O. C. HILL.

FEEDING MECHANISM.

APPLICATION FILED NOV. 29, 1907.

913,134.

Patented Feb. 23, 1909.

2 SHEETS—SHEET 1.

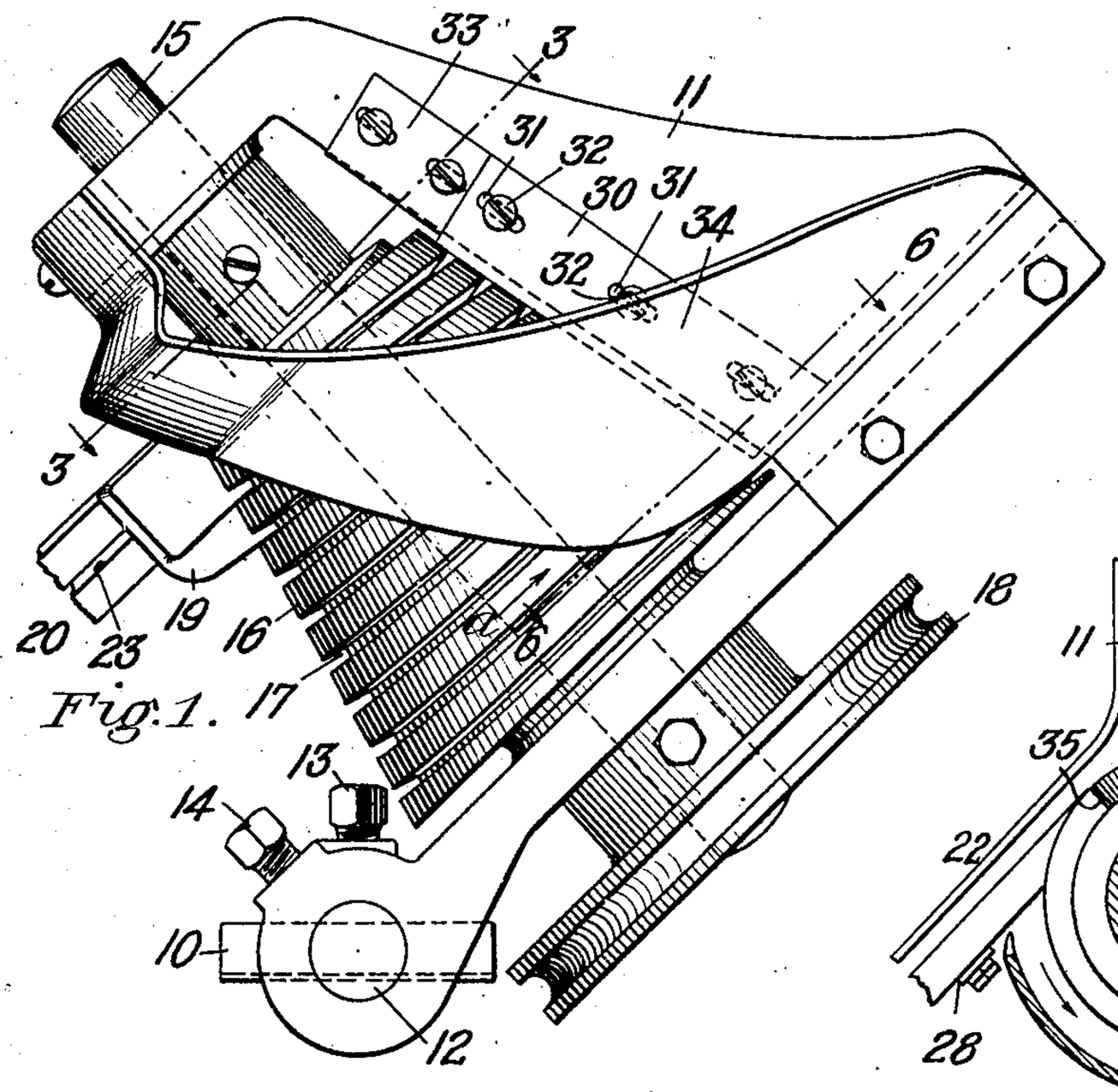

Fig. 1.

