

J. E. PERRAULT.
HOPPER AND FEEDING DEVICE.
APPLICATION FILED MAY 20, 1909.

936,029.

Patented Oct. 5, 1909.
5 SHEETS—SHEET 1.

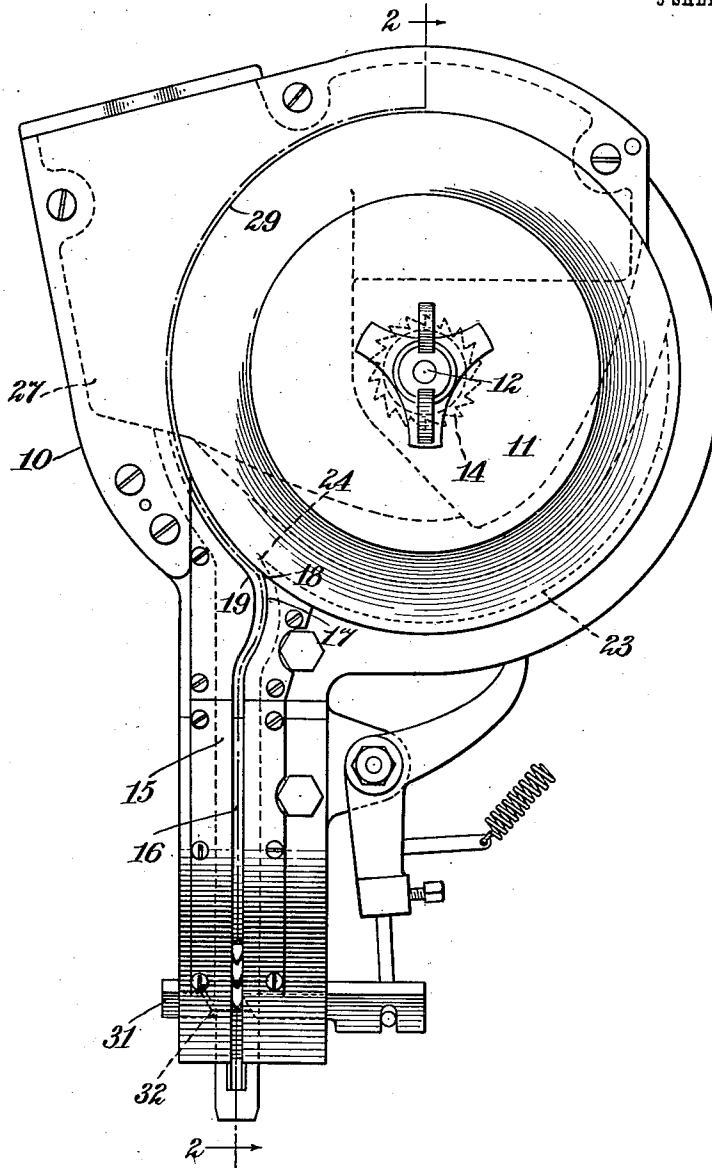


Fig. 1.

Witnesses:

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Franklin E. Low.

Inventor:

Joseph E. Perrault,
by his attorney
Charles S. Gooding.

