

June 29, 1937.

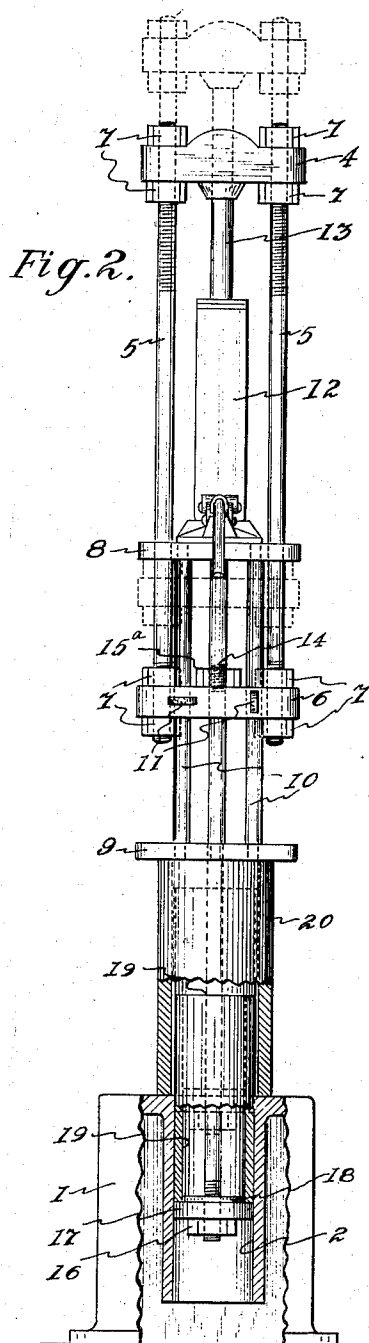
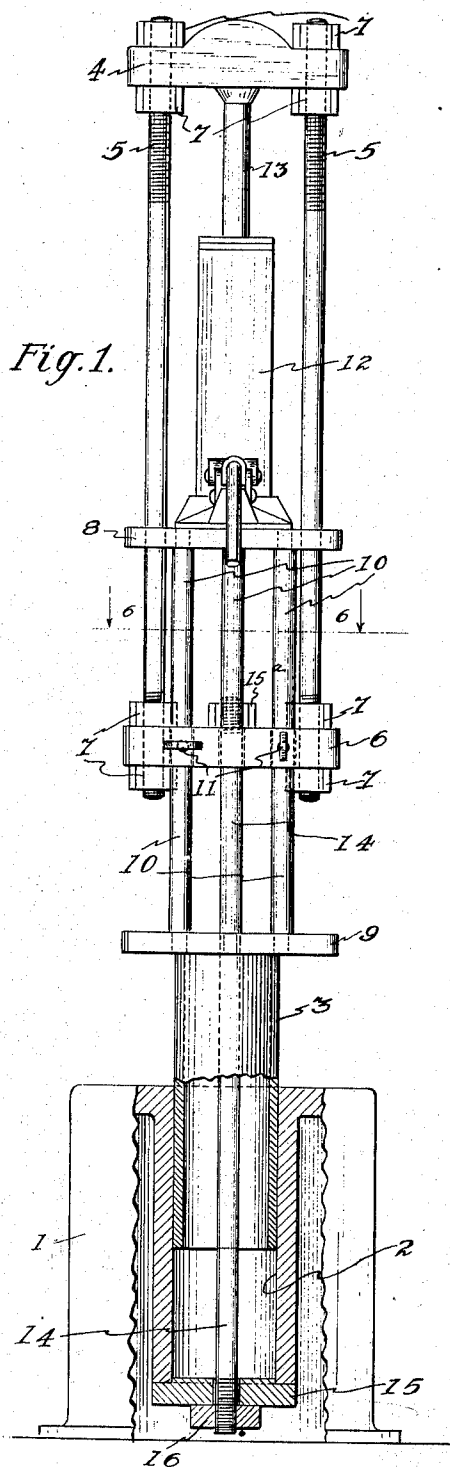
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2,085,529

