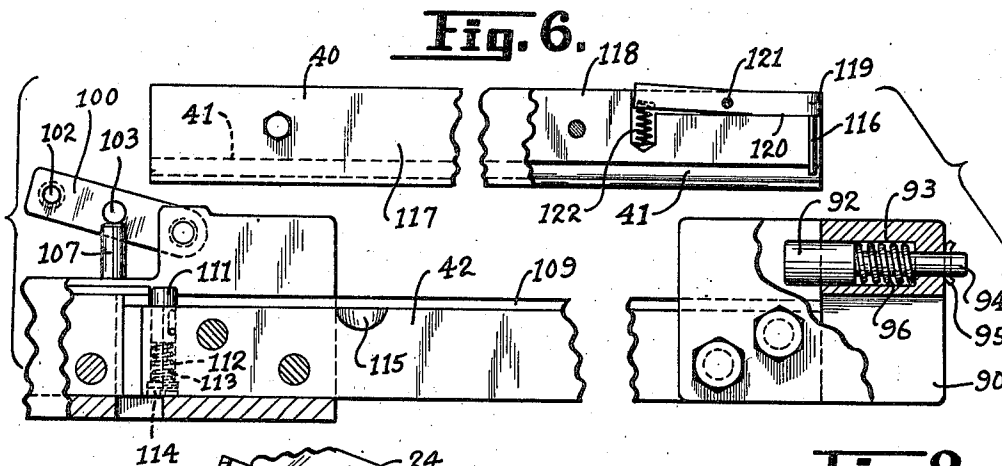


Fig. 7.

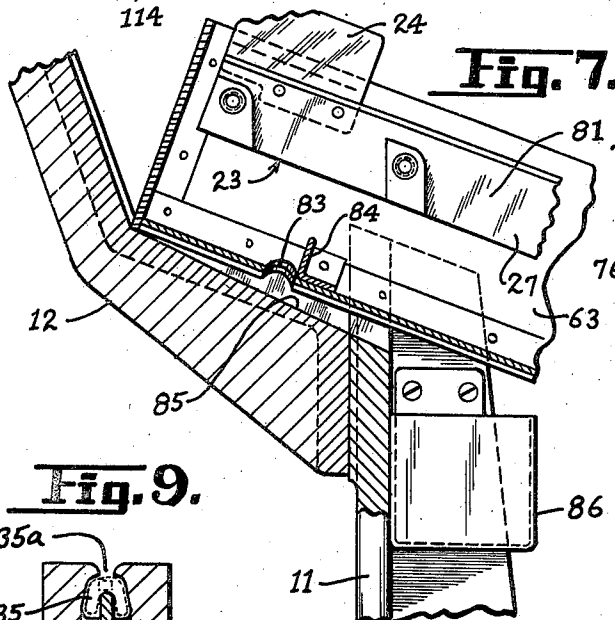


Fig. 8.

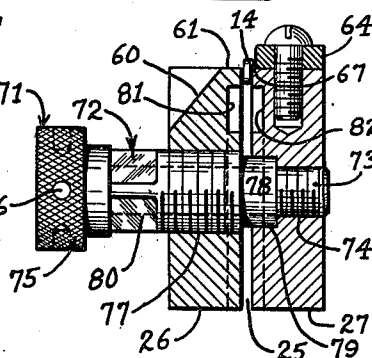


Fig. 10.

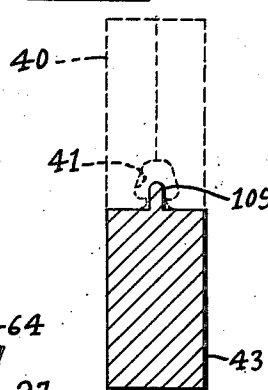


Fig. 9.

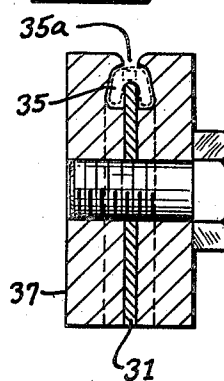
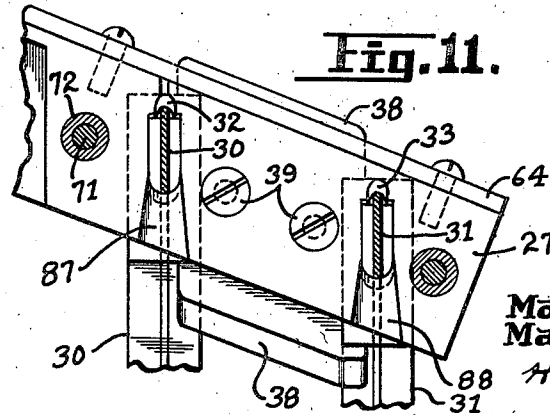


Fig. 11.



