

No. 625,804.

Patented May 30, 1899.

S. L. REED.
NAIL FORMING MACHINE.

(Application filed Aug. 2, 1898.)

(No Model.)

2 Sheets—Sheet 1.

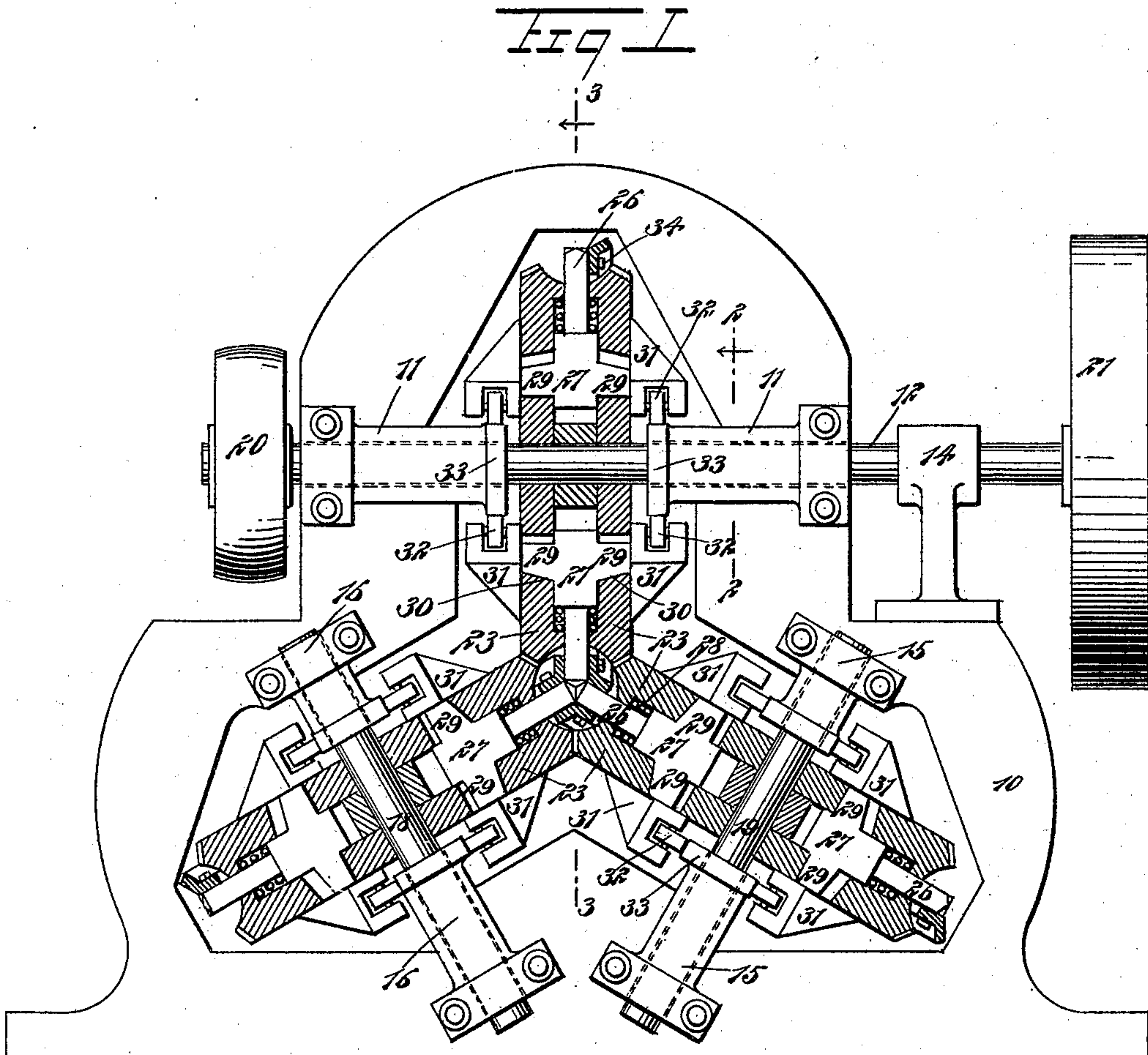
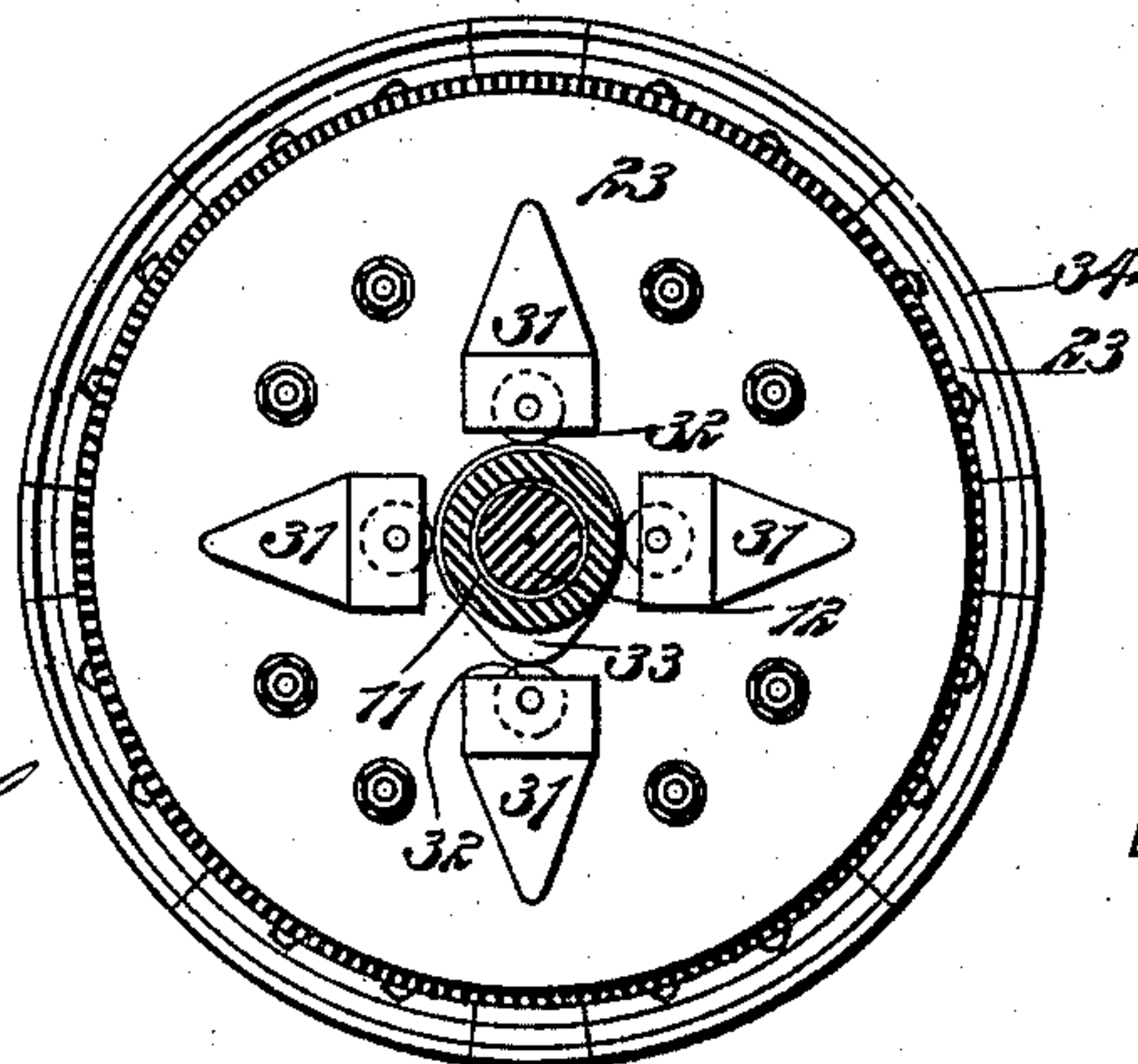


