W. L. CURTIS.

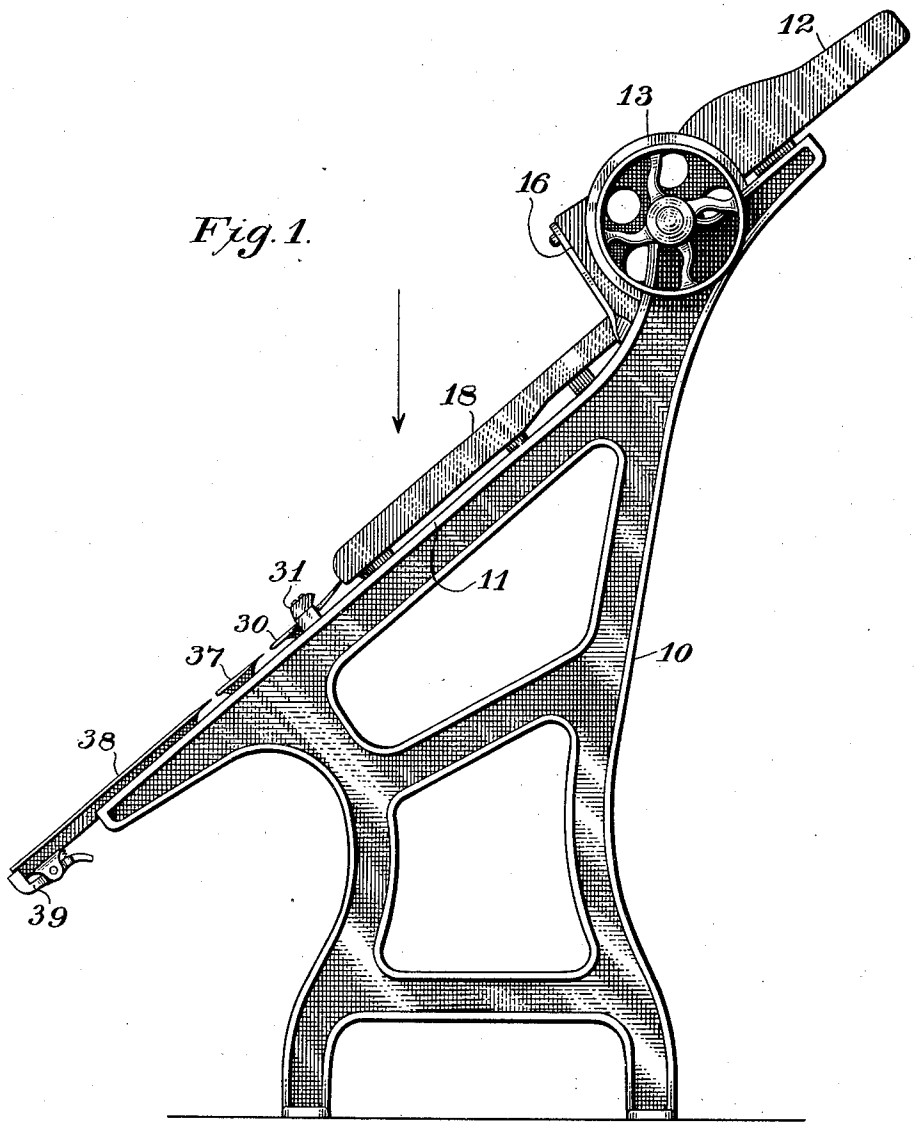
GRAVITY FEEDING DEVICE FOR EYES AND SIMILAR ARTICLES.

APPLICATION FILED NOV. 24, 1908.

1,095,192. **Patented May 5, 1914.**

3 SHEETS—SHEET 1.

Fig. 1.