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HOPPER MACHINE FOR STACKING SLIDE
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Application August 20, 1935, Serial No. 37,012

21 Claims. (Cl. 153—1)

This invention relates to hopper feeding machines, and more particularly to a machine designed to stack a plurality of separable edge fasteners, commonly known as "zipper elements," into a magazine which is to be subsequently applied to a machine for attaching the stacked elements one by one upon the edge of a tape.

One object of this invention is to provide a hopper machine of the above nature having a hopper box for receiving the fastener elements after they have been subjected to any desired tumbling or finishing operation, and thereafter directing said elements into a mechanism for arranging them in two guideways with the heads of the elements positioned in the same direction before delivery to a pair of detachable magazines located on the ends of said guideways.

A further object is to provide a machine of the above nature which is characterized particularly by the absence of any rotating or moving parts, the elements being caused to gravitate downwardly along inclined rails and guideways by an electrical vibratory unit associated with said machine.

A further object is to provide a machine of the above nature having means for permitting chips, dirt and other foreign matter to be separated from the elements at several points along the path of said fastener elements, and also means for eliminating any improperly positioned elements.

A further object is to provide a machine of the above nature which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, compact, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawings one form in which the invention may be conveniently embodied in practice.

In the drawings:

Fig. 1 represents a front elevation of the machine.

Fig. 2 is a perspective view on a greatly enlarged scale of one of the fastener elements adapted to be stacked by the machine.

Fig. 3 is a perspective view of one of the clamping units for joining the lower end of one of the element holding raceways with the upper end of the magazine supporting rail and holding the magazine in position.

Fig. 4 is a transverse sectional view of the machine, taken along the line 4—4 of Fig. 1, looking in the direction of the arrows.

Fig. 5 is a fragmentary plan view of the in-

clined chute and two cooperating raceways connected at right-angles thereto.

Fig. 6 is fragmentary front view of one of the magazine-supporting rails and the associated magazine in position to be assembled therein.

Fig. 7 is a fragmentary longitudinal sectional view through a portion of the inclined chute, the ejected element pick-up trough, and the associated member for supporting said trough.

Fig. 8 is a transverse sectional view through the inclined chute, taken along the line 8—8 of Fig. 4.

Fig. 9 is a similar transverse sectional view of one of the raceways, taken along the line 9—9 of Fig. 1.

Fig. 10 is a similar transverse sectional view of one of the magazine supporting rails, taken along the line 10—10 of Fig. 1.

Fig. 11 is a fragmentary longitudinal sectional view through the delivery end of the inclined chute, the view being taken along the line 11—11 of Fig. 5, looking in the direction of the arrows.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates a longitudinal flat base plate having attached upon its left-hand end a main support frame 11, as viewed in Fig. 1. The frame 11 is adapted to support an offset angular rear bracket 12 at its upper end, and the latter in turn supports a tapered hopper box 13 in an inclined position as shown in Figs. 1 and 4, for receiving in bulk a quantity of fastener elements 14, one of which is shown enlarged and in perspective in Fig. 2.

The element 14 is provided with a pair of diverging legs 15 including a slot 16 therebetween, and the crown end of said element is provided on one side with a pyramidal-shaped projection 17, the opposite side of said body having an opposed corresponding socket as is usual in separable edge fasteners.

The bottom of the hopper 13 is provided with a relatively heavy plate 18 preferably made of metal and having an integral extension 19, extending forwardly beyond the front wall 20 of the hopper 13. The lower edge of the front wall 20 is provided with a slot 20a adjoining the plate 18 of sufficient size to permit the elements 14 to pass freely therethrough. The size of the opening 20a is adapted to be regulated by a slidable shutter plate 21 adjustably secured to the front of the wall 20, as by a wing screw and bracket, as best shown in Fig. 4.

The forward extension 19 of the bottom plate

18 converges to a relatively narrow portion at its front end and has attached thereto a pair of upstanding side walls 22 which direct the elements 14 sliding down the plate 19 into a relatively narrow neck at the outer end thereof, whence they drop upon an inclined chute 23 between a pair of opposed angular wing plates 24. The wing plates 24 are provided with sloping sides, which, as shown in Fig. 1, tend to cause a large percentage of the elements 14 to arrange themselves in such a manner that the legs thereof will drop into a central longitudinal slot 25 provided in the chute 23. The chute 23 consists of a pair of parallel rails 26 and 27 held in suitable spaced relation to slidably receive the elements 14 as will be more fully explained later.