Fig 2



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Fig 3

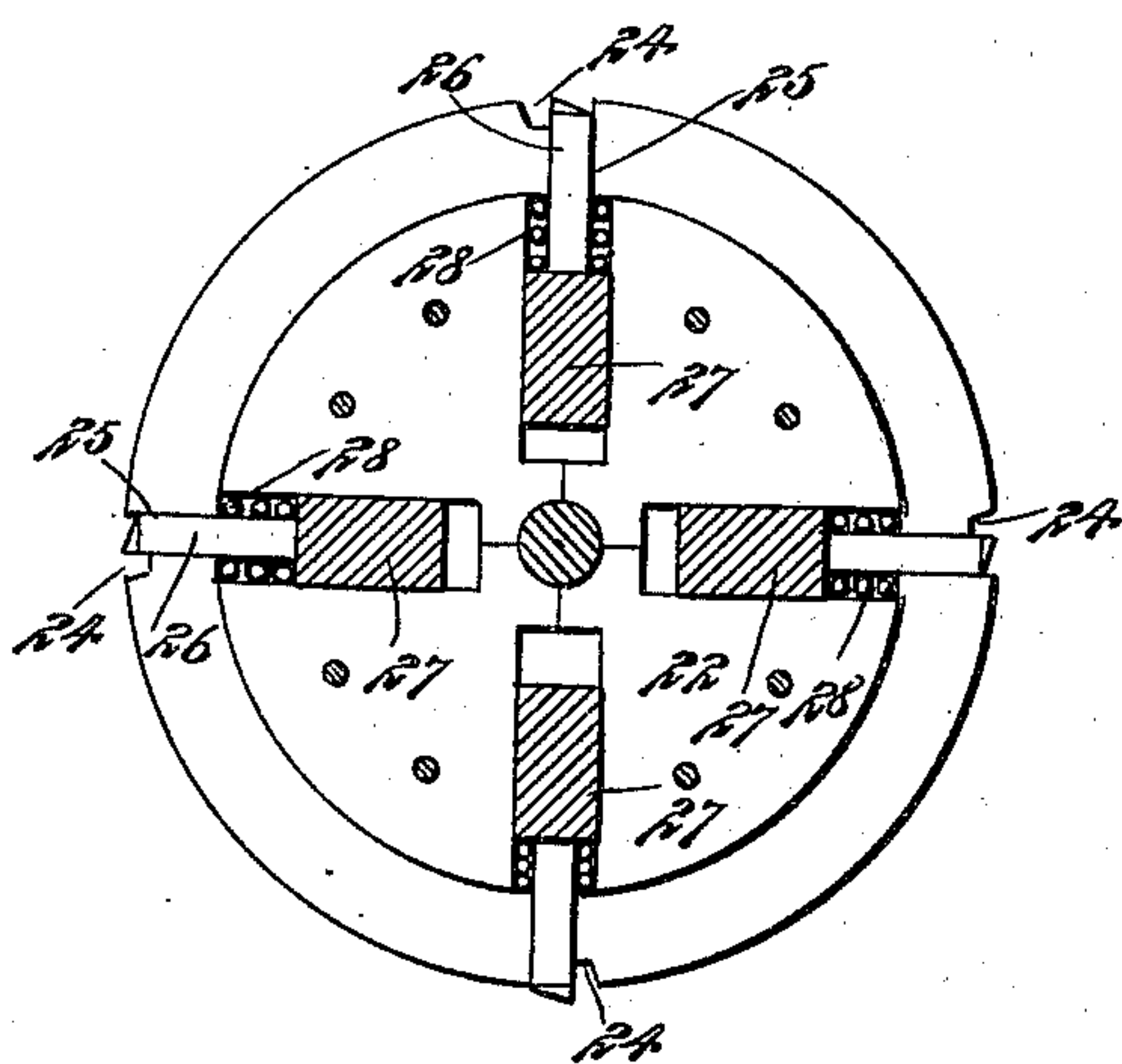


Fig 4

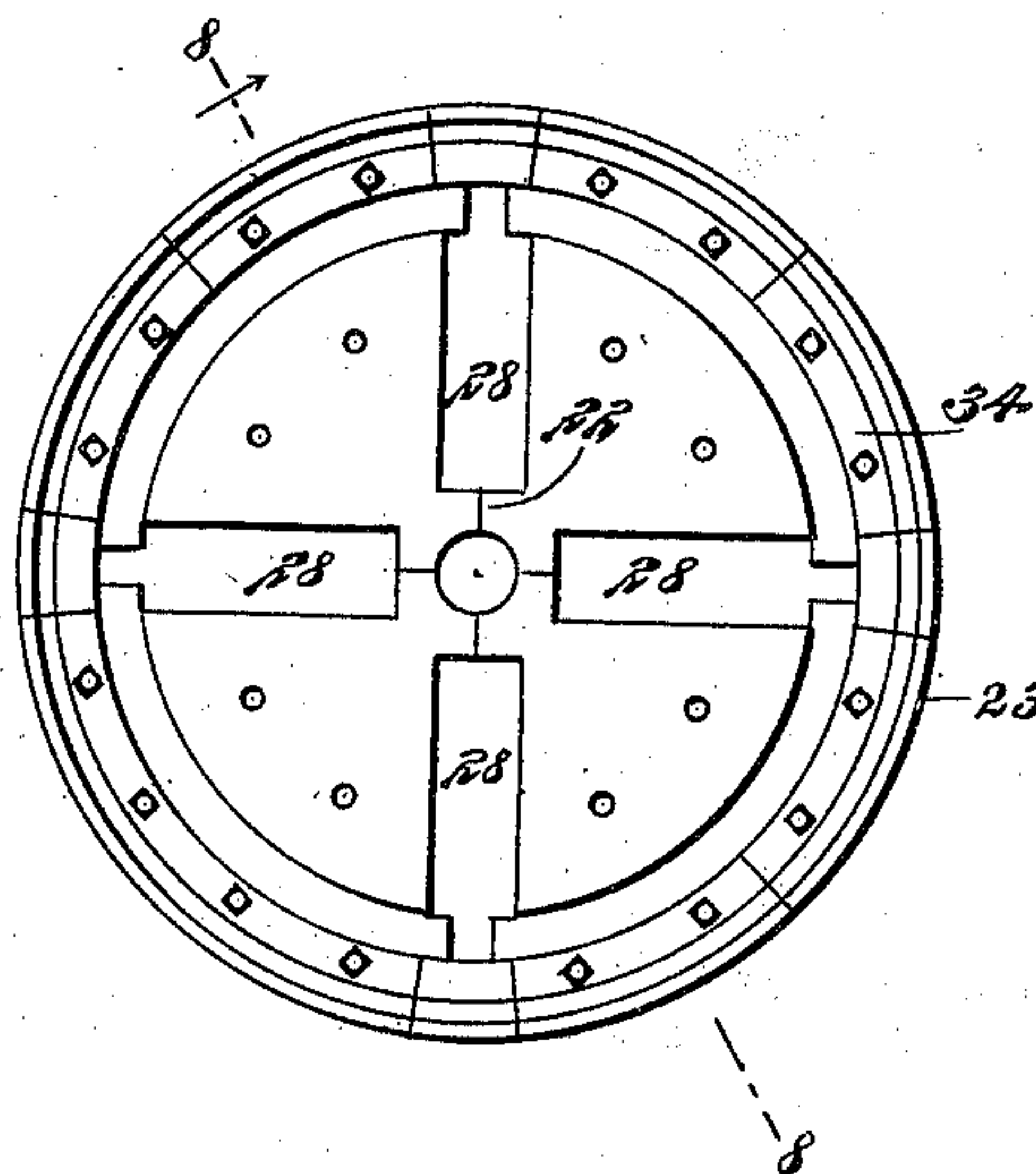


