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J. PEARCE & G. H. JACKSON.

FINISHING TOOL FOR FACING GROOVES IN PISTON HEADS.

(Application filed June 20, 1899.)

(No Model.)

Fig. 1.

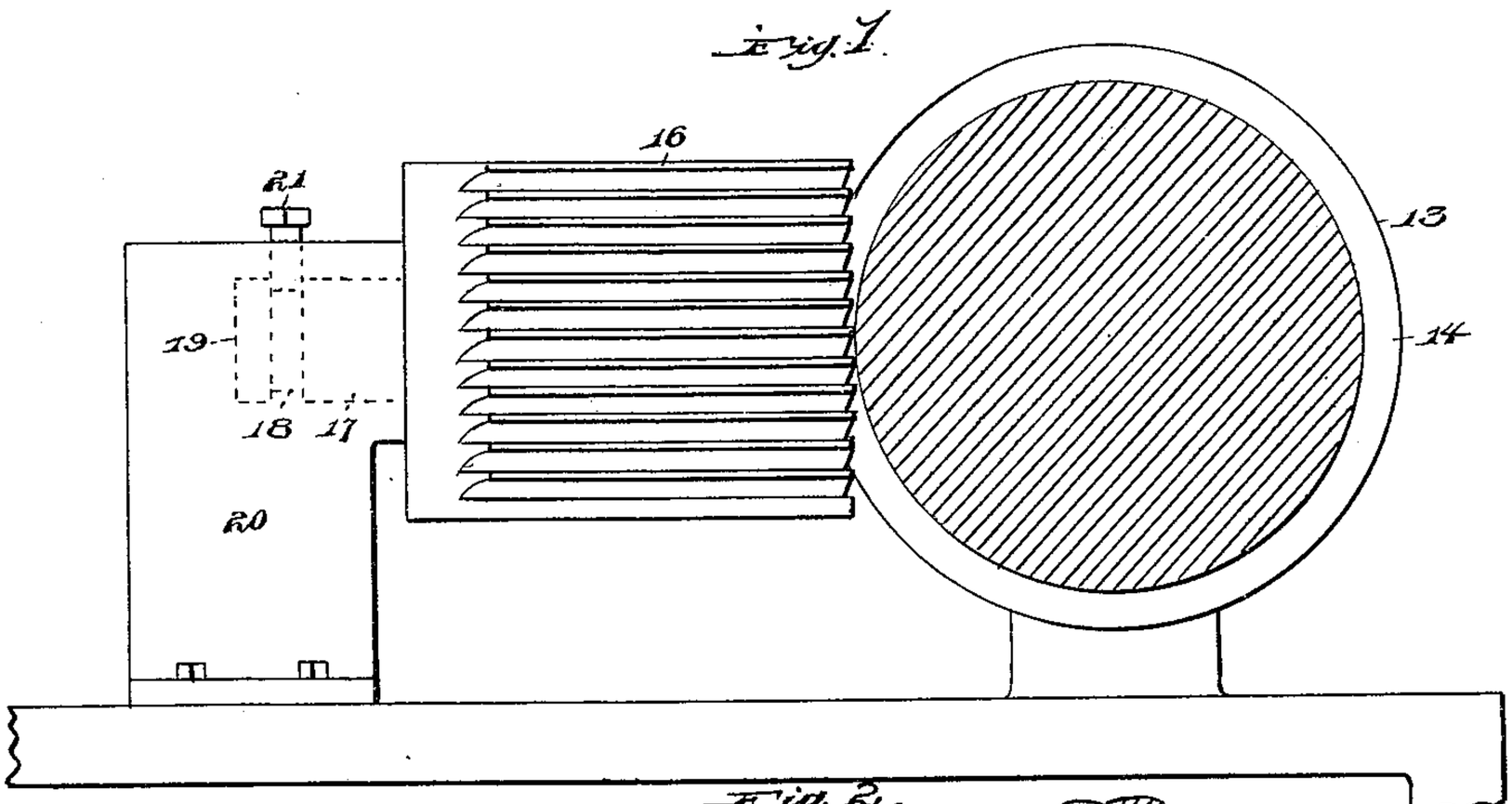


Fig. 2.

