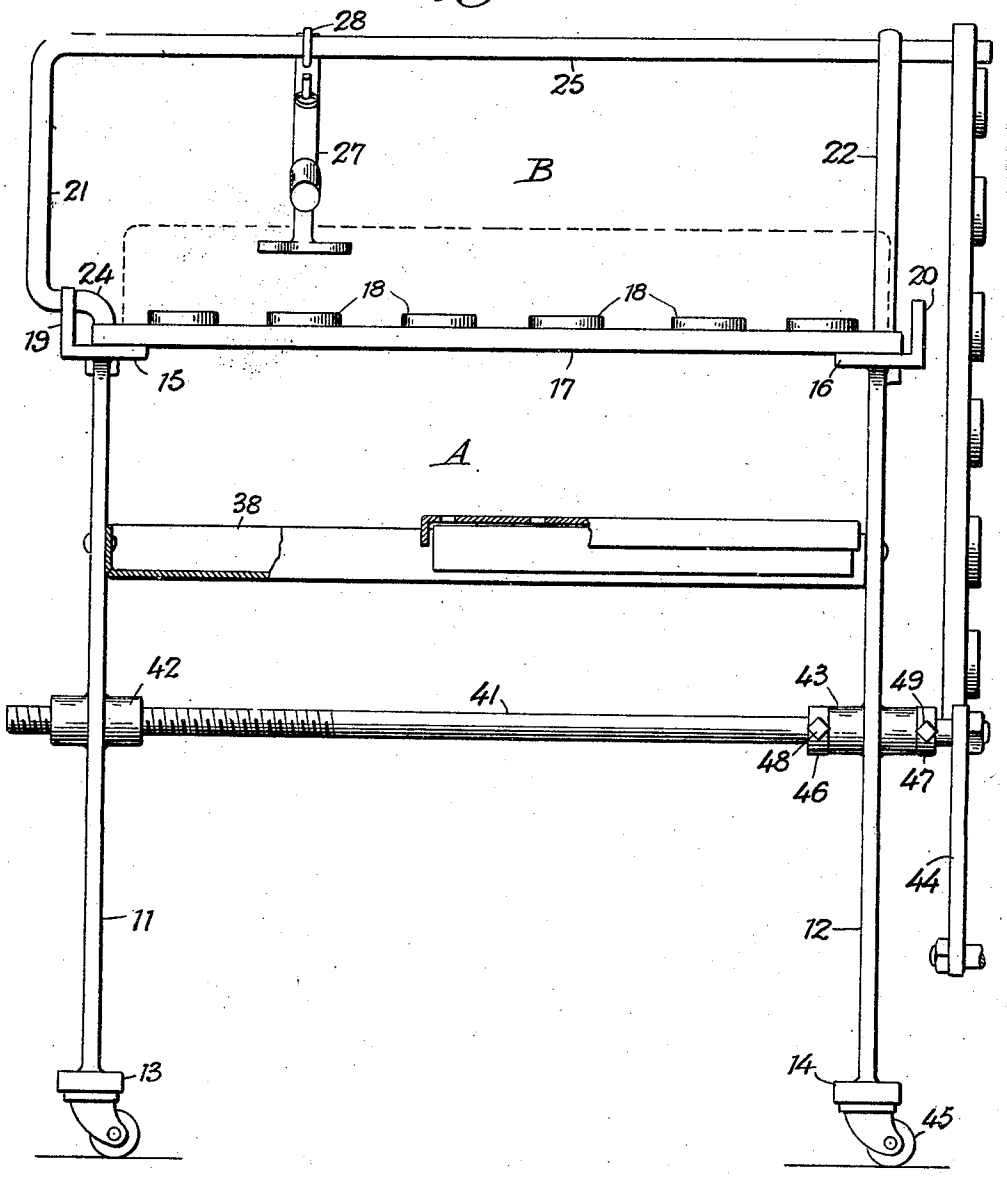
Nov. 5, 1929. G. C. GLASPY 1,734,122

COMBINED ENGINE HEAD SUPPORT AND VALVE SPRING COMPRESSOR

Filed Oct. 31, 1928 2 Sheets-Sheet 1

Fig. 1.