The elements 14 which happen to arrange themselves in the slot 25 will be supported upon the chute 23 by reason of their projecting heads 17 resting upon either the left rail 26 or the right rail 27 of said chute, as the case may be, and will be caused to gravitate down said inclined chute. The elements 14 that have their heads resting upon the right-hand rail 27, as viewed in Figs. 1 and 8, will drop by gravity through a vertical slot 28 in said rail (see Fig. 5), and the elements that have their heads oppositely arranged and resting on the left-hand rail 26 will drop through a similar slot 29 formed in said rail 26 farther down the chute.

As the elements 14 drop through their respective slots 28 and 29, they are adapted to straddle a pair of relatively thin guide rails 30 and 31 which extend across the width of the slot 25, and said guide rails 30 and 31 are adapted to direct the elements laterally to the right as shown in Fig. 1, down through a pair of clearance apertures 32 and 33 provided in the right rail 27 of the chute 23. The elements 14 are then directed into a pair of grooves 34 and 35 corresponding to the general shape of the elements 14 provided in a pair of longitudinal raceways 36 and 37, extending at right-angles and in an inclined position to the chute 23. As shown in Figs. 4 and 9, each raceway 36 (37) consists of a pair of complementary sections having the narrow guide rail 30 (31) interposed therebetween with a portion of said rail projecting up into the grooves 34 (35).

The upper end of the grooves 34 and 35 are provided with restricted longitudinal openings 34a and 35a, which permit the operator to view from above the number of elements 14 which are present in the raceways 36 and 37, and also to permit a tool to be inserted therethrough to force the elements along the raceways whenever desired. The raceways 36 and 37 are rigidly secured at their upper receiving ends to the adjacent face of the right-hand rail 27 of the chute 23 by means of a metal block 38 which in turn is secured to said rail 27 by means of a pair of countersunk screws 39 shown in Fig. 11.

The raceways 36 and 37 serve to conduct the elements 14 to a pair of detachable magazines 40 having element receiving grooves 41, as most clearly shown in Figs. 6 and 10. The magazines are adapted to be held upon a pair of supporting rails 42 and 43 with their grooves 41 downwardly. The supporting rails 42 and 43 are positioned in direct alinement with the raceways 36 and 37, respectively, and said rails are locked to said raceways by means of a pair of intermediate locking units 44 and 45, respectively. As shown in Fig. 1, the raceways 36 and 37 and the magazine-supporting rails 42 and 43 are adapted to be supported in elevated inclined position by means

of a pair of auxiliary standards 46 and 47 attached to the top surface of the base plate 10.

By thus supporting the entire mechanism upon a single base plate, the entire machine may be conveniently moved about to any desired location without the necessity of dismantling the machine.

Vibratory unit

In order to insure that the elements 14 will gravitate down the inclined chute 23 and the associated raceways 36 and 37, provision is made of an electromagnetic vibratory unit 48 supported by means of a lateral boss 49 formed integral with the side flange 11a of the main support frame 11. The vibratory unit 48 is provided with an upwardly extending vertical vibrating resilient plate 50, carrying at its upper end a horizontal plunger rod 51 (see Fig. 4). The rod 51 is preferably made of hexagonal stock, and is provided with a threaded shank 52 adjustably engaging the upper end of the vibrating plate 50 and rigidly and adjustably locked thereto by means of a pair of opposed nuts 53. The forward end of the plunger rod 51 or lefthand end, as viewed in Fig. 4, is provided with a hollow cylindrical portion 54 forming a socket for receiving a sound dampening head 55 preferably made of hard fibrous composition. The head 55 is adapted to rapidly strike against the adjacent face of the raceway 36 overcoming the influence of a coil spring 56 interposed therebetween and seated in a suitable socket in said composition head 55.

By employing the above described plunger rod mounted on the upper end of the resilient vibrating plate 50, it has been found in practice that the fastener elements will progress down the inclined chute 23 and guideways 36 and 37 at a much greater speed than was possible with the usual type of directly actuated vibrating devices which jostled the elements too severely.

