Nov. 25, 1924. 1,516,877

J. ANEKEE

COTTER PIN SPREADER

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Fig. 1.

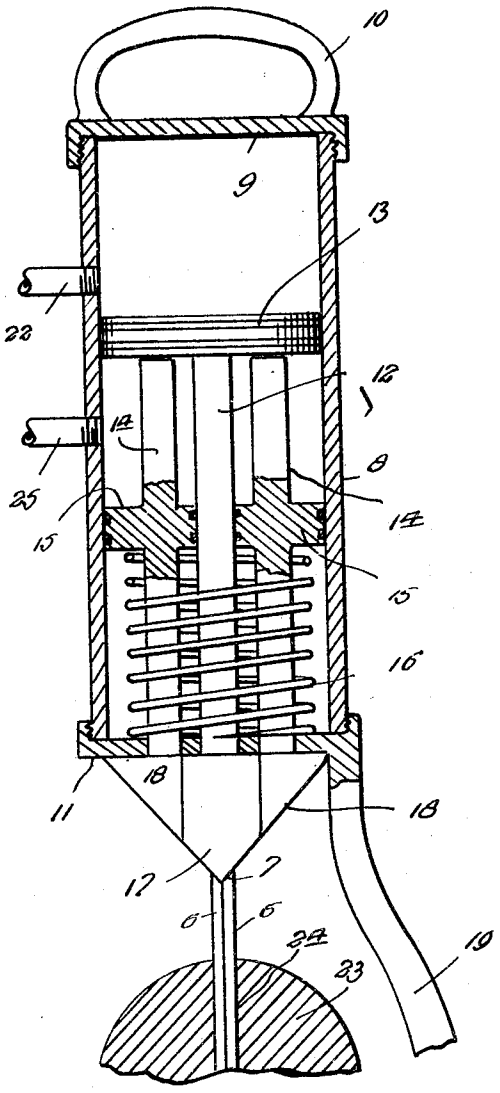
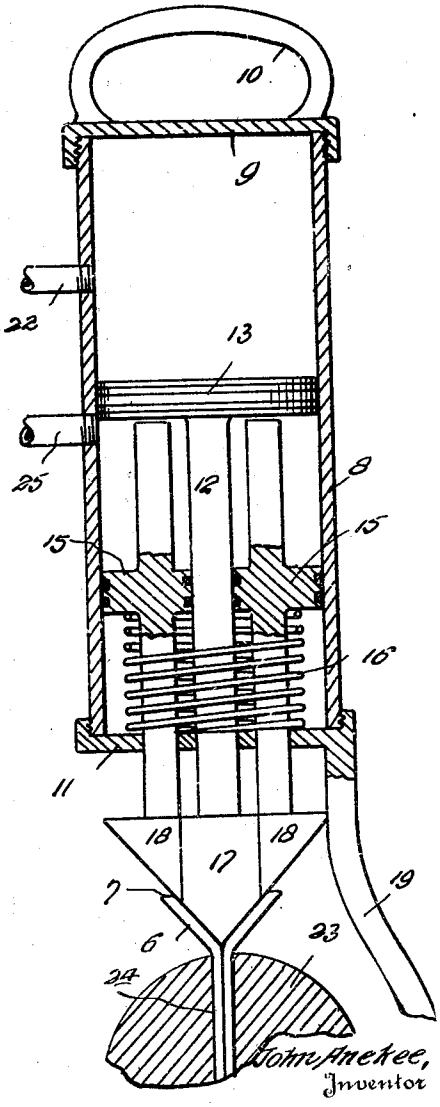


Fig. 2.



Witnesses:
H. L. Fox.

John Anekee,
Inventor

By Warren A. O'Brien
Attorney

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Fig. 3.

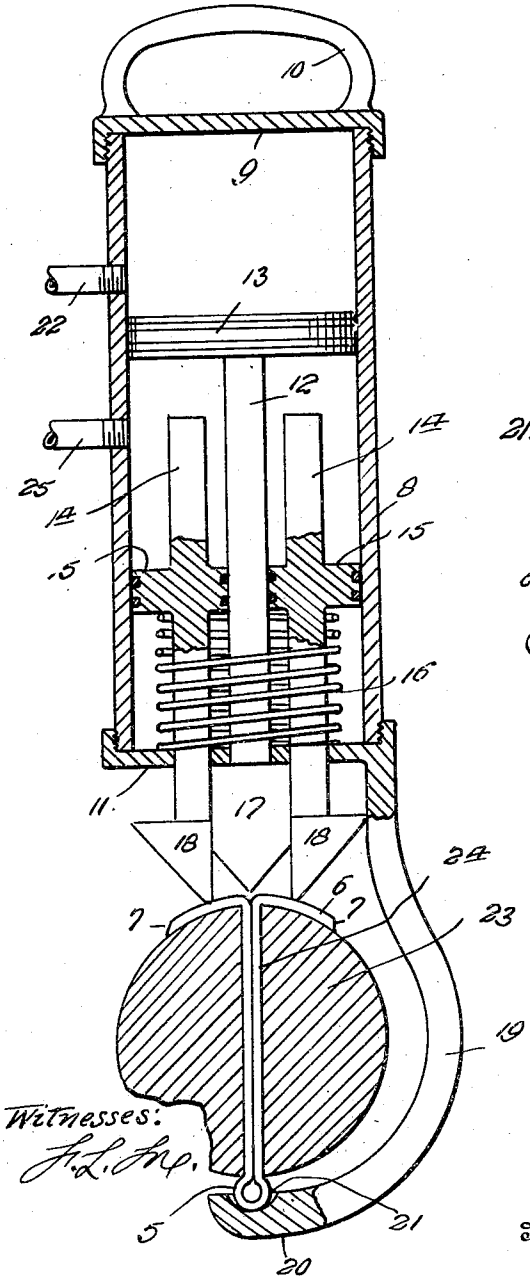
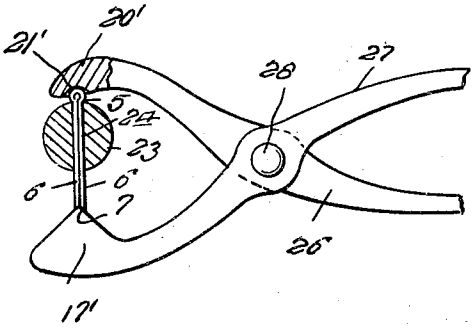


