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RIVET SORTING MACHINE

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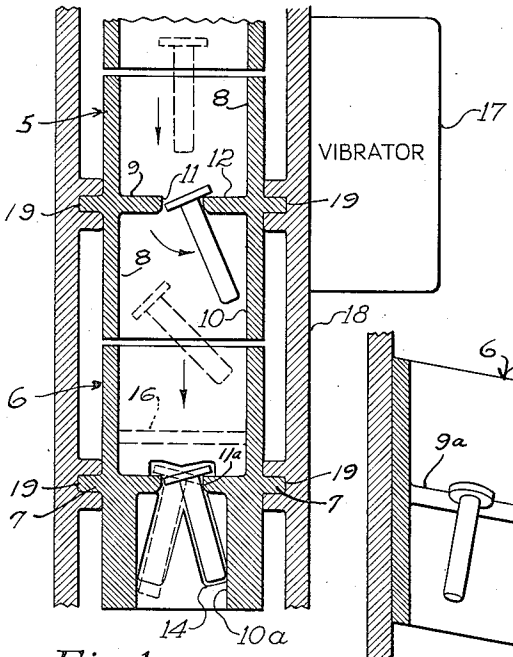


Fig. 1

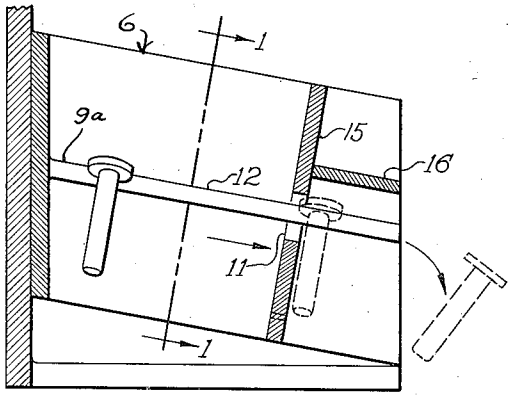


Fig. 2

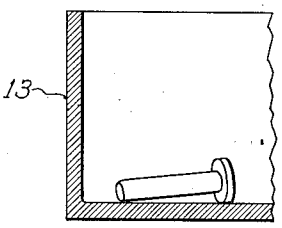


Fig. 3

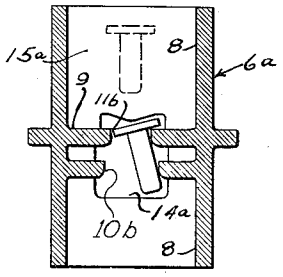


Fig. 4

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RIVET SORTING MACHINE

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2 Claims. (Cl. 209—98)

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This invention relates to sorting machinery and more especially to a machine for sorting rivets.

An object of the invention is to provide a novel machine for sorting rivets graded according to the dimensions of the parts thereof.

Another object is to provide an improved machine for sorting rivets according to variations in the length, thickness, size, and shape of head thereof, or other configuration characteristics.

A further object is to provide a series of sorting or segregating devices in a rivet sorting machine by which several sorting operations may be completed substantially as one.

My invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawing merely shows and the following description merely describes typical embodiments of the present invention, which are given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

Figure 1 is an elevation view, in section, showing an embodiment of the invention, the section being taken substantially in the plane 1—1 of Fig. 2.

Fig. 2 is an elevation view in longitudinal section showing one of the sorting sections shown also in Fig. 1.

Fig. 3 is a fragmentary elevation view of a receptacle or tray for sorted rivets.

Fig. 4 is a cross section elevation of a modified form of sorting section.

Referring more particularly to the drawing I show a rivet sorting and segregating machine which comprises a frame structure 18, consisting essentially of a pair of spaced frame members having pairs of oppositely arranged horizontal grooves or rabbets 19 for removably supporting a plurality of boxes or sorting trays 5, 6, etc., which trays or boxes may be provided with supporting flanges 7 for slidable engagement with grooves 19. Box 5 is provided with side walls 8 and a longitudinally extending inclined floor 9 positioned approximately midway between the top and bottom, there being side wall portions 10 below floor 9, floor 9 having a longitudinally extending slot 11 therein forming a pair of guide tracks or ways 12

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along which rivets may be progressed and supported by the heads thereof.

Essential features of the invention may be clearly seen from Figs. 1 and 2 which show a tray 6 that is illustrative of each of the plurality of trays having a floor 9a provided with a slot 11a and side walls 10a spaced apart a lesser amount than walls 10. A transverse wall 15 is positioned as shown, and a longitudinal plate member 16 is provided extending along and above floor 9a beyond wall 15 as shown. Wall 15 has an aperture 14 approximately in the shape of an inverted V below floor 9a, a portion of which extends above the floor, said aperture being slightly larger than the outline of a rivet which is intended to be segregated by tray 6 and passed outwardly through the open end of the tray at the right as seen in Fig. 2 and deposited in a suitable receptacle 13 therefor. Aperture 14 will be so shaped that it is practically impossible for a rivet to be discharged unless it is the correct size and shape for the particular discharge point. Frame 18 is adapted to be agitated by a suitable vibrator 17 connected thereto, which vibrator may be of any conventional type or form whereby the rivets placed in the initial tray will be agitated or vibrated so that they either pass through the slots 11 or 11a to a lower tray or progress by reason of the inclined ways 12 into other trays for further segregation or into a final tray for removal from the machine.

