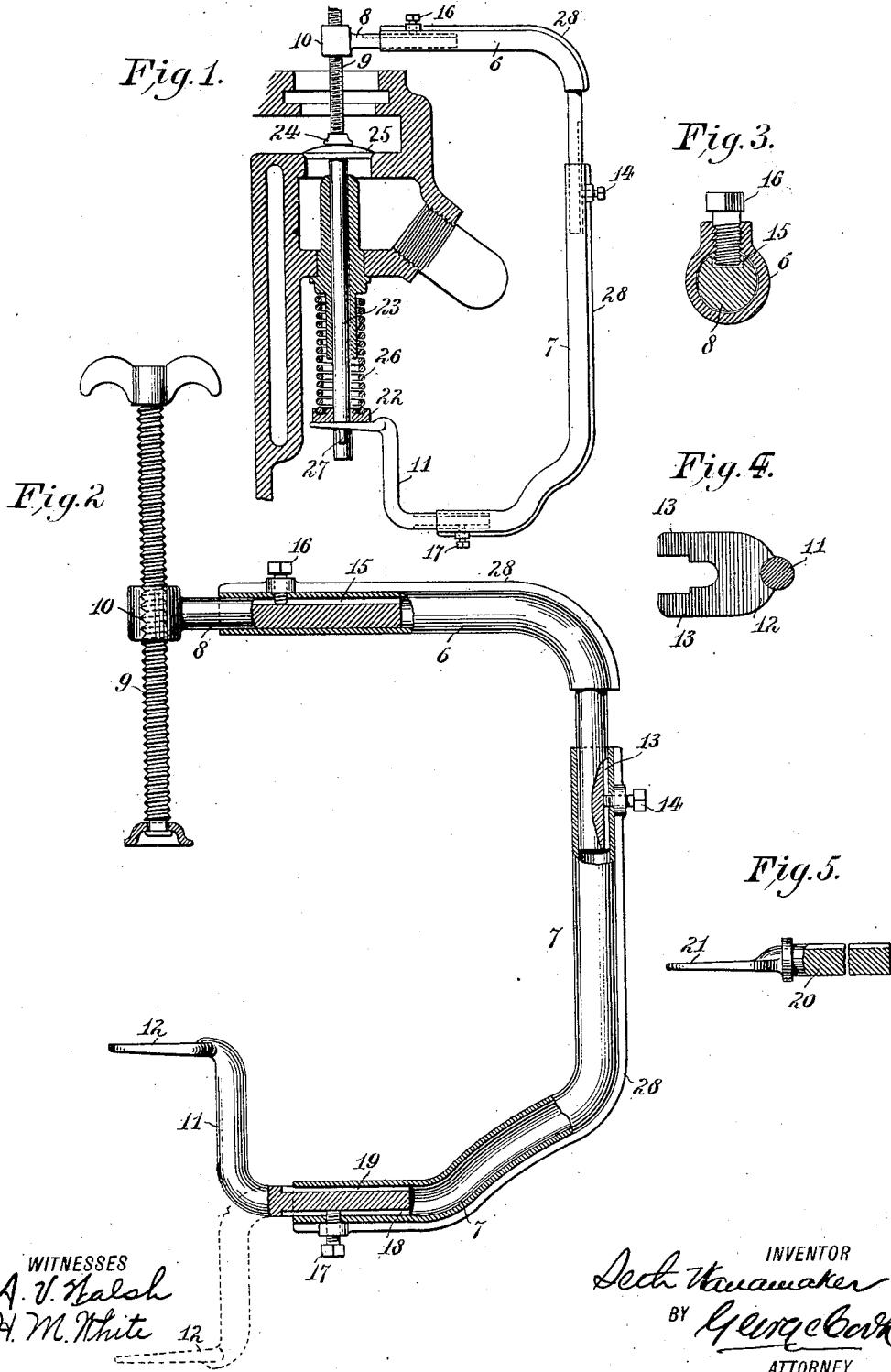


S. WANAMAKER.
 DEVICE FOR FACILITATING THE REMOVAL OF VALVES.
 APPLICATION FILED OCT. 27, 1911.

1,037,691.

