No. 896,428. PATENTED AUG. 18, 1908.

F. O. ANDERSON.

RING EXPANDER.

APPLICATION FILED JUNE 28, 1907.

Fig. 1

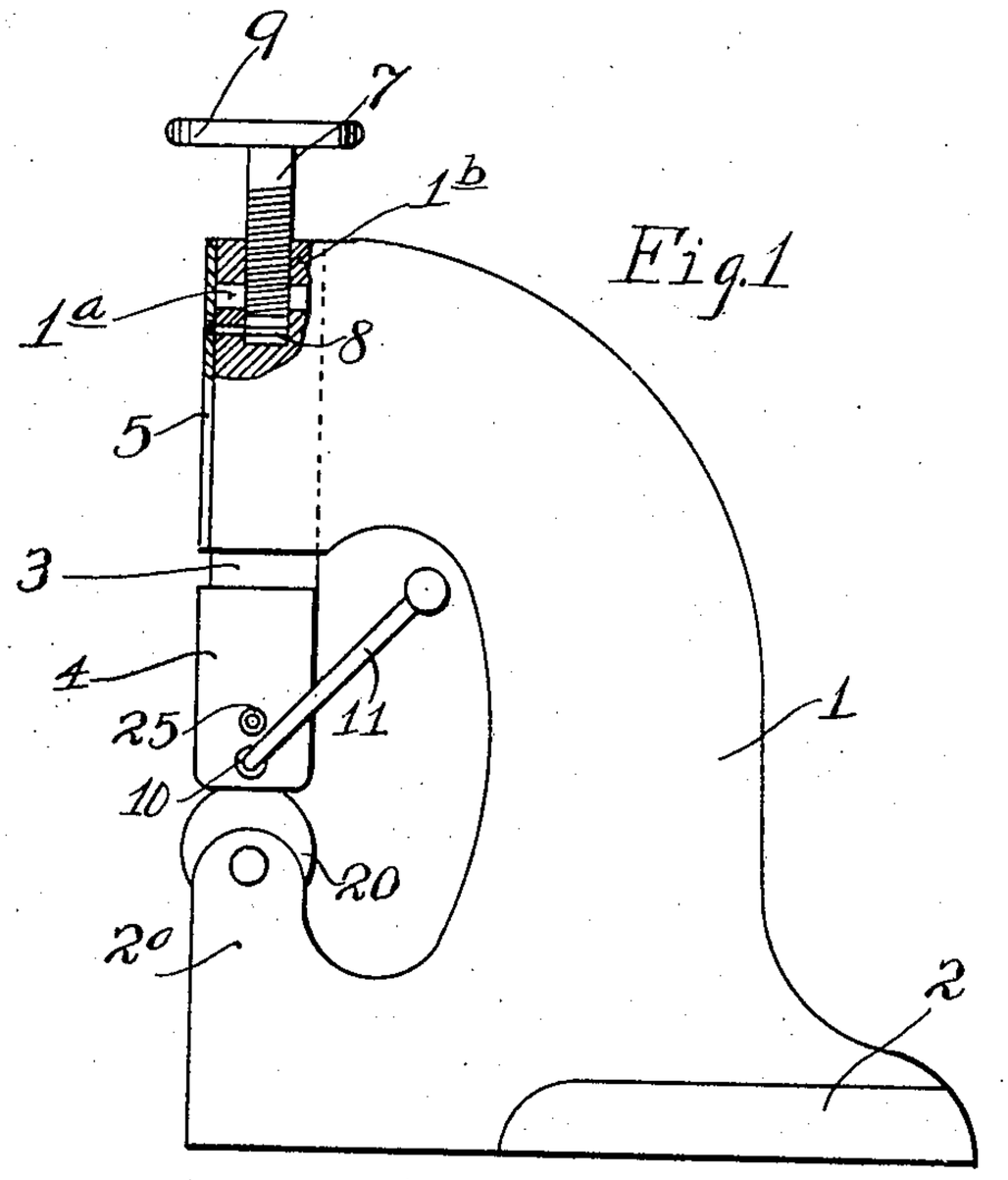


Fig. 2

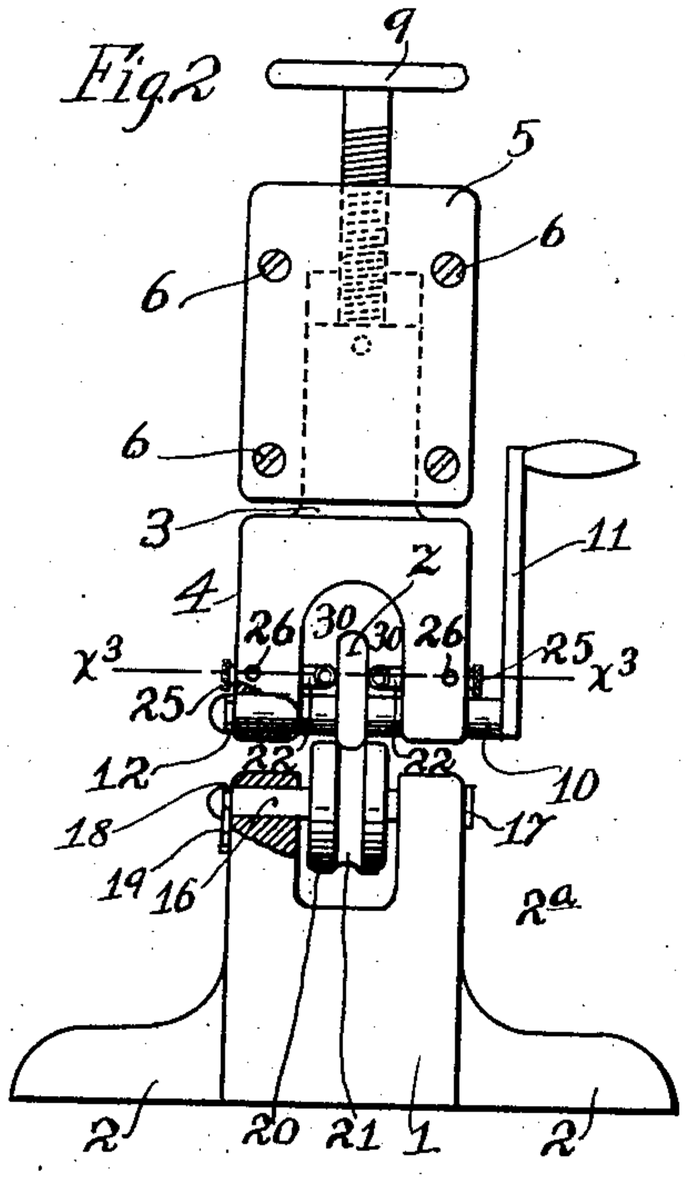


Fig. 3

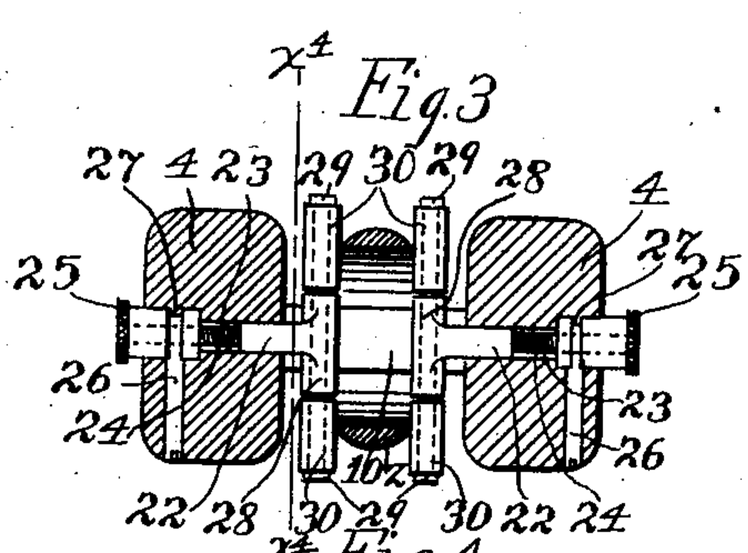


Fig. 4

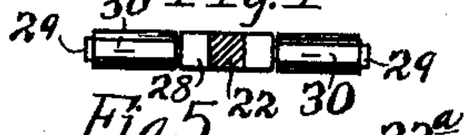


Fig. 5

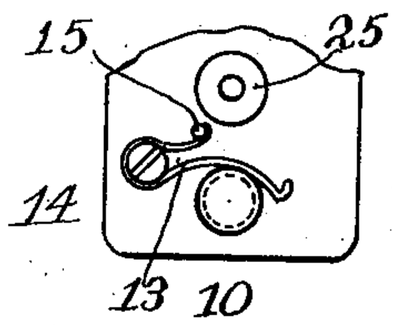
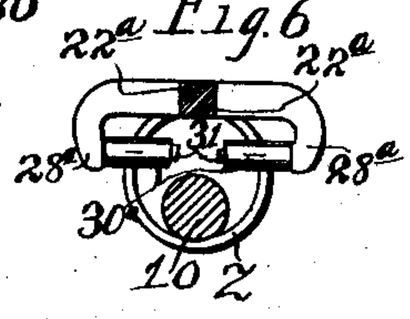


Fig. 6



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RING-EXPANDER.

No. 896,428. Specification of Letters Patent. Patented Aug. 18, 1908.

Application filed June 28, 1907. Serial No. 381,221.

To all whom it may concern:

Be it known that I, FRANK O. ANDERSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Ring-Expanders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved ring expander especially adapted for use to expand plain band finger rings, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in side elevation with some parts broken away and some parts sectioned, showing the improved expander. Fig. 2 is a front elevation of the same with some parts broken away and some parts sectioned. Fig. 3 is a horizontal section taken approximately on the line x^3 x^3 of Fig. 2, showing the parts on a larger scale than in Figs. 1 and 2. Fig. 4 is a detail of one of the ring guiding devices, taken in