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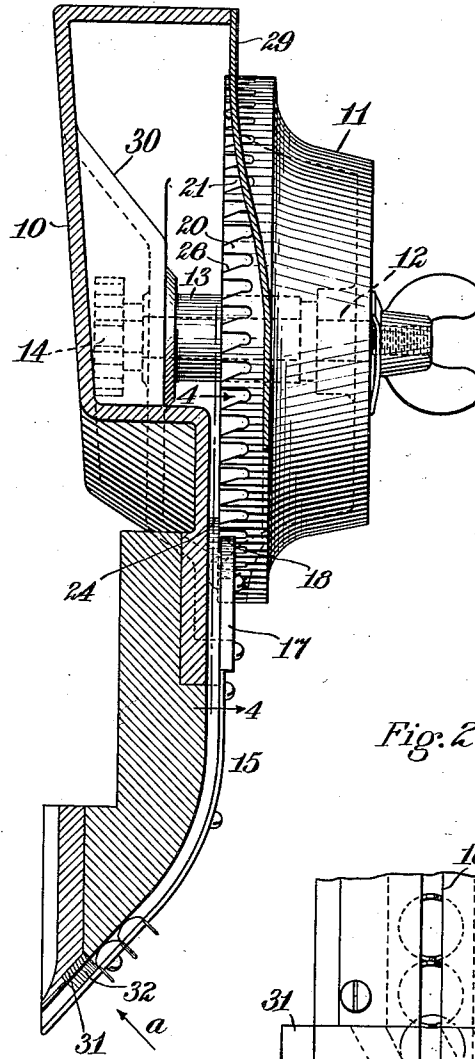


Fig. 2.

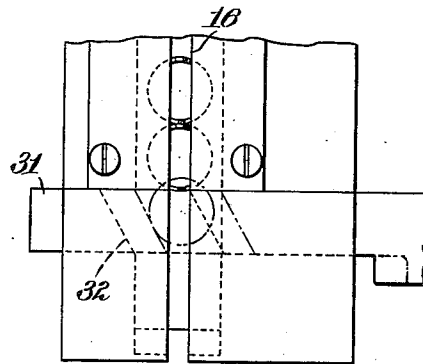


Fig. 3.

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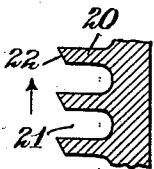
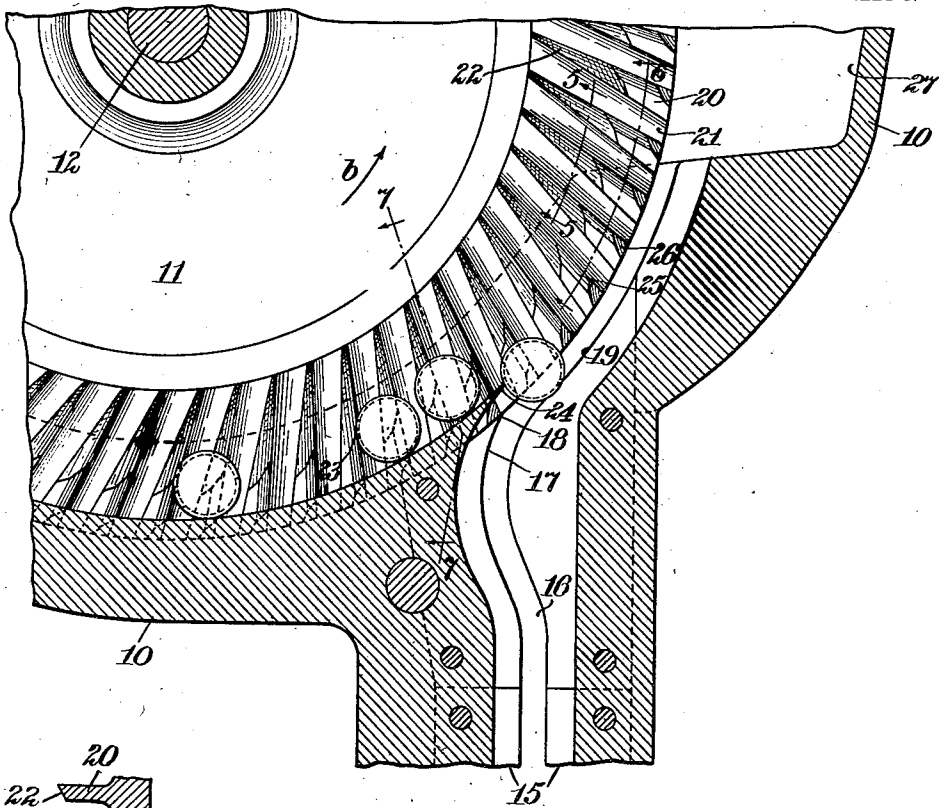


Fig. 5.

