

June 13, 1933.

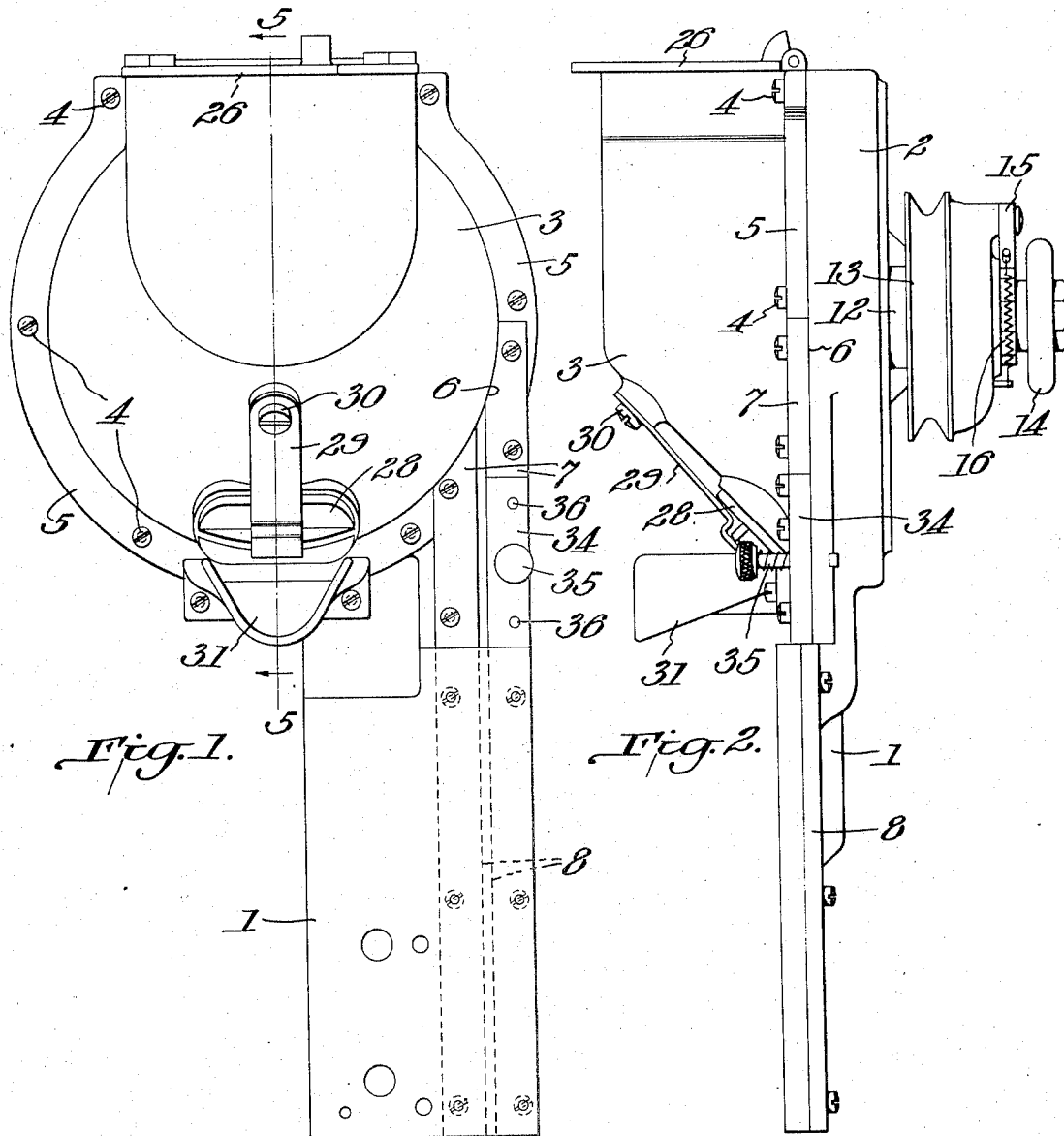
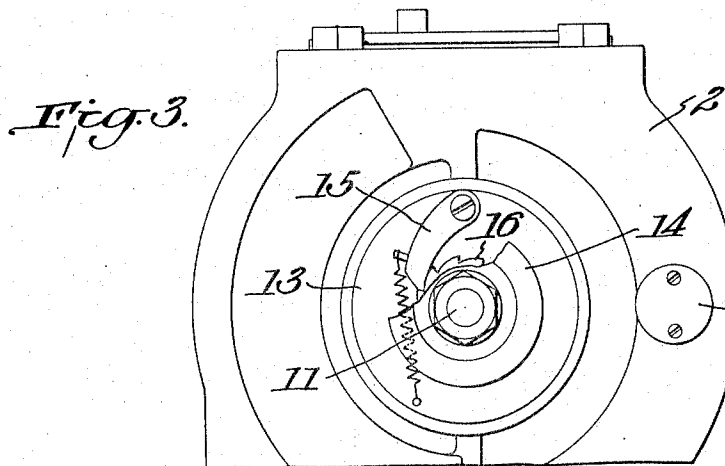
F. E. WARNER

