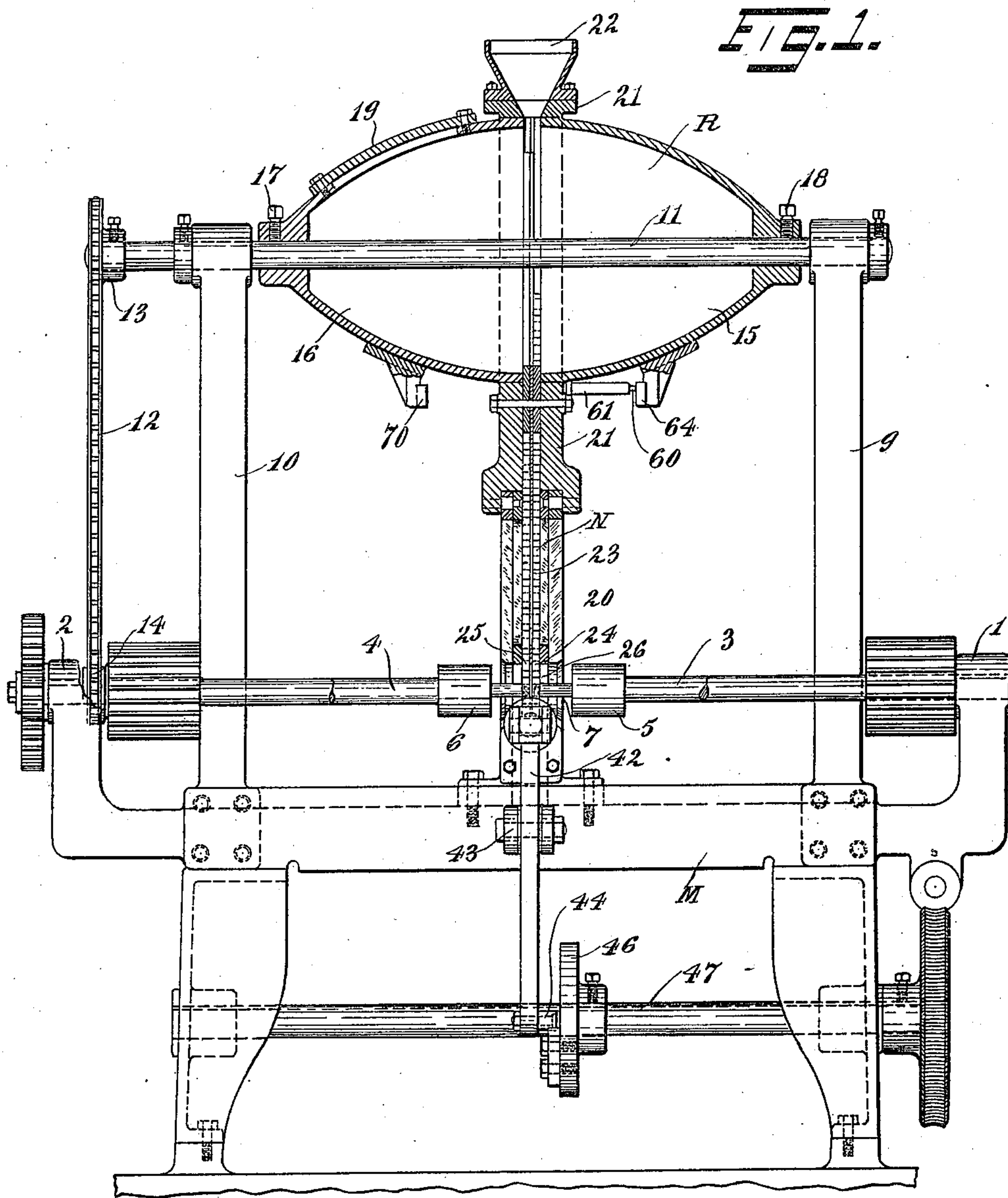


O. A. SMITH.
NUT FEED FOR TAPPING MACHINES.
APPLICATION FILED DEC. 6, 1909.

975,728.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 1.