section on the line x^4 x^4 of Fig. 3. Fig. 5 is a detail in left side elevation, showing the spring latch for detachably holding the expanding shaft of the device against endwise movement; and Fig. 6 is a view corresponding to Fig. 4, but illustrating a slightly modified form of one of the ring guides.

The frame of the device is in the form of an approximately C-shaped cast metal pedestal 1 having base flanges 2 that serve to support the same firmly when rested upon a table or other flat surface. In the forwardly projecting upper portion of the pedestal 1 is a vertical channel 1^a in which the heavy square shank 3 of a depending bifurcated head 4 is mounted to slide vertically, but is held against rotary movement. The front portion of this channel is normally closed by a retaining plate 5 which, as shown, is held in position by screws 6. The upper portion of the channel 1^a is closed by a web portion 1^b that is cast integral with the pedestal 1. A strong adjusting screw 7 works with threaded engagement through the web 1^b and is swiveled at 8 to the upper end of the shank 3. At its upper end, the adjusting screw 7 is provided with a hand-piece, shown as in the form of a wheel 9.

The depending prongs of the bifurcated head 4 are located equi-distant on opposite sides of the extended axis of the adjusting screw 7, and in the lower portions thereof are transversely extended seats in which a so-called expanding shaft 10 is rotatively mounted. The axis of this shaft should approximately intersect the extended axis of the screw 7. At one end, the said expanding shaft 10 is provided with a hand crank 11, and at its other end it is formed with a groove 12 that is normally engaged by one prong of a spring latch 13 which, as shown, is anchored to the adjacent prong of the head 4 by a screw 14 and a pin 15, as best shown in Fig. 5. This spring latch 13 detachably serves to hold the shaft 10 against accidental endwise displacement when the machine is in operation, but when the said latch is sprung out of engagement with the groove 12, said shaft may be freely moved endwise toward the right with respect to Fig. 2, from its operative position.

The lower forwardly projecting portion 2^a of the pedestal 1 is bifurcated in such manner that its prongs aline vertically with the prongs of the overlying presser head 4, and in the prongs of this portion 2^a is detachably mounted a spindle 16 having, as shown, a head 17 at one end and a groove 18 at its other end, which groove 18 is normally engaged by a spring latch 19 of the same or approximately the same construction and arrangement as the spring latch 13 above described.