Fig. 4.



Witnesses:

John Anekee,
Inventor

By Clarence A. O'Brien
Attorney

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UNITED STATES PATENT OFFICE.

JOHN ANEKEE, OF CLEVELAND, OHIO.

COTTER-PIN SPREADER.

Application filed October 27, 1923. Serial No. 671,166.

To all whom it may concern:

Be it known that I, JOHN ANEKEE, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Cotter-Pin Spreaders, of which the following is a specification.

This invention relates to an improved form of tool for spreading cotter pins, whereby cotter pins may be easily and expeditiously fastened within an aperture through a shaft or the like for holding parts of devices or machinery assembled.

One object of the invention is to provide an improved tool for spreading the legs of specially formed cotter-pins.

Another object of the invention is to provide a cotter pin spreading tool embodying opposed jaws, and means to move the same toward each other for holding the cotter pin against displacement out of the aperture in the work, and simultaneously spreading the free ends of the legs of the cotter pin.

A still further object of the invention is to provide a tool of such form and operation as to be embodied both in small and large types for respective uses in connection with small and large work.

With the above general objects in view, and others that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination, and arrangement of parts hereinafter more fully described, shown in the accompanying drawings, and claimed.

In the drawings, wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a view, partly in elevation, and partly in central longitudinal section of one form of tool constructed in accordance with the present invention, particularly adapted for heavy and large quantities of work and shown in position with the wedge-shaped jaw thereof initially engaging the cotter pin constructed in accordance with the present invention.

Figure 2 is a view, similar to Figure 1, with parts disposed in the intermediate step of the cotter pin spreading operation,

Figure 3 is a view, similar to Figure 2, with the jaw sections disposed in the final step of spreading the cotter pin, and

Figure 4 is a view partly in side elevation and partly in section, showing the invention embodied in a pair of pliers and operatively engaged with a cotter pin.

In accordance with the present invention, the cotter pin is constructed from a strip of metal that is centrally folded or return bent to form the usual eye 5 at the folded end and a pair of normally closed legs 6 of uniform size and length, the free ends of the legs being bevelled from the inner to the outer surfaces thereof in the direction of the plane of the eye 5, so that the end edges of the legs are in outwardly diverging annular relation to each other, as at 7.

Referring to Figures 1, 2, and 3, wherein there is shown the power operated form of the invention particularly adapted for heavy and large quantities of work, 8 indicates a cylinder that is closed at its outer end by means of a removable cap or head 9 integral with which is a handle 10 for facilitating manipulation of the tool. The other or inner end of the cylinder 8 is provided with a head or closure cap 11, having a central opening through which extends the main piston rod 12 upon the inner end of which is rigidly mounted the main piston 13, slidably fitted within said cylinder.

Slidably disposed through openings at each side of the central opening in the head 11, are auxiliary piston rods 14 that are disposed at opposite sides of the piston rods 12 and have their inner ends disposed normally in contact with the inner or lower side of the piston head 13. The auxiliary piston rods 14 have semi-circular or symmetrical piston head sections 15 rigid with the intermediate portions thereof and disposed in transverse alignment with respect to the cylinder, the inner sides of the piston heads or sections 15 being provided with mating or co-acting semi-circular notches to form a central opening through which the main piston rod 12 extends. The rods 12 and 14 are normally maintained in their inward limit of movement preferably by means of a helical compression spring 16 that surrounds said rods between the cylinder head 11 and the auxiliary piston.

The device embodies a wedge-shaped movable cotter pin jaw including a central section 17 rigid upon the outer end of the main piston rod 12 outwardly of the head 11, and a pair of side sections 18 rigid with

the outer ends of the piston rods 14 and disposed at opposite sides of the section 17 to form a substantially triangular head or wedge.