Witnesses:

L. C. Badeau.
H. D. Penney

Inventor:

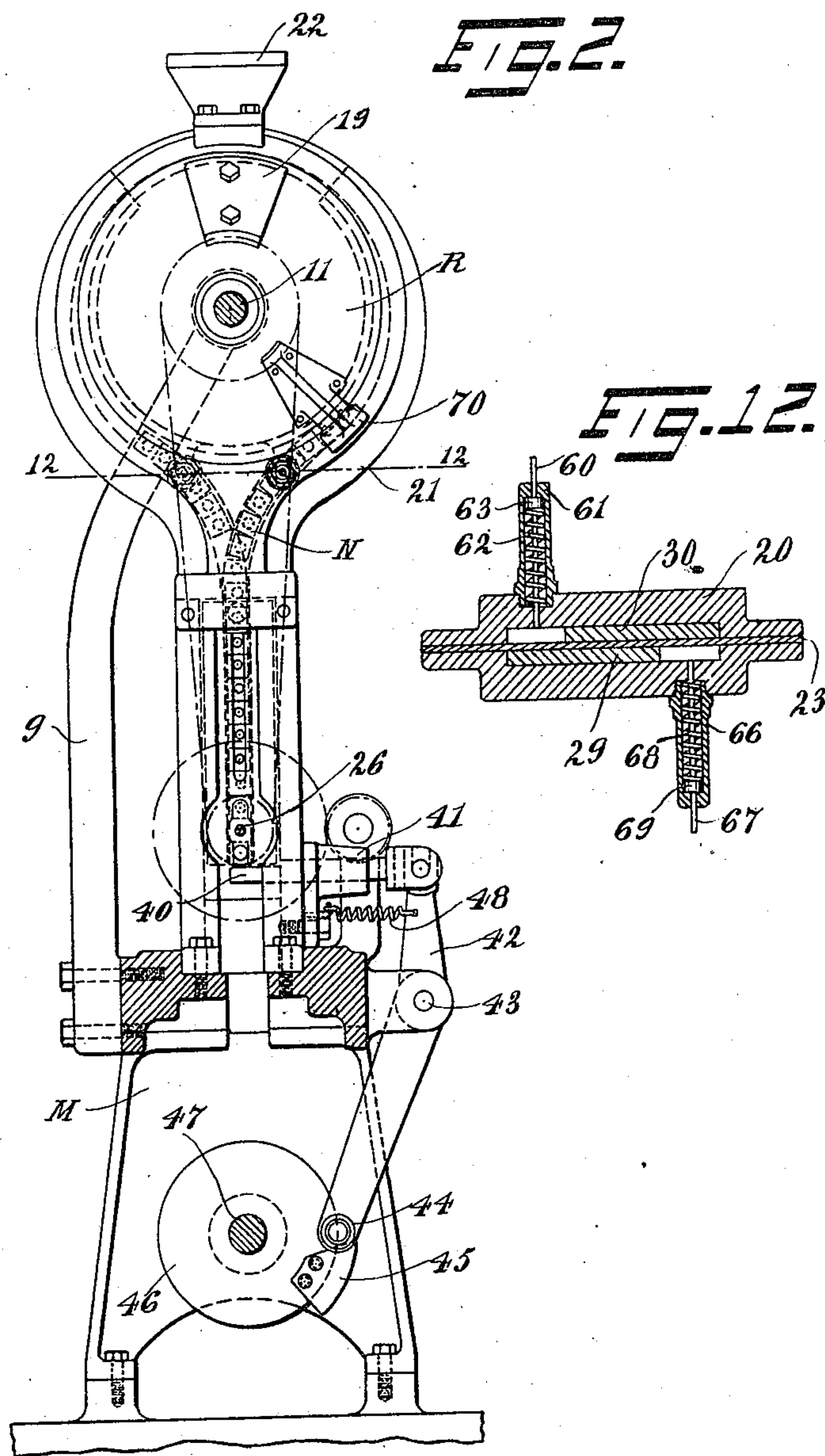
Oscar A. Smith,
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