1,913,648

FEED MECHANISM FOR ATTACHING MACHINES

Filed Aug. 6, 1931

3 Sheets-Sheet 1



Inventor
Frank E. Warner
33
W. H. Finckel
Attorney

June 13, 1933.

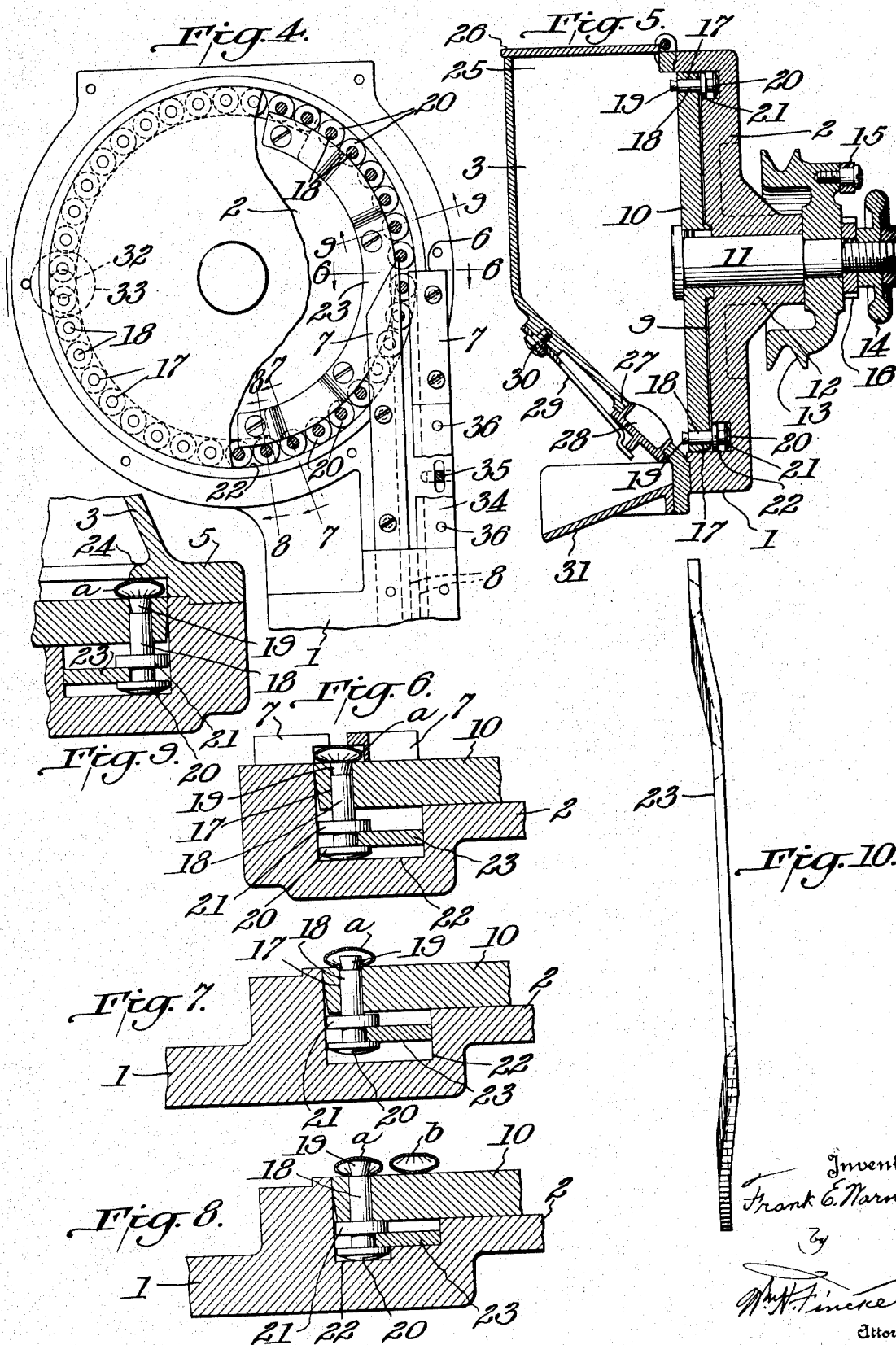
F. E. WARNER

1,913,648

FEED MECHANISM FOR ATTACHING MACHINES

Filed Aug. 6, 1931

3 Sheets-Sheet 2



Inventor
Frank E. Warner
By
W. H. Finckel
Attorney

June 13, 1933.