Rigid with and extending downwardly from the cylinder head 11 is an arm 19 having an inturned end forming a stationary jaw 20 opposed to the wedge composed of the sections 17 and 18, the inner face of said jaw 20 being provided with a groove or recess as at 21 for reception of the eye 5 of the cotter pin, whereby the jaw 20 is held against lateral displacement from said eye during the cotter pin spreading operation.

Communicating with the interior of the cylinder 8 between the piston 13 and the cylinder head 9 is a fluid pipe 22 for supplying fluid under pressure whereby the pistons 13 and parts carried thereby may be forced outwardly, and acting against the inner surface of the head 9 for forcing the cylinder in the opposite direction, whereby the jaw 20 is maintained against one side of the work such as the shaft 23 for preventing displacement of the cotter pin outwardly of the transverse opening 24 in the work through which said cotter pin passes.

As indicated at 25 another pipe is also provided for facilitating supply of fluid under pressure into the cylinder 8 between the piston heads 15 and the piston head 13, whereby the side or outer wedge sections 18 may be simultaneously projected while the intermediate wedge section 17 is at the same time retracted as shown in Figure 3. Any well known or preferred means can be provided, of course, for taking care of the exhaust from the cylinder.

In operation, the cotter pin which is normally in the condition shown in Figures 1 and 4, is placed in the opening 24 provided transversely thru the work 23, so that the free end portions of the legs of the cotter pin project. The jaw 20 is engaged with the eye 5 for the cotter pin with the latter seating in the recess 21 of said jaw and with the intermediate wedge section 17 engaged with and contacting the diverging end edges of the cotter pin legs 6. Fluid under pressure is then admitted through pipe 22 into the cylinder 8 behind the piston 13, so as to cause the wedge to be bodily projected to the position shown in Figure 2, whereby the free ends of the cotter pin legs are spread as shown in the latter figure. In some instances, it is required that the cotter pin be tightly and effectively secured in place by bending the legs to a greater degree than that shown in Figure 2. As shown in Figure 3, this may be accomplished by exhausting the fluid from the space between the head 9 and piston 13 and at the same time supplying fluid under pressure between the piston 15 and the piston 13, so as to cause the wedge section 17 to be retracted and the wedge sections 18 to be projected. In this manner, the free end portions of the cotter pin legs 6 may be separated into contact with the work 23 at opposite sides of the opening or to any degree desired, between this position and the diverging position shown in Figure 2. Upon exhausting the fluid from the space between the auxiliary and main pistons, the spring 16 will immediately return the parts to their normal positions as shown in Figure 1.

Referring to the form of invention shown in Figure 4, the same embodies a pair of pliers consisting of cross handles 26 and 27 pivotally connected between their ends as at 28 and respectively provided upon their ends with jaws 20′ and 17′, the jaw 17′ being in the form of a wedge, and the inner surface of the jaw 20′ being provided with a socket or recess 21′ for reception of the cotter pin eye as described, with respect to the socket of the jaw 20. This form of the invention is adapted for spreading relatively small cotter pins and for use in connection with general repair work, and the jaws will be forced together for spreading the legs of the cotter pin to the position shown in Figure 2, by simply manually pressing the handles 26 and 27 toward each other, the wedge jaw 17′ engaging the bevelled end edges of the cotter pin legs for this result.

From the above description, it is believed that the construction and operation as well as the advantages of the invention will be readily understood and appreciated by those skilled in the art.

What I claim as new is:

1. In a tool for spreading cotter pins having the free ends of the legs thereof bevelled in outwardly diverging relation from the inner to the outer sides thereof, a pair of opposed jaws, one of said jaws being adapted for reception of the eye of the cotter pin and the other of said jaws comprising a wedge engageable with the bevelled end edges of the cotter pin legs, means for moving said jaws toward each other to cause the wedge to enter between the legs for spreading the latter, said wedge comprising an intermediate and two side sections movable longitudinally relative to each other, and means to move the side wedge sections independently of the intermediate wedge sections.

2. A tool of the character described comprising a relatively stationary jaw, adapted to bear against the eye of a cotter pin, a movable jaw for co-action with the legs of said pin, said movable jaw being composed of a plurality of separate and independent sections, said sections being successively operable.

3. A tool of the character described comprising a fluid cylinder, independent pistons movable in said cylinder, each piston being

provided with separate stems, fluid intake pipes connected with the wall of the cylinder and in association with the piston heads for moving them relatively to each other, a sectional cotter pin jaw formed on the outer ends of the stems of said piston head, and a relatively stationary jaw for cooperation with an opposite end of the cotter pin.

4. A tool of the class described comprising a cylinder, piston heads reciprocable in said cylinder and spaced apart, one of said heads being composed of symmetrical sections, rods carried by said piston heads and extending through one end of the cylinder, a movable wedge shaped jaw composed of intermediate and side sections, said sections being respectively connected with the piston rods, and fluid supply pipes leading into the cylinder on opposite sides of one of the piston heads, and a relatively stationary jaw carried by said cylinder for cooperation with the movable jaw.

In testimony whereof I affix my signature.

JOHN ANEKEE.