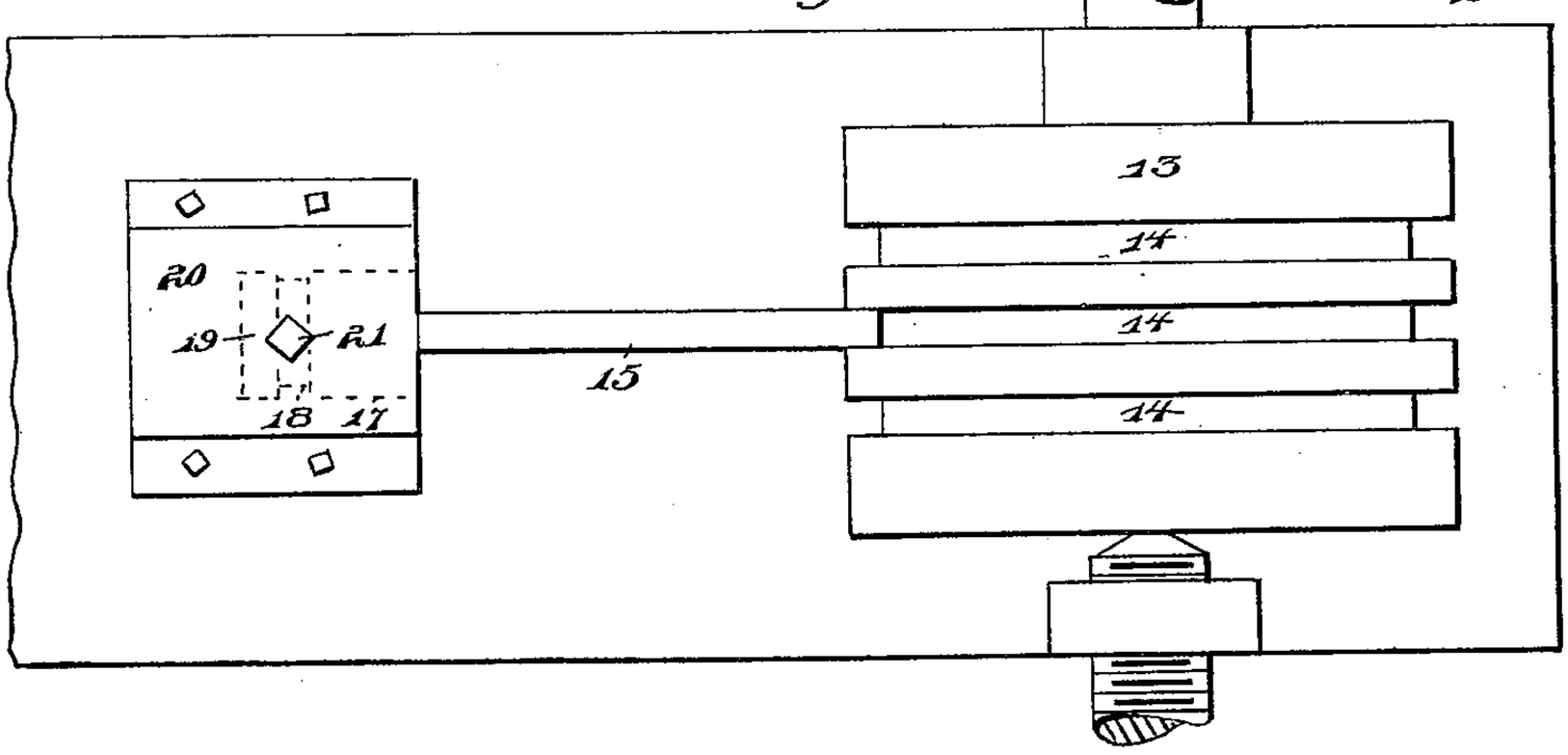


Fig. 3.

