

S. S. EVELAND.
 BALL PRESS.
 APPLICATION FILED DEC. 31, 1908.

996,573.

Patented June 27, 1911.

3 SHEETS-SHEET 1.

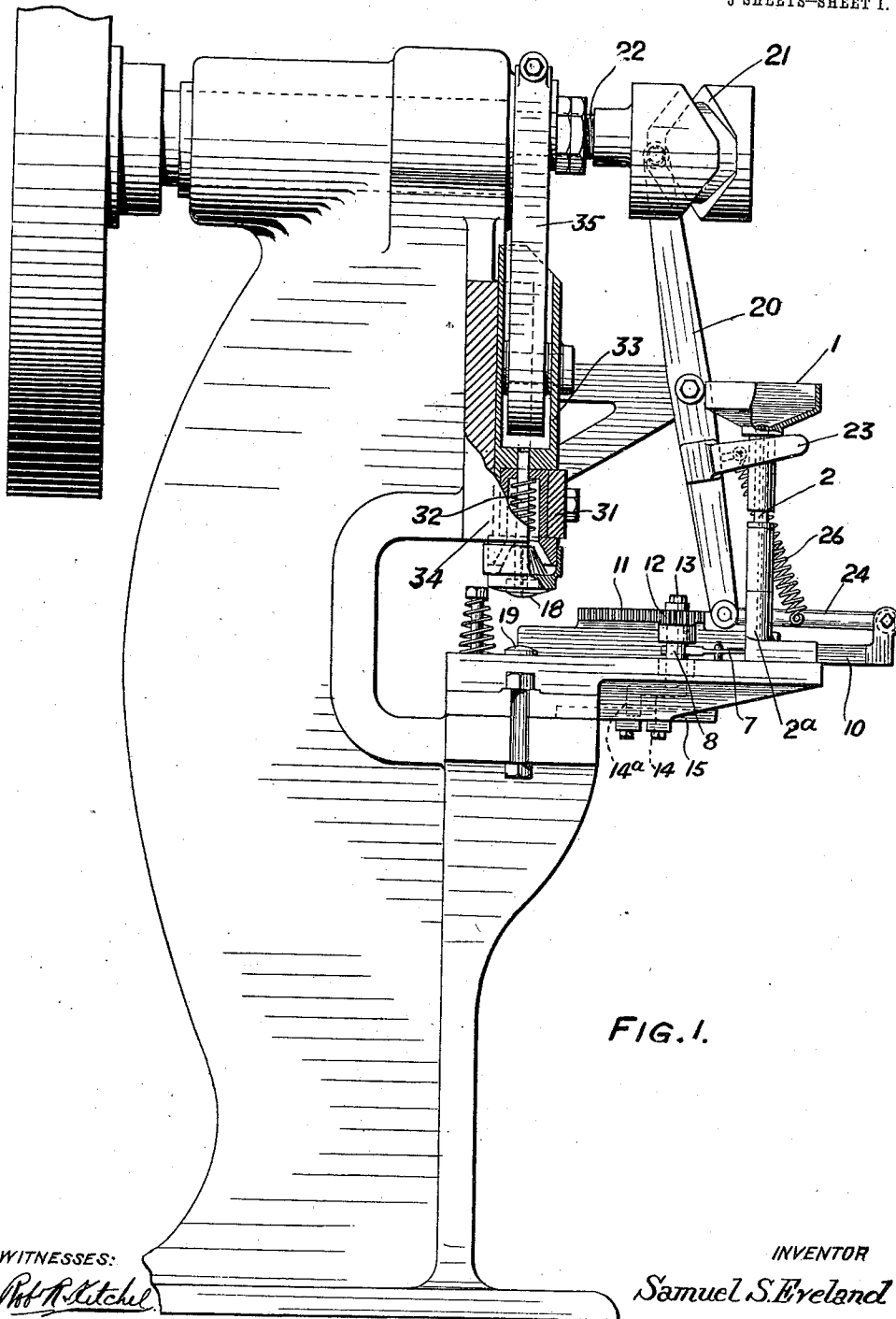


FIG. 1.