In Fig. 4 I show a modified form of the invention wherein a box or tray 6a is shown having a floor 9 provided with a slot 11b similar to slots 11 or 11a, the tray having side walls 8 as in Fig. 1. A cross wall 15a similar to wall 15 is provided and has an aperture 14a to permit the segregated rivets to pass through. A pair of flanges 10b extend from walls 8 below floor 9 as shown and provide limiting or checking means for the shanks of the rivets to permit those to be dropped through slot 11b as desired, and prevent such passing therethrough of rivets which should be segregated for passing through aperture 14a.

In the operation of my rivet sorter, the agitation of the frame structure 18 will cause the rivets to become positioned in the respective trays with the shanks thereof extending through the slots 11 and the heads thereof engaging in the guide ways 12. Considering now a series of rivets having identical heads but different shank lengths, for which the several trays shown in Fig. 1 are adapted, selection of such rivets will depend upon the angle which the heads thereof are permitted to assume in the slots 11 of the respective trays.

The angle that the head is permitted to assume in turn is controlled by the engagement of the lower end of the rivet against the side wall **10** or **10***a* of the tray. For example, in the upper tray shown in Fig. 1, the side wall **10** is positioned at a sufficient distance from the vertical axis of the tray to permit the rivet depending from the slot **11** to pivot, as indicated by the arrow, to an angle of sufficient inclination to permit the head of the rivet to be tilted sufficiently to pass through the slot **11**, whereas the wall **10***a* of the next lower tray, being spaced more closely to the vertical axis of the tray, will, by engagement with the lower end of the rivet, restrict the angle at which the rivet may depend in the slot to such an acute angle that the head is not permitted to tilt sufficiently to pass through the slot **11***a*. The angle of dependency of the rivet will be effected not only by the length of the shank but also by the diameter of the shank, by the diameter of the head, or by the shape of the head.

Those rivets that are arrested by a given tray will slide down the inclined ways **12** with the assistance of the vibration induced in the tray, and will progress through an aperture such as the aperture **14** in the tray **6**, beneath the plate member **16** (which prevents the rivets that have passed the aperture from being joggled out of position) and will thence be discharged as indicated by the broken line position and arrow in Fig. 2, into the receptacle **13** shown in Fig. 3. The aperture **14** provides a double check against the discharge of a wrong rivet from a given tray, in that it is shaped to correspond closely to the shape of the rivet and the angle of dependency of the rivet in its selector tray. It will be noted that the rivet shown in full lines in the tray **6** in Fig. 1 will pass through the aperture **14** but that the longer rivet shown in broken lines will be stopped at the wall **15**.

The rivets that are passed through a given tray, for example the tray **5**, will be subjected to a further sorting process in the next lower tray **6**, one size being selected out in that tray and the remaining rivets being dropped into a succeedingly lower tray for further sorting.

While I have illustrated and described what I now regard as the preferred embodiment of my invention, the construction is, of course, subject to modifications without departing from the spirit and scope of my invention. I, therefore, do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications that may fall within the scope of the appended claims.

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

1. A device for sorting and segregating headed and shanked articles in accordance with the configuration of the head portion of the article and the length and diameter of the shank thereof, comprising a receptacle open at the top and bottom and provided with a slotted floor intermediate the top and bottom, shank engaging means located below said floor and to one side of said slot, said slot being of less width than the diameter of said head portion and of such a predetermined width and spacing from said shank engaging means as to permit articles sized according to configuration of head and diameter and length of shank to be held at a given angle of tilting of the shank with respect to the vertical axis of the receptacle, said receptacle being provided with a slotted end wall for passage therethrough of such articles, articles not meeting such requirements being either passed through said slot or being retained in said receptacle, and means for agitating said articles.

2. A device for sorting and segregating headed and shanked articles in accordance with the configuration of the head portion of the article and the length and diameter of the shank thereof, comprising a plurality of receptacles operatively positioned one above the other, means for supporting such receptacles in operative position, each of said receptacles being open at the top and bottom and having a slotted inclined floor intermediate the top and bottom, each of said slots being of predetermined width and spacing from the side walls of its respective receptacle according to the head configuration and length and diameter of the shank of the articles to be segregated thereby, and at lease one of said receptacles being provided with an end wall slotted to pass articles of given head configuration and shank dimensions, and means for agitating said articles.

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