

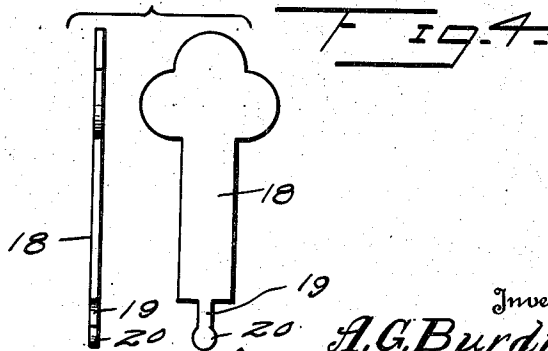
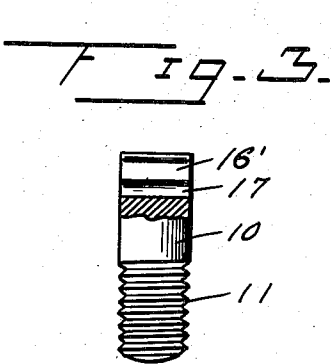
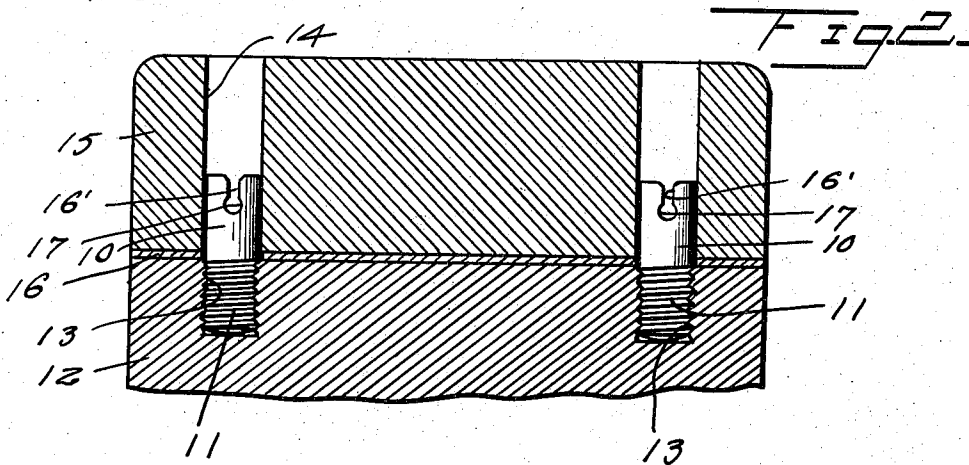
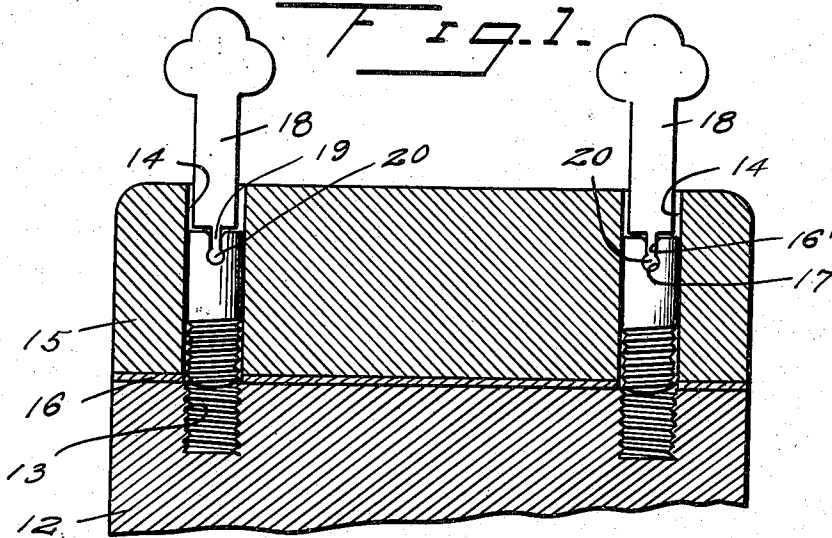
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A. G. BURDICK

CYLINDER HEAD GUIDE STUD AND REMOVING KEY

Filed March 15, 1921



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UNITED STATES PATENT OFFICE.

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CYLINDER-HEAD GUIDE STUD AND REMOVING KEY.