Fig 5

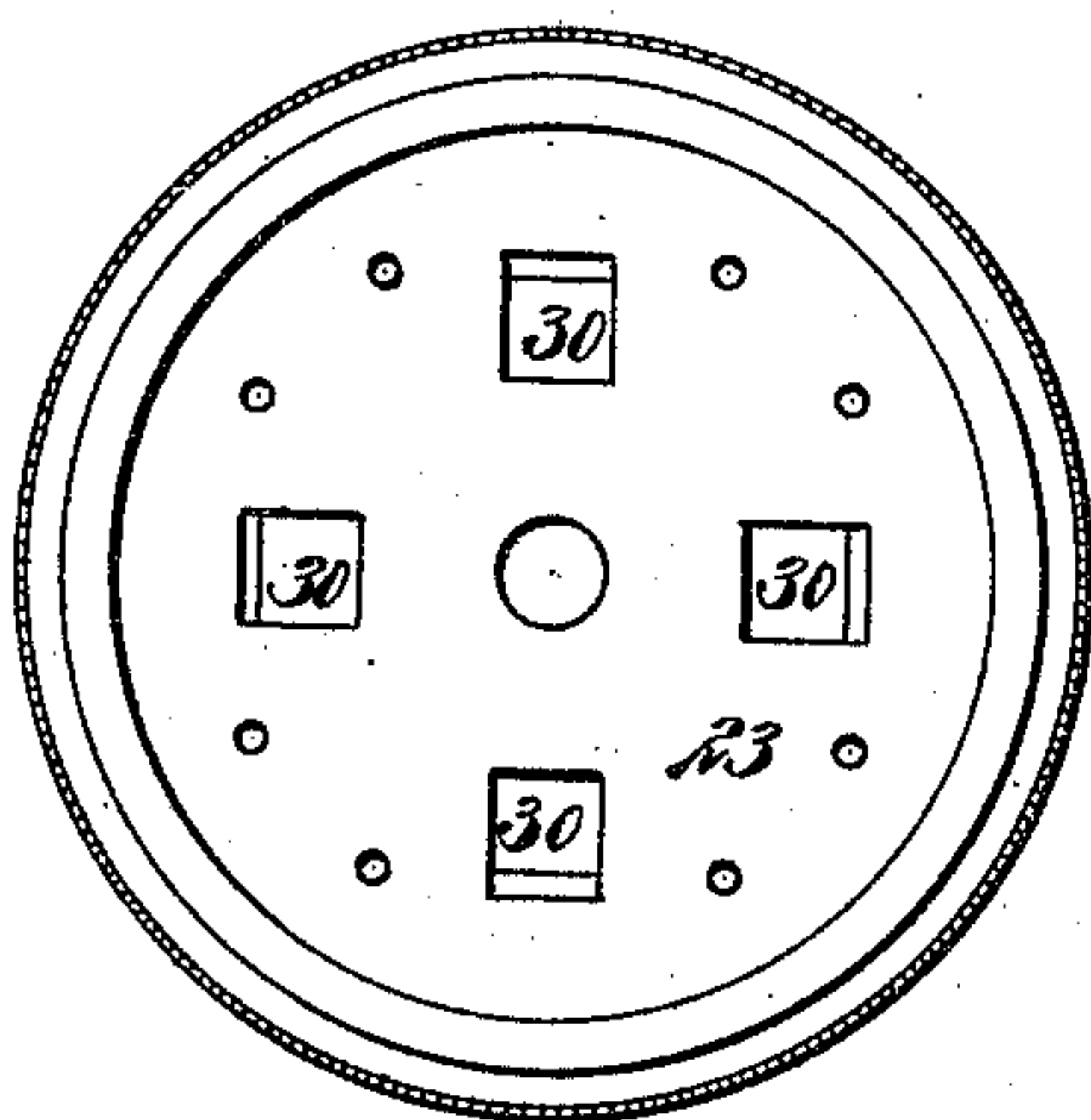


Fig 6

