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R. J. RODD.

NUT FEEDING MECHANISM.

APPLICATION FILED OCT. 14, 1905.

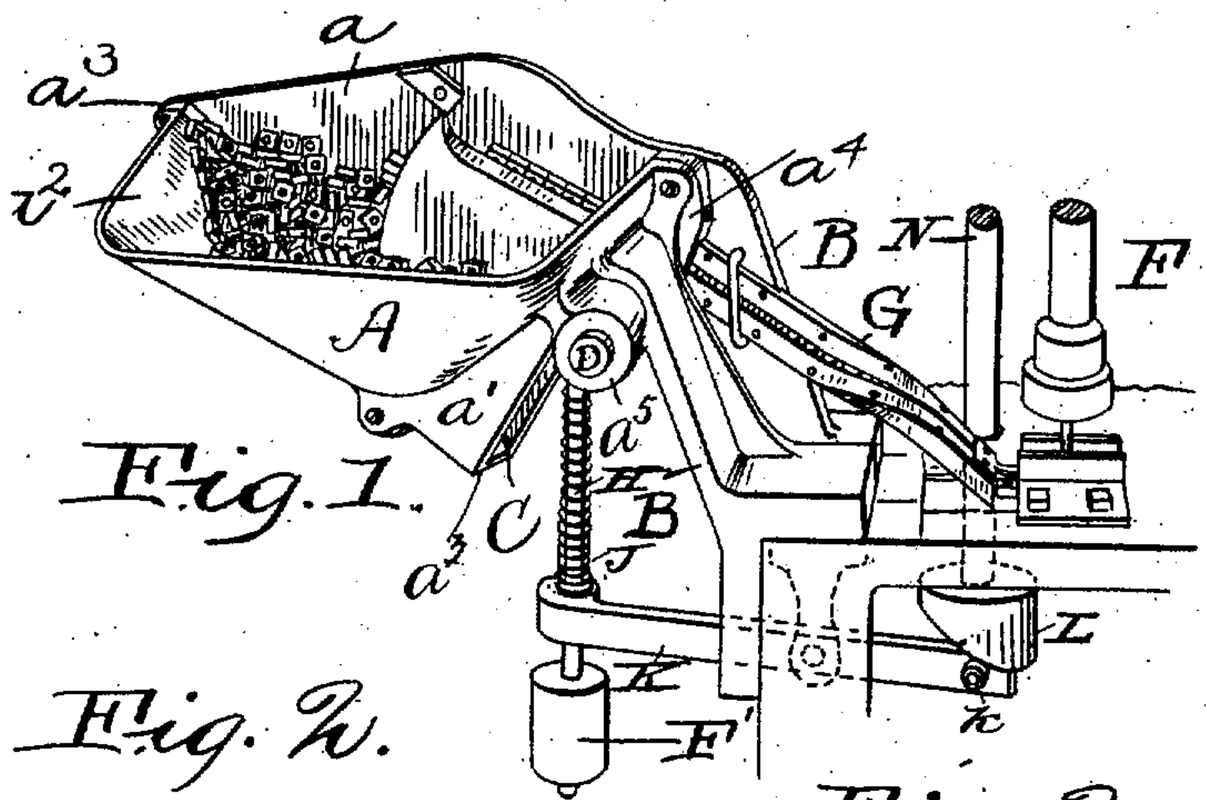

Fig. 1.