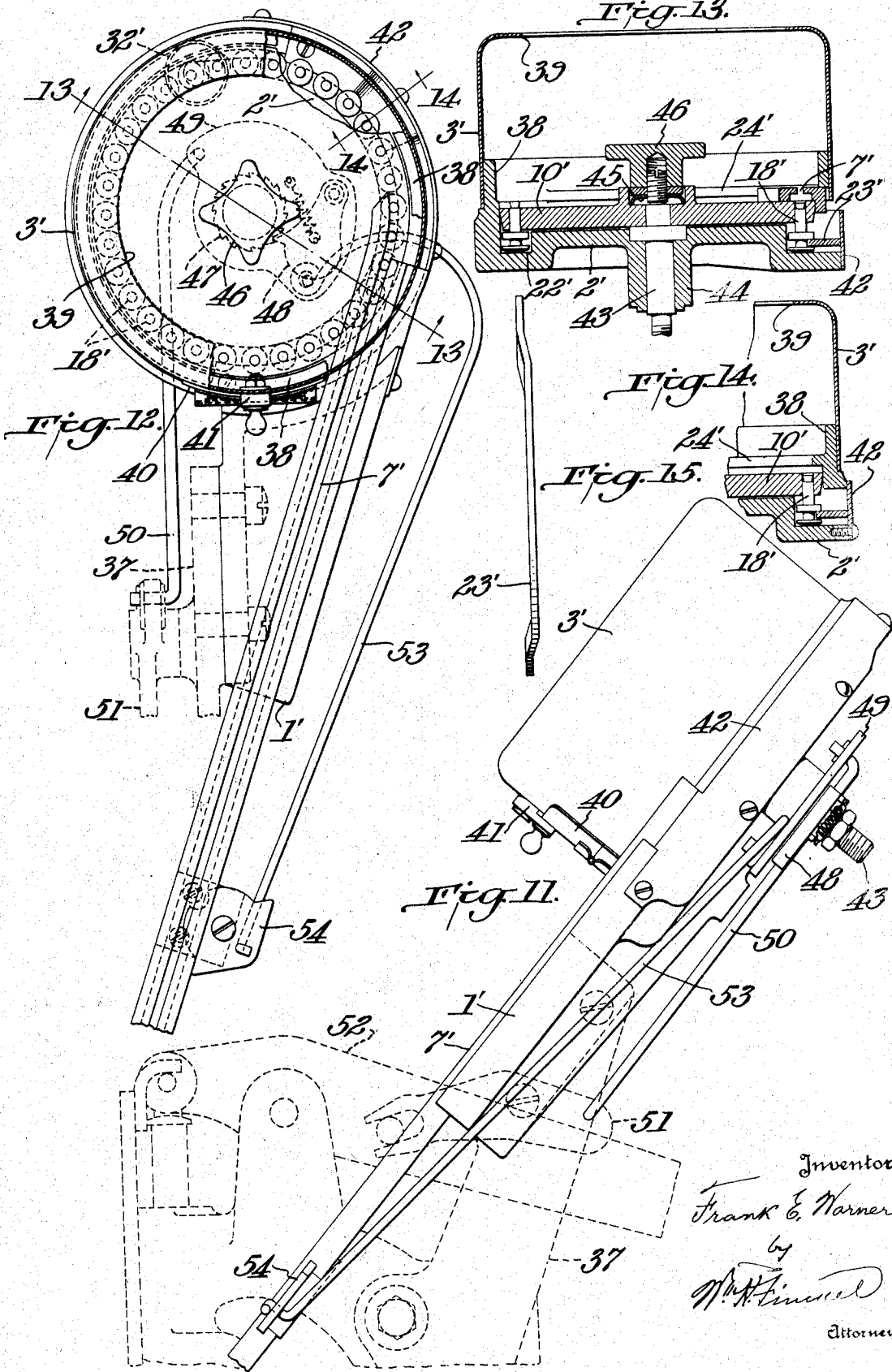
F. E. WARNER

1,913,648

FEED MECHANISM FOR ATTACHING MACHINES

Filed Aug. 6, 1931

3 Sheets-Sheet 3



Inventor
Frank E. Warner
by
W. H. Linwood
Attorney

UNITED STATES PATENT OFFICE

FRANK E. WARNER, OF WATERBURY, CONNECTICUT, ASSIGNOR TO SCOVILL MANUFACTURING COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT

FEED MECHANISM FOR ATTACHING MACHINES

Application filed August 6, 1931. Serial No. 555,634.

The cap members, of snap and other fasteners of various types, which have substantially the same surface contour on their front and back sides or faces, present certain difficulties in their proper automatic mechanical feed to the setting mechanisms of automatic setting or attaching machines.

The object of this invention is to provide a feed mechanism, primarily for feeding caps of this type, which mechanism ensures the automatic arrangement of the caps in proper position to be effectively handled by the setting mechanism of the setting or attaching machine, the structural characteristics of the caps being, in a measure, depended upon for their arrangement and feed in proper position.

The invention contemplates an organization of mechanism including an appropriate raceway leading to the setting mechanism of an attaching machine, and a feed hopper associated with this raceway and adapted to receive, haphazard, a plurality of fastener caps or the like of similar front and back surface contour which are to be fed to the raceway all in the same position. This hopper is provided with a rotatable member preferably provided with a plurality of reciprocable, and hence projectable, retractable members adapted to engage and feed the caps when presented to them in one position and to reject the caps when presented in any other position, whereby the said caps are fed to the raceway in the desired arrangement for subsequent introduction into the setting mechanism, all as will be hereinafter explained more fully and finally claimed.