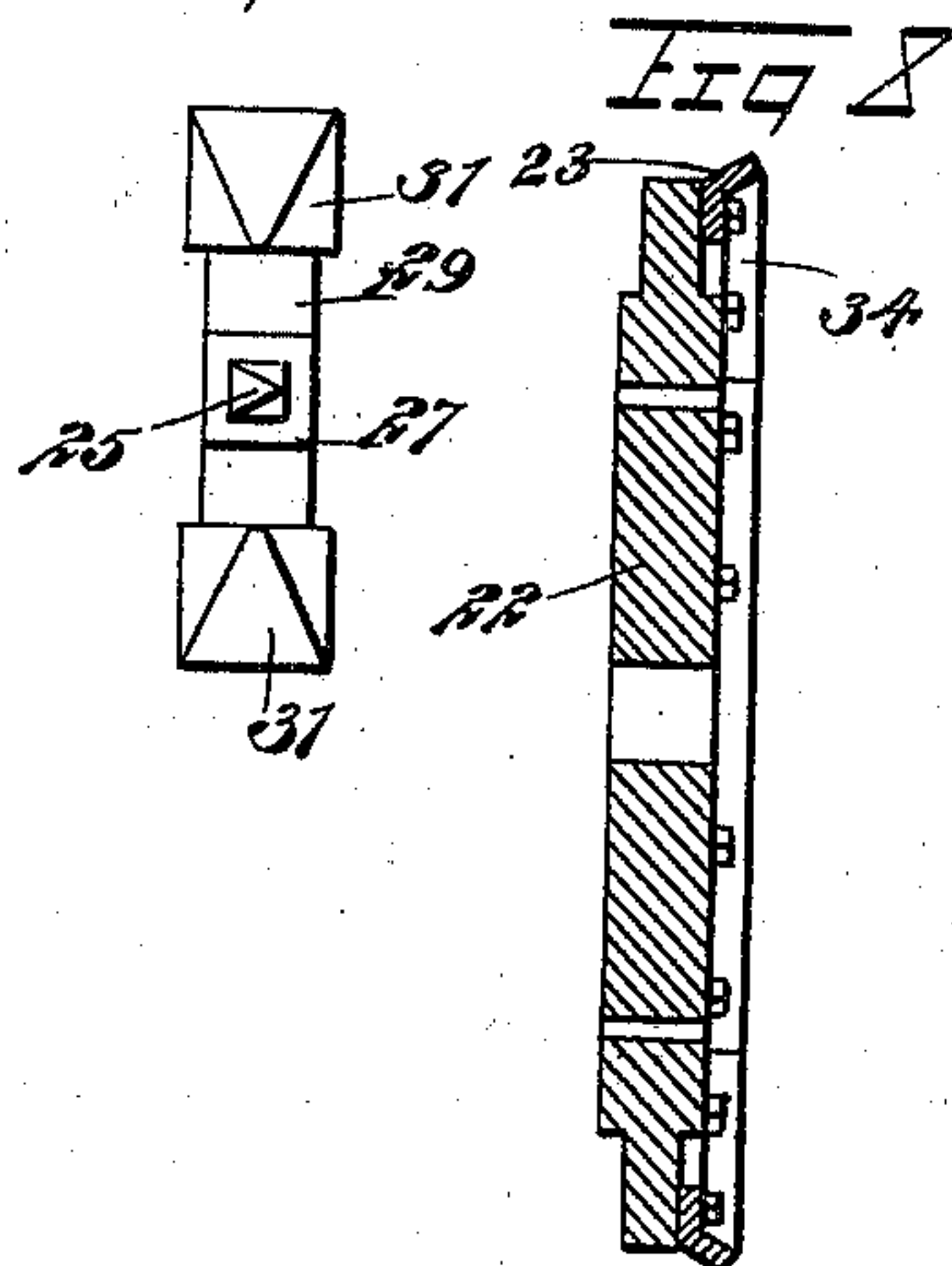
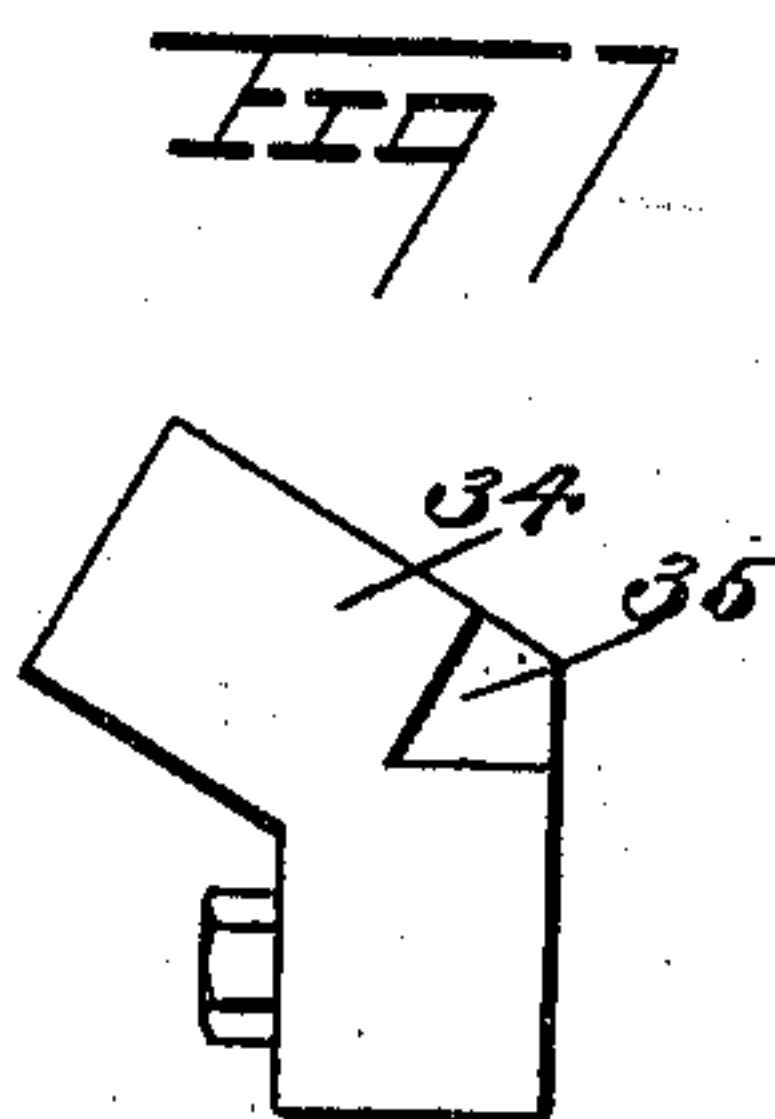