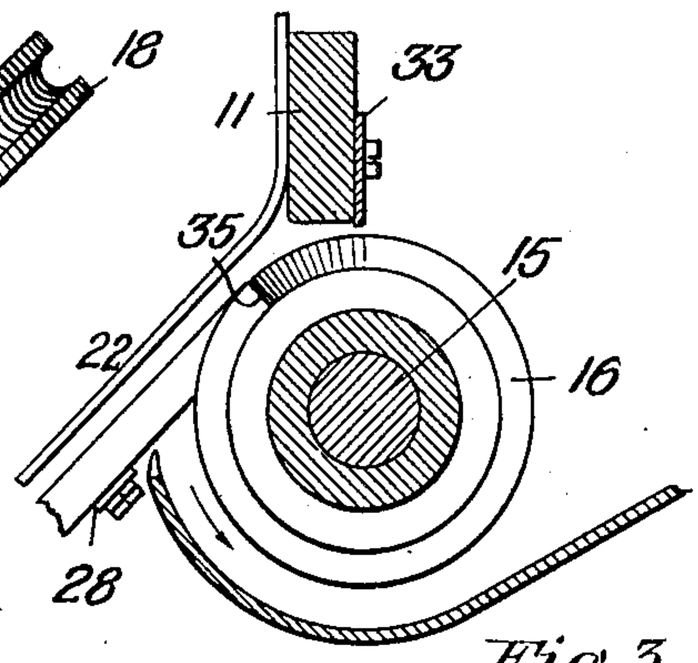

Fig. 3.