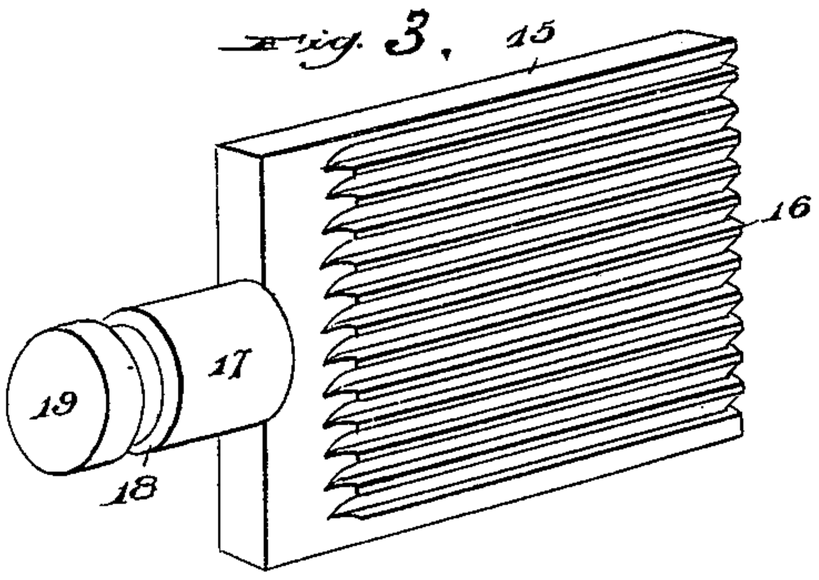
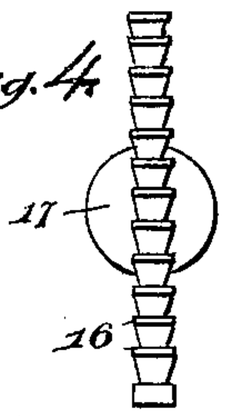


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSIAH PEARCE AND GEORGE H. JACKSON, OF SWISSVALE, PENNSYLVANIA.

FINISHING-TOOL FOR FACING GROOVES IN PISTON-HEADS.

SPECIFICATION forming part of Letters Patent No. 641,884, dated January 23, 1900.

Application filed June 20, 1899. Serial No. 721,255. (No model.)

To all whom it may concern:

Be it known that we, JOSIAH PEARCE and GEORGE H. JACKSON, citizens of the United States of America, residing at Swissvale, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Finishing-Tools for Facing Grooves in Piston-Heads, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in finishing-tools for facing grooves in piston-heads, and has for its object to construct a tool of the above-described class that will be extremely simple in its construction, strong, durable, and effectual in its operation, and comparatively inexpensive to manufacture.

The invention has for its object to construct a tool of the above-described class which will accurately face the groove in the piston-head to any desired width or depth.

The invention further aims to construct a tool which will face the groove to the one-thousandth part of an inch wider for the reception of the piston-ring, so that a perfect joint of the ring within the groove will be secured.

Furthermore, the invention aims to finish the groove in such a manner that when the piston-ring is inserted therein a perfectly smooth and true surface will be obtained, as well as a perfect joint of the ring with the groove, which has heretofore been a great difficulty in constructing machinery of this class.

Briefly described, the invention consists of a substantially rectangular-shaped plate which is provided on both of its faces with cutting-teeth extending horizontally in alinement with the plate and on its forward end with cutting-teeth which extend transversely to the plate or at right angles to the cutting-teeth on the sides thereof. A stock or shank is connected to the rear end of the plate for holding the tool in the tool-holder, this stock or shank being so constructed as to prevent the tool from becoming disengaged and also to allow of its rotation in the said tool-holder.

The details of construction will be hereinafter more particularly described and then specifically pointed out in the appended claims, and in describing the invention in detail reference will be had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate similar parts throughout the different views, in which—

Figure 1 is a side elevation of our improved tool, showing the same secured in the holder in position for facing the groove in the piston-head. Fig. 2 is a top plan view of the same. Fig. 3 is a perspective view of our improved finishing-tool, and Fig. 4 is a front view of the same.

In facing grooves in piston-heads it is desirable and, in fact, necessary that the walls of the groove be made perfectly smooth and true through, in order that when the piston-ring is inserted therein a perfect joint may be obtained to prevent the passage of steam, gas, air, or the like between the sides of the piston-ring and the walls of the groove in the piston-head. We accomplish this result by means of our improved facing-tool, which consists of a substantially rectangular-shaped plate 15, provided on both of its sides with cutting-teeth 16, extending in horizontal alinement with the plate. These cutting-teeth may be extended on the faces of the plate any distance desired, either over the entire surface or upon only a portion of the same, and these teeth on the one side of the plate are connected to those on the other side at the front end of the plate by like cutting-teeth, which extend transversely to the plate or, in other words, at right angles to the teeth on the sides of the plate, these cutting-teeth on the front end of the plate serving to face the bottom of the groove, while the teeth on the sides of the plate face the side walls thereof.

In order to hold the tool in the tool-holder, we have shown the same constructed with a stock or shank 17, which may be either formed integral with or secured to the plate in any desirable manner, but as shown herein is formed integral with the rear end of the plate 15 and is provided with a peripheral groove 18, forming a head 19 on the free end of said stock or shank. This stock or shank is adapted to enter the tool-holder 20, where it is retained by a set-screw 21, operating in said tool-holder and engaging in the peripheral groove of the stock or stem.