Fig 7



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UNITED STATES PATENT OFFICE.

SEXTUS LOUIS REED, OF GALLATIN, TENNESSEE, ASSIGNOR OF TWO-THIRDS TO RUEBEN EMMANUEL BRITTAIN AND ELBRIDGE EASTMAN DUNCAN, OF SOUTH PITTSBURG, TENNESSEE.

NAIL-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 625,804, dated May 30, 1899.

Application filed August 2, 1898. Serial No. 687,517. (No model.)

To all whom it may concern:

Be it known that I, SEXTUS LOUIS REED, of Gallatin, in the county of Sumner and State of Tennessee, have invented a new and Improved Nail-Forming Machine, of which the following is a full, clear, and exact description.

This invention relates to nail-forming machines of that class in which the nails are produced by rolling them over a continuous length of wire and cutting the wire into lengths which are pointed and headed by the machine, the apparatus having three dies rolling together to form a triangular nail and the dies carrying a series of radially-movable punches that act in unison to sever the wire into lengths and at the same time to head and point the lengths.

This specification is the disclosure of one form of my invention, while the claims define the actual scope of the invention.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a partly-sectional side elevation of the machine. Fig. 2 is an enlarged transverse sectional elevation of one of the dies substantially on the line 2 2 of Fig. 1. Fig. 3 is a transverse sectional view substantially on the line 3 3 of Fig. 1. Fig. 4 is a face view of the center piece or body of one of the dies. Fig. 5 is an inner face view of one of the gear-disks forming part of the dies. Fig. 6 is a plan view of one of the punches. Fig. 7 is an enlarged detail section of one of the guide-rims which are attached to the center piece or disk of each die; and Fig. 8 is a sectional view on the line 8 8 of Fig. 4, showing the center piece and guide-rim in place.

The machine is carried on a frame 10, which preferably stands perpendicularly and has two elongated bearing-sleeves 11, wherein is mounted to turn loosely a shaft 12. The shaft 12 is further supported by a pedestal 14, stepped on the frame 10. The shaft 12 carries at an intermediate point one of the dies, the details of construction of which will be hereinafter described. The frame 10 car-

ries below the bearings 11 two additional pairs of bearings, respectively designated 15 and 16, the members of each pair of said bearings being arranged in a diagonal line, so that the two additional dies, which are respectively keyed fast on shafts 18 and 19, mounted, respectively, in the bearings 15 and 16, will be radially disposed toward the die of the shaft 12, the peripheries of the three rotary dies bearing against each other, as shown. The shaft 12 is provided with a band-pulley 20, by which it is driven, and also with a balance-wheel 21.

Each die consists in a central piece or disk 22, made fast to the corresponding shaft and having a beveled gear-wheel 23 bolted to each face, so that the peripheries of the gear-wheels run together, as shown in Fig. 1, and thus all of the dies are made to turn in unison. The peripheries of the central disks 22 are square with the sides, and these peripheries run edge to edge, so that the material rolled between the peripheries will have triangular cross-sectional form, this being the form given the nail. Each central disk 22 has notches 24 formed in its periphery. These notches are preferably four in number, but may of course be varied according to the length that it is desired to give to the nails. At each notch the disks 22 are formed with radial slots 25, in which are the punches proper, 26. The slots 25 are contracted at their outer portions, but have their inner portions enlarged to receive the bodies 27 of the punches, such bodies being pressed inward by expansive springs 28, contained in the enlarged portions of the slots 25. Each body portion 27 of the several punches is provided with oppositely-disposed arms 29, projecting through radially-elongated slots 30 in the respective gear-wheels 23. The outer end of each arm 29 carries a block 31, such blocks sliding with the punches against the respective outer faces of the gear-wheels 23 and carrying antifriction-rollers 32, which bear on cam-flanges 33, held rigid with the inner ends of the several sleeve-bearings 11, 15, and 16. Therefore as the dies turn with their shafts the rollers 32 run over the flanges 33, and the several punches