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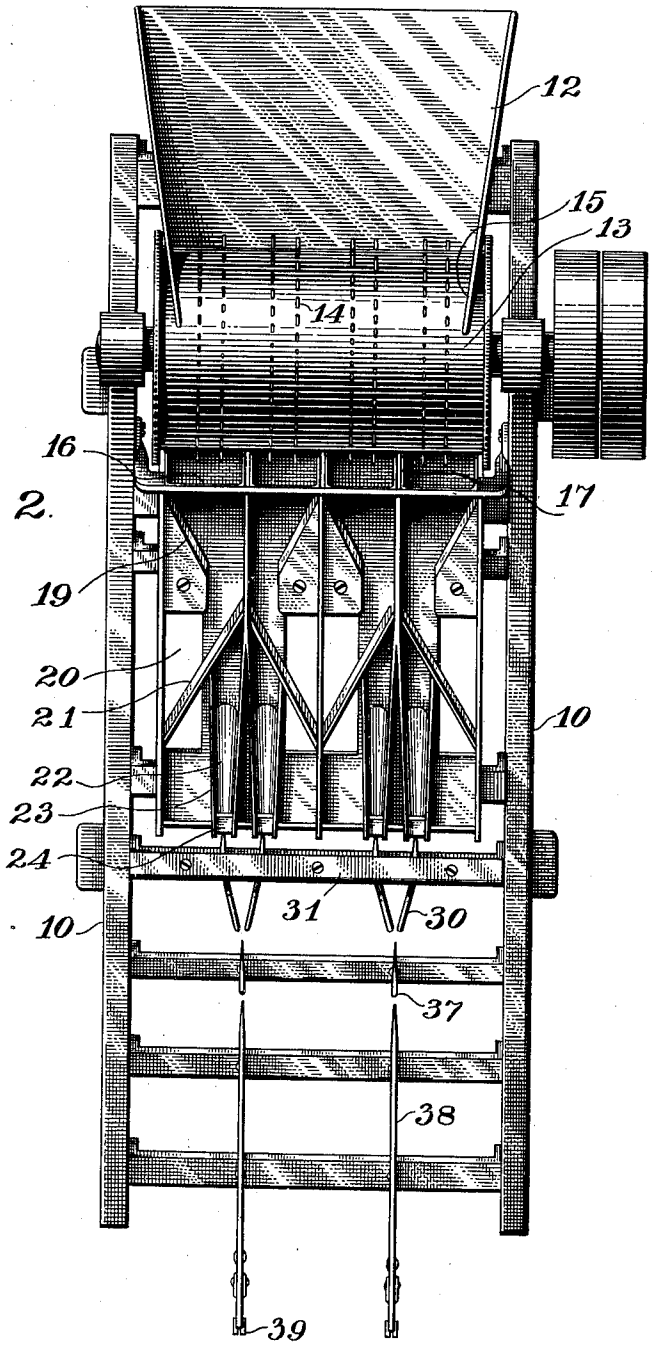
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

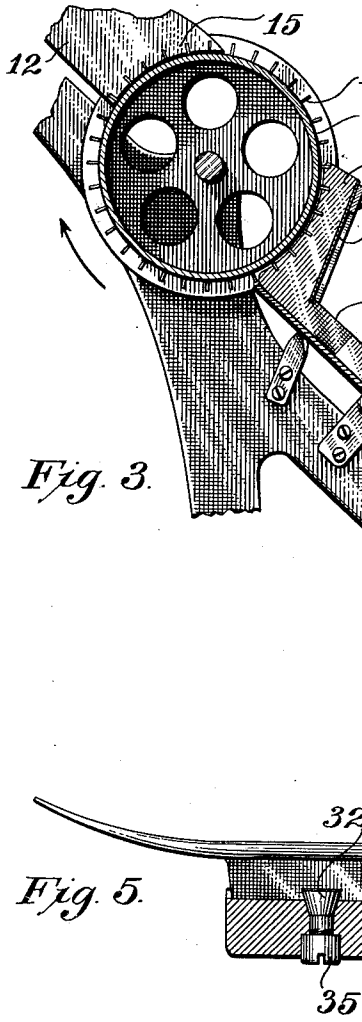


Fig. 3.