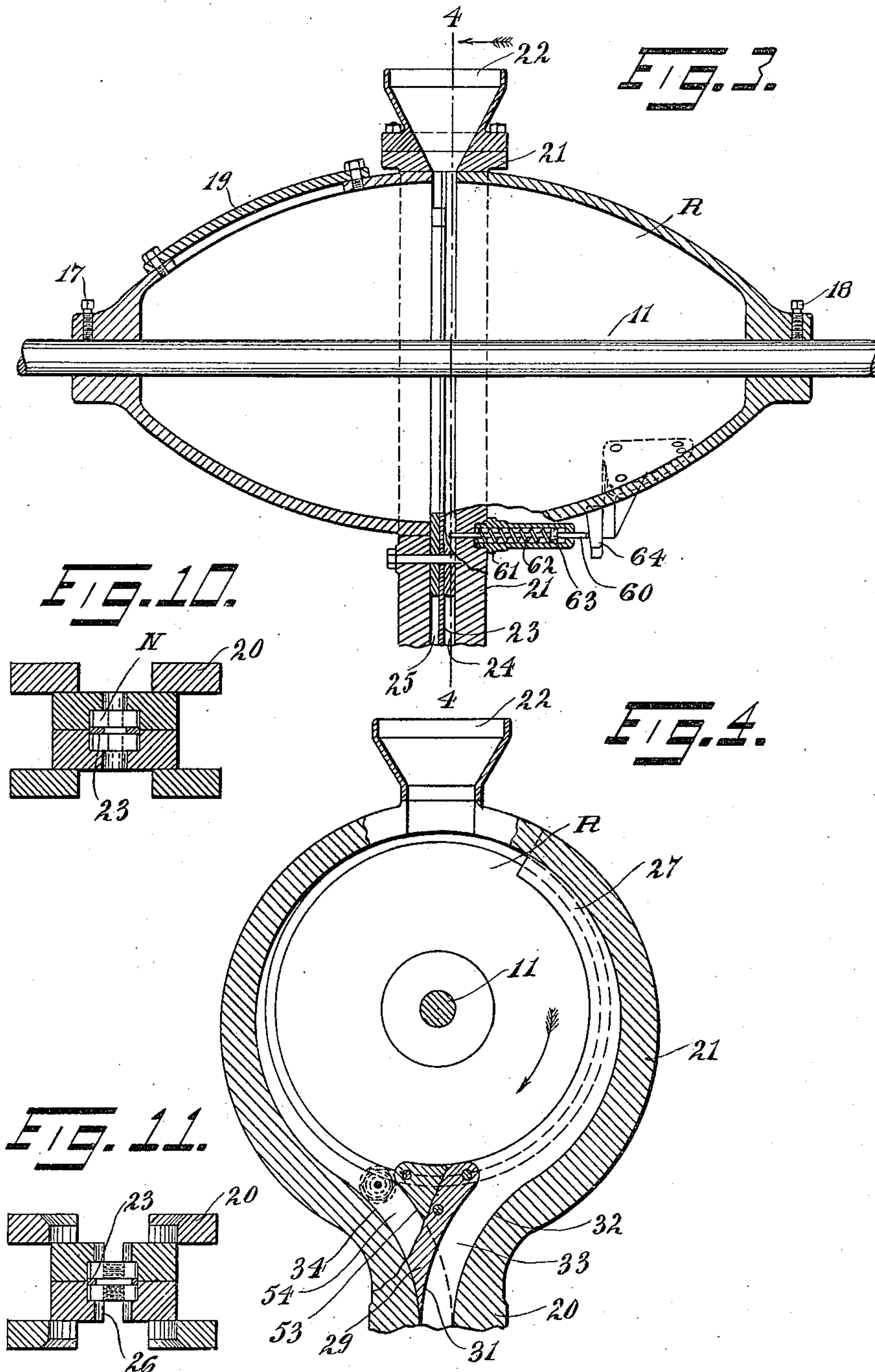
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4 SHEETS—SHEET 3.