Patented Sept. 3, 1912.



UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SETH WANAMAKER, a citizen of the United States, and a resident of Ramsey, in the county of Bergen and State of New Jersey, have made and invented certain new and useful Improvements in Devices for Facilitating the Removal of Valves, of which the following is a specification.

My invention relates to devices for facilitating the removal of the supply or exhaust valves of internal combustion engines, and the object thereof is to provide a device for the purpose stated which is capable of a large range of adjustment, so as to be available for use with various makes of engine; to provide a device for the purpose stated which may be readily taken apart, and packed in a restricted space; and to otherwise improve such devices; all as hereinafter described and claimed and illustrated in the accompanying drawing, wherein the preferred embodiment of my invention is shown.

Referring to the drawing: Figure 1 is a view showing my improved device for facilitating the removal of valves, and illustrating the same in use; Fig. 2 is a view showing the device itself, apart from the engine; Fig. 3 is a view showing a section taken upon a transverse plane; Fig. 4 is a view showing a bifurcated free end of an element of my device; and, Fig. 5 is a view showing a modified form of one of the elements of my device.

Referring to the drawings, the reference characters 6, 7 designate two parts which, taken together, form the frame of my device, such frame comprising a vertical portion and upper and lower laterally extending arms as shown. The parts 6, 7 are adjustably secured together so that the length of the frame may be varied by varying the length of the vertical member thereof to adapt the device to different makes of engine.

The reference character 8 designates a slidable member adjustably secured to the upper arm of the frame, which slidable member carries a threaded rod 9 at its free outer end, said rod being in threaded engagement with a nut 10 upon the end of the member 8.

The reference character 11 designates a second slidable member adjustably secured to the lower laterally extending arm of the

frame and the outer or free end 12 of which member is bifurcated to provide arms 13, Fig. 4, which arms fit upon either side of the lower end of the valve stem, as shown in Fig. 1.

The two part frame member of my device is preferably formed from tubular material, and the vertical portions of said frame are in telescopic engagement with one another, as shown in Fig. 2, one of said members being provided with a groove 13, and the other with a set screw 14, the free end of which lies within the groove. These features permit the vertical portion of the frame to be varied in length, whereby the laterally projecting arms are adjusted toward or from one another to adapt the device to the particular make of engine with which it is to be used, a much greater length of frame being necessary when the device is to be used for some makes of engines than when used with other makes.

The upper slidable member 8 is shown as in telescopic engagement with the upper arm 6, which is a convenient and effective construction whereby to secure adjustability of the slidable member relative to the frame, although the same end may be attained by other constructions as long as the member 8 is slidable relative to the frame. Said member is provided with a groove 15, which groove is in engagement with the free end of the set screw 16 which serves to hold the member in whatever position it may be placed. The lower slidable member 11 is also in telescopic engagement with the lower arm of the frame, and is held in whatever position it may be placed by means of a set screw 17, which engages a groove 18 formed in the member 11.

The lower slidable member 11 is preferably made in the form shown whereby the free end 12 thereof is offset. This permits the free end 12 to occupy a position either above or below the axis of the lower arm of the frame, whereby a greater range of adjustability of the device as a whole is secured. A second groove 19 is provided in the member 11 with which groove the set screw 17 engages when the member 11 is rotated to bring its free end 12 thereof into the position shown in dotted lines, Fig. 2.

Fig. 5 shows a modified form of the lower slidable member 11, this figure showing a slidable member 20 having a straight arm so that the free end 21 thereof lies in line

with the lower laterally extending arm of the frame when this form of sliding member is used.

The members 6 and 7 which constitute the frame of my device are preferably provided with ribs 28 which serve to strengthen the members and prevent them from bending the tubular form of frame, in connection with the rib, securing a maximum of strength and rigidity with minimum weight of material.

