L. A. ANDERSON.

PISTON VISE.

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1,368,683.

Patented Feb. 15, 1921.

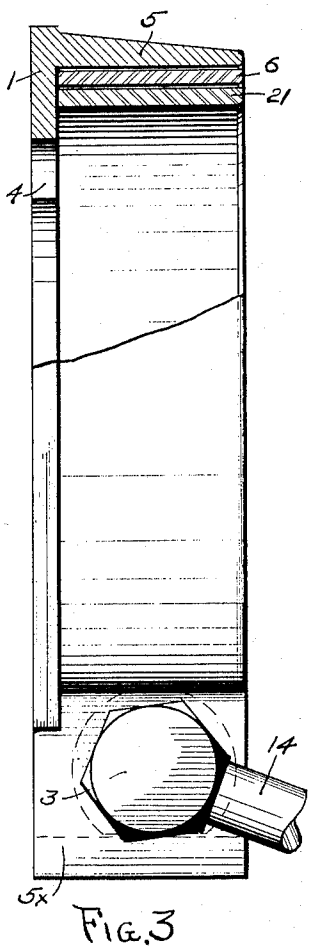

FIG. 3

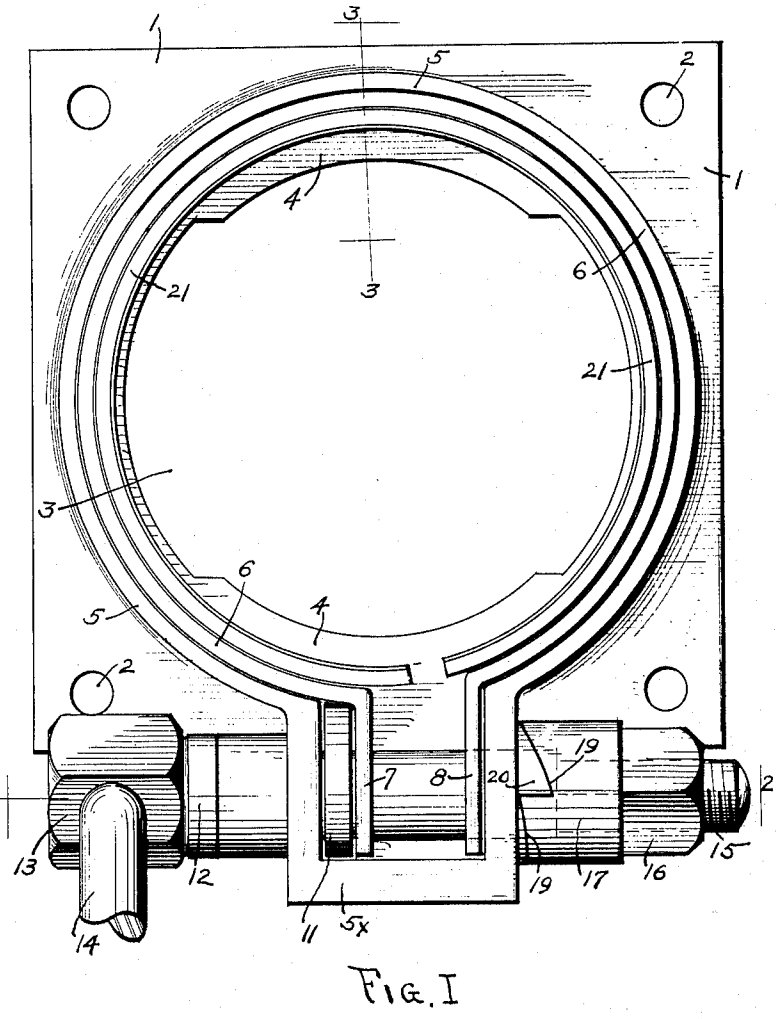

FIG. I

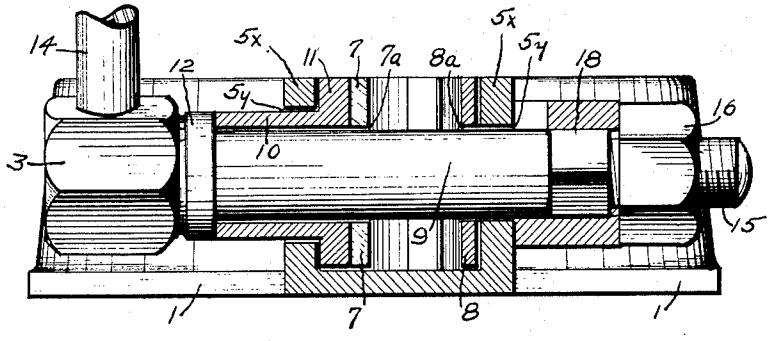

FIG. 2

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PISTON-VISE.

1,368,683. Specification of Letters Patent. Patented Feb. 15, 1921.

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To all whom it may concern:

Be it known that I, L ANDREW ANDERSON, a citizen of the United States, and a resident of Kasson, in the county of Dodge and State of Minnesota, have invented a new and useful Improvement in Piston-Vises, of which the following is a full, clear, and exact description.

My invention relates to improvements in devices for holding pistons of internal combustion engines and the like, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a piston vise by means of which equal pressure is applied to all sides of the piston, thereby holding the latter rigidly, without the slightest distortion.

A further object of my invention is to provide a device by means of which pistons may be clamped either end up, with or without the connecting rod attached.