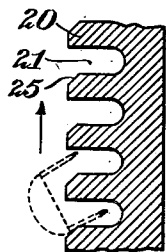


Fig. 6.

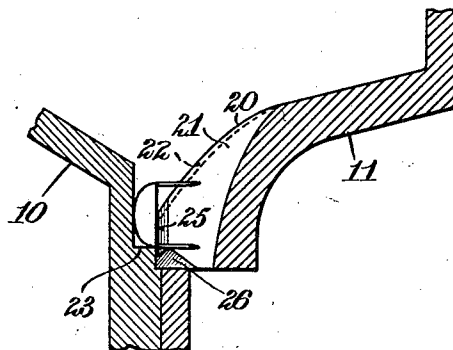


Fig. 7.

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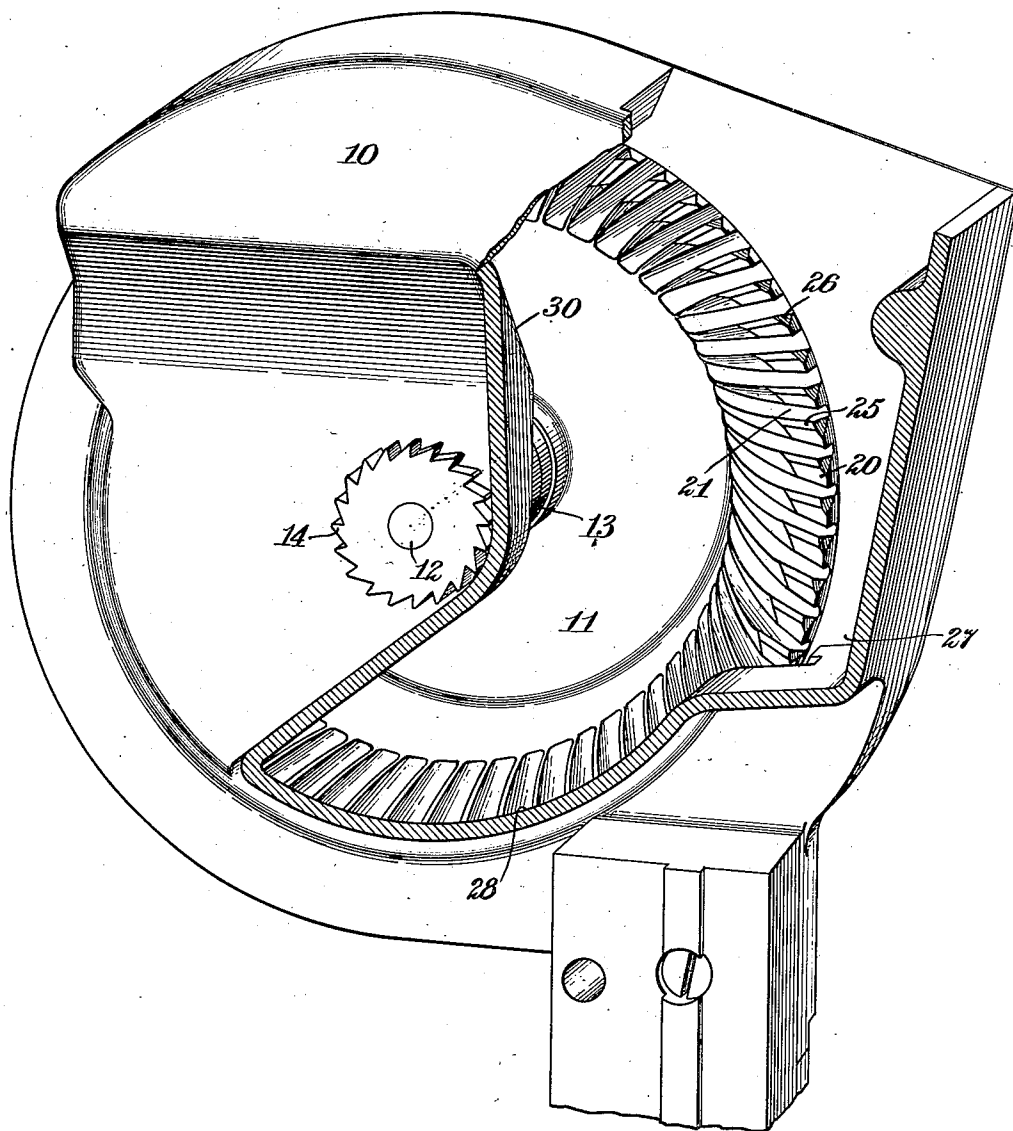


