

No. 800,559.

PATENTED SEPT. 26, 1905.

M. B. EDGERTON.
WORK HOLDER.

APPLICATION FILED OCT. 22, 1904.

Fig. 2.

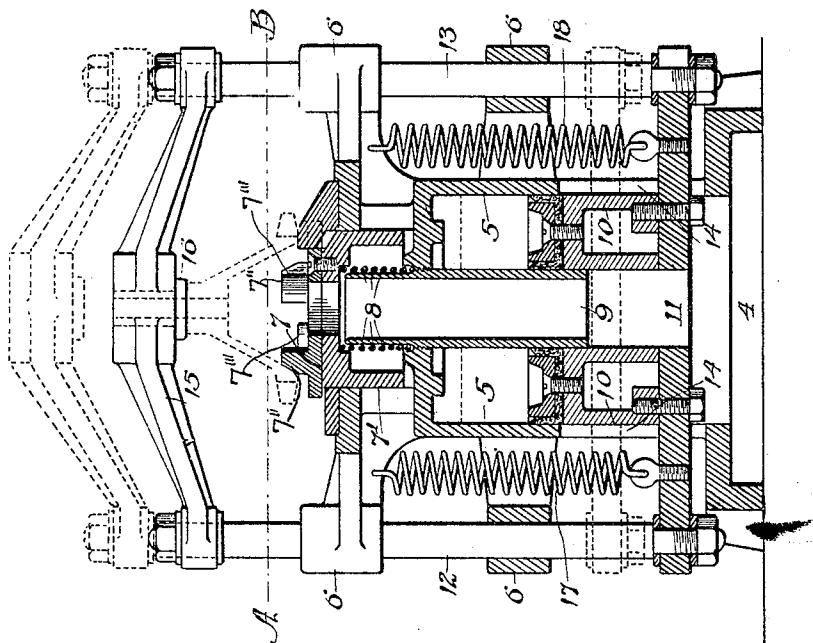


Fig. 1.

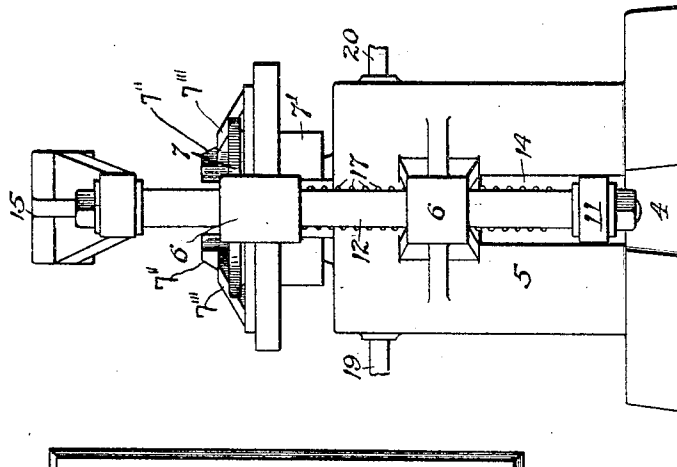
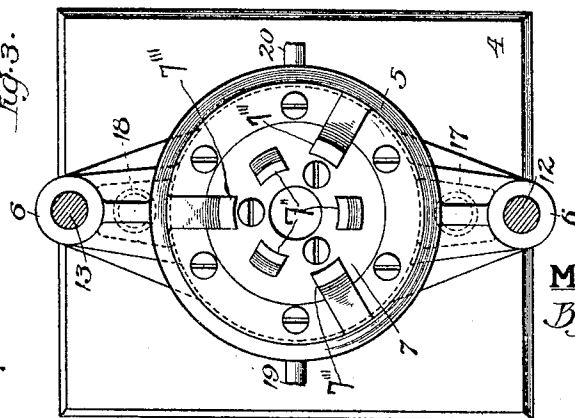


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

MORGAN B. EDGERTON, OF BERWYN, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

WORK-HOLDER.

No. 800,559.

Specification of Letters Patent.

Patented Sept. 26, 1905.

Application filed October 22, 1904. Serial No. 229,564.

To all whom it may concern:

Be it known that I, MORGAN B. EDGERTON, a citizen of the United States, residing at Berwyn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Work-Holders, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to work-holders, and particularly to that class of such devices designed to hold an article while it is being operated upon by a drill-press or boring-mill and to be operated by pneumatic or other fluid pressure. It is the usual practice where a large number of like parts are to be drilled or machined to provide a jig or work-holder that will securely hold the piece in proper position, so that any number of them may be finished exactly alike, and it is important that the holding devices be so designed that they may be quickly and accurately manipulated.

The object of the invention is to provide a work-holder that will securely hold the article to be operated upon and one that will maintain at all times the same degree of pressure, thus obviating the danger of springing or throwing a piece "out of true" by an unequal pressure relative to the points of contact of the holding means. I attain this object by the mechanism illustrated by the drawings and described in the specification accompanying this application.