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation of one type of feed hopper and raceway embodying the principle of the invention in its preferred form. Fig. 2 is a side elevation of the parts shown in Fig. 1, Fig. 3 is a fragmentary rear elevation of the parts shown in Fig. 1, certain parts being broken away. Fig. 4 is a fragmentary front elevation of the arrangement of Fig. 1 with the hopper casing removed and parts broken away. Fig. 5 is a

section taken on line 5—5 of Fig. 1. Figs. 6, 7, 8 and 9 are enlarged fragmentary schematic sections taken, respectively, on the lines 6—6, 7—7, 8—8 and 9—9 of Fig. 4. Fig. 10 is an enlarged edge view of the cam track for operating the reciprocable members. Fig. 11 is a side elevation of a modified embodiment of the apparatus of the invention, a portion of a conventional setting or attaching machine being shown in broken lines. Fig. 12 is a front view of the apparatus of Fig. 11 looking directly at the axis of the hopper, and with parts broken away. Fig. 13 is a section on line 13—13 and Fig. 14 is a section on line 14—14 of Fig. 12. Fig. 15 is an edge view of the cam track of the apparatus of Figs. 11 to 14.

The feed mechanisms of the two embodiments of the apparatus of the invention disclosed in Figs. 1 to 10 and 11 to 15, respectively, are essentially the same, but in the first mentioned embodiment the hopper and its disk are arranged upon a horizontal axis and in the other embodiment these parts are arranged upon an inclined axis. The former is designed primarily for use in connection with power-driven machines, and the latter with foot power machines of the "kick-off" type, such as that partially illustrated in broken lines, Fig. 11.