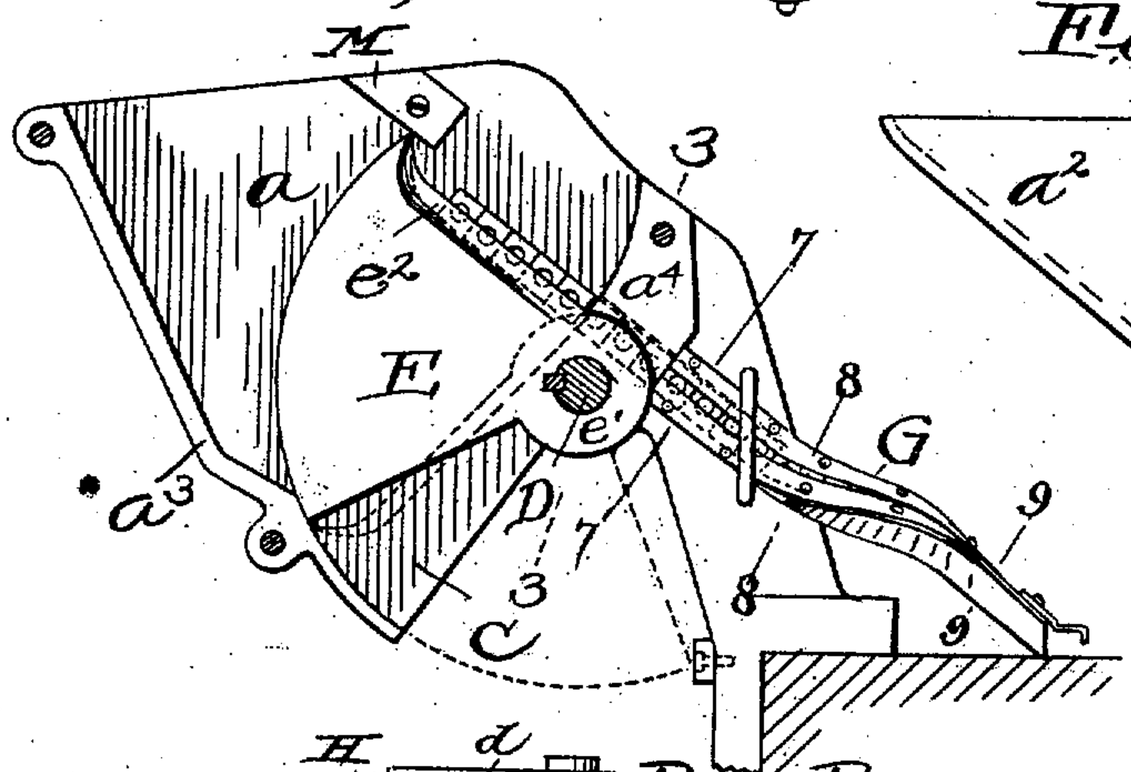

Fig. 2.

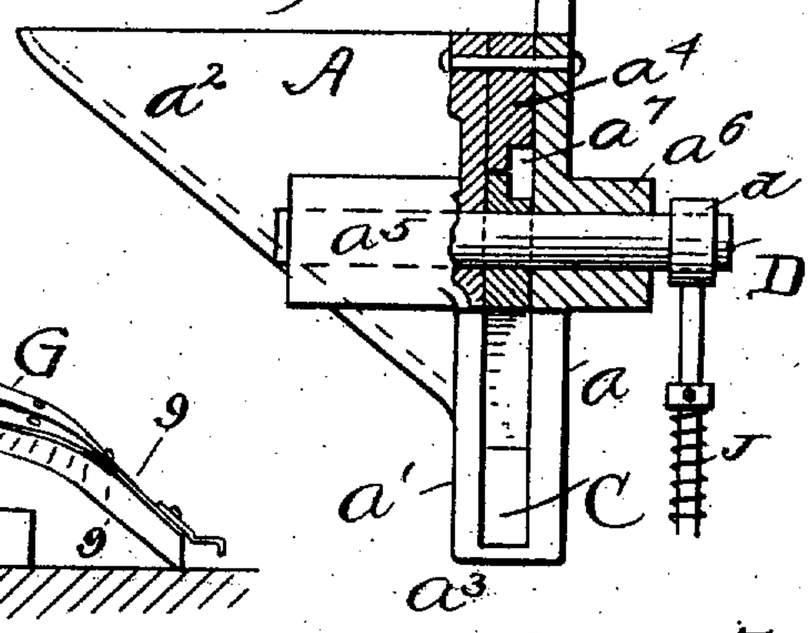

Fig. 3.