Witnesses:

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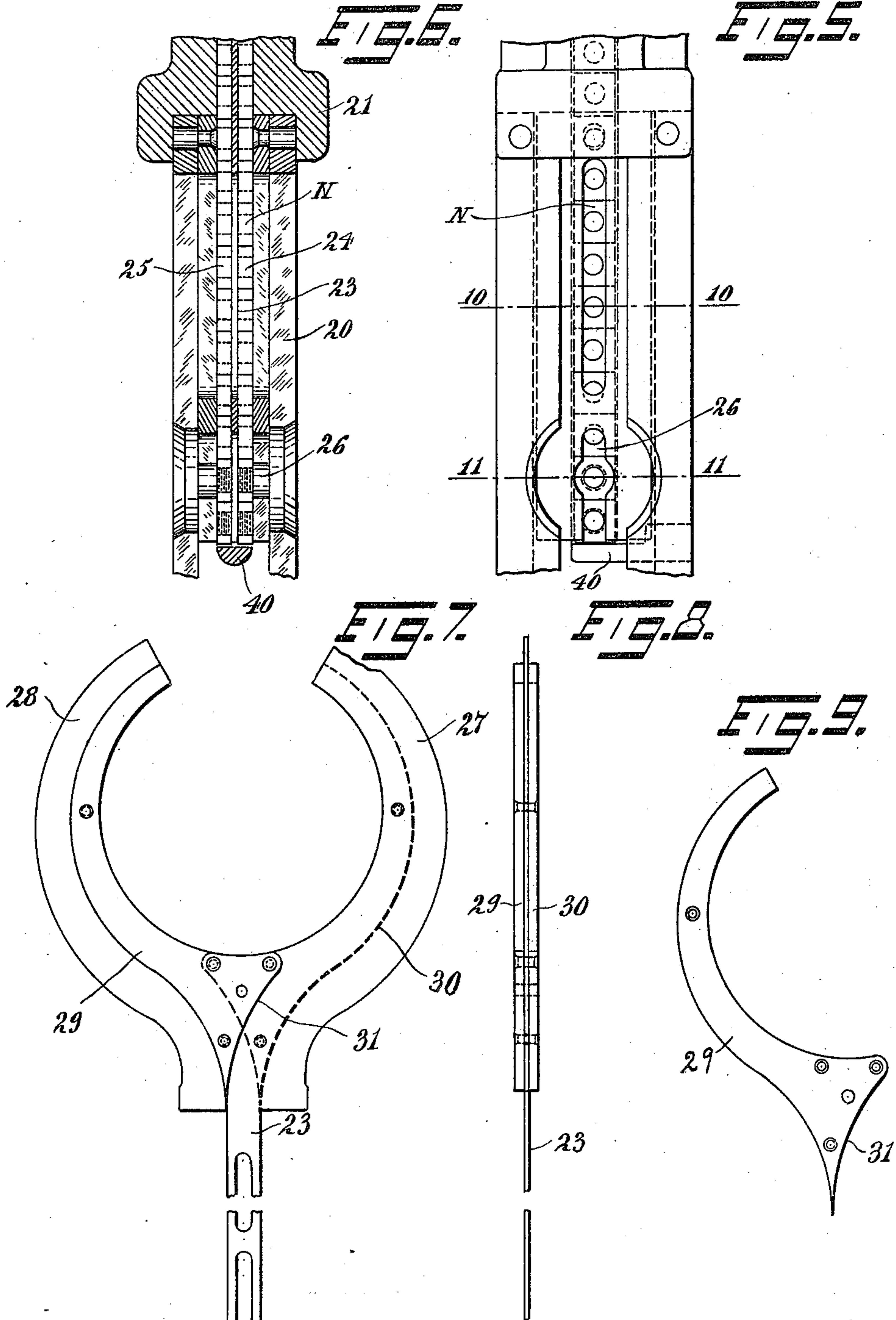
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4 SHEETS—SHEET 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

OSCAR A. SMITH, OF CLEVELAND, OHIO, ASSIGNOR TO THE NATIONAL-ACME MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

NUT-FEED FOR TAPPING-MACHINES.

975,728.

Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed December 6, 1909. Serial No. 531,527.

To all whom it may concern:

Be it known that I, OSCAR A. SMITH, a citizen of the United States, residing in Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Nut-Feeds for Tapping-Machines, of which the following is a specification.

The object of this invention is to provide an improved mechanism for automatically feeding nut blanks in an automatic tapping machine; and has for its object to provide an improved mechanism of this class wherein the nuts can be dumped in large quantities into a receptacle and will be fed in the proper position through a chute or tube to receive the tapping device.

This invention is especially applicable to the form of machine for automatically tapping nuts set forth in United States Patent granted to me September 29th, 1908, No. 899,915.

In the accompanying drawing representing an embodiment of my invention, Figure 1 is a front elevation, partly in section. Fig. 2 is a side elevation, partly in section. Fig. 3 is an enlarged section through the receptacle for the nuts. Fig. 4 is a vertical section on the line 4—4 of Fig. 3. Fig. 5 is a view still further enlarged showing a portion of the feeding chute. Fig. 6 is a section of Fig. 5. Fig. 7 shows the partition members for the chute and barrel. Fig. 8 is a side elevation of the parts shown in Fig. 7. Fig. 9 shows one of the partition plates shown in Fig. 7. Fig. 10 is a section on line 10—10 of Fig. 5. Fig. 11 is a section on line 11—11 of Fig. 5; and Fig. 12 is a section on line 12—12 of Fig. 2.