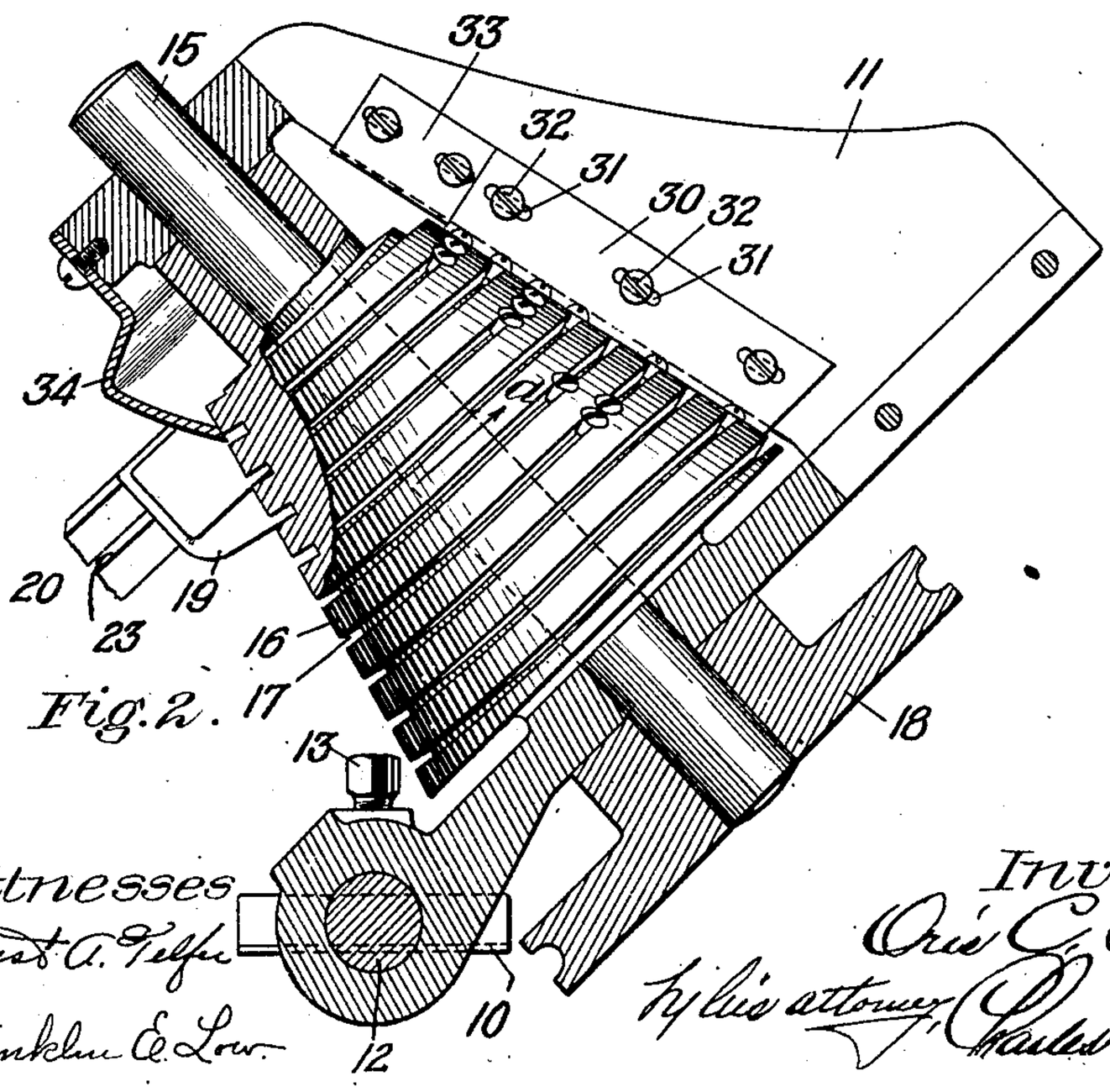

Fig. 2.