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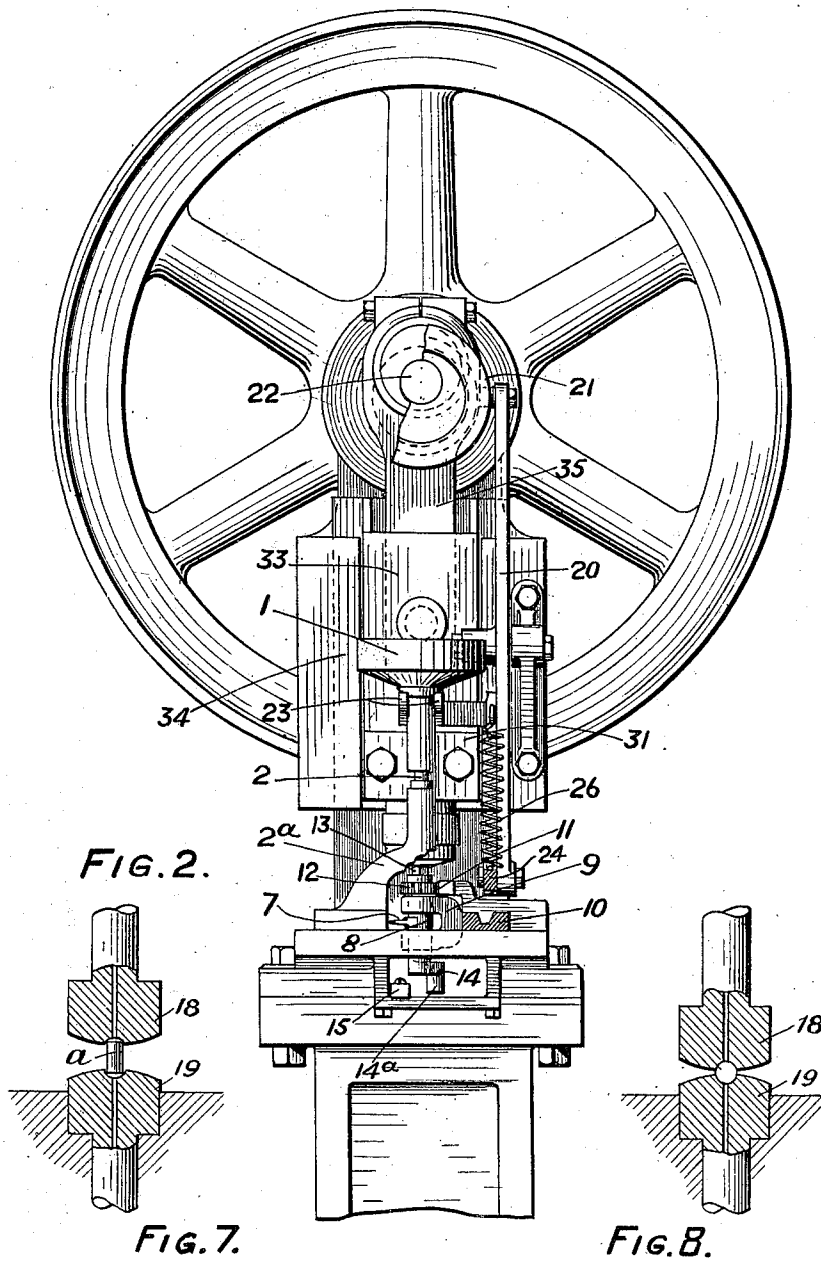
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WITNESSES:

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SAMUEL S. EVELAND, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO STANDARD ROLLER BEARING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

BALL-PRESS.

996,573.

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Application filed December 31, 1908. Serial No. 470,199.

To all whom it may concern:

Be it known that I, SAMUEL S. EVELAND, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Ball-Press, of which the following is a specification.

The principal object of the present invention is to provide a simple, reliable and comparatively inexpensive machine for pressing cylindrical or like blanks into spherical form for the purpose of making balls.

To this and other ends hereinafter set forth the invention comprises the improvements to be presently described and finally claimed.

In the drawings, Figure 1, is a side view partly in section of a machine embodying features of the invention. Fig. 2, is a front view of the upper portion of the machine. Fig. 3, is a plan view of the table and the mechanism thereof. Fig. 4, is an enlarged sectional view of the lower press die. Fig. 5, is an enlarged sectional elevation showing the feed and the transfer arm. Fig. 6, is a detail plan view of the same, and Figs. 7 and 8, are detail views of the dies.

1, is a funnel shaped hopper mounted so as to reciprocate vertically on a tube 2, held in a bracket 2^a rising from the table of the machine, the top of the tube 2 being substantially flush with the bottom of the hopper when the latter is in its lowest position. Beneath the outlet of the tube 2 is arranged one of the notches 3, formed in the edge of a part 4. By loosening the screw 5, it is possible to turn the part 4 around and again secure it to place, thus bringing any one of its notches into alinement with the discharge end of the tube 2. This may be done to compensate for wear or for any other purpose. There is a transfer arm 7, bifurcated or split at its free end, so as to provide spring fingers between which the blanks are taken one at a time from the part 3, and carried and delivered to the press mechanism, hereafter described. These blanks *a*, are short cylindrical slugs and may be made by cutting lengths off of wire, a quantity of which are placed in the hopper 1 at the beginning of the operation. The transfer arm 7 is fast on a stud 8, pivotally mounted in a claw 9 carried by a carriage 10, adapted to be reciprocated in ways on the table of the machine. There is a rack 11, fast to the table