Rotatively mounted on the spindle 19 between the prongs of the bifurcated portion 2^a is a so-called rotary anvil or platen wheel 20 which has a peripheral groove 21. A number of these platen wheels 20 should be provided because the grooves 21 thereof should have a cross section corresponding to the external cross section of the ring that is to be expanded. In the drawings, the ring which is to be expanded is indicated by the character *z*. By removal and re-application of the spindle 16 any one of the several platen wheels 20 may be applied in working position upon the said spindle, as shown in the drawings.

The expanding shaft 10 must, of course, be passed through the ring *z* that is to be expanded and the said ring must be pressed by

the said shaft into the groove 21 of the said platen wheel. By means of the adjusting screw 7 the shank 3, presser head 4 and shaft 10 may be pressed downward so as to press the ring *z* against the platen wheel 20 under any desired pressure; and when the said shaft 10 is then rotated, the frictional engagement therewith of the shaft 10 will cause the ring to rotate and the ring, in turn, will cause the said platen wheel to rotate, under which pressure and rotary movement the ring will be expanded, or, in other words, its diameter will be increased, but at the same time its original cross section will be maintained providing, of course, that the groove in the platen wheel is of the form above stated. The extent to which the ring will be expanded will depend upon the pressure applied thereto and the number of rotations given thereto. It is further very important that the ring while it is being rotated be held for true rotations in a common plane, and for this purpose I provide a pair of ring guides of novel construction. These ring guides are arranged in rights and lefts and are applied one to each of the prongs of the presser head 4. Each preferably comprises a square shank 22 that fits a square seat 23 and a corresponding prong of said head 4, so that it is thereby mounted for endwise but held against rotary movements. Said shanks 22 are provided with outwardly projecting threaded stems 24 with which engage nuts in the form of rotary sleeves 25 that are rotatively mounted in the enlarged outer extremities of the seats 23. These nuts 25 are held against endwise movement by small screws 26 that are screwed into the prongs of the head 4 and engage annular grooves 27 of the said sleeve nuts. The outer extremities of the nuts 25 are preferably knurled so that they may be easily rotated with the fingers, to thereby move the shanks 22 inward and outward, at will. At their inner ends the shanks 22 are provided with heads 28 through which extend transverse pins or small shafts 29. On the projecting ends of the pin 29 are mounted small wide faced rollers 30 that are adapted to engage with the edges of the ring, as best shown in Figs. 2 and 3.

In the modified form illustrated in Fig. 6, the shanks 22^a are formed with transversely extended heads 28^a having downturned ends, and the rollers 30^a are journaled directly on studs 31 that are secured to and project inward from the depending ends of said head. This arrangement throws the rollers lower down on the ring than the form of the device illustrated in the other views of the drawings. As is evident, the ring will be properly held for rotation when it is lightly engaged by the opposing pairs of rollers 30 or 30^a. Also, the rollers afford but very slight resistance to the rotation of the ring.

It is important to note that in this improved device the so-called expanding shaft 10, as well as the spindle 19 are firmly supported on opposite sides of the ring and of the platen wheel, respectively, so that in the first place there will be little or no possibility for the said shaft and spindle to spring, and in the second place any slight spring therein would be equal on opposite sides of the said ring and platen wheel and, hence, would not interfere with the true rotation of the ring in a plane at a right angle to the axis of the said shaft and spindle. This is a result that is impossible to secure in a device where the shaft and mandrel are supported at one side only of the ring. Furthermore, it will be noted that the pressure from the adjusting screw 7 is in the plane of the rotation of the ring and directly in vertical line with the axis of the ring and of the platen wheel, so that the force applied to the said ring and platen wheel will have no tendency whatever to tilt either the ring or platen wheel.

What I claim is:

In a ring expander, the combination with a pedestal having mounted therein a platen wheel and a coöperating presser head, of a pair of opposing ring guiding devices, comprising angular shanks mounted in said presser head and provided with outwardly projecting threaded stems, sleeve-like nuts engaging the threaded stems of said shanks and mounted in said presser head for rotation, but held against endwise movement, and oppositely projecting rollers mounted on the inner end portions of said shanks for engagement with the opposite edges of the ring, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK O. ANDERSON.

Witnesses:

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MALIE HOEL.