are pushed outward against the springs 28, and when the rollers 32 move past the rise of the cam the springs 28 return the punches to their inner positions.

5 Bolted to one side of each disk 22 and at the periphery thereof is a circular guide-rim 34, such rims being angular in cross-section and being provided, as shown in Fig. 7, with notches 35, tallying with the notches 24 in
10 the disk 22. These guide-rims run with the dies in the positions shown in Fig. 1, so as to brace the dies against each other and form a complete inclosure through which the material must pass. The notches 35 register with
15 the notches 24 and form enlarged spaces in which the material forming the nail is pressed by the dies to produce the head, while the punches 25 move outward and sever the wire
20 of the punches, as shown in Figs. 1, 3, and 6, one end of each length is given a triangular point. The nails therefore are rolled into triangular form, severed, and pointed and headed by the simultaneous action of the
25 rolling dies.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of a shaft, a disk fixed
30 thereto, radially-movable punches mounted in the disk, arms attached to the punches and projecting laterally therefrom, gear-wheels fixed to the respective sides of the disk and through which gear-wheels the arms extend,
35 slide-blocks carried by the arms to move on the outer faces of the gear-wheels, and rollers carried with the slide-blocks and engaging the cam.

2. In a machine for forming nails, the combination of a revoluble shaft, disks mounted
40 to turn with the revoluble shaft, radially-disposed punches movable between the disks and having laterally-extended arms, and cams mounted stationary with reference to the
45 shaft, the cams being engaged by the arms to periodically reciprocate the punches.

3. In a nail-forming machine, the combination with a frame, of a plurality of revoluble shafts, disks mounted to turn with the shafts
50 and having their peripheries engaged with each other, radially-disposed punches mounted on the disks and having laterally-extended arms, and stationary cams engaged by the arms to periodically reciprocate the punches.

55 4. In a nail-forming machine, the combina-

tion of a revoluble shaft, two disks mounted to turn therewith, punches radially movable between the disks and having laterally-extended arms projected through openings in the disks, and stationary cams engaged by the
60 arms to periodically reciprocate the punches.

5. In a nail-forming machine, the combination of three revoluble shafts, two disks mounted to turn with each shaft, the disks having peripheral engagement with each other,
65 radially-movable punches mounted between each pair of disks and having laterally-extended portions projected through the disks, and stationary cams engaged by the said laterally-extended portions of the punches, where-
70 by to periodically reciprocate the punches.

6. In a nail-forming machine, the combination with a frame, of a series of bearings fixed thereon, cams carried by each bearing, shafts
75 revolubly mounted in the bearings, two disks mounted to turn with each shaft, the disks having peripheral engagement with each other, radially-movable punches mounted between the disks, springs pressing the punches inwardly, and laterally-projected arms at-
80 tached to the punches and extended through openings in the disks, the arms being engaged with the cams, whereby to periodically reciprocate the punches against the springs thereof.

7. In a nail-forming machine the combina-
85 tion of a frame, two bearings fast thereto, a shaft mounted to turn in the bearings, a cam carried on each bearing, two disks mounted to turn with the shaft, punches located between the disks and movable radially, and lat-
90 erally-extended arms attached to the punches and projected through openings in the disks to engage with the cams, whereby to periodically reciprocate the punches.

8. The combination of a revoluble shaft,
95 bearings in which the shaft is mounted, a cam located adjacent to each bearing, a disk fixed to the shaft and turning therewith, and having radially-disposed passages, punches mounted to reciprocate in said passages and
100 having laterally-disposed arms engaged by the cams, and two gear-wheels fast to the shaft respectively on the sides of the disk, and having openings therein through which are extended the said arms of the punches.

SEXTUS LOUIS REED.

Witnesses:

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