Fig. 8.

Witnesses:

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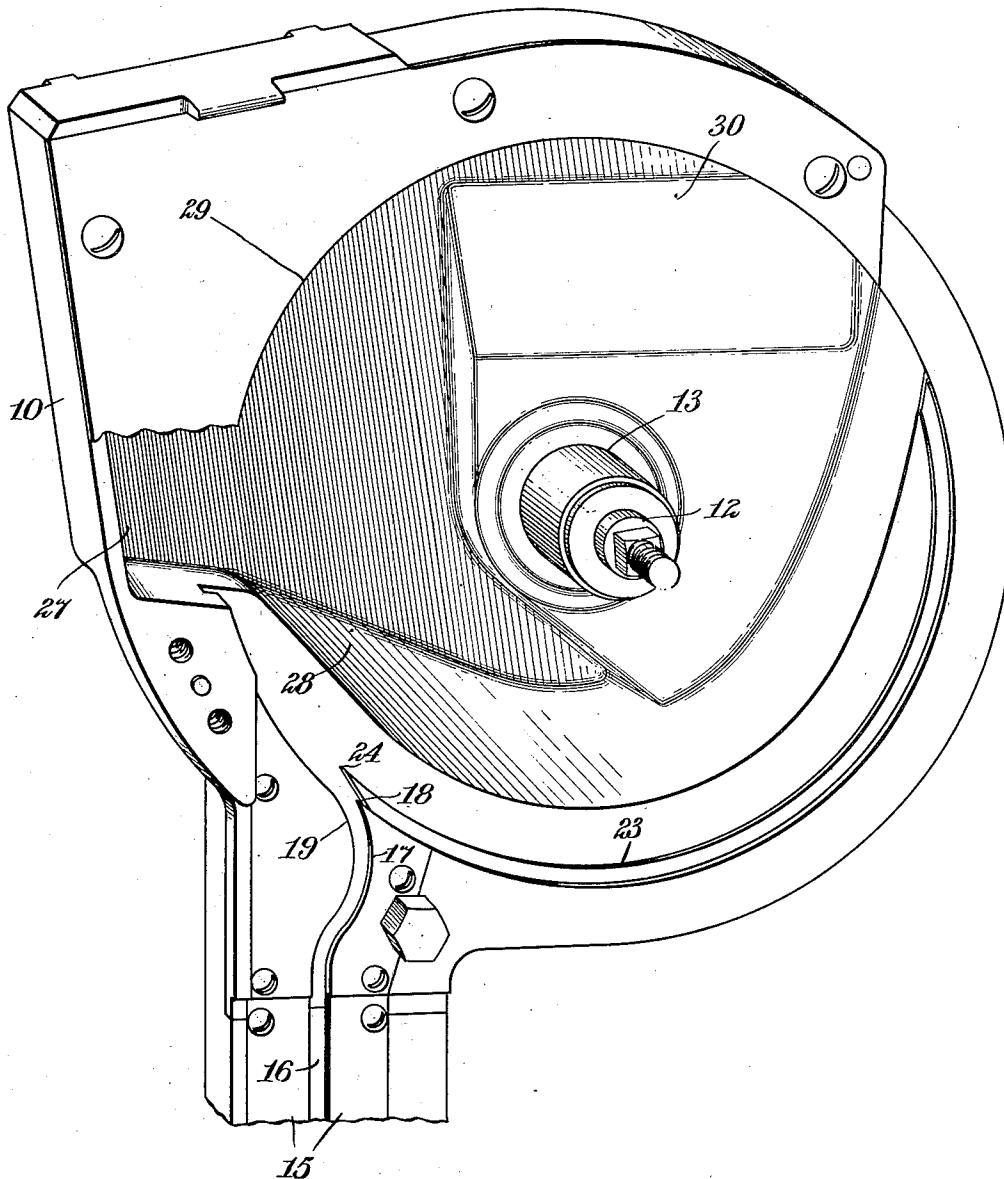