A further object of my invention is to provide a piston vise by means of which different sizes of pistons may be rigidly clamped, thereby obviating the necessity of providing an individual clamp for each size piston.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is a plan view of the device,

Fig. 2 is a section along the line 2—2 of Fig. 1, and

Fig. 3 is a side view of the device, a portion being shown in section, along the line 3—3 of Fig. 1.

In carrying out my invention, I provide a body portion 1 consisting of a plate having openings 2, by means of which it may be secured to any suitable support. The plate 1 is provided with a central opening 3, and has integral flanges 4 at the edges of the opening by means of which the piston may be firmly held.

Formed integrally with the plate 1 is a laterally extending flange 5 provided with an integral U-shaped extension 5^x, and on the interior of the flange 5 is disposed an annular spring clamping member 6 having lateral extensions 7 and 8 which are spaced apart and which are arranged to enter the U-shaped extension 5^x, as shown. These extensions 7 and 8 have alined openings 7^a and 8^a through which a shaft 9 passes, openings 5^y being provided in the U-shaped extension 5^x. Inserted through one of the openings 5^y and arranged to encircle the shaft 9 is a sleeve 10 having a head 11 which is disposed between the extension 7 and the adjacent side of the U-shaped extension 5^x. On the shaft 9 is a collar 12 and the end of the shaft is formed with a hexagonal head 13 to which a handle 14 is secured. The opposite end of the shaft 9 is threaded as shown at 15, and is provided with a nut 16 which bears against a block 17 which fits on a portion 18 of the shaft and which is provided with cam surfaces 19 arranged to engage lugs 20 which are secured to the extension 5^x.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. A piston (not shown) is placed in the opening 3. This piston may be a small one, say of three and three-fourths inches in diameter. In such case, the spring bushing 21 is provided, and the end of the piston is placed so as to abut the supporting flanges 4. Now when the handle 14 is turned, the plug 17 is turned with it. By reason of the cam surface 19, the shaft 9 is forced to the right in Fig. 1, the head 12 forcing the sleeve 10 to the right, whereupon the head 11 of the sleeve moves the member 7 laterally and causes the closing of the clamping member 6, so as to securely clamp the piston.

When it is desired to clamp a four-inch piston, the bushing 21 is removed, the piston inserted, and the handle 14 manipulated, as described. It will be noted that the lateral extension member 8 is held securely by the extension 5^x so that the movement of the member 7 toward the member 8 results in contracting the spring ring 6 uniformly, thereby insuring that the piston is clamped uniformly and thus preventing distortion.

I claim:

1. A piston clamping device comprising a body portion having an annular flange portion with a U-shaped extension, a spring ring disposed within the interior of said annular flange and having laterally extended ends entering said extension and cooperating with said extension, and means for forcing the ends of the ring together to contract the ring.

2. A piston clamping device comprising a plate having a central opening therein, an integral laterally extending annular flange surrounding said opening, said flange having a U-shaped extension, a spring ring disposed within said annular flange and being provided with laterally bent ends arranged to enter said U-shaped extension, a shaft extending through said U-shaped extension and through the ends of said spring ring, and means carried by the shaft for forcing the extended ends of the spring rings toward one another.

3. A piston clamping device comprising a plate having a central opening and being provided with flanges extending into the opening, an integral annular flange surrounding the opening, said annular flange having a U-shaped extension at one side thereof, a spring ring disposed within the annular flange and having laterally bent ends arranged to enter the U-shaped extension, an opening arranged to pass through the sides of the extension and through the loosely bent ends of the spring ring, a sleeve having a head disposed on the shaft between one of said laterally bent ends and the side of the U-shaped extension, the other bent end being disposed in engagement with the opposite side of the U-shaped extension, and means for causing a movement of the sleeve and head when the shaft is turned to force said extended ends of the spring rings together.

4. A piston clamping device comprising a plate having a central opening and being provided with flanges extending into the opening, an integral annular flange surrounding the opening, said annular flange having a U-shaped extension at one side thereof, a spring ring disposed within the annular flange and having laterally bent ends arranged to enter the U-shaped extension, an opening arranged to pass through the sides of the extension and through the loosely bent ends of the spring ring, a sleeve having a head disposed on the shaft between one of said laterally bent ends and the side of the U-shaped extension, the other bent end being disposed in engagement with the opposite side of the U-shaped extension, means for causing a movement of the sleeve and head when the shaft is turned to force said extended ends of the spring rings together, said last named means including a block carried by the shaft and having a cam surface, and lugs carried by the U-shaped extension and arranged to be engaged by the block when the shaft is turned.

5. A piston clamping device comprising a plate having a central opening and being provided with flanges extending into the opening, an integral annular flange surrounding the opening, said annular flange having a U-shaped extension at one side thereof, a spring ring disposed within the annular flange and having laterally bent ends arranged to enter the U-shaped extension, an opening arranged to pass through the sides of the extension and through the loosely bent ends of the spring ring, a sleeve having a head disposed on the shaft between one of said laterally bent ends and the side of the U-shaped extension, the other bent end being disposed in engagement with the opposite side of the U-shaped extension, means for causing a movement of the sleeve and head when the shaft is turned to force said extended ends of the spring rings together, said last named means including a block carried by the shaft and having a cam surface, lugs carried by the U-shaped extension and arranged to be engaged by the block when the shaft is turned, a collar carried by the shaft and arranged to engage the sleeve on one side of the U-shaped extension, and a nut carried by the shaft and arranged to engage the block on the opposite side of the extension.

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