Referring now particularly to Figs. 1 to 10 inclusive, the embodiment therein shown includes a frame member 1 which may be suitably mounted upon the frame of the attaching machine. The upper portion of this frame member 1 is enlarged to substantially circular shape to form a back or closure 2 for a hopper 3 rigidly secured to it by cap screws 4 which pass through the flange 5 of the hopper. This flange is cut away at 6 to receive the entrance end of a raceway comprising guides 7 and 8 secured to the front and back of the frame member 1, respectively.

The back 2 is provided with a circular depression or recess 9 in which is arranged a rotatable member or disk 10 mounted for rotation with a shaft 11 journaled in a bearing member 12 and carrying a pulley 13 whereby it may be appropriately rotated by

means of a belt connected with a moving part of the attaching machine. A hand wheel 14 and pawl and ratchet mechanism 15-16 are provided for manually rotating the disk 10 when necessary or desired.

The disk 10 is provided with a plurality of bores 17 in circumferential arrangement adjacent to its periphery, and in these bores are arranged reciprocable, and hence projectable retractable members or pins 18 having undercut extensions 19 normally projecting beyond the face of the disk, and heads 20 and collars 21 extending beyond the back of the disk and travelling in a guideway 22 in the back 2. The radius on which the pins 18 are circumferentially arranged is such that they will feed fastener parts (preferably caps of the type hereinbefore referred to) into the raceway formed by the guides 7 and 8.

The guideway 22 is enlarged throughout that portion adjacent to the raceway and is provided with a cam track 23 (see Figs. 4 to 10) adapted to engage the pins 18 between their heads 20 and collars 21 to retract them as they approach the raceway and to project them to normal position again after they have passed the raceway, as will be more specifically pointed out hereinafter.

The hopper 3 is provided with a lip 24 (Fig. 9) overlying the pins which are, for the time being, operated upon by the cam track 23, so that the fastener parts advanced by the pins into proximity to the entrance end of the raceway will not drop back into the hopper.

The hopper 3 is provided with a filling opening 25 having a hinged cover 26, and may be emptied through a discharge opening 27 provided with a cap 28 held in place by a spring arm 29 pivotally mounted at 30. A chute 31 underlies the discharge opening 27 for the purpose of facilitating the collection of the parts discharged in a suitable receptacle.

In order that the pins 18 may be inspected and replaced, when necessary, without dismantling the machine, an opening 32 provided with a cap 33 communicates with the guideway 22 through the back 2.

If the raceway should become jammed, it may be cleared by removal of a section 34 of one of the guides 7. This section 34 is held in place by a spring latch member 35 and pins 36 in a known manner.

Referring now to Figs. 11 to 15, it will be seen that the frame member 1' is so attached to a bracket 37 of the setting machine that the axis of the hopper 3' is arranged at an angle and the back or closure 2' of the hopper is inclined. The hopper 3' in this form of the apparatus is preferably a sheet metal cup having a slip fit on the exterior of a cylindrical boss 38 formed on the back 2'. The upper or exposed face of the hopper 3' is

provided with an opening 39 through which it may be filled and has a discharge door 40 held closed by a pivoted latch 41.

The raceway 7', disk 10', pins 18', guideway 22', cam track 23' and lip 24' cooperate and function in the same manner as the similar parts already described, but their arrangement is slightly different.

The cam track 23' is arranged at the outer circumference of the guideway 22' and the guideway is closed by a shield 42.

The disk 10' is mounted upon a shaft 43 having a bearing 44 in the back 2' and is frictionally secured for rotation with this shaft by a spring washer 45 and hand wheel 46.

The shaft 43 carries a ratchet wheel 47 engaged by a pawl 48 pivotally mounted upon a lever plate 49. Oscillatory movement is imparted to this plate 49 by a link 50 connected with a lever 51 actuated by the main lever 52 of the attaching machine. Also connected with the plate 49 is a link 53 for operating the feed element 54 of the raceway 7'. Thus, every time the attaching mechanism is operated the disk 10' will be partially rotated, clockwise, and the feed element 53 will be actuated.