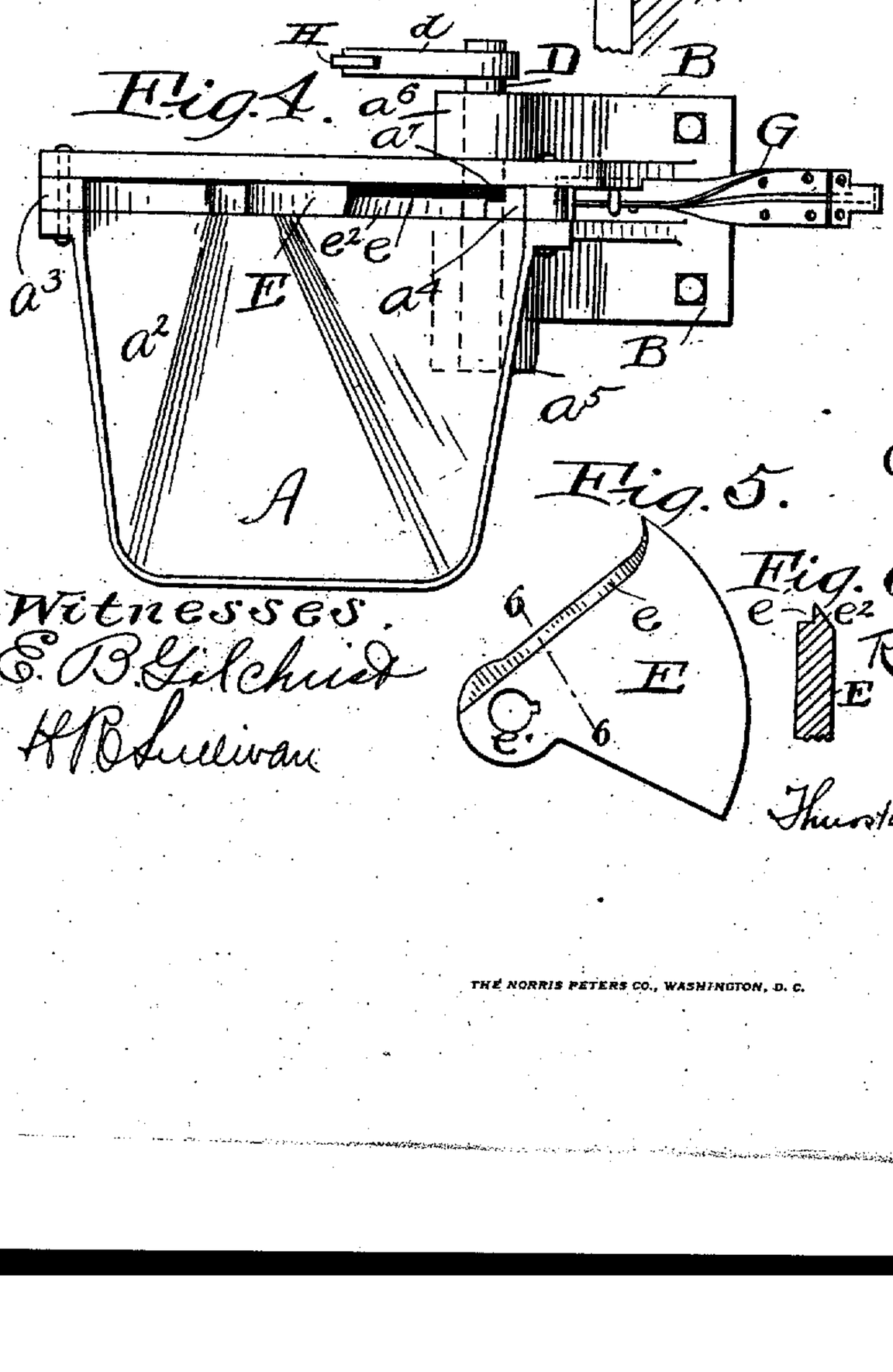

Fig. 4.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 5.

Fig. 6.

Witnesses.
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UNITED STATES PATENT OFFICE.

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NUT-FEEDING MECHANISM.

No. 884,211. Specification of Letters Patent. Patented April 7, 1908.

Application filed October 14, 1905. Serial No. 282,695.

To all whom it may concern:

Be it known that I, ROBERT J. RODD, a citizen of the United States, residing at Cuyahoga Falls, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Nut-Feeding Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of the invention is to automatically supply nut-blanks to a nut tapping machine as fast as they are required by that machine,—and to do this with a simple and inexpensive mechanism which will maintain a continuous supply and is not liable to get out of order.

The invention may be summarized as consisting in the combinations of parts hereinafter described and pointed out definitely in the claims.