Fig. 9.

Witnesses.

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UNITED STATES PATENT OFFICE.

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HOPPER AND FEEDING DEVICE.

936,029.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed May 20, 1909. Serial No. 497,200.

To all whom it may concern:

Be it known that I, JOSEPH E. PERRAULT, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Hoppers and Feeding Devices, of which the following is a specification.

This invention relates to improvements in hoppers and feeding devices and has for its object the provision of a hopper and feeding device which shall be capable of feeding fasteners from a mass in the hopper to a raceway and controlling the passage of the fasteners down the raceway.

The present embodiment of my invention is particularly adapted to the feeding of a fastener or rivet of special form, the same being provided with two spurs or prongs for the attachment thereof to a piece or pieces of sheet material, these spurs or prongs being distinct from each other and located at a substantial distance apart as distinguished from rivets and the like having a shank provided with prongs.

The invention consists in the novel features of construction and 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 hopper and feeding device embodying my invention. Fig. 2 is a sectional view taken on line 2—2 of Fig. 1, looking toward the right. Fig. 3 is an enlarged detail elevation of the lower part of the raceway and the stop and cut-off device as viewed from the right of Fig. 2 in the direction of the arrow *a*. Fig. 4 is an enlarged sectional view taken on line 4—4 of Fig. 2 and partly broken away to save space. Fig. 5 is a detail sectional view of the rotary member of the feeding device taken on line 5—5 of Fig. 4, looking toward the left. Fig. 6 is a detail sectional view of the rotary member of the feeding device taken on line 6—6 of Fig. 4, looking toward the left. Fig. 7 is a detail section taken on line 7—7 of Fig. 4, looking toward the left. Fig. 8 is an enlarged perspective view of the hopper and feeding device as viewed from the opposite side of that shown in Fig. 1, a part of one wall of the hopper being partly broken away and shown in section to expose the interior thereof and the interior

of the rotary member which constitutes in effect a part of the hopper. Fig. 9 is a perspective view of the hopper viewed from the same side as shown in Fig. 1, the rotary member being removed and a part of the hopper being broken away.

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

In the drawings, 10 is a stationary hopper and 11 is a rotary hopper, the latter being fast to a shaft 12 journaled in a bearing 13 provided in the former, said shaft having fast thereto a ratchet 14 which may be intermittently rotated in the direction of the arrow *b*, Fig. 4, by any usual or desired mechanism. Leading downwardly from the hoppers 10 and 11 is a raceway 15 provided with a passage 16, one wall 17 of which terminates at a point 18 adjacent to the periphery of the rotary hopper 11, while the other wall 19 of said passage extends beyond said point in the direction of rotation of said rotary hopper outside of and substantially parallel with the periphery thereof. That part of the passage 16 which is adjacent to and immediately below the point 18 is preferably substantially tangent to the periphery of the rotary hopper 11, as shown in Fig. 4.

Formed on or fast to the rotary hopper 11 are a plurality of blades 20 separated from each other by passages 21 leading from the interior to the exterior periphery of said hopper, said passages being preferably non-radial, or in other words, being tangent to a circle struck from the center of rotation of said hopper.