Witnesses

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2 SHEETS—SHEET 2

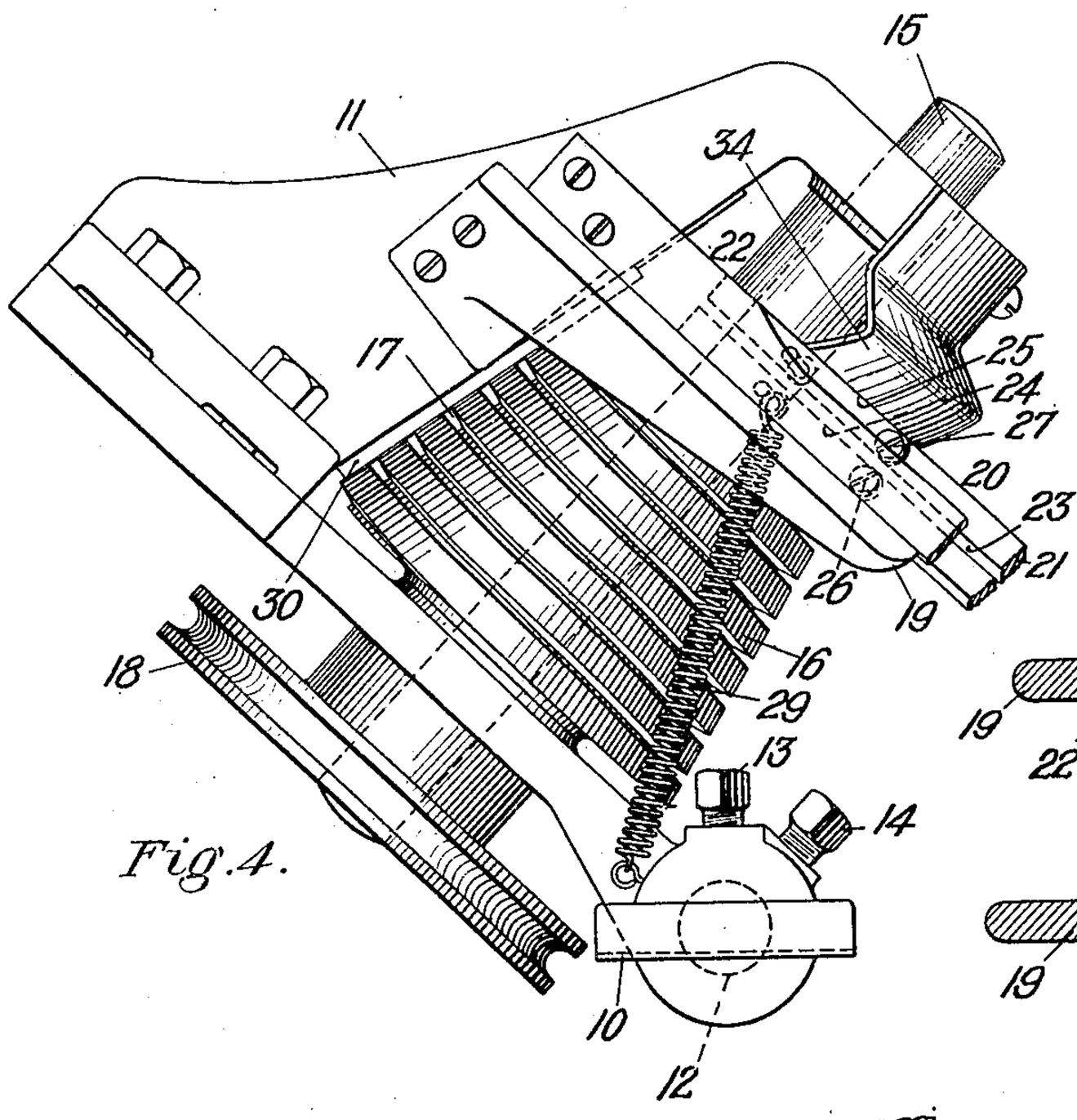

Fig. 4.

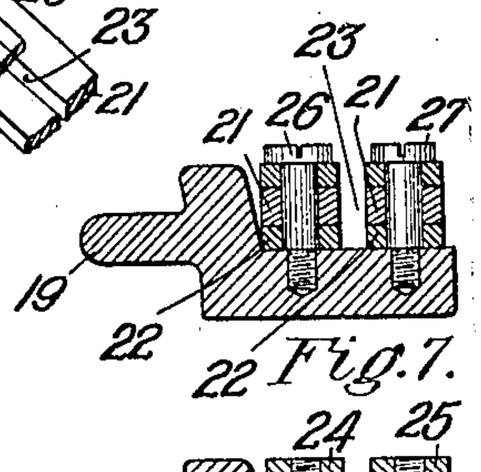

Fig. 7.