The machine is shown as comprising a frame denoted generally by M having a pair of bearing members 1 and 2 in which operate shafts 3 and 4 having bushings or sockets 5 and 6 respectively that receive the double ended tap 7. By suitable means not here shown, but set forth in said patent, the tap is caused to reciprocate endwise, and after passing through one or a pair of adjacent nuts it is withdrawn entirely from the nuts by the recession alternately of these bushing members to permit the nuts operated upon to drop and blanks to fall into their position for operation upon the next advance of the tap. All of this means forms the subject matter of said patent. The pres-

ent invention provides means for feeding the nut blanks into position for engagement with the tap at each operation or endwise movement thereof. On a pair of uprights 9 and 10 in suitable bearings is mounted a shaft 11, that is rotated by a chain 12 running on a sprocket 13 on this shaft and also on a sprocket 14 on the shaft 4. It should be here stated that the said shafts 3 and 4 that operate the tap, at each endwise reversal of movement of the tap have their direction of rotation reversed, because as explained in said patent the tap moving in the opposite direction into the blank must have its rotation reversed to cut the same thread at each movement. By this means the chain will be reversed and the shaft 11 will rotate alternately in opposite directions. This shaft carries a receptacle denoted generally by R comprising two complementary cup-shaped portions 15 and 16 that are shown as secured on the shaft by suitable bolts 17 and 18. One of these members as 16 is provided with an opening closed by a plate 19 to permit access to the interior of the receptacle when desired in case the blanks should become jammed or caught, or it is desired to remove them.

A chute member 20 is mounted on the frame M and projects upward at the center of the machine, and its upper portion carries a ring frame 21 into which the free edges of the cup shaped members project, but these edges are offset a certain distance to permit the nuts to be fed in through a hopper portion 22 at the top of the ring frame 21. The chute member 20 has a narrow partition wall 23 dividing it into two passages 24 and 25 made of sufficient size to permit the nut blanks *n* to freely slide down. A suitable open portion 26 is provided in the chute to permit entrance of the tap on each side, yet to retain the nuts in the chute and prevent their turning. The partition wall 23 has extensions 27 and 28 at the top extending around the opposite sides of the ring frame 21. Where the two passages 24 and 25 open into the receptacle R they are arranged at opposite sides thereof whereby the rotation of the barrel in one direction will tend to feed the nuts down to one of the chutes and the rotation of the barrel in the opposite direction will have the effect of feeding the nuts into the other chute. Where the chute member 20 merges into the

ring frame 21 the opening is made funnel shaped as shown in Fig. 4. Curved guide plates 29 and 30, that are identical in shape and one of which is shown separately in Fig. 9, are secured to the opposite faces of the guide plate 23, as indicated in Fig. 7, and extend down into the throat of the chute member 20. Between the curved edge 31 of the plate 29, and the wall 32 of the chute member is formed a curved passage 33; whereby upon the rotation of the receptacle in the direction indicated by the arrow in Fig. 4 the nuts will be fed into this chute portion to feed down the passage 24, on one side of the partition 26. On the opposite side of the partition plate 23 the passage 25 connects with a throat or passage 54 located between the curved edge 53 of the plate 30 and the opposite edge 34 of the chute member. When the receptacle is turned in the direction opposite to that indicated by the arrow in Fig. 4, the nuts will be fed into this curved throat of the passage way. This will cause the alternate reversals of the barrel to feed the nuts successively into the two chutes, and as the chutes have considerable length one will not become emptied when the nuts are being fed into the other one.

Suitable means are provided below the nuts engaged by the tap in the chute for holding the column of nuts stationary, and which member is withdrawn at suitable intervals. In the construction shown there is a stop arranged to hold the column by engaging the nut in each of the passages that is next below the nut in position for engagement with the tap. While the two nuts are being engaged by the tap and consequently supported thereby, the stop is withdrawn for a very short time permitting the two lower nuts that have just been tapped, to fall and then the stop is at once returned to its position. Thereupon the withdrawal of the tap after passing entirely through the two nuts will permit such nuts to fall onto the stop occupying the position of the nuts that have just been released. This will permit the column of nuts in the two chutes to fall, and the two blanks that were resting on the nuts engaged by the tap will fall into position for engagement with the tap, and evidently the whole column of nuts will drop down a unit distance. The stop is withdrawn once for each reciprocation or advance of the tap, and thereby the nut blanks will be fed as required, and the tapped nuts will be released or ejected. As shown a bar 40 reciprocates in a bearing 41 in the machine and its top face will extend across the chute to engage the two nuts just below the nuts or blanks registering with the tap. A lever 42 pivoted at 43 connects with the stop 40 which lever carries a roller 44 engaged by a block 45 on a disk 46, turning on the cam shaft 47. The latter shaft

is given one rotation for each advance of the tap and at the proper time the block 45 will swing the lever 44 to withdraw it and release the tapped nuts; whereupon a spring 48 will return the lever and stop bar upon disengagement of the wedge.

