E. L. DUNN.

RIVET SORTING MACHINE.

APPLICATION FILED SEPT. 19, 1919.

1,324,650.

Patented Dec. 9, 1919.

4 SHEETS—SHEET 1.

Fig. 1.

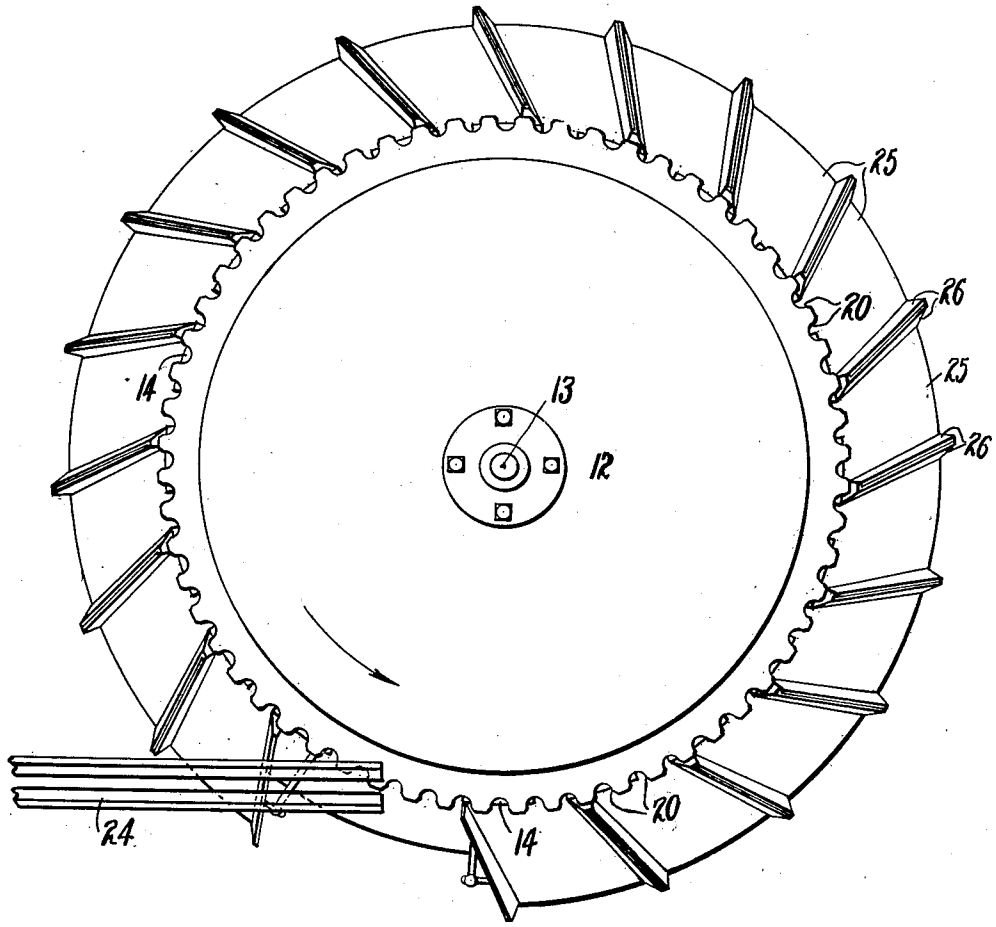
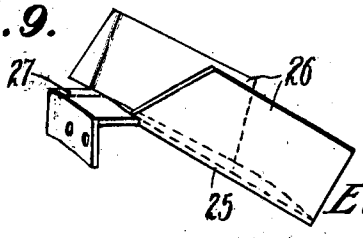


Fig. 9.



Witnesses

W. C. Fielding

Augustus B. Coppes

Inventor

Edmund L. Dunn

By Joshua R. H. Potts

His Attorney

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4 SHEETS—SHEET 2.

Fig. 2.