CYLINDER SLEEVE PRESS

Filed Nov. 4, 1935

2 Sheets-Sheet 1



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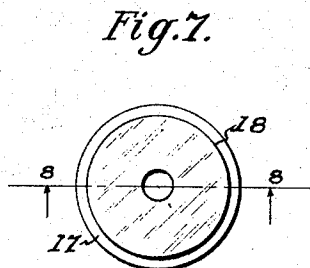
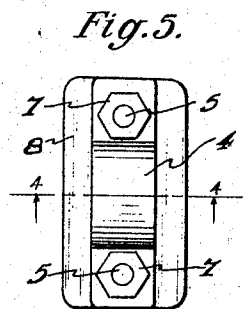
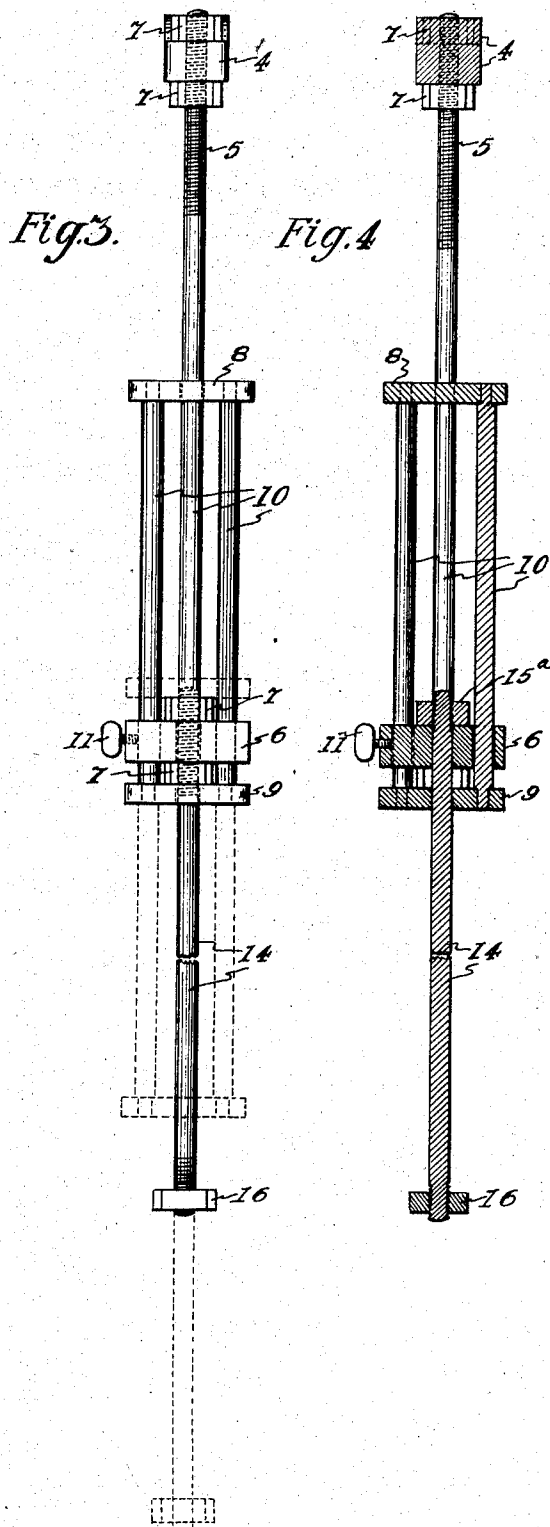
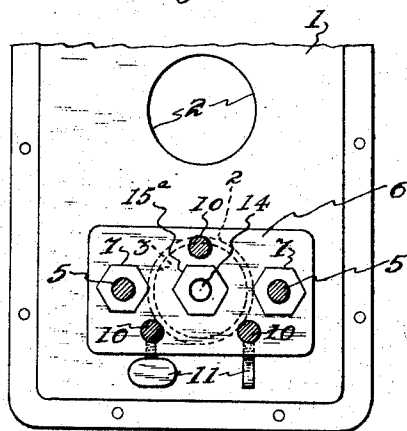


Fig. 8.