Figure 1 represents a side elevation of my improved work-holder. Fig. 2 is a partial sectional view of Fig. 1, and Fig. 3 is a top plan view of Fig. 2 on line A B.

Like numerals represent like parts throughout.

4 represents the base, which is designed to afford means for attaching the holder to the various tools to which it may be applied. Integral with the base is a cylinder 5, and projecting from opposite sides of said cylinder are arms 6. 7 is a yielding work-receiver slidably connected with the upper end of the cylinder and designed to support the particular articles to be operated upon. Various forms of work-receivers may be provided to suit the various shapes of the different articles. In the present machine it is designed to support a sprocket-wheel, as shown by dotted lines in Fig. 2.

The work-receiver is made in two parts, 7

being the work-holding part and 7' the support, fitted to slide within the upper end of the cylinder and having a yielding sliding bearing therewith by means of the coiled spring 8, surrounding the tube 9, that is attached to the cylinder 5, or it may be integral therewith. The part 7 is removable and may be replaced by one of any special form to suit the requirements of various-shaped articles. In the construction illustrated the part 7 is provided with three upstanding angular lugs 7'', designed to contact with the inner surface of the rim for the purpose of centering the article properly. When pressure is applied to the article at its upper end, the parts 7, 7', and 7'' yield downward against the force of the spring 8 until the end surface of the article contacts with the lugs 7'', that operate to level it in a manner to bring the rim of the wheel at right angles with the axis of the bushing 16. It is desirable to have one portion of the holder yield relative to the other, as stated, for the purpose of receiving articles that may vary slightly in form. A piston 10, having suitable packing-ring, is arranged to operate within the cylinder and around the tube 9, the function of the tube being to conduct the chips or borings beyond the piston. A cross-head 11 is secured to the lower end of the piston, or, if preferred, it may be integral therewith. At opposite ends of the head are secured rods 12 and 13, that are provided with guiding-bearings in the arms 6 of the cylinder 5, the cylinder having openings 14 through its opposite sides to allow for the free movement of the cross-head therein. The rods 12 and 13 are joined at their upper ends by a cross-piece or pressure-head 15, which carries at its center a bushing 16 to guide the drill or other tool in a well-known way. The upper arms 6 of the cylinder are connected with the cross-head 11 by means of the counterbalancing-springs 17 and 18, which are designed to support the weight of the piston and the parts moving therewith.

19 and 20 are pipes communicating with the cylinder and connected with a source of supply and exhaust and provided with suitable valves for controlling the induction and eduction of fluid-pressure to and from the cylinder. With no pressure in the cylinder the counterbalancing-springs will cause the piston to raise the cross-piece 15 through its connection with the cross-head on the piston,

the guide-rods sliding freely through the side bearings 6. When in this raised position, the operator places the work to be operated upon in the work-receiver and turns on the pressure, which causes the cross-piece to descend and clamp the piece securely in proper position.

Various forms of cross-pieces may be substituted for 15 to meet the requirements of changes in the shape of the article to be operated upon, and by such changes of cross-pieces, bushings, and work-receivers a wide range is given to the class of articles that may be operated upon by a single work-holder. It might be desirable with some class of work to have the cylinder move relative to the piston and the other parts arranged accordingly. I prefer using air-pressure to operate the work-holder; but other fluids may be used, if desired.

Various modifications of my invention may be suggested by those skilled in the art to adapt it for any special class of work without departing from its spirit.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A work-holder comprising a base, a cylinder mounted thereon, a piston operative within the cylinder, a work-receiver yieldingly mounted upon the cylinder, a removable pressure-head arranged to operate in combination with said work-receiver to secure an article therebetween, connections between said pressure-head and said piston, guideways for said connections secured to said cylinder, means for supplying fluid-pressure to said cylinder to move said piston in one direction, and a

counterbalancing-spring mechanism adapted to return said piston to its initial position.

2. A work-holder comprising a base, a cylinder mounted thereon, a piston operative within the cylinder, a tubular central core in said cylinder projecting beyond the head thereof, a work-receiver mounted on the cylinder coaxially with the core, a spring arranged to operate between the cylinder and the work-receiver and means for clamping the work upon said work-receiver said clamping means having an opening therethrough in line with the tubular core and connected with said piston.

3. A work-holder comprising a base, a cylinder mounted thereon, a work-receiver mounted on the cylinder-head concentric with and adapted to slide relative thereto, a tubular central core in said cylinder projecting beyond the head and into said work-receiver, a spiral spring surrounding said core and arranged to operate between said head and said work-receiver, a pressure-head arranged to operate in combination with said work-receiver to secure an article therebetween, a tubular piston operative within said cylinder and surrounding said core, connections between said piston and said pressure-head, and means for supplying fluid-pressure to move said piston whereby the pressure-head is caused to clamp an article upon the receiver.

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

MORGAN B. EDGERTON.

Witnesses:

ALFRED M. CHRISTIAN,
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