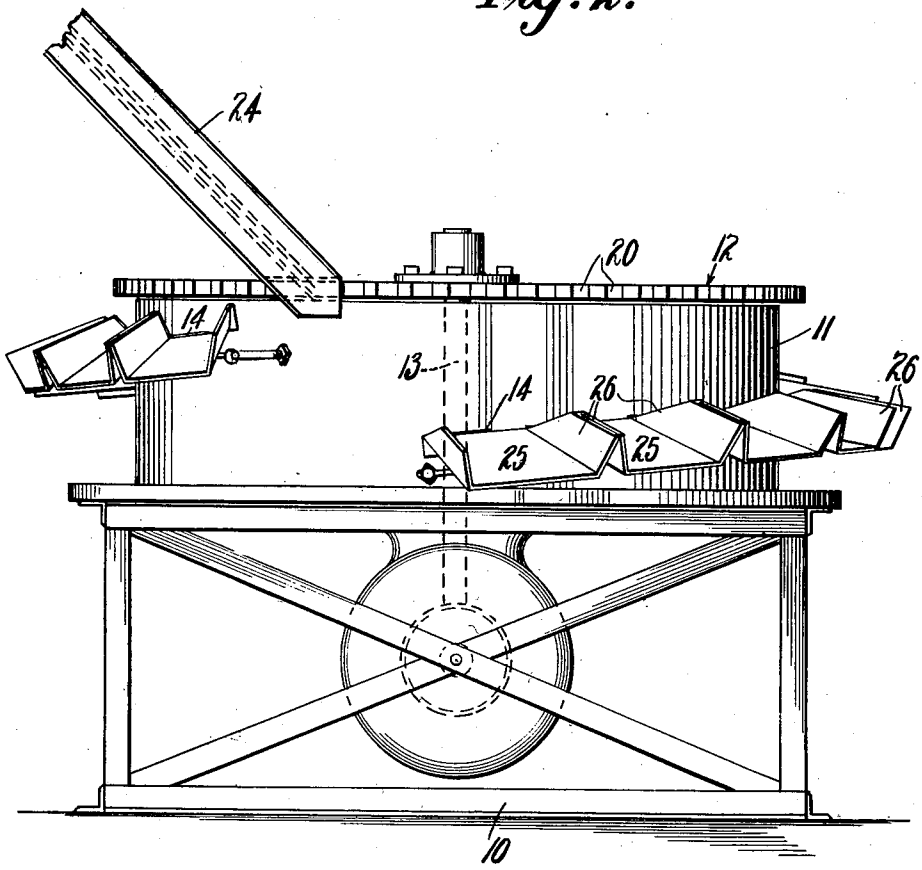
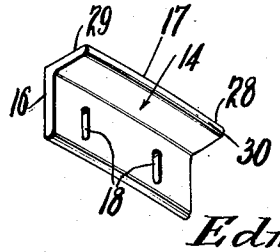


Fig. 8.



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W. C. Fielding

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4 SHEETS—SHEET 3.

Fig. 3.

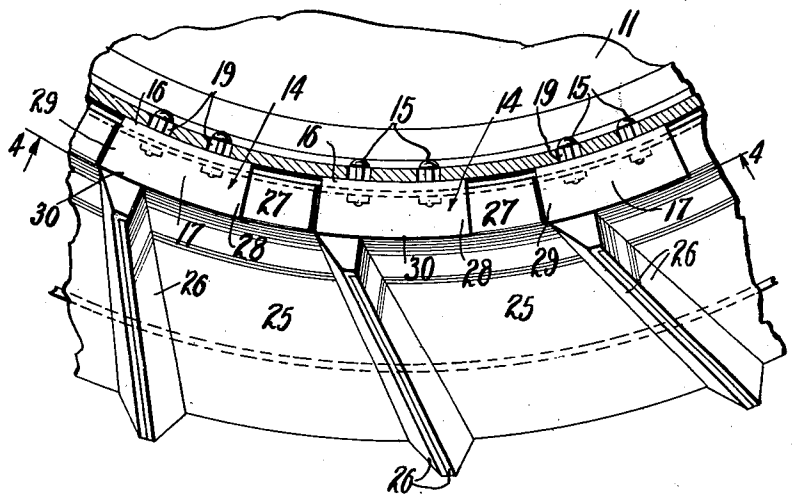
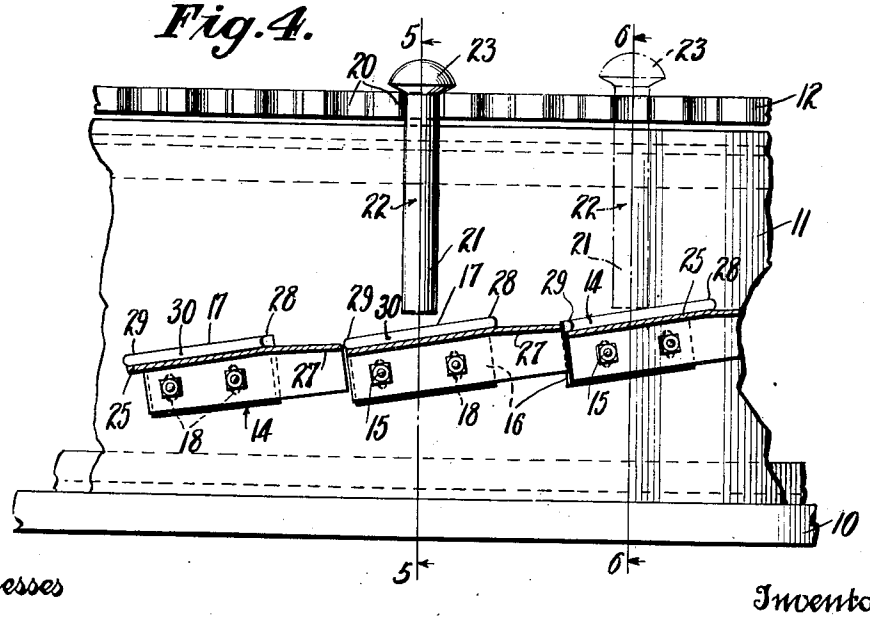


