Jan. 10, 1950 H. A. MEARNS ET AL 2,494,252

SPRING SHACKLE TOOL

Filed March 3, 1947

Fig. 1

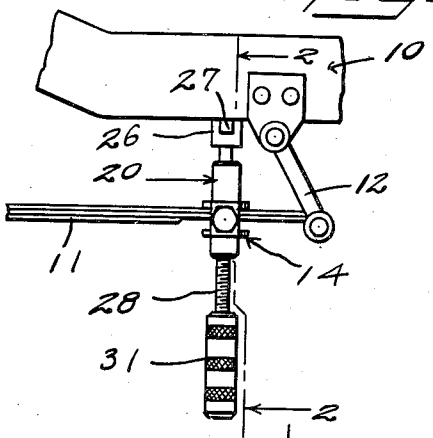


Fig. 2

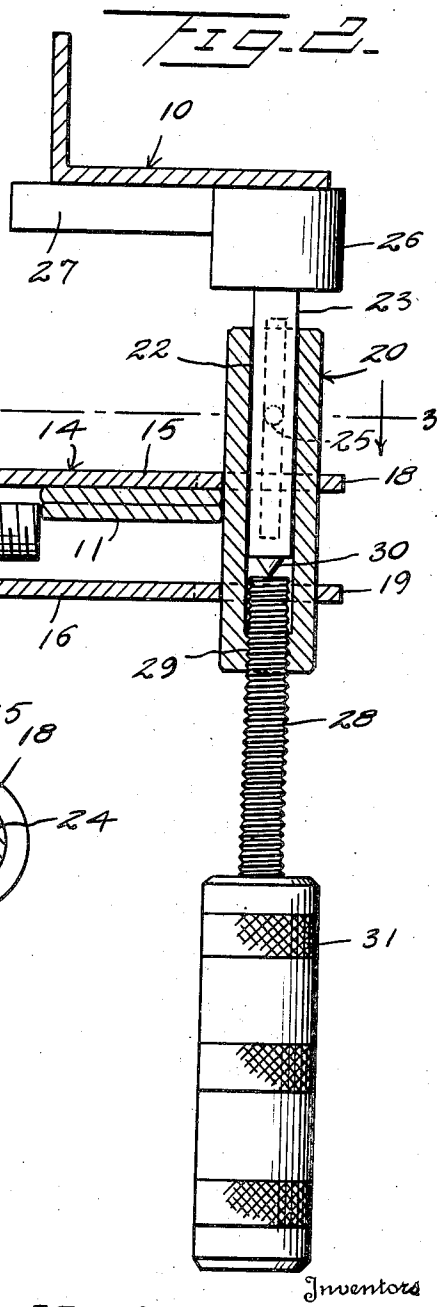


Fig. 3

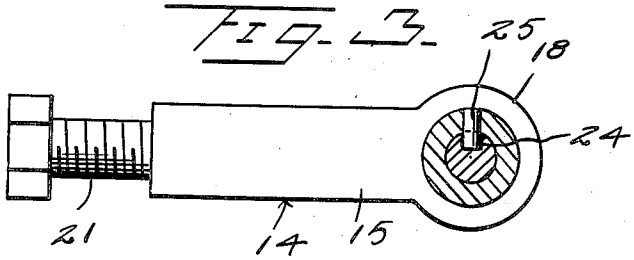
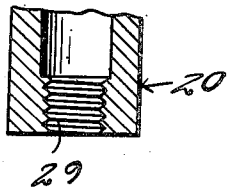


Fig. 4



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SPRING SHACKLE TOOL

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2 Claims. (Cl. 29—230)

1

This invention relates to tools designed as an example for removing or applying spring shackles.

In the work of applying or removing spring shackles for vehicles considerable equipment of a heavy nature is required to support the weight of the vehicle body, and when the spring is relaxed considerable difficulty is encountered in lining up the bearing of the spring with the shackle stud. The net result is that considerable more time is consumed in doing the job than seems justified by the cost of the parts involved. It is, therefore, an object of this invention to provide a small too which will eliminate the use of heavy equipment, and will permit the insertion and/or removal of the shackle within a very short time. Furthermore, with a tool constructed according to this invention, small service stations can remove or apply spring shackles in a short time and with apparently little effort.

Another object of this invention is to provide a tool of this kind which will retain the normal tension on the springs and hold the vehicle body in its normal position.

A further object of this invention is to provide a tool of this kind which can be used on various types of vehicles so that a single tool can be used on most standard vehicles.

A further object of this invention is to provide a tool which is applicable to torsion bar suspensions, and also in the close adjustment of heavy articles.

With the above and other objects in view, our invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a fragmentary detail side elevation of a vehicle frame and suspension spring with a device constructed according to an embodiment of this invention mounted thereon,

Figure 2 is a sectional view taken on the line 2—2 of Figure 1,

Figure 3 is a sectional view taken on the line 3—3 Figure 2,

Figure 4 is a fragmentary sectional view of the lower end of the combined guide and abutment for the clamp.