of the machine and a pinion 12 meshes with the teeth of this rack and has frictional engagement with the stud 8 which carries the transfer arm. The nut 13 affords convenient means for establishing this frictional engagement. The stud 8, is provided at its lower end with a stop arm 14, having a downward projection that coöperates with a fixed rail or bar 15. The arm 14, projects from the stud diametrically opposite to the transfer arm. As the carriage 10 is reciprocated toward the right the pinion 12 meshes with the teeth of the rack 11 and travels along the same so that by the frictional contact between the pinion and the stud 8, the transfer arm 7 is turned; its path being indicated by dotted lines in Fig. 6. However, this turning motion brings the projection 14^a of the arm 14 into contact with the rail or bar 15, thus the further turning motion of the transfer arm 7 is arrested and as the carriage continues to move toward the right the transfer arm proceeds in a straight line, the pinion 12 still turning but slipping in respect to the stud. The fingers of the transfer arm seize a blank from the part 4. To insure rectilinear motion of the transfer arm 7, a fixed part 16 is provided between the face of which and the rail or bar 15, the projection 14^a enters and slides as between ways. In the reverse motion of the carriage this part 16, operates to cause the arm 7 to retract in a straight line before turning in a circle. The continued motion of the carriage toward the left swings the arm 7 around and causes it to proceed in a straight line so as to place the blank, which it carries, between the pressing dies 18 and 19. These dies come together and compress the blank as shown in Figs. 7 and 8, but as soon as they have engaged the blank, the transfer arm 7 retracts in a straight line and then turns back to grasp another blank.

The carriage is shown as reciprocated by means of a centrally pivoted link 20 which is operated by a cam 21 on the driving shaft 22. This link is provided with arms 23, which support the movable part of the hopper so as to reciprocate it vertically. The link 20 is not pivoted directly to the carriage but to an arm 24 which engages the carriage in such manner as to be capable of slipping out of engagement with the carriage if the parts get out of time or other accident occur. As shown the arm 24 is

connected to the carriage by means of a spring pressed center pin 25. The spring 26, serves to lift the arm 24, if it becomes disconnected from the carriage at the spring pressed pin 25. Each pressing die is or may be fitted with a centrally arranged endwise movable needle 27, normally pushed up by a spring 28 so as to operate as an ejector. The die 19 is carried by a link 29, pivoted at one end to the table of the machine and at the other end to a spring cushioned rod 30. The purpose of this is that the dies may firmly, yet yieldingly, hold the blank while it is being freed from the transfer arm 7. The upper die 18 is mounted in a die holder 31 with a spring 32 between the parts for much the same purpose as the spring connection 30 is provided. A die holder 33 is mounted in a slide 34 in the head of the machine and is reciprocated by an eccentric rod 35, operated by an eccentric on the shaft 22. 36, is a spring finger pivoted to the table of the machine and normally held in front of the notch in the part 4, so as to close it while the blanks are being delivered, but this finger is knocked out of the way by the transfer arm 7, when it goes into position for grasping a blank.

What I claim is:

1. In a machine of the type recited the combination of pressing dies, feed mechanism, an arm having a split transfer portion and a stop portion, a reciprocatory carriage to which the middle portion of said arm is pivoted, a rack, a pinion meshing with said rack and frictionally connected with said arm for turning it, and a rail and a fixed part with which the stop portion of the arm coöperates to insure rectilinear motion thereof at the ends of its travel and when in proximity with the dies and feed mechanism, substantially as described.

2. In a machine of the type recited the combination of a fixed part having in its edge a notch, means for feeding blanks to said notch, a pivotal spring finger adapted to cover said notch, and a split transfer arm adapted to collide with said finger and turn

it aside so as to reach a blank, substantially as described.

3. In a machine of the type recited the combination of pressing dies, feed mechanism, a reciprocating carriage, a transfer arm carried by the carriage, devices for controlling the movements of said arm, a link, a spring pivot for detachably connecting one end of the link to said carriage so that the pin frees the link if the carriage sticks, an operating lever connected to the other end of the link, and a spring connected with the link for holding the same clear of the carriage when disconnected therefrom, substantially as described.

4. In a machine of the type recited the combination of a member notched for the reception of blanks, a hopper for feeding blanks vertically to the notch of said member, vertically reciprocating presser dies having ejectors, a carriage arranged for reciprocation horizontally between said member and dies, a bifurcated transfer arm pivoted to said carriage and adapted to turn about a vertical axis, a rack-and-pinion having frictional engagement with said arm for turning it, and guides for imparting to said arm rectilinear motion in the direction of its length and at the ends of its travel, substantially as described.

5. In a machine of the type recited the combination of a member having a marginal notch, means for feeding blanks to said notch, a spring finger normally overlying the notch to close it, a pair of spring supported pressing dies, a bifurcated carrying arm adapted to push said finger aside and grasp a blank and deposit it between the spring dies, and means including a reciprocating carriage and a rack-and-pinion and guides for operating said arm, substantially as described.

In testimony whereof I have hereunto signed my name.

SAMUEL S. EVELAND.

Witnesses:

S. E. PATTERSON,
FRANK E. FRENCH.