INVENTOR.
George C. Glaspy.
BY
Hodges & Hopkins
ATTORNEY.

Nov. 5, 1929. G. C. GLASPY 1,734,122

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Fig. 2.

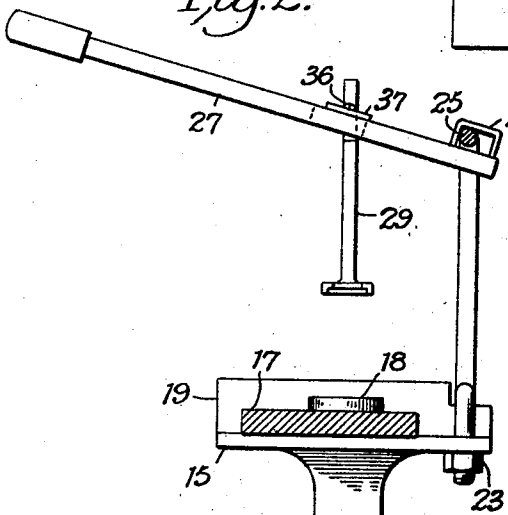


Fig. 3.

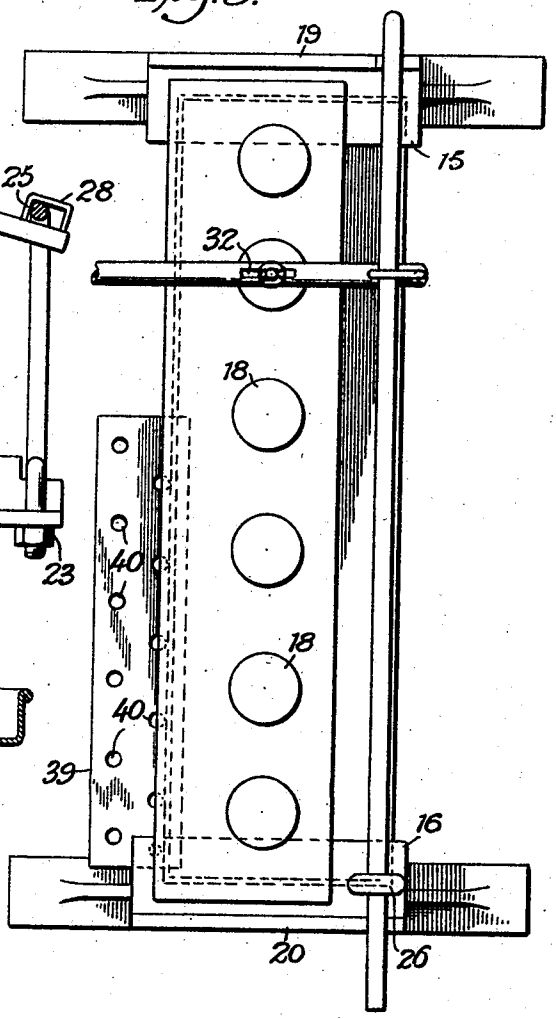
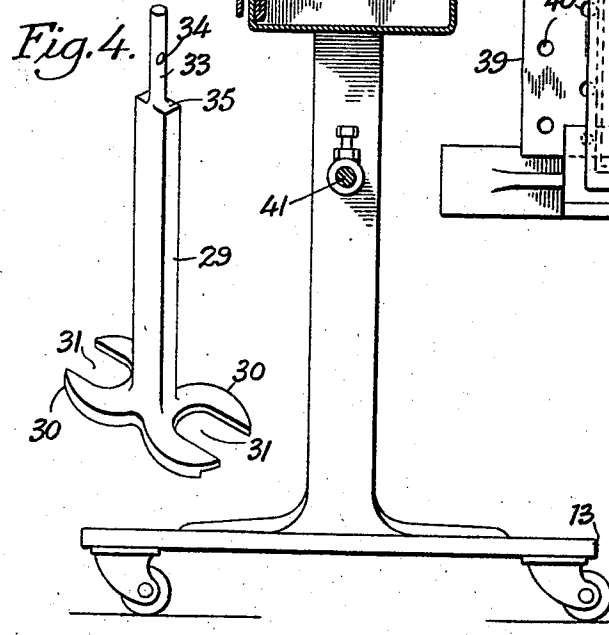


Fig. 4.