The vibratory unit 48 is controlled by means of an electric switch 57 located on the back wall of the main support frame 11 and supplied with current through a pair of connecting conductors 58. A two-wire cable 59 leads from the switch 57 to any suitable electric power source.

A more detailed description of the parts of the invention will now be given. As previously described, the chute 23 consists of two rails 26 and 27 held in spaced relation. The left-hand rail 26 is provided with a relatively wide beveled upper edge 60, leaving a relatively narrow ridge 61 extending along the top surface thereof, upon which the lateral projections or heads 17 of the fastener elements which face to the left are adapted to rest as the elements slide down the chute 23. The elements which have their projections facing to the right will rest upon the rail 27. It will be understood that a certain percentage of the elements dropping from the end of the hopper extension 19 between the wing plates 24 will not be properly oriented to be caught by the slot 25, and such elements will be guided off both sides of the chute 23 by reason of a pair of saddle-like grooves 62 formed in the opposite side walls of the rails 26 and 27, adjacent the lower end of the wing plates 24 (see Fig. 4). These elements passing over the grooves 62 will drop into a V-shaped trough 63 located thereunderneath.

To assist in directing the misarranged elements into the saddle-like grooves 62, provision is made of a metal strip 64 affixed, as by screws 65, to the top surface of the right rail 27. As best shown in Figs. 5 and 8, the metal strip 64 is preferably

made slightly narrower than the width of the right rail 27, thus leaving an exposed section 67 of said rail, against which the elements 14 having right-facing projections are adapted to slide. The trough 63 will also catch any of the elements 14 which happen to accidentally slide beyond the vertical drop slots 28 and 29, and drop off the end of the chute 23. A funnel-shaped spout 68 is preferably disposed at the lower end of the trough 63 to direct the elements 14 into a suitable container 69 supported on a suitable bracket 70 attached to the main support frame 11.

In order to hold the two bars 26 and 27 of the chute 23 in adjustable spaced position so as to accommodate elements of different thicknesses, provision is made of a series of sets of interfitted male and female screws 71 and 72 having heads accessible at the left side of the chute 23, as viewed in Fig. 1. One set of the screws 71 and 72 are shown on an enlarged scale in Fig. 8. As here shown, the inner or male screw 71 is provided with an elongated shank 73 adapted to pass axially through the center of the larger associated female screw 72, and the threaded end of said male screw is engaged in a tapped hole 74 provided in the right rail 27. The head of the male screw 71 consists of a cylindrical knurled section 75 having a plurality of radial sockets 76 spaced thereabout which may be engaged by a pin wrench or other suitable tool for tightening said screw. The intermediate body of the female screw 72 is exteriorly threaded and engages in a tapped hole 77 provided in the left rail 26.

The inner end of the female screw 72 is provided with a tubular integral reduced end 78 fitted into a countersunk socket 79 in the rail 27. The outer end of the enlarged female screw 72 adjacent the head of the male screw 71 is formed with a squared section 80 which may be engaged by a suitable wrench for turning the same. To adjust the bars laterally with respect to each other to accommodate the elements 14 of various thicknesses, the male screw 71 is first unscrewed a slight distance to release the female screw 72, and the latter screw is then screwed inwardly; i. e. to the right, or screwed outwardly; i. e. to the left, to respectively move the bars 26 and 27 farther apart or closer together. After the bars 26 and 27 are properly adjusted the male screw 71 is screwed down tightly against the female screw 72 to hold the latter in adjusted locked position.

As shown in Figs. 7 and 8, a considerable portion of the adjacent inner faces of the spaced rails 26 and 27 are cut away, as shown at 81 and 82. This is for the purpose of permitting any sawdust, chips, dirt or improperly formed elements to more easily drop through the slot 25 and pass into the trough 63. Obviously, most of the chips, etc., that are carried along with the elements passing out of the hopper will drop through the upper part of the slot 25 at the upper rear end of the chute 23 into the adjacent end of the trough 63, and will be allowed to pass through a drain aperture 83 provided in the base of the trough 63 (see Fig. 7). An angular baffle lug 84 is positioned in the trough 68 adjacent the lower edge of the aperture 83 to assist in directing the chips through said aperture. Any foreign matter passing through the drain aperture 83 will slide down through an inclined slot 85 machined in the upper face of the offset support bracket 12, whence it will be directed into

a small receptacle 86 attached to the flanged wall 11a of the support frame 11.