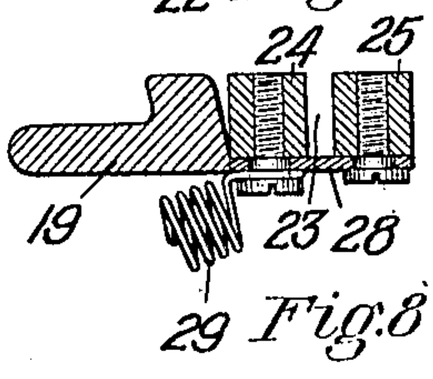

Fig. 8

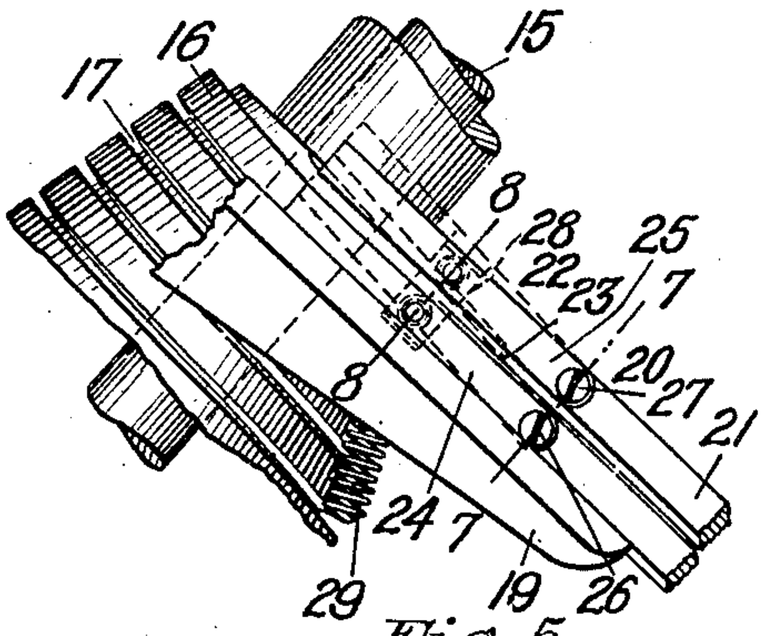

Fig. 5.

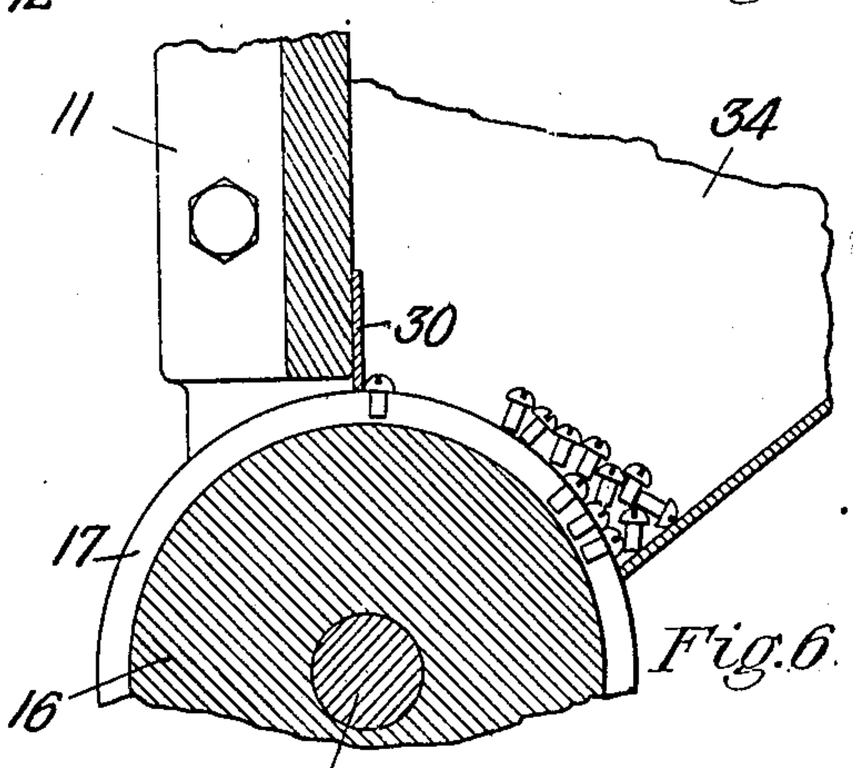

Fig. 6.

Witnesses:

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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM.

No. 913,134. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed November 29, 1907. Serial No. 404,225.

To all whom it may concern:

Be it known that I, ORIS C. HILL, a citizen of the United States, residing at Roxbury, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Feeding Mechanism, of which the following is a specification.

This invention relates to improvements in feeding mechanisms for separating screw blanks, rivets or the like from a body of the same contained in a hopper and feeding them into a raceway, and the object is to provide a mechanism of this character which is capable of delivering to the raceway a plentiful supply of blanks.

The object is further to provide a mechanism of the character described in which there can be no choking or clogging at any time in the progress of the blank from the mass in the hopper into the passage of the raceway and if at any time the raceway becomes entirely filled blanks delivered to the inlet of its passage will drop back into the hopper.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the appended claims.