Obviously, the disk 10' may be manually rotated, when desired, by means of the hand wheel 46.

An inspection opening 32', similar to and for the same purpose as that already described, is provided in the back 2'.

Referring to the fastener caps shown in section at *a* and *b* in Figs. 6 to 9, it will be seen that their front and back faces are of substantially the same contour, the back face differing from the front face only in that it is provided with an opening for the reception of a complemental attaching member, and that it is radially slitted. These differences, however, are not sufficient to enable the caps to be fed and properly positioned, all in one sense, in a raceway, by reliance upon their physical characteristics alone, and hence they must be positively handled by the feed mechanism.

In either form of apparatus illustrated the caps, in quantities, are dumped haphazard into the hopper. As the disk rotates the caps will be agitated by the normally projecting undercut ends 19 or 19' of the reciprocable members or pins 18 or 18' and those caps which happen to fall with their open back faces in contact with the pins will be engaged thereby and separately carried around with the disk out of the caps in the hopper and deposited in the raceway. The undercut extensions 19 or 19' of the pins will so engage the caps as to prevent them from falling back into the hopper, as will be apparent from an inspection of Fig. 8.

This figure (8) illustrates the manner in which those caps which are in the one proper position (*a*) relatively to the pins will be en-

gaged thereby, whereas those (b) which are otherwise positioned will be rejected.

The pins, when travelling in that portion of the guideway not occupied by the cam track, are normally positioned with their undercut extensions projecting beyond the face of the disk, as shown in Fig. 5. When the pins engage the cam track they are gradually retracted until they assume the position illustrated in Figs. 6 and 9 which frees the caps from them. The caps cannot fall back into the hopper because of the arrangement of the lip 24 or 24' and hence they must fall into the raceway.

The pins remain in retracted position until they are clear of the zone of the raceway, and then they are projected gradually, as shown in Fig. 7, until they reach the fully projected position of Fig. 8 and are again normally held projected by the guideway 22 or 22'.

It will thus be seen that inasmuch as the caps can be picked up by the pins only in one position, they will all be deposited in the raceway in the same sense and hence will feed therethrough into proper relation to the setting mechanism of the attaching machine.

Various changes and modifications other than and in addition to those specifically referred to are considered to be within the spirit of the invention and the scope of the following claims.

What I claim is:—

1. The combination with a raceway, of a hopper for the reception of a plurality of parts to be fed, a rotatable member arranged in said hopper and carrying an axially reciprocable member extending therethrough and having one end adapted to engage a part presented in one position and to reject parts otherwise presented and to advance said part into proximity to said raceway, and means cooperating with the opposite end of said reciprocable member for retracting same to permit said part to enter said raceway.

2. The combination with a raceway, of a hopper for the reception of a plurality of parts to be fed, a rotatable member arranged in said hopper and carrying an axially reciprocable member extending therethrough and having one end adapted to engage a part presented in one position and to reject parts otherwise presented and to advance said part into proximity to said raceway, and means cooperating with the opposite end of said reciprocable member for retracting same to permit said part to enter said raceway and for subsequently projecting said member for engagement with another part to be fed.

3. The combination with a raceway, of a hopper for the reception of a plurality of parts to be fed, a rotatable member arranged in said hopper and provided with a plurality of axially reciprocable members extending therethrough and each having one end adapted to engage said parts when in one position

and to reject them when in other positions; said members serving to advance said parts to said raceway, and means cooperating with the opposite ends of said members for retracting same to permit feed of the parts engaged thereby into said raceway.

4. The combination with a raceway, of a hopper for the reception of a plurality of parts to be fed, a rotatable member arranged in said hopper and provided with a plurality of axially reciprocable members extending therethrough and each having one end adapted to engage said parts when in one position and to reject them when in other positions, said members serving to advance said parts to said raceway, and means cooperating with the opposite ends of said members for retracting same to permit feed of the parts engaged thereby into said raceway and for subsequently projecting said members for engagement with other parts to be fed.