At the lower end of the chute 23 at the junction of the raceways 36 and 37, provision is also made of cut-out grooves 87 and 88, as shown in Fig. 11, which serve as an additional outlet for any chips or other particles that may be carried to this point. Provision is also made of a plurality of substantially vertical slots 89 formed in the raceways 36 and 37, and conjoining with the grooves 35 and 36 to allow the escape of any foregoing matter or misarranged elements which may arrive at those points.

In order to retain the magazines 40 upon the supporting rails 42 and 43 coincident with the stacking operation, the forward ends of said magazines are held by means of the locking units 44 and 45 previously mentioned. The rear ends of the magazines 40 in turn are adapted to be tensioned and confined between the legs of a pair of U-shaped clips 90 and 91, rigidly secured to the extreme lower right ends of the supporting rails 42 and 43. The tensioning means for each of the clips 90 and 91 comprises a plunger 92 (Fig. 6), engaging in a countersunk socket 93 provided in the base of said clips 90, 91, said plungers 92 having reduced shanks 94 extending through the ends of said clips and provided with exterior locking pins 95. The plungers 92 are adapted to be depressed against helical compression springs 96 located in the base of the sockets 93.

The locking units 44 and 45 are of identical construction except that the operating handles thereof are both located on the outside thereof for convenience in manipulating the same.

The locking unit 45, as shown in detail in Fig. 3, comprises a pair of opposed side plates 97 and 98, herein shown as rigidly secured to the sides of the forward raceway 37 and the aligned magazine support rail 43 by means of bolts 99. The upper edges of the forward or left end of the side plates 97 and 98 are made flush with the upper edge of the raceway 37, and the rear ends of said plates extend a substantial distance above the supporting rail 43 to provide a suitable slot to embrace the end of one of the magazines 40.

To the forward face of the front plate 98 is pivotally attached a hand lever 100 by means of a pivot stud 101. The outer free end of the lever 100 is provided with a handle rod 102 for convenience in manipulating said lever. Extending rearwardly from the intermediate section of the lever 100 is a locking rod 103 which is adapted to engage against the back of the adjacent end of the magazine 40 for locking the latter in position upon the supporting rail 43. Extending forwardly from the lever 100 in axial alignment with the rod 103 is a pin 104 for receiving one end of a helical tension spring 105, while its opposite end is anchored to a stationary pin 106, extending forwardly from the plate 98. When the lever 100 is swung in a counterclockwise direction to release the magazine 40, as shown in Fig. 6, said lever 100 is supported in a substantially horizontal position by means of a vertical abutment pin 107 extending upwardly from the front plate 98 and lying in the path of the locking rod 103.

As best shown in Fig. 10, the element receiving groove 41 of the magazine 40 conforms to the general shape of the elements 14 and is similar in shape to the slots 34 and 35 in the raceways 36 and 37. As the elements are directed down the raceways 36 or 37, they are transferred from

the rails 30 (or 31) to a pair of aligned longitudinal vertical raised flanges 109 and 110 formed integral with the top surface of the magazine supporting rails 42 and 43, and said elements are adapted to be stored in the longitudinal groove 41 in the magazine 40.

In order to retain or "damp up" the elements 14 at the end of the raceways 36 or 37 when the magazines 40 are not in receiving position, as shown in Fig. 6, provision is made of a vertical plunger member 111 reciprocally engaged in a socket 112 in the adjacent end of the rail 42. The plunger is adapted to be pressed upwardly at all times by means of a compression spring 113 retained within said socket 112 by means of a bottom plug screw 114. While it is not shown in the drawing, the upper end of the plunger head 111 is bifurcated and adapted to straddle the flange 19 to produce a more effective dam for the elements in the adjacent raceways 36 or 37.

For the purpose of facilitating the gripping of the magazines 40 to remove the same from the rails 42 or 43 after the magazines have been stacked with the elements 14, a pair of clearance grooves 115 are formed on the opposite side of each rail 42 or 43 adjacent the locking units 44 or 45.

In transporting the loaded magazines 40 from the hopper machine to the fastener machine, the elements 14 are prevented from slipping out of the magazines 40 by means of a stop pin 116 slidable in suitable grooves provided in the adjacent faces of a pair of complementary half sections 117 and 118 comprising the magazine 40, a portion of the section 117 in Fig. 6 being removed to show the construction. The stop pin 116 normally projects into the groove 41 of the magazine 40 at the extreme lower end thereof, as an abutment for the elements 14. The pin 116 is rigidly attached to a pivoted lever 119 located in a suitable slot 120 provided in the back of said magazine 40 and fulcrumed therein by means of a transverse pin 121. The opposite end of the lever is slightly bent outwardly and cooperates with a compression spring 122 seated in a socket 123 formed in said magazine 40. When the magazine is set up in a vertical position in the fastener machine, the bent end of the lever 119 is adapted to be pressed inwardly by some part of said machine against the influence of the spring 122, and consequently withdrawing the pin 116 from the groove 41 to release the elements held therein.