Fig. 6.



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UNITED STATES PATENT OFFICE

2,085,529

CYLINDER SLEEVE PRESS

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Application November 4, 1935, Serial No. 48,108

6 Claims. (Cl. 29—88.2)

This invention relates to improvements in cylinder sleeve presses or tools for extracting and inserting inner sleeves of various types, such as motor vehicle cylinder sleeves, bushings, bearing sleeves, guiding sleeves, piston valves and devices of like nature. One object is to provide a device of this type that is readily portable and easily applied and operated and that requires the services of but one man to operate.

A further object is to provide a device particularly adapted for pressing replacement sleeves into cylinder blocks and for as readily removing the same when desired. The present invention is an improvement upon the device set up in my application for Patent, Ser. No. 24,782, Cylinder sleeve presses patented April 7, 1936, No. 2,036,475.

The present device includes two relatively adjustable frames, one of which is adjustable to press a sleeve into a cylinder and the other of which is adjustable to remove a sleeve therefrom.

More specifically the invention consists in the combination and arrangement of parts to be fully described in the following specification, pointed out in the claims and illustrated in the accompanying drawings which form a part of this application for patent and in which—

Fig. 1 is a view of the tool in front elevation illustrating its application for the insertion of a sleeve into a cylinder.

Fig. 2 is a view similar to Fig. 1 showing the tool in use to remove a sleeve from a cylinder.

Fig. 3 is a side view of the tool, a second position of one of the frames being denoted in dotted lines, the actuating jack being omitted.

Fig. 4 is a view of the tool partly in elevation and partly in section, on the line 4—4 of Fig. 5.

Fig. 5 is a top plan view of Fig. 3.

Fig. 6 is a cross sectional view taken on the line 6—6 of Fig. 1.

Fig. 7 is a plan view of Fig. 8 illustrating a follower disc employed.

Fig. 8 is a cross sectional view through Fig. 7 on the line 8—8 thereof.

Like reference characters denote corresponding parts throughout the several views.

The present invention is intended particularly to be applied to the top of a cylinder block to press a replacement sleeve thereinto or to remove a sleeve therefrom, the insertion or removal being through the top end of the cylinder. The reference numeral 1 denotes a cylinder block having the cylinders 2 provided with the sleeves or bushings 3. At times it becomes necessary to remove a sleeve or bushing that is worn or scored and to replace the same with a new one. These opera-

tions are readily performed with the present tool.

The invention includes two frames, an outer or upper frame and an inner or lower frame, these frames being adjustably secured together, one end of the lower frame being adapted for direct application to a sleeve to insert the same and an anchor or pull rod carried by the upper frame being adapted to be connected to the lower end of a sleeve to extract the same.

The outer frame includes an oblong head block 4 that is connected at its ends by the threaded rods 5 to the base plate 6, said rods passing through one end plate of the lower frame and being secured to the plates 4, 6 by the nuts 7. An inner or bottom frame includes the top end plate 8, through which the rods 5 loosely pass, and a base end plate 9, said plates 8, 9 being secured together by the three rods 10 that pass through the base plate 6 of the upper frame loosely, the ends of said rods 10 being slightly reduced in diameter and fitted into said plates. The rods 5 passing freely through the top end plate 8 of the lower frame and the rods 10 passing through the base plate 6 of the upper frame secure said frames adjustably together. Wing nuts 11 carried by the plate 6 of the upper frame for frictional engagement with the rods 10 serve to releasably secure the frames in adjusted position when desired. A conventional type of jack or ram 12 is, in operation, freely disposed upon the top end plate 8 of the lower frame, the plunger 13 being adapted for engagement with the head block 4 of the upper frame.