Referring to the drawing, the numeral 10 designates generally a vehicle frame having disposed therebenath, a leaf spring 11 which is connected at at least one end thereof to the frame

2

10 by means of a shackle 12. The frame 10, with the spring 11 and the shackle 12, are of conventional construction and are herein shown as an example of a vehicle structure with which the hereinafter described tool may be used.

In order to provide a means whereby the shackle 12 may be removed or applied without the use of heavy equipment such as a crane and jack construction for lifting the body of the vehicle and otherwise supporting the spring to permit removal or application of the shackle, we have provided a tool which will retain the normal tension on the spring 11, the tool being interposed partly between the spring 11 and the lower side of the frame 10.

This tool comprises a clamp generally designated as 14 which is adapted to straddle the upper and lower sides of the spring 11. The clamp 14 is U-shaped in side elevation, being formed with parallel legs 15 and 16, and a connecting portion 17 at one end which is formed with an interiorly threaded bort or opening as indicated at 13. The two legs 15 and 16 of the clamp 14 are provided at their free ends with eyes 18 and 19 respectively, and a tubular combined guide and abutment or jaw, generally designated as 20, is adapted to initially engage loosely through the eyes 18 and 19. The guide 20 is substantially longer than the distance between the eyes 18 and 19 so that a substantial portion of this guide may extend above and below the eyes in order that the guide may be vertically adjusted with respect to the frame 10.

The spring 11 is positioned between the two legs 15 and 16, having the inner edge thereof abutting against the guide or abutment member 20, and the spring 11 is tightly clamped against the guide or abutment member 20 by means of a pressure applying screw 21 which is threaded through the opening 13 in the connecting portion 17. When the screw 21 is in pressure applying position, the guide 20 will be tightly disposed within the eyes 18 and 19 and will thereby be held against endwise movement.

The guide 20 is formed with a bore 22 within which an elongated shank 33 slidably engages. The shank 23 is formed with a keyway 24, extending lengthwise thereof, and a key or pin 25 extends through the guide 20 into the keyway 24 so as to thereby hold the shank 23 against turning movement and also limit the endwise movement of the shank, the keyway 24 being of less length than the length of the shank 23 and

having the ends thereof disposed between the upper and lower ends of the shank 23.

The shank 23 has fixed on its upper end a head 26 and a right angularly disposed arm 27 extends from the head 26. The head 26 and the arm 27 are adapted to engage the lower side of the frame 10, as shown in Figures 1 and 2, so that when the shank 23 is vertically adjusted, the spring 11 will be held in its tensioned position with respect to the frame 10. A shank adjusting screw 28 is threaded as at 29, through the lower end of the guide 20, and is adapted to bear at its upper or inner end against a point 30 which is formed on the lower end of the shank 23. The lower end of the screw 28 has a handle 31 secured thereto, whereby the screw 28 may be rotated either inwardly or outwardly of the guide 20.

In the use and operation of this tool, when it is desired to remove the shackle 12, the guide 20 is disengaged from the eyes 18 and 19 and the opposite legs 15 and 16 of the clamp 14 are extended over the upper and lower sides of the spring 11. The eyes 18 and 19 will be positioned on the inner edge of the spring 11 and then the guide 20 is inserted through the eyes 18 and 19 and roughly adjusted vertical so that the L-shaped frame engaging member, comprising the shank 23, the head 26, and the arm 27, will lightly engage the lower side of the frame 10.

The pressure applying screw 21 is then threaded inwardly so as to engage the outer edge of the spring 11, and the tightening of the screw 21 will then lock and tighten the guide 20 within the eyes 18 and 19. The upper side of the L-shaped frame engaging member is disposed with the arm 27 extending at right angles with respect to the length of the frame 10 and the adjusting screw 28 is then threaded inwardly of the guide 20 until the shackle 12 is loosely disposed within the bearings of the frame 10 and the spring 11.

When the weight of the frame 10 and the tension of the spring 11 are relieved from the shackle 12 by adjustment of the screw 28, the shackle 12 may be easily removed from the bearings carried by the frame and the spring.

With a tool as hereinbefore described, the procedure of applying or removing the spring shackle is very much simplified and can be accomplished in a very short space of time so that small service stations can apply or remove shackles for either replacing the shackles or for cleaning out the lubricating channels in the shackles.

We do not mean to confine ourselves to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

What we claim is:

1. A spring shackle tool, comprising a U-shaped clamping member adapted to be disposed with the legs thereof positioned on opposite sides of a spring, a pressure applying bolt threaded through the connecting portion of said clamping member, an eye carried by the free end of each leg of said member, an abutment element loosely engaging through said eyes, a vehicle frame engaging member slidably carried by said abutment element, and threaded adjusting means for said vehicle frame engaging member carried by said abutment element.

2. A spring shackle tool comprising a U-shaped clamping member adapted to be disposed with the legs thereof straddling a spring, an eye carried by the free end of each leg of said clamping member, an abutment element loosely engaging through said eyes, a pressure applying bolt threaded through the connecting portion of said clamping member and adapted to engage the spring for clamping thereof between said bolt and said abutment element whereby said clamping member will be frictionally locked against movement relative to said abutment element, a vehicle frame engaging member slidably carried by said abutment element, and threaded adjusting means for said vehicle frame engaging member carried by said abutment element.

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