INVENTOR.
George C. Glaspy.
BY
Hodges & Hopkins
ATTORNEY.

Patented Nov. 5, 1929 1,734,122

UNITED STATES PATENT OFFICE

GEORGE C. GLASPY, OF BURLINGTON, NORTH CAROLINA

COMBINED ENGINE-HEAD SUPPORT AND VALVE-SPRING COMPRESSOR

Application filed October 31, 1928. Serial No. 316,324.

The invention is for a portable combined internal combustion engine head support and valve spring compressor and is more particularly adapted to use in the operation of grinding the valves of an internal combustion engine of the valve-in-head type.

The primary object of the invention is to provide a device of the character indicated which can be easily and readily moved from place to place in a machine shop and placed in any position relative to the engine of an automobile to receive and support the engine head for repairs and is more particularly adapted to the support of the engine head for the purpose of grinding and setting the valves.

A further object of the invention is to provide a support for an engine head whereby a mechanic may stand in one position and work on any part of the engine head without moving the support or himself moving in order to have ready access to all parts of the engine head.

A further object of the invention is to provide an internal combustion engine head support which will obviate the necessity of a mechanic removing the engine head from the engine block of an automobile and carrying the same to the work bench which, may be, and often is at a remote point from the automobile in the shop thus saving both time and labor. A still further object of the invention is to provide an internal combustion engine head support that will be of such construction as to render it light, easily moved from place to place in a machine shop and yet be sufficiently steady to readily withstand the stress and strain to which such a device would naturally be put.

A still further object of the invention is to provide a device of the character stated which will be simple of operation, economical of manufacture, and efficient in its functions.

Applicant is well aware of the fact that portable work supports of various kinds and for various purposes for machine shops are old but does not know and does not believe that there has ever been a portable combined internal engine head support and valve spring compressor made or used which embodies the combination of elements for the performance of the functions capable by the device described in the following specification and illustrated in the accompanying drawings which are made a part of this specification and in which:—

In the drawings Fig. 1 is a front elevational view of the invention partially in section.

Fig. 2 is an end view partially in section showing the valve stem rack in engagement with the side of the drip pan and the compression lever and plunger in elevated position above the transfer board.

Fig. 3 is a top plan view showing the transfer board with the bosses for supporting the valve stem heads and spacing the engine head from the board with the plunger directly over one of the bosses.

Fig. 4 is an enlarged detail in perspective of the plunger showing the reduced portion at the upper end and the presser feet at the lower end thereof.

For a more comprehensive and clearer understanding of the invention reference will now be made to the drawings by reference numerals using numerals for the various parts and elements of the device. Like reference numerals indicate like parts or elements throughout the several figures of the drawings.

Reference character A indicates the supporting frame generally which may be made of any suitable material, such for instance, as cast iron or steel and is provided with supports or standards 11 and 12 which are provided with bases 13 and 14 which extend to either side of the standards for the purpose of providing a stable support for the