In Figs. 1 and 2 I have shown the piston-head 13 provided with the annular groove 14, the tool being shown in position for facing said groove, with the piston-head suitably

mounted for rotation. After the groove in the piston-head has been roughed out our improved finishing-tool is placed in the tool-holder, as shown in Fig. 1 of the drawings, and as the piston-head is driven or rotated the cutter-teeth on the sides of the plate will engage the walls of the groove, while the teeth on the front end of the plate engage the piston-head at the bottom of the groove, and the latter is accurately and exactly faced to the desired width and depth.

It is desirable that the tool be connected in the tool-holder in a manner which will permit of the same turning, which will allow of the tool being at all times in true alinement with the groove in the piston-head, and a convenient and practical form of construction for accomplishing this result is by the shank which I have herein shown and described, which permits the ready insertion in and removal from the tool-holder and also permits the rotation of the tool as desired. We, however, do not wish to limit ourselves to the construction of the shank as shown, nor do we wish to limit ourselves to the particular arrangement of the cutting or facing teeth as shown or to the shape of the plate, as it will be readily observed that various changes might be made in such details of construction as would clearly come within the scope of our invention and without departing from the general spirit of the same.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, the combination of the tool-holder, a facing-tool comprising in its construction, a plate provided on both of its faces with cutting-teeth, with a shank secured to its rear end and adapted to engage in the tool-holder, said shank having a peripheral groove to receive means for holding the tool in the tool-holder, substantially as described.

2. A tool for facing grooves in piston-heads, comprising in its construction, a plate provided on both of its faces and on its forward end with cutting-teeth, the cutting-teeth of the sides extending in horizontal alinement with the plate and the teeth on the forward end extending transversely thereto, and a shank formed integral with the rear end of said plate for securing the same in a tool-holder, substantially as described.

3. A tool for facing grooves in piston-heads, comprising in its construction, a plate provided on both of its faces and on its forward end with cutting-teeth, the cutting-teeth on the faces extending in horizontal alinement with the plate and the teeth on the forward end extending transversely thereto, and a shank secured to the rear end of said plate for fastening the tool in a tool-holder, said shank having a peripheral groove, as and for the purpose specified.

4. A tool for facing grooves in piston-heads, comprising in its construction, a plate provided on both faces and on its forward end with cutting-teeth, and a shank connected to the rear end of said plate for fastening the same in a tool-holder, said shank having a peripheral groove to receive retaining means carried by the tool-holder, substantially as described.

5. A tool for facing grooves in piston-heads, comprising in its construction, a plate provided on both of its faces with teeth extending in alinement with the plate and on its one end with teeth extending at right angles to the teeth on the faces of the plate, and means connected to said plate for securing the same in a tool-holder.

6. A tool for facing grooves in piston-heads, comprising in its construction, a plate provided on both of its faces with teeth extending in alinement with the plate and on its one end with teeth extending at right angles to the teeth on the faces of the plate, combined with means connected to said plate for rotatably securing the same in a tool-holder.

7. A tool for facing grooves in piston-heads, comprising in its construction, a plate provided on both of its faces with cutting-teeth extending in alinement with the plate, combined with means connected to the plate for securing the same in a tool-holder in a manner to allow the alinement of the plate at all times with the groove in the piston-head.

8. A tool for facing grooves in piston-heads, consisting of a substantially rectangular plate provided on both faces thereof with a series of cutting-teeth extending in horizontal and longitudinal alinement with the plate, substantially as described.

9. A tool for facing grooves in piston-heads, consisting of a substantially rectangular plate provided on both faces thereof with a series of cutting-teeth extending in horizontal alinement with the plate and further provided on its one end with teeth extending at right angles to the teeth on the sides of the plate, substantially as described.

10. A tool for facing grooves in piston-heads, comprising in its construction, a substantially rectangular plate provided with a series of horizontally-extending cutting-teeth, and means connected to the said plate for rotatably securing the same in a tool-holder, substantially as described.

11. A tool for facing grooves in piston-heads, comprising in its construction, a substantially rectangular plate provided with horizontally and longitudinally extending teeth, and means connected to the said plate for rotatably securing the same in a tool-holder, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

JOSIAH PEARCE.
GEORGE H. JACKSON.

Witnesses:
JOHN NOLAND,
E. W. ARTHUR.