R. C. ZANON.

PISTON CLAMP.

APPLICATION FILED NOV. 15, 1921.

1,432,008.

Patented Oct. 17, 1922.

Fig. 1

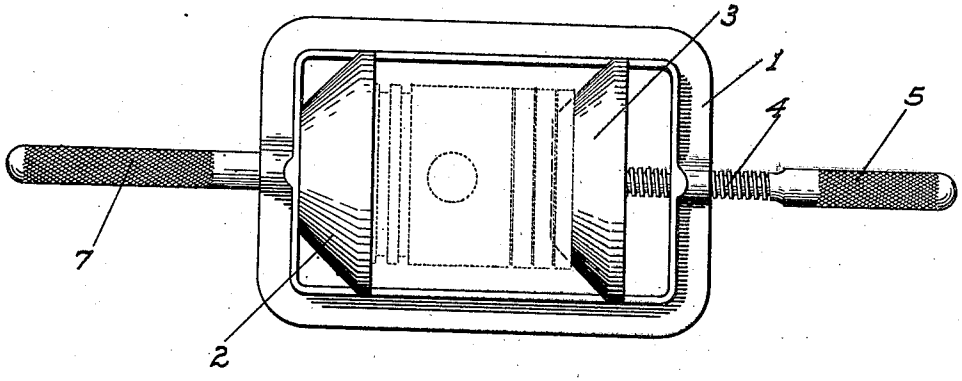


Fig. 2

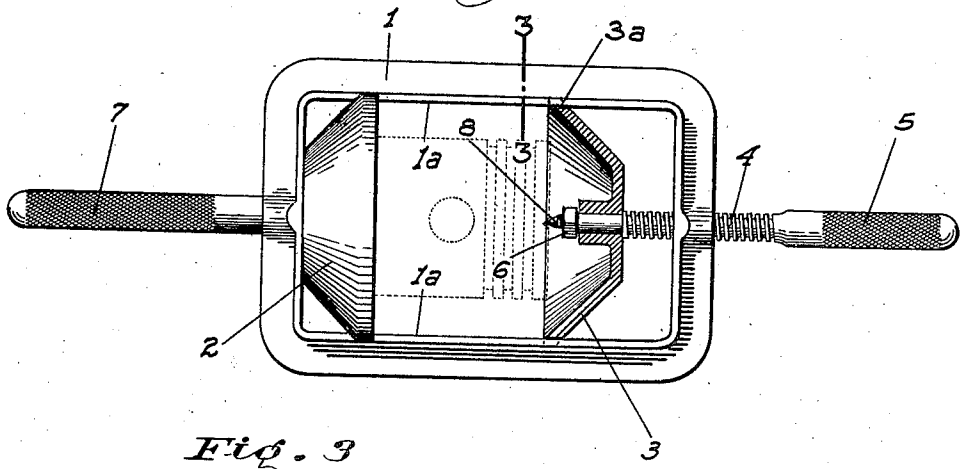
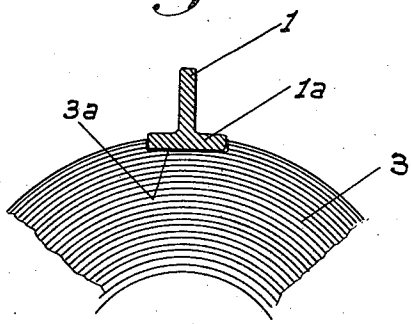


Fig. 3



INVENTOR.

Remo C. Zanon

BY

ATTORNEY

Patented Oct. 17, 1922. 1,432,008

UNITED STATES PATENT OFFICE.

REMO C. ZANON, OF MODESTO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO JOHN J. FERLIN, OF MODESTO, CALIFORNIA.

PISTON CLAMP.

Application filed November 15, 1921. Serial No. 515,325.

To all whom it may concern:

Be it known that I, REMO C. ZANON, a citizen of the United States, residing at Modesto, county of Stanislaus, State of California, have invented certain new and useful Improvements in Piston Clamps; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this application.

This invention relates to improvements in portable and hand-operated clamps, and particularly to a type intended to clamp gas-engine pistons and similar cylindrical bodies, the principal object of my invention being to provide a clamp of this character which will firmly grip a piston at both ends, and without the possibility of distorting the piston or marring the surface of the same.

Another object is to provide a clamp so designed that a single size may be used to hold pistons of various sizes, both as to length and diameter, within reasonable limits.

A further object is to so design the clamp that it is a symmetrically formed and portable unit, adapted to be held by the hands at both ends, to allow of any work necessary being done on the piston, particularly as regards reaming or reboring the piston-pin bore or bushing.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a persual of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views.