device and to prevent tilting. Standards 11 and 12 terminate at their upper ends in brackets 15 and 16 for the support thereon of a transfer board 17 having upwardly extending bosses 18 thereon which bosses are for the purpose of receiving the downward thrust of the valve stem head when pressure is applied by the plunger on the valve spring for the purpose of removing the retaining key for holding the valve stem spring under initial pressure and for the further purpose of spacing the engine head from the transfer board 17 in order to provide a clearance for the fingers of the mechanic when placing the head on the transfer board or securing a hold on it to remove it therefrom. The brackets 15 and 16 are provided with upwardly extending flanges 19 and 20 at their outer lateral edges respectively for limiting the movement of transfer board 17 longitudinally of the work support. Springing upwardly from the brackets 15 and 16 and preferably adjacent the rear edge thereof is a yoke indicated by the reference character B, generally the yoke is composed of uprights 21 and 22 which may be secured to the rear end of brackets 15 and 16 in any suitable manner though preferably by screw-threading the ends of the uprights for the reception thereon of nuts as clearly shown at 23. Upright 21 is provided with offset 24 a short distance above bracket 15 to provide a clearance for the over-hanging portion or lip of an engine head and terminating at its upper end in a spanner 25 which extends transversely across the support and has a free sliding movement through the apertured head 26 of upright 22. Upright 22 may be secured to bracket 16 in any suitable manner such as described with reference to upright 21. Spanner 25 has pivotally related thereto operating lever 27 as by shackle 28 or in any suitable way. Operating lever 27 has depending therefrom and pivotally related thereto plunger 29 which is provided at its lower extremity with diametrically opposite presser feet 30 for engaging the usual spring retaining cup or washer of a valve spring for compressing the spring to relieve the pressure on the cup or washer when the locking key may be readily withdrawn from the valve stem and the valve stem removed from the engine head. It will be observed that the plunger is provided with two diametrically opposite presser feet which are recessed as at 31 which recesses are for the purpose of receiving therein the valve stem of the inlet port and the valve stem of an outlet port of an engine head for the simultaneous compression of their respective springs by a single downward movement of the operating lever 27. Operating lever 27 is longitudinally slotted as at 32 at a point approximately above the center of the flanges 19 and 20 of the brackets 15 and 16 when the operating lever is in a horizontal position for receiving therethrough the reduced portion 33 at the upper end of plunger 29 in a sliding engagement in order to adjust the plunger in a direction transversely of the transfer board 17 for positioning the plunger feet 30 in vertical alignment with the valve stem spring to be compressed. Plunger 29 has aperture 34 through the reduced portion thereof which aperture is at a distance slightly greater than the diameter of operating handle 27 from shoulder 35 of the plunger 29 to provide for a free rocking movement of the plunger with relation to the operating handle 27 in adjusting the feet 30 of the plunger to the spring retaining cup or washer of the valve stems upon which it is desired to compress the springs. The plunger 29 may be retained in slot 32 of the operating handle 27 by the insertion therethrough of a cotter pin 36 preferably having a washer 37 interposed between the cotter pin 36 and the operating handle 27. Supported by the standards 11 and 12 and below the brackets 15 and 16 is secured a telescopic pan 38 which is for the purpose of catching anything which may drop from the engine head supported by the device when being worked upon by a mechanic such as small parts, grease or the like. Secured to the front wall of the pan 38 is provided valve stem rack 39 having aperture 40 therethrough for the insertion therein of the valve stems as they are withdrawn from the engine head. This valve stem rack may be supported contiguous to the pan 38 in any suitable way and may be made of any suitable material. As shown in the drawings the valve stem rack is made of comparatively thin sheet metal having one edge bent downwardly then upwardly and then downwardly again upon itself forming a comparatively deep groove adapted to receive the wall of the pan therein for supporting the rack. It will be noted that the transfer board shown in the drawings is provided with six upwardly extending bosses for the accommodation of a six cylinder engine head thereon and it will be noted further that the valve stem rack is shown in the drawings as provided with twelve apertures therethrough in staggered relation for the reception therein of the six inlet and six outlet port valve stems of a six cylinder engine. The six perforations nearer the front side of the rack may be used for the six inlet port valve stems and the six perforations to the rear of the rack may be used for the six outlet port valve stems, in both instances placing the valve stems, in the respective apertures in corresponding sequence to the bosses 18 on the transfer board 17. Thus it will be seen that the mechanic will be enabled to definitely identify the valve stem in the rack with the port from which it was withdrawn and thereby avoid confusion and be assured of replac-

ing each valve stem in the respective port from which it was drawn.

Intermediate the upper and lower ends of standards 11 and 12 and preferably at their approximate centers is provided adjusting rod 41 which is screw-threaded for a portion of its length at one of its ends for engaging the internally screw-threaded boss 42 of support 11. At a point diametrically opposite and in alignment therewith support 12 is provided with boss 43 having a smooth bore therethrough in which bore adjusting rod 41 is capable of free rotatable movement for drawing or propelling standard 11 toward or away from standard 12 and thereby regulating the distance between brackets 15 and 16 in order to so adjust the lateral dimensions of the device as to accommodate the transfer board having four, six, or eight bosses for the reception thereon of an engine head having four, six, or eight cylinders as occasion may require by reason of the engagement of the screw-threaded adjusting rod 41 with the internally screw-threaded boss 42.