Fig. 4.



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W. C. Fielding

Augustus B. Coppes

Inventor

Edmund L. Dunn

By Joshua R. H. Potts

His Attorney

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4 SHEETS—SHEET 4.

Fig. 5.

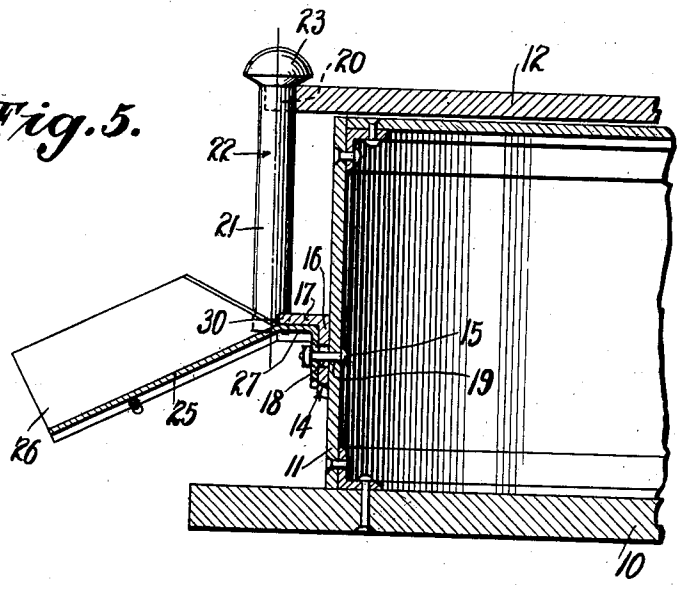


Fig. 7.

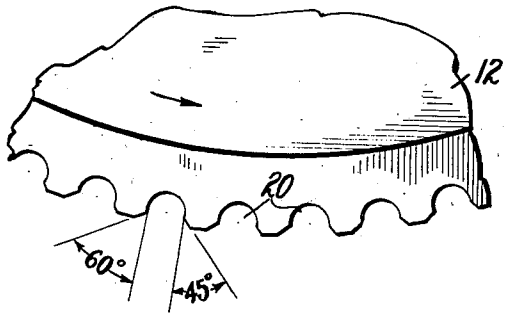
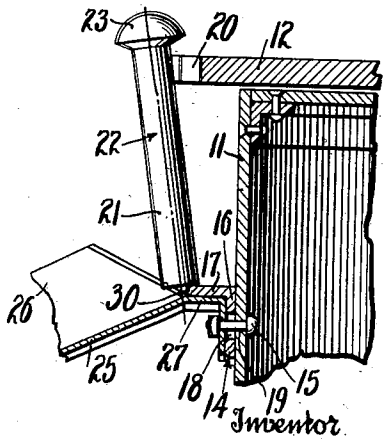


Fig. 6.



Witnesses

W. C. Fielding

Augustus B. Coppee

Inventor

Edmund L. Dunn

By Joshua R. H. Potts

His Attorney

UNITED STATES PATENT OFFICE.

EDMUND LOUIS DUNN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO JAMES P. SALMON AND ONE-THIRD TO EDMUND D. FITZPATRICK, BOTH OF PHILADELPHIA, PENNSYLVANIA.

RIVET-SORTING MACHINE.

1,324,650. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed September 19, 1919. Serial No. 324,741.