5. In a feed mechanism for attaching machines, a raceway, a hopper communicating with said raceway and adapted to receive a plurality of parts to be fed, a rotatable disk arranged in said hopper and provided with a plurality of reciprocable pins extending therethrough and each having one end adapted to engage and feed to said raceway parts presented in one position and to reject parts otherwise presented, means for rotating said disk, and means cooperating with the opposite ends of said pins for projecting and retracting same for the purpose specified.

6. In a feed mechanism for attaching machines, a raceway, a hopper communicating with said raceway and adapted to receive a plurality of parts to be fed, a rotatable disk arranged in said hopper and provided with a plurality of reciprocable pins extending therethrough and each having one end adapted to engage and feed to said raceway parts presented in one position and to reject parts otherwise presented, means for rotating said disk, and a stationary cam track cooperating with the opposite ends of said pins for projecting and retracting same for the purpose specified.

7. In a feed mechanism for attaching machines, a raceway, a hopper communicating with said raceway and adapted to receive a plurality of fastener parts in haphazard arrangement, a rotatable disk arranged in said hopper and carrying a plurality of reciprocable pins extending therethrough and each having one end normally projecting beyond said disk and into said hopper, the projecting ends of said pins adapted to engage and feed to said raceway fastener parts presented to them in one position and to reject fastener parts otherwise presented, and means cooperating with the opposite ends of said pins for retracting their normally projecting ends as they approach said raceway for the purpose specified.

8. In a feed mechanism for attaching machines, a raceway, a hopper communicating with said raceway and adapted to receive a plurality of fastener parts in haphazard arrangement, a rotatable disk arranged in said hopper and carrying a plurality of reciprocable pins extending therethrough and each having one end normally projecting beyond said disk and into said hopper, the projecting ends of said pins adapted to engage and feed to said raceway fastener parts presented to them in one position and to reject fastener parts otherwise presented, means cooperating with the opposite ends of said pins for normally holding the projecting ends of said pins in projected position, and means engageable with said opposite ends for retracting said pins as they approach said raceway for the purpose specified.

9. In a feed mechanism for attaching machines, a frame member, a raceway carried by said frame member, a hopper carried by said frame member and closed thereby, said hopper adapted to receive a plurality of fastener parts in haphazard arrangement, a rotatable disk arranged in said hopper and provided with a plurality of projectable retractable pins adapted to engage and feed to said raceway fastener parts presented in one position and to reject fastener parts otherwise presented, a guideway in said frame member adapted to hold said pins normally in projected position whereby they may engage said fastener parts and advance them into proximity to said raceway, a cam track for retracting said pins adjacent to said raceway for releasing said fastener parts and permitting their entrance into the raceway, and means for rotating said disk.

10. In a feed mechanism for attaching machines, a frame member, a raceway carried by said frame member, a hopper carried by said frame member and closed thereby, said hopper adapted to receive a plurality of fastener parts in haphazard arrangement, a rotatable disk arranged in said hopper and provided with a plurality of projectable retractable pins adapted to engage and feed to said raceway fastener parts presented in one position and to reject fastener parts otherwise presented, a guideway in said frame member adapted to hold said pins normally in projected position whereby they may engage said fastener parts and advance them into proximity to said raceway, a cam track for retracting said pins adjacent to said raceway for releasing said fastener parts and permitting their entrance into the raceway, means for preventing return of said fastener parts to said hopper after such releasing, and means for rotating said disk.

11. In a feed mechanism for attaching machines, a frame member, a raceway carried by said frame member, a hopper carried by

said frame member and closed thereby, said hopper adapted to receive a plurality of fastener parts in haphazard arrangement, a rotatable disk arranged in said hopper and provided with a plurality of projectable retractable pins adapted to engage and feed to said raceway fastener parts presented in one position and to reject fastener parts otherwise presented, a guideway in said frame member adapted to hold said pins normally in projected position whereby they may engage said fastener parts and advance them into proximity to said raceway, a cam track for retracting said pins adjacent to said raceway for releasing said fastener parts and permitting their entrance into the raceway, a lip in said hopper overlying the fastener parts and serving to prevent their return to said hopper after such releasing, and means for rotating said disk.

In testimony whereof I have hereunto set my hand this 5th day of August A. D. 1931.

FRANK E. WARNER.