Application filed March 15, 1921. Serial No. 452,438.

To all whom it may concern:

Be it known that I, ARTHUR G. BURDICK, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in a Cylinder-Head Guide Stud and Removing Key; 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 appertains to make and use the same.

The object of the invention is to provide simple and efficient means whereby a cylinder head may be aligned with the cylinder and applied thereto by movement perpendicular to the end of the cylinder so as to avoid disturbance of the packing as caused by the sliding of the head in contact with the packing in order to secure proper registration of the bolt holes of the head with those of the cylinder wall; and in that connection to provide means for removing the guiding means after the cylinder head has been properly positioned, so as to permit of the substitution of the cylinder head fastening bolts; and with this object in view the invention consists in a construction and combination of parts of which a preferred embodiment is shown in the drawing, wherein:

Figure 1 is a view of a portion of a cylinder and a cylinder head applied thereto with guide studs arranged to position the head relative to the cylinder and removing keys disposed in engagement with the studs to permit of the removal thereof.

Figure 2 is a view showing the application of a cylinder head to the guide studs in positioning the former with relation to the cylinder.

Figures 3 and 4 are detail views respectively of one of the studs and the key for removing the same from the bolt sockets of the cylinder.

The device consists essentially of a stud 10, adapted to be used in the operation of replacing a cylinder head upon the cylinder after having been removed for the purpose of cleaning the cylinder or making an interior adjustment or repair, said stud being preferably threaded for a portion of its length as indicated at 11 for engagement with the threads in the bolt socket 12 of the cylinder 13, the smooth surfaced portion of

the stud being adapted to project beyond the end of the cylinder to serve as a means of entering the bolt holes 14 of the cylinder head 15 in placing the latter upon a cylinder, so as to accurately position the head relative to the cylinder with the bolt holes of the former in alignment with those of the latter, to avoid the necessity of any sliding or lateral movement of the head after it has been placed in contact with the packing shown at 16, the objection to such sliding movement of the head with relation to the cylinder being that the packing is thereby displaced and such displacement involves difficulty in properly securing the head upon the cylinder.

The construction and arrangement of cylinders in certain automobiles or cars are such as to prevent the use of long guide pins or studs, such as would project beyond the outer surface of the head when positioned to permit of removal of the studs by ordinary means, and therefore the studs of which two or more may be used in positioning a head on the cylinder are provided at their outer ends with kerfs 16' adapted for engagement by means of a screw driver or the like, which kerfs are undercut or enlarged at their inner ends to form the seats 17, and after the cylinder head has been positioned with relation to the cylinder and the packing so that the bolt holes are accurately in registration, a screw driver may be inserted through the bolt hole of the head and engaged with the kerf 16' to unscrew and loosen the stud. Owing to the shortness of the stud however, and therefore the failure thereof to extend even when unscrewed to the upper or outer surface of the head, it is proposed to employ a key 18, insertable through the opening in the cylinder head and provided at its inner end with a tongue 19 having a transversely enlarged flat head 20 which may be extended downward through the kerfs 16 and then turned in the seat 17 so that the studs may be withdrawn to permit of the substitution of the cylinder head bolts to lock the parts in their operative relation.

The device constitutes a means therefore whereby a cylinder head may be accurately positioned upon the cylinder and may be readily and quickly withdrawn after the required positioning of the head so as to permit of the introduction of the fastening

bolts, under conditions assuring the accurate setting of the head and the expenditure of the minimum time in accomplishing the desired operation.

5 Having thus described the invention, what I claim is:—

1. In combination with a head adapted to be secured in place by a detachable fastening which occupies holes in the head and in the element which the head engages, a 10 positioning stud disposable in said holes in the assembling of the head, and means separably engageable with the stud to lift the same from the holes after positioning of the 15 head, and said stud being of less length than the depth of the hole of the head.

2. In combination with a head adapted

to be secured in place by a detachable fastening which occupies holes in the head and in the element which the head engages, a 20 positioning stud disposable in said holes in the assembling of the head, said stud having a kerf for engagement by a securing tool, said kerf being enlarged, said stud being of less length than the depth of the 25 hole of the head, and a lifting key for separable engagement in the enlargement of the kerf.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR G. BURDICK.

Witnesses:

GEORGE F. KELLY,

ADDIE BRALEY.