To all whom it may concern:

Be it known that I, EDMUND L. DUNN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Rivet-Sorting Machines, of which the following is a specification.

One object of my invention is to provide an improved sorting and distributing machine for bolts or rivets which will quickly and accurately sort and distribute rivets or bolts from a mixed lot.

Another object is to make my improved machine of a simple and durable construction.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a top plan view of my improved machine,

Fig. 2 is a front elevation of my improved machine,

Fig. 3 is a fragmentary sectional plan view drawn on an enlarged scale and showing certain features of my improved machine,

Fig. 4 is a fragmentary elevation taken on the line 4—4 of Fig. 3 and illustrating a rivet being conveyed by the machine for the purpose of delivering the rivet to a certain receptacle.

Fig. 5 is a fragmentary section taken on the line 5—5 of Fig. 4.

Fig. 6 is a fragmentary section taken on the line 6—6 of Fig. 4 showing said rivet in the act of falling into one of a number of distributing chutes down which it will slide into a receptacle (not illustrated) which can be set under the lower end of said chute,

Fig. 7 is a fragmentary top plan view of a conveying wheel drawn on an enlarged scale and showing the shape of notches which are formed in its edge for the purpose of receiving and holding the rivets during the conveying movement,

Fig. 8 is a perspective view of one of a number of knock-off brackets which forms a part of my invention, and

Fig. 9 is a perspective view of one of the distributing chutes.

Referring to the drawings, 10 represents a supporting structure illustrated in the form of a frame and having a cylinder 11 secured thereon. A rotatable plate or wheel 12 is mounted directly above the cylinder 11 and is secured to an operating shaft 13; said shaft being rotatable by any suitable means in the direction of the arrow shown in Fig. 1. A series of knock-off brackets 14 are secured by bolts 15 to the cylinder 11; said brackets being substantially inverted L-shape in cross section, as clearly shown in Figs. 5, 6 and 8. The upper leg portions 16 have their upper surfaces 17 arranged substantially in the form of a helical curve with respect to the axes of the rotatable conveying wheel 12 and cylinder 11. These brackets extend throughout practically the entire circumference of the cylinder 11 and by being arranged in helical formation above mentioned, it will be noted that the first of the series will be arranged at a higher level than the last of the series, as clearly shown in Fig. 2. To permit proper adjustment these knock-off brackets are provided with slots 18 which extend substantially vertical, as shown in Figs. 5, 6 and 8, and the cylinder is provided with slots 19 which extend in the direction of the circumference of the cylinder, as clearly shown in Fig. 3.

The bolts 15 pass through the slots 18 and 19 and a practical universal adjustment can thus be provided for the brackets 14. The wheel 12 is of greater diameter than the cylinder 11 and has notches or recesses 20 in its outer edge; said notches being adapted to receive the stems 21 of the rivets 22 as illustrated. The heads 23 are adapted to engage the upper surface of the wheel 12 so that during the rotation of the wheel 12 the rivets will hang from the wheel 12, as shown in Fig. 5. The rivets may be fed to the wheel 12 by means of a feed chute 24 or they may be manually placed within the notches 20 at a place between the ends of the series of knock-off brackets 14.

A number of inclined distributing chutes 25 are secured, preferably by the bolts 15, adjacent the knock-off brackets 14. These chutes have bent-up flanges 26 at their opposite sides and are arranged substantially tangent to a circle drawn concentric to the axis of the wheel 12. In other words, these

flanges 26 are not radial and as will hereinafter be more fully described serve to keep the rivets within the confines of the chute into which they are intended to be delivered. The chutes 25 have tongues 27 projecting therefrom; said tongues being located between the adjacent ends of the knock-off brackets as shown in Fig. 3 so as to prevent any chance of a rivet falling between the knock-off brackets during the operation of the machine.

As clearly shown in Fig. 4, I preferably arrange the knock-off brackets 14 so that the uppermost part of the surface 17 of one bracket, as shown at 28, is above the level of the lowermost part 29 of the surface 17 of the knock-off bracket which next succeeds it in the series in going from the lowest to the highest brackets of the series. Also the outer edges 30 of the knock-off brackets 14 are closer to the outer surface of the cylinder 11 than are the axes of the rivets while suspended on the wheel 12. This latter arrangement of parts forms a very important part of my invention and in fact these features alone render my invention superior to other devices for this purpose made prior to my invention for a reason now to be described.