In Fig. 12 and elsewhere are shown plungers operating in the two passageways at their curved end portions for engaging the nut blanks. On one side is a plunger 60 sliding in a frame 61 and pressed outward from the passage by a spring 62 in the frame engaging a disk 63 on the plunger. This plunger is pressed inward at each revolution of the receptacle by engaging a strap 64 fast on the receptacle. On the opposite side is a similar arrangement comprising a frame 66 in which slides a plunger 67 pressed out by a spring 68 from the passage which spring engages a disk 69 on the plunger. A strap 70 secured on the receptacle engages the plunger once during the rotation of the receptacle to force the plunger inward into the chute.

Having thus described my invention, I claim:

1. A feeding device for blanks comprising a frame, a receptacle rotatable in the frame, a feeding chute having its opening adjacent the receptacle, the receptacle having an opening registering with the opening in the chute during the rotation of the receptacle, the chute having a partition in its bore providing two passages, and partitions in the chute causing the passages where entering the receptacle to extend in opposite directions in the plane of rotation of the receptacle.

2. A feeding device for blanks comprising a frame, a receptacle rotatable in the frame, a feeding chute having its opening adjacent the receptacle, the receptacle having an opening registering with the opening in the chute during the rotation of the receptacle, means for rotating the receptacle in opposite directions, the chute having a partition in its bore providing two passages, and partitions in the chute causing the passages where entering the receptacle to extend in opposite directions in the plane of rotation of the receptacle.

3. In an automatic machine for operating upon blanks, the combination of a tool operating device, a chute arranged to feed the blanks to the tool, a receptacle supported to rotate above the chute and having an annular opening therein, the chute having an extension inclosing the said opening in the receptacle with the bore of the chute registering with said opening during rotation of the receptacle, the extension having a hopper portion at the top leading to said opening in the receptacle.

4. In an automatic machine for operating upon blanks, the combination of a tool oper-

ating device, a chute arranged to feed the blanks to the tool, a receptacle supported to rotate above the chute and having an annular opening therein, the chute having an extension inclosing the said opening in the receptacle with the bore of the chute registering with said opening during rotation of the receptacle, the bore of the chute having a partition forming two passages therein, walls in said passages where they open into the receptacle causing one passage to connect with the opening in the receptacle at a tangent on one side, and the other passage leading into the receptacle and extending at a tangent on the opposite side.

5. In an automatic machine for feeding blanks, the combination of a shaft rotatably mounted on the frame, a pair of cup shaped members both axially secured on the shaft with their rims alining and arranged in proximity forming thereby complemental members of a receptacle supported to rotate, a chute member arranged below the receptacle having an annular extension surrounding the rim portions of the members to inclose the receptacle with the opening in the receptacle between the rims registering with the bore of the chute during rotation of the receptacle, the said extension having a hopper portion for feeding blanks into the receptacle.

6. In an automatic machine for feeding blanks, the combination of a shaft rotatably mounted on the frame, a pair of cup shaped members both axially secured on the shaft with their rims alining and arranged in proximity forming thereby complemental members of a receptacle supported to rotate, a chute member arranged below the receptacle having an annular extension surround-

ing the rim portions of the members to inclose the receptacle with the opening in the receptacle between the rims registering with the bore of the chute during rotation of the receptacle, the chute member having a partition forming two passages in its bore that open into the receptacle at the rim portions, one of the passages leading into the receptacle at a tangent on one side and the other passage leading into the receptacle at a tangent on the opposite side.

7. In an automatic machine for operating upon blanks, the combination of a tool operating device, a chute arranged to feed the blanks to the tool, a receptacle supported to rotate above the chute and having an annular opening therein, the chute having an extension inclosing the said opening in the receptacle with the bore of the chute registering with said opening during rotation of the receptacle, the bore of the chute having a partition forming two passages therein, walls in said passages where they open into the receptacle causing one passage to connect with the opening in the receptacle at a tangent on one side, the other passage leading into the receptacle and extending at a tangent on the opposite side, said tool operating device being arranged to operate upon blanks in the lower portion of the chute and organized to reciprocate the tool from shafts operating alternately in reverse directions, and connecting means for rotating the receptacle from one of said shafts whereby the receptacle is rotated alternately in opposite directions.

OSCAR A. SMITH. [L. s.]

Witnesses:

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J. G. LOE.