Referring to the drawings: Figure 1 is an elevation of a mechanism embodying my invention. Fig. 2 is a sectional elevation of the same viewed from the same direction as Fig. 1. Fig. 3 is a sectional elevation taken on line 3—3 of Fig. 1, looking in the direction of the arrow on said line. Fig. 4 is an elevation, partly broken away, viewed from the opposite direction to that in which Fig. 1 is viewed. Fig. 5 is a detail elevation viewed from the same direction as Fig. 4, partly broken away to save space in the drawings and certain parts being omitted for the sake of clearness in illustrating the relation of the raceway with the drum. Fig. 6 is a detail sectional elevation, partly broken away to save space and taken on line 6—6 of Fig. 1, looking in the direction of the arrow in said line. Fig. 7 is an enlarged detail sectional elevation taken on line 7—7 of Fig. 5. Fig. 8 is an enlarged detail sectional elevation taken on line 8—8 of Fig. 5.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 10 is a base which may be secured to a frame of a machine of any character which the feeding mechanism may be used in connection with. On the base 10 is supported a frame 11 which may be adjustably secured thereto by means of a pivotal pin 12 fast to said base by means of a set screw 13 and fast to said frame by means of a set screw 14, whereby said frame may be rocked on said pivot to change the inclination of the mechanism. A shaft 15 journaled in the frame 11 has fast thereto a drum 16 which may be conical in form, as shown, said drum being provided with a helical groove or screw-thread 17. The groove 17 may be of any form or depth to accommodate blanks, rivets or other articles of like nature of any shape or size. Fast to the shaft 15 is a pulley 18 which may be driven by a belt, the direction of rotation of the drum 17 being indicated by arrows. Mounted on a bracket 19 fast to the frame 11 is a raceway 20 comprising a fixed portion 21 and a movable portion 22 and having a passage 23, said raceway being arranged substantially tangent to the drum 16 and said passage being arranged to receive blanks from the groove 17, as will be hereinafter described.

The movable portion 22 of the raceway 20 may consist of two bars or guides 24 and 25 pivoted on studs 26 and 27, respectively, fast to the bracket 19. A link 28 pivotally connected to the bars or guides 24 25 serves to maintain said guides in parallelism. A spring 29 connected at one end to the movable portion 22 of the raceway is connected at its other end to the base 10 and serves to normally hold said movable portion in the position shown in Fig. 4 and also shown in full lines in Fig. 5. A blade or bar 30 mounted on the frame 11 is provided with slots 31 through which screws 32 extend, said screws serving to secure said blade to said frame and said slots being adapted to permit said blade to be adjusted longitudinally of the drum 16. The blade 30 may be arranged either in actual contact with the drum 16 or separated therefrom by a slight space. The blade 30 acts as a stop which limits the movement of the screw blanks or rivets in one direction, as will be hereinafter more particularly described, the heads of said blanks being brought into contact with said blade as the drum 16 is rotated.

A plate 33 may be secured to the frame 11 at the left hand end of the blade 30 (Figs. 1 and 2) the lower edge of said plate being arranged at a sufficient distance from the

periphery of the drum 16 to permit the heads of the blanks to pass thereunder and said plate preventing blanks having heads greater in thickness than the distance between said plate and the periphery of said drum from passing therebetween. A hopper 34 of irregular form is supported on the frame 11 and extends beneath the drum 16 at the delivery end of said drum, that is, the smaller end thereof which delivers the blanks to the raceway 20. It will be noted that the hopper 34 as seen in Fig. 1 slopes from the left hand end thereof toward the right hand end thereof, so that the greater portion of the screw blanks placed therein lodges at or near the right hand end of said hopper.

The general operation of the feeding mechanism hereinbefore specifically described is as follows. Assuming the hopper 34 to be filled with screw blanks, rivets or the like and the drum 16 to be rotating in the direction of the arrows *a*, Figs. 1 and 2, the rotation of said drum causes the shanks of blanks to pass into the groove 17 at or near the right hand end of said drum, Figs. 1 and 2, and continued rotation of said drum causes the heads of said screws to be brought into contact with the blade 30 and as the drum rotates the screws whose heads are bearing against said blade are fed by the groove 17 toward the left, Figs. 1 and 2, until one by one they reach the left hand end of said blade, whereupon they are carried one by one beneath the plate 33.