Operation

In the operation of the hopper machine, a quantity of elements 14 will first be placed in the hopper 13 in bulk, and the shutter 21 adjusted to permit the desired amount of elements 14 to escape therefrom in accordance with the vibratory effect of the machine. The vibratory unit 48 may then be energized by means of the switch 57 and will cause the elements 14 to gravitate down the inclined chute 23 and enter their respective raceways 36 and 37 in a manner already explained. In case the magazines 40 are not located in position upon the supporting rails 42 and 43, the elements will stack up in the raceways 36 and 37 held in check by the plungers 111.

When it is desired to charge the magazine 40 with elements, the hand lever 100 of the locking unit 44 or 45 will be moved in a counter-clockwise direction to the position as shown in Fig. 6. The magazine 40 is then placed with its lower end in one of the clips 90 or 91, and depresses the

plunger head 92 rearwardly to its fullest extent, and the upper end of the magazine will then be dropped between the side plates 97 and 98 of the locking unit 45. Finally, the lever 100 may be swung back to its operating position to cause the locking rod 103 to engage across the back of the magazine 40 for holding it in secure position. It will be noted from Fig. 10 that the flange 109 of the rails 43 is adapted to project into the groove 41 of the magazine 40 to facilitate the guidance of the elements into said magazine, the same being true with the rail 42 and flange 110. When the magazines 40 are in position on the rails 42 and 43, they automatically operate to depress the locking plunger member 111 to release the damaged-up elements in the raceways 36 or 37, and permit them to pass unobstructed into the receiving groove 41.

Instead of depending entirely upon the vibratory effects of the machine to gravitate the elements 14 from the raceways 36 or 37 into their respective magazines 40, this operation may be expedited by inserting a suitable pointed tool through the slots 34a or 35a, to manually urge the stacked elements down the inclined raceways into the magazine in a much shorter period of time.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In an apparatus for stacking a plurality of slide fastener elements, a hopper having an inclined base, an inclined chute for receiving elements in succession from said hopper and arranging them in edge-to-edge alinement, an inclined raceway at the lower end of said chute and adapted to receive the elements therefrom in face-to-face alinement, a frame for supporting said hopper, chute, and raceway as a unitary structure, an electric vibratory unit attached to said frame, a vibrating plate extending upwardly from said vibratory unit and having a plunger rod at its upper end for rapidly striking against a portion of said apparatus, whereby the elements will be caused to gravitate down the inclined slopes of the several parts to a predetermined position.

2. In an apparatus for stacking a plurality of slide fastener elements having lateral heads, a hopper, an inclined chute for receiving elements one by one from said hopper in edge-to-edge relationship, said chute comprising a pair of parallel rails, means at the upper end of said chute for directing the bodies of the elements into the space between said rails with the heads of said elements engaging the top surfaces of said rails, a track member projecting into said space at right-angles to said chute, one of said rails having a drop groove for receiving the heads of said elements to permit them to drop down and straddle said track member, and an inclined raceway associated with the lower part of said track member for directing the elements away from said chute in stacked face-to-face relationship.

3. In an apparatus for stacking a plurality of

slide fastener elements having lateral heads, a hopper, an inclined chute for receiving elements one by one from said hopper in edge-to-edge relationship, said chute comprising a pair of parallel rails, means at the upper end of said chute for directing the bodies of the elements into the space between said rails with the heads of said elements engaging the top surfaces of said rails, a track member projecting into said space at right-angles to said chute, one of said rails having a drop groove for receiving the heads of said elements to permit them to drop down and straddle said track member, an inclined raceway associated with the lower part of said track member for directing the elements away from said chute in stacked face-to-face relationship, a magazine removably supported in axial alignment with said raceway, and locking means normally holding said elements stacked in said raceway but releasable by the insertion of said magazine to permit the elements to pass from said raceway into said magazine.