In the drawing, Figure 1 is a perspective view of my invention and so much of the nut tapping machine to which it is secured as is necessary for the understanding of the purpose and operation of the present invention. Fig. 2 is a side elevation of the mechanism when the part a^2 of the hopper is removed. Fig. 3 is a front view with the bearing of the rock-shaft D, and parts adjacent thereto, in section. Fig. 4 is a plan view of the mechanism. Fig. 5 is a detached view of the lifter; showing the reverse side to that which is shown in Fig. 2. Fig. 6 is a sectional view on line 6—6 of Fig. 5. Figs. 7, 8 and 9 are respectively transverse sectional views of the twisted conveyer spout in planes indicated by lines 7—7, 8—8 and 9—9.

A represents a hopper which is fixed in proper relation to the nut tapping machine F, of which only a part is shown. Preferably the hopper is secured by bracket arms B to the frame of that machine. In the hopper is a substantially vertical plane wall *a*, which is preferably one of the sides of the hopper. The other three sides of the hopper converge toward the bottom of this plane wall. In the bottom of the hopper is a well C, which is in the form of a relatively long narrow slot, and extends through the front end of the hopper. One side of this well is a downward continuation of the wall *a*. Its opposite parallel side is formed by a flange a' which extends downward from the bottom of the hopper.

In the specific construction shown, the hopper is formed of four pieces, to wit, the vertical wall plate *a*, the part a^2, which forms the other three sides and the bottom of the hopper, and two distance pieces a^3, a^4. These distance pieces are equal in thickness to the width of the well, and they are secured by bolts between the two parts *a*, a^2. The front end of the rear distance piece a^3 forms also the rear wall of the well,—said wall being curved in a circular arc of which the axis of the rock shaft D is the center. This rock shaft is mounted in bearings a^5, a^6, with its axis at right angles to the inner face of the wall *a*. It crosses the upper front end of the well C, and extends through the wall *a*. The lifter E lies against the wall *a*, and its hub e' embraces and is secured to this shaft. The lifter extends into the hopper, and its thickness is substantially equal to the width of the well; its length is such that its free end, which is arc-shaped, is close to the lower front end of the distance piece a^3; and its width, from top to bottom, is such that, whatever may be its position due to the rocking of the rock shaft, it will project into the well C and prevent the nut blanks from falling through. The other distance piece a^4 is secured between the front ends of the two hopper sections *a*, a^2 above but close to the hub of the lifter.

In the top edge of the lifter, and in that side thereof which is next to the wall *a*, is a rabbeted groove *e* which extends chord-like across the hub e' and almost but not quite to the free end of the lifter. The top edge of the free end of the lifter is curved upward slightly, as shown at e^2, so that it may better lift the nut blanks out of the way. The groove does not extend quite to this free end because, if it did, some of the nut blanks in the groove could slip out of this end when the lifter had been swung downward. The width of the groove *e* is a trifle greater than the thickness of a nut blank, and its depth is sufficient to enable it to satisfactorily guide nut blanks which rest on edge therein. This groove, together with the wall *a*, forms a channel into which the nut blanks can enter when in one position only, viz., on edge. The top edge e^2 of the lifter blade is beveled downward from the edge of the groove *e*, so that it will afford very little support for any nut blanks except those in said groove.

In the lower edge of the distance piece a^4 is a groove a^7 which is directly over that part of the groove *e* which extends across the hub of the lifter.

A downwardly inclined conveyer G is provided with a channel *g* of such size that nut blanks may slide downward therein, but may not be removed therefrom. This conveyer is secured in such a position that the upper end of its channel communicates with the channel formed by the groove *e* when the lifter is in its elevated position, wherefore nut blanks sliding down in the groove *e* will be discharged directly into the channel *g*. The lower end of the conveyer G is continued to a point where it will deliver the nut blanks to the nut tapping mechanism. The conveyer is twisted a quarter turn between its upper and lower ends so that the nuts as they travel downward will be turned from the position in which their holes are horizontal to the position in which their holes are vertical,—in which latter position they must be delivered to the particular nut tapping machine shown.

When the mechanism is operated the rock shaft is oscillated, to first swing the lifter downward so that its top edge is below the hopper bottom and in the well C, as shown by dotted lines in Fig. 2. When it is in this position, the nut blanks fall into the well upon the lifter. Some of them will find their way into the groove *e*. Then the rock shaft turns in the opposite direction, swinging the lifter upward so that its top edge is inclined from its free end downward, as shown by full lines in Fig. 2. When in this position the nut blanks will slide down in the groove *e* out of the hopper and into the upper end of the conveyer channel *g*. Practically no nut blanks, except those which enter the channel in proper position, will find a support upon the lifter, because of its beveled upper edge e^2. Occasionally a nut blank does remain in the wrong position on said lifter, but such blanks will be swept off the lifter when they slide down into contact with the distance piece a^4.