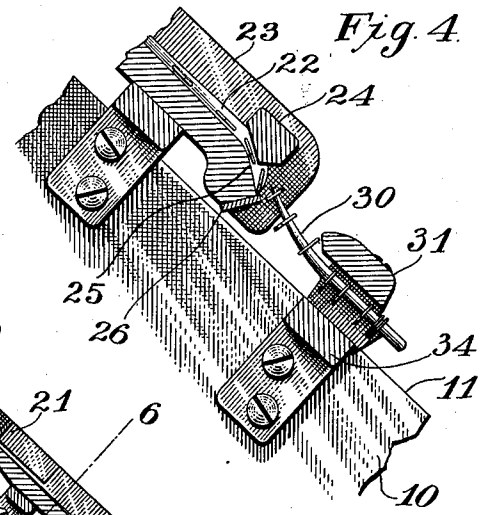


Fig. 4.

Fig. 5.

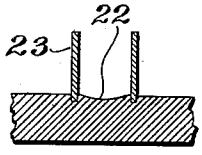


Fig. 6.

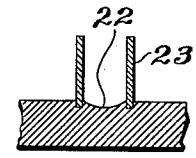


Fig. 7.

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UNITED STATES PATENT OFFICE.

WALTER L. CURTIS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO DE LONG HOOK AND EYE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

GRAVITY FEEDING DEVICE FOR EYES AND SIMILAR ARTICLES.

1,095,192. Specification of Letters Patent. **Patented May 5, 1914.**

Application filed November 24, 1908. Serial No. 464,229.

To all whom it may concern:

Be it known that I, WALTER L. CURTIS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Gravity Feeding Device for Eyes and Similar Articles, of which the following is a specification.

This invention relates to a machine or device for feeding articles of a general circular form having a passage therethrough, as for example, rings or eyes which are to be engaged with hooks.

The principal objects of the invention are to provide a simple and convenient feeding device for articles of this character in which the articles can be placed indiscriminately in a hopper and will be fed forward preferably by gravity in such a way as to be delivered in uniform position; also to provide means whereby if the articles pile up as they are fed along, the surplus ones will be discharged so as to be out of the way; means for gradually bringing the articles into a position substantially in alinement as they are fed down; means for delivering the articles from a plurality of chutes to a single guide; means whereby a guide can be caused to serve as a reservoir for the articles and to receive only a certain number at a time; means whereby the articles are reversed in position as they leave one part of the mechanism and enter another so that they will more readily be received by the lower part of the device; and other features which will be described hereinafter.

Reference is to be had to the accompanying drawings in which,

Figure 1 is a side elevation of a device constructed in accordance with this invention. Fig. 2 is a plan of the same looking at Fig. 1 in the direction of the arrow. Fig. 3 is a longitudinal sectional view of a portion of the same on an enlarged scale. Fig. 4 is a similar view of a smaller portion on a still further enlarged scale. Fig. 5 is a sectional view of a detail, and Figs. 6 and 7 are transverse sectional views on the lines 6—6 and 7—7 respectively of Fig. 3.

The device is shown as comprising a supporting frame 10 which has a slanting side 11 for a purpose that will be referred to hereinafter and which supports at the top a hopper or receiving chute 12. The eyes, rings or other articles to be fed are supplied to this chute indiscriminately. This chute is shown with an inclined bottom so that the articles will be fed down the same by gravity into contact with the rotating drum 13 which is mounted in bearings on the upper part of the frame. This drum forms the bottom of the hopper and it is shown as provided with a plurality of series of radial pins 14 constituting means for taking the articles up out of the hopper and feeding them therefrom, the drum rotating in the direction of the arrow in Fig. 3.