Fig. 1 is a side elevation of my improved clamp, showing a piston held thereby.

Fig. 2 is a similar view, one of the clamp members being in section and reversed in position.

Fig. 3 is an enlarged fragmentary cross section taken on a line 3—3 of Fig. 2.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes an endless frame or yoke, preferably of a shape to outline a rectangular area.

Fixed inside one end of the frame is a hollow member 2, frusto-conical in shape both inside and out, held against longitudinal or rotative movement relative to the frame, while at the other end of the frame is a similarly shaped member 3, which may be reversed in position with respect to the member 2, and is slidably lengthwise of the frame, being held against rotation by reason of the opposed edges of the member 3 being grooved as at 3^a to embrace the transverse edge-flanges 1^a of the frame.

Threaded through the frame 1 at the end thereof adjacent the cone 3 and in axial alinement therewith is a screw 4 provided with a handle 5 on its outer end, this screw passing through the cone 3, and being rotatable therein, but held against longitudinal movement relative thereto. A nut 6 on the inner end of the screw member 4 holds the latter against withdrawal from the cone 3, but when it is desired to reverse the setting of the cone, it is only necessary to remove the nut, slide the cone away from the contact with the screw, and then move it slantwise so that the grooves 3^a will be disengaged from the frame, permitting the cone to be withdrawn and set back in a reverse position.

A handle 7 similar in form and size to the handle 5 and in axial alinement therewith and with the cones, projects from the opposite end of the frame, or beyond the cone 2, so that the weight of the device is balanced along the line of the handles.

In practice, for use with ordinary pistons which are chamfered just inside their lower edge, the clamp is set as in Fig. 1, the cones being spread apart a distance sufficient to enable the head end of the piston being placed in the cone 2, the cone 3 being then

moved toward the piston by manipulation of the screw until the outer face of the said cone fits into and firmly grips the inner surface of the lower end of the piston. Since the cones are machined or finished both inside and out, and the engaged surface of the piston are likewise trued up, the cones will grip the piston at all points of the engaging peripheries, without chance of slipping and without any possible distortion of the piston no matter how tight the screw may be turned.

If the piston is of a type unfinished on its inner surface, the cone 3 is reversed so that its inner surface will then engage the outer surface of the piston, which is always machined.

The clamp, with the piston firmly held in its grip, may then be grasped by both hands and brought into position for a drill or reamer to engage the piston-pin bore, without danger of the piston slipping.

I have shown the frame 1 as being endless, the extra bar over what is employed in the usual U-shaped clamp-frame not only giving additional strength, but giving a more even bearing for the cones than would otherwise be had without unwieldy proportions of sundry parts.

I have also specified the clamp as being used particularly to hold pistons, but it is evident that it may be used to hold any cylindrical bodies which may require work of any nature being done on their surfaces.

The inner end of the member 4, beyond the nut 6 is provided with a tapered or 60° point 8, so as to engage the usual center-socket provided in piston heads, when it is desired to hold a piston in this manner as shown in Fig. 2.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent, is:—

1. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, whereby the tapered surfaces may engage the outer surface of a cylindrical object.

2. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, and means for altering the distance between said members while preventing rotation thereof.

3. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, and one of said members being similarly shaped on its outer surface.

4. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, and one of said members being similarly shaped on its outer surface, and means whereby the latter member may be reversed in position.

5. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed and means for moving one of said members lengthwise of the frame while holding it against rotation.

6. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, and handles projecting from the opposite ends of the frame.

7. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, and handles projecting from the opposite ends of the frame, said handles being in axial alinement with each other and with the clamp members.

8. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, handles projecting from the opposite ends of the frame, said handles being in axial alinement with the clamp members, and means between one of said handles and the adjacent clamp member for moving the latter lengthwise of the frame, and means for preventing rotation of the clamp member at all times.

9. A clamp for cylindrical bodies comprising a yoke-frame, and a pair of opposed clamp members mounted in the frame at opposite ends thereof, said members being frusto-conically recessed, handles projecting from the opposite ends of the frame, one of said handles being turnably mounted, and means for moving the adjacent clamp member lengthwise of the frame with the rotation of the handle while preventing the clamp member from such rotation.

10. A gas-engine piston clamp comprising a frame, a taper-bored clamp member at one end adapted to receive the lower end

of the piston therein, and a screw threaded through the opposite end of the frame in axial alinement with the clamp member and provided with a taper point at its inner end adapted to seat in the center socket in the head of the piston.

11. A clamp comprising a yoke frame having a pair of parallel arms, a pair of opposed clamp members mounted therein, the arms passing outside the clamp members and handles projecting from both ends of the frame beyond the clamp members.

In testimony whereof I affix my signature.

REMO C. ZANON.