On the projecting end of the rock shaft there is an arm *d* on which a bar H is suspended. The lower end of this bar passes through a hole in a lever K pivoted to some part of the frame of the nut tapping machine. A weight F′ may be hung on the lower end of the bar H to assist in rocking the shaft in the direction which carries the lifter down into the well. A spring J surrounds this bar and its upper end engages with a collar fixed thereto. The lower end of this spring is engaged by a collar which is slidable upon the bar, which collar rests upon said lever. The opposite end of the lever carries a friction roller *k* which is engaged by a cam L on a rotating shaft N which may be a part of the nut tapping machine. The described means of operating the lifter insures that nothing will be broken if by chance the nut blanks get packed above or below it as to prevent its movement. Secured to the wall *a* of the hopper is a stop M, with which the lifter engages when it has been swung up to that position in which its groove *e* communicates with the channel *g*. This stop is a necessity when the described cam lever and spring are employed to swing the lifter upward, because the cam and spring cannot be made and adjusted to give the exact throw required for the lifter.

I claim

1. In a nut-blank feeding device, the combination of a hopper containing a substantially vertical plane wall, with a lifter movable in contact with said plane wall and pivoted on its axis at right angles thereto and having a rabbeted groove on its top edge and along the side thereof which is adjacent to said wall, and mechanism for oscillating the lifter upon its axis.

2. In a nut-blank feeding device, the combination of a hopper containing a substantially vertical plane wall, with a lifter movable in contact with said plane wall and pivoted on its axis at right angles thereto and having a rabbeted groove on its top edge and along the side thereof which is adjacent to said wall, and having its top edge remote from said wall inclined downwardly and outwardly from the edge of said rabbeted groove, and mechanism for oscillating the lifter upon its axis.

3. A hopper having a substantially vertical plane side, a rock shaft passing through said plane side and mounted at right angles thereto, a lifter secured to said rock shaft and projecting into the hopper in contact with said plane side, and having a rabbeted groove in its top edge adjacent to said plane side, and means for actuating said rock shaft, substantially as specified.

4. In a nut-blank feeding device, the combination of a hopper containing a substantially vertical plane wall, a rock shaft passing through said wall and mounted in bearings with its axis at right angles to said wall, a lifter secured to said rock shaft and projecting into the hopper in contact with said plane wall and having a rabbeted groove on its top surface adjacent to said plane wall, an arm secured to said rock shaft, a lever, its operating mechanism, a spring interposed between said lever and arm for transmitting motion from the lever to the arm to rock said arm in the direction which swings said lifter upward, and a stop secured to the inner face of the vertical hopper-wall for limiting the upward movement of said lifter.

5. A hopper consisting of a substantially vertical plate *a*, a piece a^2 which is provided with three downwardly converging sides and has a downwardly extended flange a' which is parallel with said plate *a*, and two distance pieces a^3, a^4, of which the former is secured between the rear side of said parts *a* and a^2 and is extended down between the rear end of said plate *a* and the downwardly extended

flange a', a rock shaft mounted in bearings on the front end of the two parts a, a^2, and crossing the space between them, a lifter secured to the rock shaft in said space and in contact with said plate a and having a rabbeted groove in its top edge adjacent to said plate,—and being of such dimensions that it will project into the well at all times and its free end will substantially contact with the lower end of said distance piece,—the distance piece a^4 being between the two parts a, a^2 above but close to the hub of said lifter, and having in its lower edge a groove a^7 which is alined with the groove in the lifter, and a downwardly inclined conveyer secured with its upper end in alinement with the groove in the lifter when the lifter is elevated, substantially as specified.

6. In a blank-feeding device, in combination, a hopper having a substantially-vertical plane wall, a lifter movable in substantial contact with said wall and recessed along the upper edge nearest said wall, yielding mechanism for raising and lowering said lifter, and a stop on said wall for limiting the upward travel of the lifter.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

ROBERT J. RODD.

Witnesses:
E. B. GILCHRIST,
E. L. THURSTON.