By reference to Fig. 5 it will be seen that each of the blades 20 is provided with a beveled face 22, the bevel being toward the direction of rotation of the hopper 11. The purpose of this beveling or sharpening of the blades is to enable them to more readily pick up the articles to be fed.

The device is particularly intended and adapted to feed a fastening device of special form having a convex head and two prongs which are distinct from each other, as clearly shown in Fig. 7. The fact that these prongs are distinct from each other instead of being formed upon a shank makes it difficult to provide a hopper and feeding device in which the fastener shall pass from the hopper into the raceway without clogging or jamming. To this end there is provided a

circumferential guide 23 which, in this instance, is formed as a part of the hopper 10, said guide being adapted to support the heads of the fasteners as the same are being carried around by the rotation of the hopper 11 when the prongs of said fasteners are located in the passages 21 in the manner shown in Figs. 4 and 7.

Sometimes both of the prongs of a fastener will pass into and be carried around in a single groove 21 and sometimes the two prongs will be located in two adjacent passages, respectively. It is the latter case which tends to make it difficult to cause the fastener to pass from the passages 21 into the passage 16 of the raceway without jamming the fastener between the advancing face of the blade and the wall 19 of the passage 16 adjacent to the point 18. In other words, when the fastener is advancing along the guide 23 with one of its prongs in advance of the other, when the fastener has reached the termination of said guide the natural tendency is for the same to rest upon the extremity of the guide and tend to rock clockwise about said extremity as a pivot. If this were not prevented the prong which is in advance would be apt to be jammed against the wall 19. To prevent this the guide 23 is carried to and terminates at a point 24 the shortest distance from which to the wall 19 of the raceway passage 16 is less than the distance between the prongs of said fastener. The consequence is that when a fastener arrives at the point 24 with one of its prongs resting upon the guide 23 and the other prong drops out of the passage 21 which is in advance of the point 24, the latter prong cannot swing downwardly along the wall 19, but advances upwardly along said wall as the rotation of the hopper 11 continues. When the second prong, therefore, has passed beyond the point 24 said prong will drop out of the passage 21 in which it was located into the passage 16 of the raceway and the fastener will then be carried by gravity down said raceway. If by chance there is carried around by the rotation of the hopper 11 a fastener having both of its prongs located in one of the passages 21, when said prongs pass beyond the point 24 they will without difficulty pass out of said passage into the passage 16.

By referring to Fig. 4 it will be observed that the passage 16 is extended a substantial distance beyond the point 24 so as to give the fasteners ample opportunity to pass thereinto. If, however, fasteners should fail to pass into the raceway it is, of course, necessary that they shall be enabled to free themselves from the blades by which they are carried and to this end each of said blades is provided with a beveled face 25 which, as shown in Fig. 6, is beveled opposite to the direction of rotation of the hop-

per 11, so that the fastener is enabled to pass out of engagement with said hopper in the manner indicated in dotted lines in Fig. 6.

To still further facilitate the dropping of the fasteners the blades 20 are still further provided with beveled faces 26 adjacent to their outer ends, these faces being provided for the purpose of allowing a fastener to clear itself from the blades if one prong is located in one passage 21 and another prong is located in another passage 21, it being evident that the prong which is in advance will more readily swing out of its passage when the blade is carried upward toward a horizontal plane. The fasteners which are carried beyond the upper limit of the raceway 15 by the blades drop into the cavity 27 provided for this purpose and said fasteners then find their way from this cavity downwardly along a conical surface 28 and thus join the mass of fasteners in the bottom of the hoppers.

Should any of the fasteners be carried by the blades to a point above the axis of rotation of the hopper 11, said fasteners will be gradually carried out of engagement with the blades by means of a substantially helical cam 29 formed on or secured to the hopper 10, the shape of this cam being clearly shown in section in Fig. 2. There is provided within the hopper 10 an inclined face 30 which the fasteners in some instances fall onto in becoming disengaged from the blades and these fasteners pass by gravity down said face to join the mass of fasteners at the bottom of the hoppers.