The rivets when fed to the wheel 12 are of various lengths, some short and some long. It is the work of this machine to sort and distribute these rivets in the receptacles so that each receptacle, after the sorting and distributing have been accomplished, will have rivets therein of similar lengths. After the rivets are fed to the wheel 12 they are conveyed by the wheel until their lower ends engage the upper surface 17 of a bracket 14 which is of such height that it will not permit the rivet to pass it without raising said rivet. As the wheel continues, for example from the position of the rivet shown in full lines in Fig. 4, to the position shown in dot-and-dash lines in the same figure, the rivet will be raised and since the edge portion 30 is located between the axis of the rivet and the portion of the rivet which is nearest the cylinder 11 the rivet will be overbalanced and will tilt and fall into an adjacent distributing chute 25. In other words, the knock-off bracket engages the rivet at a position to the side of center of gravity of the rivet and since the inclined nature of the surface 17 causes a further movement of the wheel 12 to effect the lifting movement of the rivet by the knock-off bracket, the rivet will fall into its proper chute and slide down into any suitable receptacle placed under the chute for the purpose of receiving the same.

The wheel 12 is made of sufficient strength to support the rivets without in any manner flexing so that there is no possible chance of sagging or other deviation between the wheel 12 and the knock-off brackets.

By positioning the ends 29 lower than the ends 28 as above described if a rivet is of sufficient length to pass over an end 28 it cannot engage the nearest knock-off bracket directly at its end 29, but must pass on a short distance before it can strike said latter bracket. This prevents a rivet, which for example just about passes a part 28 of one of the brackets, from striking the adjacent end 29 of the next succeeding bracket and then falling back into the chute which is intended to receive the rivets from the preceding knock-off bracket. Thus the accurate sorting and distribution of the rivets is insured.

By having the flanges 26 arranged substantially at a tangent as above described a centrifugal movement of the rivets when falling into the chutes 25 is permitted without possible chance of the rivets bouncing over the flanges from one chute into another and by thus arranging the distributing chutes the wheel can be rotated at a comparatively high speed without chance of improper distribution.

While I have described my improved machine particularly for sorting and distributing rivets, it will be noted that the same can be made to sort and distribute bolts or other elements which can be carried on the wheel 12 and which have portions adapted to engage the knock-off brackets. Also in the claims I have used the word "rivets" as a means of convenience for description, but it will be understood that bolts or other articles can be used in lieu thereof.

While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

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

1. A machine for sorting and distributing rivets including means for conveying the rivets; and means having portions located at various distances from said conveying means and adapted to lift and tilt said rivets and thereby cause them to fall from said conveying means; substantially as described.

2. A machine for sorting and distributing rivets including means for conveying the rivets; and means having portions located at various distances from said conveying means and adapted to lift said rivets at positions beyond their centers of gravity whereby the rivets will tilt and fall from said conveying means; substantially as described.

3. A machine for sorting and distributing rivets including conveying means having notches in which the stems of rivets can be placed to permit the rivets to be suspended thereon by their heads; and means having portions located at various distances from the conveying means and adapted to be engaged and ridden upward upon by the lower ends of the rivets whereby the rivets will be raised and tilted so as to fall out of said notches of the conveying means; substantially as described.

4. A machine for sorting and distributing rivets including conveying means having notches in which the stems of rivets can be placed to permit the rivets to be suspended thereon by their heads; and means having portions located at various distances from the conveying means and adapted to be engaged and ridden upward upon by the lower ends of the rivets at points beyond the centers of gravity of the rivets whereby the latter will be raised and tilted so as to fall out of said notches of the conveying means; substantially as described.

5. A machine for sorting and distributing rivets including means for conveying the rivets; means having portions located at various distances from said conveying means and adapted to lift and tilt said rivets and thereby cause them to fall from said conveying means; and distributing chutes adjacent said portions and adapted to respectively receive said rivets as they fall after having been tilted by said portions; substantially as described.

6. A machine for sorting and distributing rivets including means for conveying the rivets; means having portions located at various distances from said conveying means and adapted to lift and tilt said rivets and thereby cause them to fall from said conveying means; and distributing chutes adjacent said portions and adapted to respectively receive said rivets as they fall after having been tilted by said portions, said chutes extending in a direction substantially similar to that of the direction of movement imparted to said rivets, while falling, due to centrifugal motion effected by movement of said conveying means; substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDMUND LOUIS DUNN.

Witnesses:
ANNA RENTON,
CHAS. E. POTTS.