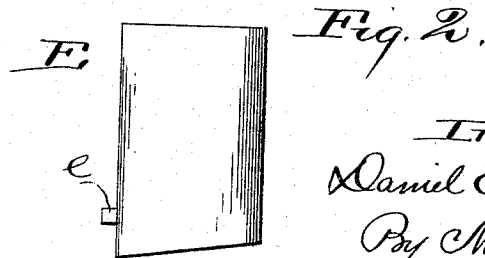
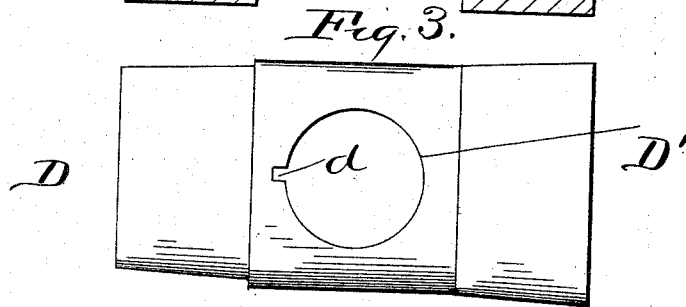
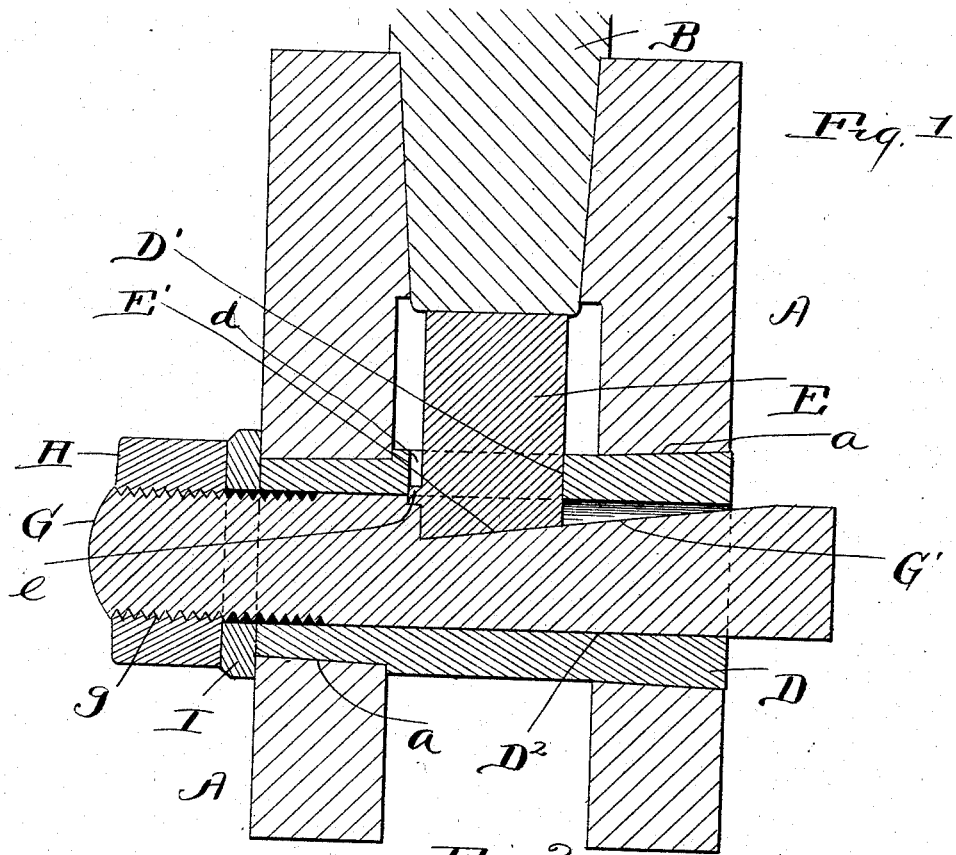


(No Model.)