The side walls of the hopper are provided with forward projections 15 extending over the ends of the drum so that the drum constitutes virtually the lower end of the hopper. As the articles are fed forward over the drum they are naturally dropped off the straight radial pins 14 and a guard plate 16 is provided for preventing them from being discharged out of the apparatus. In the form shown in the drawings, this guard plate is provided behind it with a series of partitions 17 dividing up the space into a plurality of sections, four being shown. The guard plate 16 directs the articles into these sections. The bottoms of these sections are inclined and they are continuous with a series of inclined chutes 18. These chutes are provided with inclined guard plates 19 for directing the articles to the side of each chute so as to carry them forward in line. Just below these guards are open spaces 20 shown located at the sides of the chute, and extending upwardly from each of these open places at an angle are guard plates 21 spaced from the bottom of the chute and located at such an angle that when the articles come down the bottom of the chute if they happen to be piled up the surplus ones will be caused to be swept off the chute through the open space 20. Those which are lying flat on the bottom of the chute will pass under this guard and proceed down to the lower part of the chute which is clearly shown in Figs. 2, 3, 6 and 7, as provided with a concave bottom 22 which progresses gradually from the flat shape of the bottom down to a more deeply or sharply curved form at the lower end so as to bring the articles substantially into alinement. The chute at this point is also provided with converging sides 23 which draw together toward the bottom

so as further to assist in bringing all the articles into substantially perfect alinement at the lower ends of the chutes. Over the lower end of each chute is a cross bar 24 spaced from the bottom but in position to engage the eyes that come down on the bottom and cause them positively to continue down.

A sharper incline 25 is shown as just under the bar 24. This allows the forward edges of the eyes or other articles to be dropped down suddenly to engage a projection, shown as a plate 26. By the force of gravity the upper ends are caused to swing over and engage on the end of a guide 30, as shown in Fig. 4. The incline of the parts and the sharpness of the curve at 25 are sufficient to cause this action to take place.

When this machine is used for feeding eyes, many of them are fed against the plate 26 with their thread loops forward and consequently they are deposited on the guide rod with these loops hanging down. Those which are deposited in any other position however are engaged by a cross-bar 31 which holds them back until they fall over into natural position which they would assume by gravity. They are then free to pass under the cross bar and fed downwardly along the rod 30. This guide or rod 30 is shown as held to the frame by means of conical headed screws 32 engaging a fin 33 on the bottom of the guide and connected with the cross bar 34 on the frame by means of a nut 35. In the form shown in the drawings the guide rods 30 are arranged in groups of two each, each receiving eyes or the like from a chute above and each pair being designed to deliver them to a second guide or rod 37 below. In this case the plurality of guides 30 in each group converge toward a common point and the forward end of the guide 37 is located at that point. There is a space between it and the ends of the guides 30. The upper end of the guide 37 is slightly below the lower ends of the guides 30 so that the eyes or the like will be discharged on it therefrom and the same arrangement is observed in connection with a third guide 38 below the guide 37. These several guides can be secured in position in the manner indicated above and it will be observed that the guides 38 are designed to constitute reservoirs for the articles being fed because as the latter engage a device 39 below they will accumulate on the guides 38 until they reach the space between them and the guides 37. These spaces are long enough to permit the surplus eyes which are then delivered from the guides 37 to be discharged therethrough but yet on account of the relative position of the ends of the two guides, when they are allowed to slide down by gravity, they leap the space and are retained on the guides below if they are not already filled.

The operation has been described fully in connection with the description of the mechanism shown.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications may be made therein by any person skilled in the art without departing from the scope of the same as expressed in the claims. Therefore, I do not wish to be limited to the particular features of construction shown and described but

What I do claim is:—

1. In a machine of the character described, the combination of a hopper, a fixed inclined chute leading downwardly therefrom for feeding articles by gravity, said chute having an opening in one side thereof, means above said opening for directing articles toward the other side of the chute, and a plate having its upper end over the bottom of the chute, spaced therefrom, and inclined downwardly toward said opening whereby articles that are fed down the chute piled up in position high enough to engage said plate will be directed by the plate through the opening.