4. In an apparatus for stacking a plurality of slide fastener elements having lateral heads, a hopper, an inclined chute for receiving elements one by one from said hopper in edge-to-edge relationship, said chute comprising a pair of parallel rails, means at the upper end of said chute for directing the bodies of the elements into the space between said rails with the heads of said elements engaging the top surfaces of said rails, a track member projecting into said space at right-angles to said chute, one of said rails having a drop groove for receiving the heads of said elements to permit them to drop down and straddle said track member, and an inclined raceway associated with the lower part of said track member for directing the elements away from said chute in stacked face-to-face relationship, said chute having a cut-out bottom portion to cause any foreign matter or improperly formed elements to drop out by gravity.

5. In an apparatus for stacking a plurality of slide fastener elements having lateral heads, a hopper, an inclined chute for receiving elements one by one from said hopper in edge-to-edge relationship, said chute comprising a pair of parallel rails, means at the upper end of said chute for directing the bodies of the elements into the space between said rails with the heads of said elements engaging the top surfaces of said rails, a track member projecting into said space at right-angles to said chute, one of said rails having a drop groove for receiving the heads of said elements to permit them to drop down and straddle said track member, and an inclined raceway associated with the lower part of said track member for directing the elements away from said chute in stacked face-to-face relationship, said raceway having an open slot to cause any foreign materials or improperly formed elements to drop out by gravity.

6. In an apparatus for stacking a plurality of slide fastener elements, a hopper, an inclined chute for receiving said elements from said hopper and arranging them in edge-to-edge alignment, a pair of raceways adapted to receive said elements from said chute in face-to-face alignment, each of said raceways having a longitudinal groove for receiving said elements, each raceway having a longitudinal upper slot narrower than said groove for permitting visual inspection of said elements from above, and a guide rail located in said groove for supporting said ele-

ments with their legs straddling the sides of said rail.

7. In an apparatus for stacking a plurality of slide fastener elements, a chute for receiving said elements including a pair of parallel flat rails, and means for adjusting the distance between said rails including a headed screw threadedly engaged in one of said rails, a tubular screw surrounding said headed screw and threadedly engaged in the other rail, one end of said tubular screw engaging the head of the other screw, and the opposite end of said tubular screw engaging said first rail.

8. In an apparatus for stacking a plurality of slide fastener elements, a chute for receiving said elements including a pair of parallel flat rails, means for adjusting the distance between said rails including a headed screw threadedly engaged in one of said rails, a tubular screw surrounding said headed screw and threadedly engaged in the other rail, one end of said tubular screw engaging the head of the other screw, and the opposite end of said tubular screw engaging said first rail, and means on each of said screws for permitting adjustment thereof.

9. In an apparatus for stacking a plurality of slide fastener elements, an inclined guide member for receiving said elements, means for vibrating said guide member to facilitate the gravitation of said elements downwardly in said guide member comprising a flexible bar fixed at one end and carrying a spring-pressed plunger at its other end for vibratory engagement with said guide member, and means for intermittently applying force to said bar to cause said plunger to strike said guide member.

10. In an apparatus for stacking a plurality of slide fastener elements, an inclined guide member for receiving said elements, means for vibrating said guide member to facilitate the gravitation of said elements downwardly in said guide member comprising a flexible bar fixed at one end and carrying a spring-pressed plunger at its other end for vibratory engagement with said guide member, and means for intermittently applying force to said bar to cause said plunger to strike said guide member, said plunger having a sound-deadening cushion plug at its striking end.

11. In an apparatus for stacking a plurality of laterally headed slide fastener elements, a hopper, an inclined chute for successively receiving said elements from said hopper, said chute comprising a pair of parallel relatively adjustable top side rails for receiving said elements in edge-to-edge alignment and with the heads of said elements resting on said rails and some facing in each direction, a pair of detachable elongated grooved magazines, a pair of inclined raceways in alignment with said magazines for guiding said elements in face-to-face relationship from said chute to said magazines and with the elements in one raceway and magazine all facing in one direction and the elements in the other raceway and magazine all facing in the opposite direction, and means for causing the delivery of elements to one of said raceways with the heads facing in one direction and to the other raceway with the heads facing in the opposite direction.

12. In an apparatus for stacking a plurality of laterally headed slide fastener elements, a hopper, an inclined chute for successively receiving said elements from said hopper, said chute comprising a pair of parallel top side rails for receiving said elements in edge-to-edge alignment and

with the heads of said elements resting on said rails and some facing in each direction, a pair of detachable elongated grooved magazines, a pair of inclined raceways in alinement with said magazines for guiding said elements in face-to-face relationship from said chute to said magazines and with the elements in one raceway and magazine all facing in one direction and the elements in the other raceway and magazine all facing in the opposite direction, means to detachably clamp said magazines to the ends of said raceways, and means for causing the delivery of elements to one of said raceways with the heads facing in one direction and to the other raceway with the heads facing in the opposite direction.