The fasteners which pass down the raceway 15 are controlled by a slide 31 constituting a stop and separator, said slide being provided with an angular groove 32 intersecting the top and bottom faces of said slide, the head of the lowermost of the column of fasteners located thereabove being adapted to rest upon the upper face of the slide 31 just at the right of the groove 32, as shown in Fig. 3. When the slide 31 is moved toward the right by suitable mechanism so that the groove 32 occupies the position shown in dot and dash lines in Fig. 3, the fastener which just before was supported upon the upper face of said slide passes into said groove and upon the next movement of said slide toward the left said fastener is allowed to pass freely down the raceway 15 beyond and below said slide, said slide acting to stop the next succeeding fastener and hold the same until the next reciprocation of the slide.

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

1. The combination, in a device for feeding fasteners each having a head and two prongs, of a hollow rotary member provided

with passages leading from the interior to the exterior periphery thereof, each of which is adapted to receive one or both of said prongs, a raceway, one wall of which terminates at a point adjacent to the periphery of said member, and the other wall of which extends along the outside of said member in the direction of rotation thereof beyond said point, and a guide located beneath and adapted to support said fasteners when the same are carried by the rotation of said member toward said raceway, said guide terminating at a point the shortest distance from which to said second wall of said raceway passage is less than the distance between said prongs.

2. The combination, in a device for feeding fasteners each having a head and two prongs, of a hopper, a hollow rotary member forming together with said hopper a chamber, said member being provided with passages leading from the interior of said chamber to the exterior periphery of said member, each of which is adapted to receive one or both of said prongs, a raceway one wall of which terminates at a point adjacent to the periphery of said member, and the other wall of which extends along the outside of said member in the direction of rotation thereof beyond said point, and a guide located beneath and adapted to support said fasteners when the same are carried by the rotation of said member toward said raceway, said guide terminating at a point, the shortest distance from which to said second wall of said raceway passage is less than the distance between said prongs.

3. The combination, in a device for feeding fasteners each having a head and two prongs, of a hollow rotary member provided with passages leading from the interior to the exterior periphery thereof, a raceway provided with a passage extending for a portion of its length substantially tangent to the periphery of said member, one wall of said raceway terminating at a point adjacent to the periphery of said member and the other wall of which extends along the outside of said member in the direction of rotation thereof beyond said point, and a guide located beneath and adapted to sup-

port said fasteners when the same are carried by the rotation of said member toward said raceway, said guide terminating at a point, the shortest distance from which to said second wall of said raceway passage is less than the distance between said prongs.

4. The combination, in a device for feeding fasteners each having a head and two prongs, of a hollow rotary member having thereon a plurality of blades separated by passages leading from the interior to the exterior periphery thereof, each of which is adapted to receive one or both of said prongs, each of said blades having two oppositely beveled sides, a raceway, one wall of which terminates at a point adjacent to the periphery of said member and the other wall of which extends along the outside of said member in the direction of rotation thereof beyond said point, and a guide located beneath and adapted to support said fasteners when the same are carried by the rotation of said member toward said raceway, said guide terminating at a point, the shortest distance from which to said second wall of said raceway passage is less than the distance between said prongs.

5. A device for feeding rivets provided with two prongs having, in combination, a hollow rotary member provided with passages leading from the interior to the exterior periphery thereof, a raceway provided with a passage adapted to guide the head and prongs of said rivet, one wall of said passage terminating at a point adjacent to the interior periphery of said member, and the other wall of said passage extending along the outside of said member beyond said point and in the direction of rotation thereof, and a stop and cut-off device adapted to engage the heads of the rivets in said raceway consecutively to control the passage of the same therein.

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

JOSEPH E. PERRAULT.

Witnesses:

LOUIS A. JONES,
SADIE V. MCCARTHY.