D. E. SULLIVAN.
PISTON REMOVING DEVICE.

No. 526,589.

Patented Sept. 25, 1894.



Witnesses.
E. B. Gilchrist
[Signature]

Inventor.
Daniel E. Sullivan
By M. W. Leggett
his attorney.

UNITED STATES PATENT OFFICE.

DANIEL E. SULLIVAN, OF GREEN RIVER, WYOMING.

PISTON-REMOVING DEVICE.

SPECIFICATION forming part of Letters Patent No. 526,589, dated September 25, 1894.

Application filed April 24, 1894. Serial No. 508,755. (No model.)

To all whom it may concern:

Be it known that I, DANIEL E. SULLIVAN, of Green River, in the county of Sweetwater and State of Wyoming, have invented certain new and useful Improvements in Tools or Devices for Removing Pistons from Cross-Heads in Locomotive, Stationary, or Marine Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to a tool or device for removing the piston from the cross-head in locomotive, stationary or marine engines, where the wrist-pin is removable.

In the accompanying drawings, Figure 1 is an elevation in section showing my improved tool or device in position for removing a piston from the cross-head. Fig. 2 is an elevation of the piston-engaging-plunger of the tool, and Fig. 3 is a view of the plunger-receiving side of sleeve D hereinafter described.

Referring to the drawings, A designates the cross-head of an engine; *a*, the wrist-pin-hole or holes in the cross-head, and B the piston, the removal of which is the object of my improved tool or device.

My improved tool or device comprises a sleeve or tubular member D that loosely fits the wrist-pin-receiving-hole or holes *a* in the cross-head, the wrist-pin, of course, being removed for the reception of member D. Sleeve D is provided with a lateral hole or perforation D' that is in open relation with the central and longitudinal hole or bore D² of the sleeve. Sleeve D also has a small lateral slot *d* that is in open relation with hole D' and is adapted to receive a dowel-pin or projecting-member *e* of a plunger E that fits into hole D' of said sleeve, and is adapted to engage the adjacent end of the piston that is to be removed. The mutually engaging dowel-pin or projecting-member *e* on plunger E and slot *d* in sleeve D prevent the plunger from turning in the sleeve. Plunger E is shown extending into the central longitudinal bore or sleeve D, and is beveled at its inner end within said

sleeve, as at E', said beveled surface of the plunger engaging a correspondingly beveled surface or incline G' on a pin G that fits within and is movable endwise of sleeve D. The mutually engaging dowel-pin or projecting-member *e* of plunger E and slot *d* in sleeve D are also instrumental in insuring that the beveled end of the plunger truly engages with the beveled or inclined surface of pin G, the arrangement of parts being such that when dowel-pin or projecting-member *e* of plunger E is brought into engagement with slot *d* in sleeve D, in the assemblage of the parts, the beveled end of the plunger shall truly engage the incline on pin G. Pin G, at the end adjacent to the lower end of incline G', is shown screw-threaded, as at *g*, the pin extending through the sleeve and the threaded portion of the pin extending beyond the end of the sleeve and having a nut H mounted thereon. A washer I is preferably interposed between the nut and the adjacent end of sleeve D.

The parts are assembled in any suitable manner and the tool is operated by screwing up nut H and thereby actuating pin G endwise in the direction of the lower end of the incline, causing the beveled end of the plunger to ride up the incline on the pin and resulting in the exertion of force by the plunger against the end of the piston, thereby forcing the piston out of the cross-head.

What I claim is—

A tool of the variety indicated, consisting of a sleeve D having a lateral hole D² and a lateral slot *d*; screw-threaded pin G provided with incline G'; plunger E beveled, as at E' and provided with a dowel-pin or projecting-member *e*; nut H, and washer I, all arranged substantially as shown, for the purpose specified.

In testimony whereof I sign this specification, in the presence of two witnesses, this 21st day of March, 1894.

DANIEL E. SULLIVAN.

Witnesses:

WM. TAYLOR,
J. F. REGAN.