2. In a machine of the character described, the combination of an inclined chute for feeding articles by gravity, said chute having an opening, means for directing articles into the chute, and a plate spaced from the bottom of the chute and inclined downwardly toward said opening whereby articles that are fed down the chute piled up in position high enough to engage said plate will be discharged through the opening, said chute having a flat bottom and being provided with a lower portion having a curved bottom, the curvature of which gradually becomes sharper toward the lower end thereof.

3. A machine of the character described, comprising an inclined chute for feeding articles by gravity, having an opening, means for directing articles that are fed down piled up in the chute through the opening, said chute having a flat bottom and a lower portion having a curved bottom, the curvature of which gradually becomes sharper toward the lower end thereof and side walls gradually approaching each other toward the lower end.

4. A machine of the character described, comprising an inclined continuous chute for feeding articles by gravity, having a flat bottom, and a lower portion having a curved bottom, the curvature of which gradually and continuously becomes sharper toward the lower end thereof, and side walls gradually approaching each other toward the lower end.

5. In a device of the character described, the combination of an inclined chute adapted to feed articles by gravity, means for dis-

lodging from the chute articles which are fed down in a heaped up condition, means for causing the articles in the chute to gradually assume a substantially central position therein when they reach the lower end thereof, and a bar across the end of the chute spaced from the bottom thereof for preventing the discharge of articles in such position as to project upwardly from the bottom of the chute.

6. In a device of the character described, the combination of an inclined chute adapted to feed articles resting thereon by gravity, means located over the bottom end of the chute for preventing articles projecting above the bottom of the chute from being discharged therefrom, and means below said means for turning the articles over as they are discharged from the chute.

7. A machine of the class described having an inclined chute for supporting and feeding articles by gravity provided over the bottom thereof with means for turning the articles over flatwise as they are discharged from the chute.

8. A device of the character described comprising an inclined chute for supporting and feeding articles by gravity, having stationary means projecting above it for turning the articles end over end flatwise.

9. In a machine of the character described, the combination of an inclined chute having a steeper incline at the lower end adapted to support articles and provided with a transverse plate on the bottom of said steeper incline projecting just above it, whereby articles fed against said plate by gravity will be turned over, and means for receiving the articles therefrom in that position.

10. In a machine of the character described, the combination of an inclined chute having a steeper incline at the lower end and provided with a projection at the bottom of said steeper incline, whereby articles fed against said projection by gravity will be turned over and discharged from the chute, and a guide having a pointed upper end in proximity to said projection for receiving the articles therefrom.

11. In a machine of the character described, the combination of an inclined chute having a sharp incline at the lower end and provided with a projection on said sharp incline, whereby articles fed against said projection by gravity will be turned over and discharged from the chute, a guide having its upper end in proximity to said projection for receiving the articles therefrom, and means located above said guide for engaging articles fed down the guide with any parts projecting upwardly therefrom and stopping the descent of the same until they have turned into a position in which they do not project upwardly.

12. In a device of the character described, the combination of an inclined chute for feeding articles by gravity having downwardly converging walls at a distance apart at the bottom substantially equal to the width of the articles and having a concave bottom, means for preventing articles from being discharged from the chute which are presented in an inclined position to the bottom thereof, means for turning the articles over as they are discharged from the chute, and a guide rod having an upwardly projecting end centrally located with respect to the end of the chute for receiving the articles therefrom.

13. As an article of manufacture, an inclined chute for feeding articles by gravity having downwardly converging walls at a distance apart at the bottom substantially equal to the width of the articles and having a concave bottom, the radius of which decreases toward the lower end.

14. In a device of the character described, the combination of an inclined chute for feeding articles by gravity, a guide rod for receiving articles from said chute, and an inclined guide rod having its upper end spaced from the end thereof for receiving articles therefrom.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

WALTER L. CURTIS.

Witnesses:
ALBERT E. FAY,
C. FORREST WESSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."