Such being the construction of my device it will be understood, referring to Fig. 1, that upon assembling and properly adjusting the parts of the frame, the free end 12 of the lower slidable member may be placed beneath the washer 22 at the lower end of the valve stem 23; and the free end 24 of the threaded rod 9 brought into engagement with the valve 25 of the engine. Upon screwing the rod 9 downward the spring 21 will obviously be compressed, which will relieve the pin 27 and permit it to be removed from the valve stem. The threaded rod 9 is now rotated in a reversed direction until the tension of the spring is released, whereupon the device may be removed and the valve removed from the engine, as will be understood. It will be further obvious that my improved device being made up of several parts readily assembled and disassembled, the same may be disassembled and packed in a comparatively small space, when not in use.

Having thus described and explained my device, I claim and desire to secure by Letters Patent:

1. A device for facilitating the removal of valves comprising a frame having a vertical portion and upper and lower laterally extending arms; a slidable member adjustably secured to the upper of said arms and having a vertically extending threaded rod at its free end, the lower end of which rod is adapted to engage a valve to be removed; and a second slidable member adjustably secured to the lower of said arms and the free end of which is bifurcated to fit about the lower end of the stem of the valve.

2. A device for facilitating the removal of valves comprising a frame having a vertical portion and upper and lower laterally extending arms; a slidable member adjustably secured to the upper of said arms and having a vertically extending threaded rod at its free end, the lower end of which rod is adapted to engage a valve to be removed; and a second slidable member adjustably secured to the lower of said arms and the free end of which is offset so as to occupy a position above or below the axis of said lower arm, and bifurcated to fit about the lower end of the stem of the valve.

3. A device for facilitating the removal of valves comprising a frame having a ver-

tical portion made adjustable so as to vary the length thereof, and upper and lower laterally extending arms; a slidable member adjustably secured to the upper of said arms and having a vertically extending threaded rod at its free end, the lower end of which rod is adapted to engage a valve to be removed; and a second slidable member adjustably secured to the lower of said arms and the free end of which is bifurcated to fit about the lower end of the stem of the valve.

4. A device for facilitating the removal of valves comprising a tubular frame having a vertical portion and upper and lower laterally extending arms; a slidable member in telescopic engagement with the upper of said arms and having a vertically extending threaded rod at its free end, the lower end of which rod is adapted to engage a valve to be removed; and a second slidable member in telescopic engagement with the lower of said arms and the free end of which is bifurcated to fit about the lower end of the stem of the valve.

5. A device for facilitating the removal of valves comprising a tubular frame having a vertical portion and upper and lower laterally extending arms; a slidable member in telescopic engagement with the upper of said arms and having a vertically extending threaded rod at its free end, the lower end of which rod is adapted to engage a valve to be removed, said slidable member having a longitudinally extending groove and said upper arm having a set screw the end of which lies within said groove; and a second slidable member in telescopic engagement with the lower of said arms and the free end is bifurcated to fit about the lower end of the stem of the valve; said second slidable member having a longitudinally extending groove and said lower arm having a set screw the end of which lies within said groove.

6. A device for facilitating the removal of valves comprising a tubular frame made up of two parts in telescopic engagement with one another whereby the length of the frame may be varied, and which frame has upper and lower laterally extending arms, one of said parts having a longitudinally extending groove and the other having a set screw, the end of which lies within said groove; a slidable member in telescopic engagement with the upper of said arms and having a vertically extending threaded rod at its free end, the lower end of which rod is adapted to engage a valve to be removed, said slidable member having a longitudinally extending groove and said upper arm having a set screw the end of which lies within said groove; and a second slidable member in telescopic engagement with the lower of said arms and the free end of

5 which is offset so as to occupy a position above or below the axis of said lower arm; and bifurcated to fit about the lower end of the stem of the valve, said second slidable member having two oppositely located longitudinally extending grooves and said lower arm having a set screw the end of which may engage either of said grooves.

Signed at Ramsey borough of Ramsey
in the county of Bergen and State of New 10
Jersey this 23rd day of Oct. A. D. 1911.

SETH WANAMAKER.

Witnesses:

WM. ALLINSON,
W..E. DECKER.