13. In an apparatus for stacking a plurality of slide fastener elements, an elongated grooved magazine for receiving said elements, an inclined elongated raceway for guiding said elements to said magazine, a rail member secured to said raceway and extending beyond the end thereof, said magazine being supported by and interfitted with said rail, and means to detachably clamp said magazine to said raceway and rail in longitudinal alinement with said raceway.

14. In an apparatus for stacking a plurality of slide fastener elements, each having a head on one side thereof, a hopper containing a mass of such elements, an inclined chute for successively receiving said elements from said hopper in edge-to-edge relationship and with the heads of said elements extending in both directions, said chute having a pair of oppositely facing clearing slots for permitting said elements to drop there-through, a pair of inclined raceways for receiving said elements in face-to-face relationship and with the elements in one raceway facing in the one direction and the elements in the other raceway facing in the opposite direction, and a pair of detachable grooved magazines in alinement with said raceways for receiving said elements.

15. In an apparatus for stacking a plurality of slide fastener elements, an inclined raceway for transferring said elements in face-to-face relationship from a feed chute, a grooved magazine for receiving said elements from said raceway, means extending from said raceway to form a seat for said magazine, a locking unit on the lower end of said raceway comprising a pair of side plates, a lever pivoted to one of said side plates, said lever carrying a transverse rod for detachably engaging the top of the rear end of said magazine for holding it down on its seat.

16. In an apparatus for stacking a plurality of slide fastener elements, an inclined raceway for transferring said elements in face-to-face relationship from a feed chute, a grooved magazine for receiving said elements from said raceway, means extending from said raceway to form a seat for said magazine, a locking unit on the lower end of said raceway comprising a pair of side plates, a lever pivoted to one of said side plates, said lever carrying a transverse rod for detachably engaging the top of the rear end of said magazine for holding it down on its seat, and a spring for holding said lever into an out-of-the-way position when it is not engaging said magazine.

17. In an apparatus for stacking a plurality of

slide fastener elements, an inclined raceway for transferring said elements in face-to-face relationship from a feed chute, a grooved magazine for receiving said elements from said raceway, means extending from said raceway to form a seat for said magazine, a locking unit on the lower end of said raceway comprising a pair of side plates, a lever pivoted to one of said side plates, said lever carrying a transverse rod for detachably engaging the top of the rear end of said magazine for holding it down on its seat, said raceway extension having a longitudinal top flange extending into the groove in said magazine to guide the elements received from said raceway.

18. In an apparatus for stacking a plurality of slide fastener elements, an inclined raceway for transferring said elements in face-to-face contact from a feed chute, a magazine having a groove on its lower face for receiving said elements, a rail extending beyond said raceway for detachably supporting said magazine, said rail having an abutment clip secured to its outer end, and latching means on the end of said raceway for engaging the rear end of said magazine to hold it upon its seat between said raceway and said clip to permit the elements to pass from said raceway into said magazine.

19. In an apparatus for stacking a plurality of slide fastener elements, an inclined raceway for transferring said elements in face-to-face contact from a feed chute, a magazine having a groove on its lower face for receiving said elements, a rail extending beyond said raceway for detachably supporting said magazine, said rail having an abutment clip secured to its outer end, and latching means on the end of said raceway for engaging the rear end of said magazine to hold it upon its seat between said raceway and said clip to permit the elements to pass from said raceway into said magazine, said clip having a spring-pressed plunger for frictionally engaging the end of said magazine.

20. In an apparatus for stacking a plurality of slide fastener elements, an inclined raceway for transferring said elements in face-to-face contact from a hopper and feed chute, a magazine having an element receiving groove on its bottom face, a depending stop pin movably mounted in the end of said magazine, said pin normally extending into said groove to hold the elements therein, and means to move said pin out of said groove to release said elements from said magazine when it is inserted into a fastener machine.

21. In an apparatus for stacking a plurality of slide fastener elements, an inclined raceway for transferring said elements in face-to-face contact from a hopper and feed chute, a magazine having an element-receiving groove on its bottom face, a horizontal lever pivoted to the end of said magazine, a depending pin at the end of said lever, a spring for pressing said lever to cause pin to normally extend into said groove, and means on said lever operated by the insertion of said magazine into a fastener machine to engage said lever and cause said pin to move out of said groove and release said elements.

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