A pull rod 14 has one threaded end passing through the base plate 6 of the upper frame and a nut 15a applied thereto to prevent removal of the pull rod in a downward direction, said rod passing through the base end plate 9 of the lower frame centrally and being of such a length as to permit it to pass through the sleeve or bushing 3 to be inserted and through the cylinder 2 and provided upon its lower end with the anchor disc 15 of greater diameter than the inner diameter of the cylinder, a nut 16 upon the lower threaded end of the pull rod serving to retain the anchor disc in position upon the rod. The foregoing is the particular construction when the tool is to be used to press a sleeve or bushing into a cylinder. With the sleeve placed manually at the upper end of the cylinder the tool is placed in position upon the upper end of the sleeve with the pull rod passing through the sleeve and cylinder, the disc 15 and nut 16 having been removed from the rod. The disc and nut are now applied to the lower

threaded end of the pull rod from the under side of the cylinder block. The tool is now in position, the wing nuts being loosened so that the frames are adjustable. The jack is now operated and the plunger 13 pressing against the head block 4 will force the lower frame 8, 9, 10 against the upper end of the sleeve, driving the same into the cylinder. The pressure applied to the top of the sleeve is exerted between the two resistance points, one above and one below the pressure point and both falling within the plane of the sleeve or cylinder and in this there is no lateral pressure or pull upon the cylinder block and breakage of the same is positively prevented. In this instance the lower frame is movable with respect to the cylinder block while the upper frame is stationary. In the event it is desired to replace the jack in use by another while the operation is in progress, the frames may be temporarily locked in adjusted position by tightening the wing nuts. When it is desired to remove a sleeve or bushing from the cylinder block the pull rod 14 is provided with an annular pulling disc 17 and nut 16.

The disc 17 is formed with a slightly reduced portion 18, said disc being of a diameter slightly less than the interior bore of the cylinder so that it is movable therethrough, but of a diameter greater than the bore of the sleeve or bushing 19 to be removed so that it will not pass therethrough. A cylindrical pedestal 20 of slightly greater diameter than the cylinder bore so that it may be disposed about the mouth of the bore, and of greater length than the sleeve to be removed, is employed. With this pedestal in place upon the cylinder block the tool is placed thereupon, the end plate 9 resting upon the pedestal and the pull rod extending centrally therethrough and through the cylinder and the sleeve therein to be removed. The pulling disc is now applied to the rod, as is also the nut 16, from underneath the cylinder. By operating the jack the upper frame is raised, as denoted in dotted lines in Fig. 2, the disc 17 withdrawing the sleeve from the cylinder and moving it into the pedestal, the lower frame being stationary during this operation. The sleeve being removed rests, during this operation, upon the shoulder formed by the junction of the reduced portion 18 of the pulling disc and the main body portion of the same.

What is claimed is:—

1. In cylinder sleeve presses, a movable frame, a stationary frame connected thereto, a pedestal receiving said stationary frame, a connection between said movable frame and the sleeve to be extracted, and actuating means for said movable frame.

2. In cylinder sleeve presses, a movable frame, a stationary frame connected thereto, wing nuts releasably connecting said frames, a cylindrical pedestal supporting said stationary frame, a connection between said movable frame and the sleeve and passing through said pedestal whereby to extract said sleeve, and actuating means for said movable frame.

3. In cylinder sleeve presses, a movable frame, a stationary frame connected thereto, a pedestal support for said stationary frame, a pull rod connected to said movable frame and extending through said pedestal and the sleeve to be extracted, and a pulling disc at one end of said pull rod engaging one end of the sleeve.

4. In cylinder sleeve presses, an outer frame, an inner frame connected thereto, a pedestal receiving said inner frame, a connection between said outer frame and the sleeve to be extracted, and actuating means for said outer frame disposed within the confines thereof upon the upper end of said inner frame.

5. In cylinder sleeve presses, a pair of adjustable frames connected together, one of said frames including a base end plate for application to the sleeve under operation, both of said frames being wholly disposed thereby in spaced relation to the upper end of the cylinder, and a pull rod carried by one frame for connection to the lower end of the cylinder as the sleeve is being inserted.

6. In cylinder sleeve presses, a pair of adjustable frames connected together, one of said frames including a base end plate for direct application to the sleeve under operation, both of said frames being disposed above and in spaced relation to the upper end of the cylinder thereby, a pull rod carried by one frame and extending through the sleeve and cylinder, an anchor disc carried by said pull rod, and a nut carried by said pull rod.

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