Locking collars 46 and 47 having tensioning screws 48 and 49 respectively are provided for contacting with the respective ends of boss 43 to prevent the accidental movement of standards 11 and 12 with relation to each other. Crank handle 44 is affixed to adjustment rod 41 at its outer end adjacent support 12 for rotating the rod in adjusting the standards 11 and 12 with relation to each other for support on brackets 15 and 16 of a transfer board 17 for the accommodation thereon of a four, six, or eight cylinder engine head as may be required for the piece of work which the mechanic may have in hand. The device is provided with rollers or castors 45 for portably supporting the frame A in order to conveniently move the device to any point desired on the floor of a machine shop.

Claims—

1. An engine head support comprising spaced apart standards, a spanner connecting the standards, brackets carried by the standards, a removable transfer board supported by the brackets, a plunger pivotally related to the spanner and capable of longitudinal adjustment thereof and means for exerting pressure on the plunger.

2. An engine head support comprising a frame, a yoke carried by the frame, a lever pivotally related to the yoke, a plunger pivotally related to the lever, a transfer board supported by the frame and spaced from the lever, a drip pan beneath the transfer board, and a valve stem rack carried by the drip pan.

3. An engine head support having supporting standards, brackets carried by the standards, a transfer board supported by the brackets, bosses on the transfer board, a yoke carried by the standards and a plunger pivotally related to the yoke.

4. An engine head support having supporting standards, flanged brackets carried by the standards, a removable transfer board supported by the brackets, a yoke carried by the standards, a dependent plunger carried by the yoke and adjustable longitudinally of the transfer board and recessed presser feet carried by the plunger.

5. An engine head support comprising spaced apart standards, uprights carried by the standards, one of said uprights having an offset portion and terminating in a spanner the free end of which is supported by and capable of free reciprocal movement with relation to the other of the standards, a plunger pivotally related to the spanner, a transfer board supported by the standards and spaced from the spanner and means for exerting pressure on the plunger.

6. An engine head support comprising spaced apart standards, spaced apart uprights carried by the standards, one of said uprights terminating in a spanner, a plunger pivotally related to the spanner, means for exerting pressure on the plunger, and means for adjusting movement of one of the standards toward and away from the other of the standards.

7. An engine head support comprising spaced apart standards, supporting means for an engine head carried by the standards, one of the standards having a screw-threaded aperture therethrough the other of the standards having an aperture therethrough, a screw-threaded adjusting rod passing through the apertures of the last named standard and engaging the screw-threaded aperture of the other of the standards and means for rotating the rod.

8. An engine head support comprising spaced apart standards, supporting means for an engine head carried by the standards, an internally screw-threaded boss carried by one of the standards, a boss having a smooth bore therethrough carried by the other of the standards, a screw-threaded adjusting rod passing through the smooth bore and engaging the internally screw-threaded boss, means for rotating the adjusting rod, locking collars around the adjusting rod and adjacent the smooth bored boss and means for rotating the adjusting rod.

9. An engine head support comprising spaced apart standards, a transfer board supported by the standards, a spaner carried by the standards and spaced from the transfer board, a lever having an elongated slot therethrough intermediate its ends and pivotally related to the spanner, a plunger having a reduced portion passing through the slot and means for slidably retaining the plunger within the slot.

10. A portable combined engine head support and valve spring compressor comprising spaced apart standards, brackets carried by the standards, a transfer board supported by the brackets, a spanner spaced from and above

the transfer board, a lever pivotally related to the spanner, a plunger carried by the lever, a drip pan supported by the standards and below the transfer board, a valve stem rack supported by the drip pan, a screw-threaded rod passing through one of the standards and in screw-threaded engagement with the other of the standards, and means for rotating the rod and rollers for portably supporting the bases of the standards.

In testimony whereof he has hereunto set his hand.

GEORGE C. GLASPY.