Referring now more particularly to Figs. 3 and 5, it will be seen that the blanks after passing beneath the plate 33 are brought one by one into alinement with the passage 23 of the upper portion 22 of the raceway 20 and move down said raceway by gravity. If, as is often the case, the passage 23 should become filled with blanks to the upper end thereof, blanks which are subsequently brought around by the drum to said upper end drop back into the hopper 34 one by one as the end 35 of the screw-thread 17 passes the upper end of said raceway. It will be seen that when the raceway 20 is entirely filled with the blanks, a few of said blanks at the upper end of said raceway are located partly in the passage 23 of said raceway and partly in the groove or screw-thread 17 and thus it will be seen that it is necessary for the upper portion 22 of said raceway to move longitudinally of the drum 16 as said drum rotates. Thus it will be seen that the screw-thread 17 acts as a sort of cam on the shanks of the blanks which are located partly in the raceway and partly in said screw-thread and causes the upper portion 22 of said raceway to be rocked on its pivots 26 and 27 against the tension of the spring 29 into the position shown in dotted lines, Fig. 5, said upper portion continuing to rock to and fro on its pivots until said raceway has been partially freed of blanks by their escape at the lower end of said raceway. It will be understood that at any time if for any reason a blank should remain stationary close to the upper end of the raceway, said upper end will yield as just described. Inasmuch as the blanks may have heads of greater or less diameter the blade 30 is adapted to be adjusted toward the right or left, Figs. 1 and 2, as the case may require so as to release said blanks at the proper point to allow them to be carried into the passage 23 of the raceway 20. Should an odd sized blank, that is, one having a thicker head than the remainder of the blanks in the hopper 34, happen to be carried along by the drum 16, said head will not pass beneath the plate 33 and said blank, therefore, falls back into said hopper.

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

1. In a feeding device, a raceway provided with a passage adapted to receive blanks, a rotary drum provided with a helical groove adapted to receive blanks and deliver the same to said raceway, said drum being arranged with its axis inclined downwardly from said raceway, a plate located adjacent to and extending longitudinally of said drum, whereby blanks located in said groove and moved by the rotation of said drum into contact with said plate are guided thereby toward said raceway, and a hopper adapted to hold a supply of blanks in contact with the periphery of said drum, a portion of said hopper which is adjacent to said drum being inclined downwardly from the delivery end of said drum and at an acute angle to said axis, said hopper extending beyond the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

2. In a feeding device, a raceway provided with a passage adapted to receive blanks, a rotary drum provided with a helical groove adapted to receive blanks and deliver the same to said raceway, said drum being arranged with its axis inclined downwardly from said raceway, a plate located adjacent to and extending longitudinally of said drum, whereby blanks located in said groove and moved by the rotation of said drum into contact with said plate are guided thereby toward said raceway, and a hopper adapted to hold a supply of blanks in contact with the periphery of said drum, a portion of said hopper which is adjacent to said drum being inclined downwardly from the delivery end of said drum and at an angle to said axis, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

3. In combination, a rotary drum provided with a helical groove adapted to receive blanks, and a raceway provided with a passage adjacent to and adapted to receive blanks from said groove, said raceway being movable relatively to said drum, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield.

4. In combination, a rotary drum provided with a helical groove adapted to receive blanks, and a raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being movable longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield longitudinally of said axis.

5. In combination, a rotary drum provided with a helical groove adapted to receive blanks, and a pivoted raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being adapted to swing on its pivot longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to be rocked on its pivot.

6. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a raceway provided with a passage adjacent to and adapted to receive blanks from said groove, said raceway being movable relatively of said drum, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield, and a stop against which said raceway is normally adapted to rest.

7. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a raceway provided with a passage adjacent to and adapted to receive blanks from said groove, said raceway being movable relatively to said drum, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield, a stop adapted to limit the movement of said raceway in one direction, and a spring adapted to normally hold said raceway against said stop.

8. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a pivoted raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being adapted to swing on its pivot longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to be rocked on its pivot, and a stop against which said raceway is normally adapted to rest.

9. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a pivoted raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being adapted to swing on its pivot longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to be rocked on its pivot, a stop adapted to limit the movement of said raceway in one direction, and a spring adapted to normally hold said raceway against said stop.

10. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a raceway comprising two pivoted bars having a passage therebetween extending transversely of the axis of said drum and adapted to receive blanks from said groove, said bars being adapted to swing on their pivots longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said bars to be rocked on their pivots, and a link pivotally connected to both of said bars and adapted to maintain the same in parallelism.

11. In a feeding device, a raceway provided with a passage adapted to receive blanks, a rotary drum provided with a helical groove adapted to receive blanks and deliver the same to said raceway, said drum being arranged with its axis inclined downwardly from said raceway, a plate located adjacent to and extending longitudinally of said drum, whereby blanks located in said groove and moved by the rotation of said drum into contact with said plate are guided thereby toward said raceway, and a hopper adapted to hold a supply of blanks in contact with the periphery of said drum, a portion of said hopper which is adjacent to said drum being inclined downwardly from the delivery end of said drum and at an acute angle to said axis, said hopper extending beyond the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

12. In combination, a raceway provided with a passage adapted to receive blanks, a rotary drum provided with a helical groove adapted to receive blanks and deliver the same into said passage, a hopper adapted to hold a supply of blanks in contact with the periphery of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper, and a blade arranged above said drum substantially parallel to the axis thereof, said blade being adjustable longitudinally of said drum.

13. In combination, a raceway provided with a passage adapted to receive blanks, a rotary drum provided with a helical groove

adjacent to said passage and adapted to receive blanks and deliver the same into said passage, and a hopper adapted to hold a supply of blanks in contact with the periphery of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper, said raceway being movable relatively to said drum, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield.

14. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being movable longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield longitudinally of said axis, and a hopper adapted to hold a supply of said blanks in contact with the periphery of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

15. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a pivoted raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being adapted to swing on its pivot longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to be rocked on its pivot, and a hopper adapted to hold a supply of said blanks in contact with the periphery of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

16. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a raceway provided with a passage adjacent to and adapted to receive blanks from said groove, said raceway being movable relatively to said drum, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield, a stop against which said raceway is normally adapted to rest, and a hopper adapted to hold a supply of said blanks in contact with the periphery of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

17. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a raceway provided with a passage adjacent to and adapted to receive blanks from said groove, said raceway being movable relatively to said drum, whereby a blank located partly in said groove and partly in said passage may cause said raceway to yield, a stop adapted to limit the movement of said raceway in one direction, a spring adapted to normally hold said raceway against said stop, and a hopper adapted to hold a supply of said blanks in contact with the periphery of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

18. In combination, a rotary drum provided with a helical groove adapted to receive blanks, a pivoted raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being adapted to swing on its pivot longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to be rocked on its pivot, a stop against which said raceway is normally adapted to rest, and a hopper adapted to hold a supply of said blanks in contact with the periphery of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

19. In combination, a rotary frame provided with a helical groove adapted to receive blanks, a pivoted raceway provided with a passage extending transversely of the axis of said drum and adapted to receive blanks from said groove, said raceway being adapted to swing on its pivot longitudinally of said axis, whereby a blank located partly in said groove and partly in said passage may cause said raceway to be rocked on its pivot, a stop adapted to limit the movement of said raceway in one direction, a spring adapted to normally hold said raceway against said stop, and a hopper adapted to hold a supply of said blanks in contact with the peripherv of said drum, said hopper extending beneath the delivery end of said drum, whereby blanks failing to pass from said groove into said passage drop into said hopper.

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

ORIS C. HILL.

Witnesses:
LOUIS A. JONES,
ANNIE J. DAILEY.