W. E. CHRISTOPHER.

ADJUSTABLE SPRING PULLER.

APPLICATION FILED AUG. 26, 1914.

1,139,488. Patented May 18, 1915.

Fig. 1.

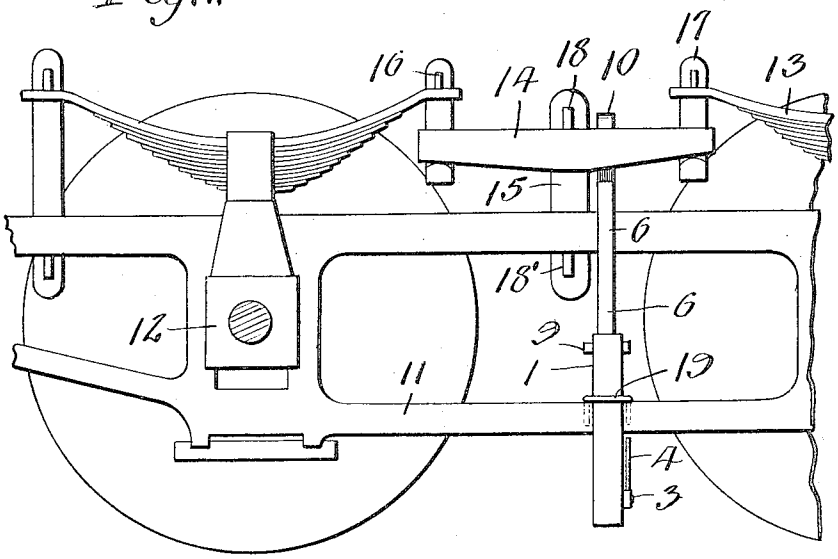


Fig. 2.

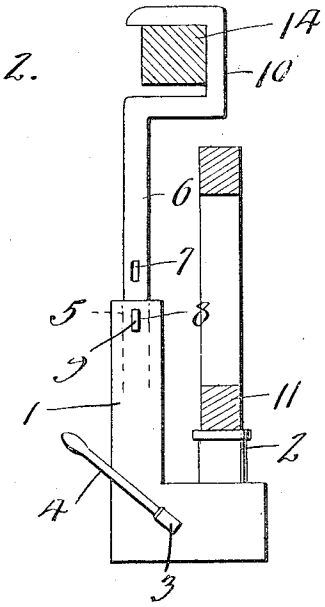
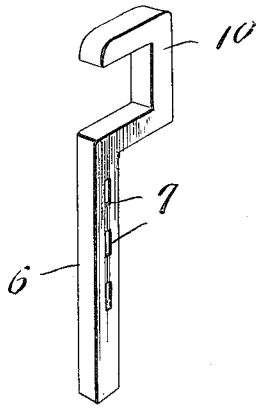


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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ADJUSTABLE SPRING-PULLER.

1,139,488. Specification of Letters Patent. Patented May 18, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM E. CHRISTOPHER, a citizen of the United States, residing at Bessemer, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Adjustable Spring-Pullers, of which the following is a specification.

This invention relates to tools and more particularly to adjustable spring pullers.

The leading feature of my invention consists in providing a device which is adapted to enable certain parts which are present in a locomotive and which serve to equalize the elliptic springs forming part of the engine thereof, to be quickly removed.

One of the objects of my invention is to provide a device of the above character which shall embrace a minimum number of parts so as to reduce the expense of removing the equalizing hangers, the springs, gibs and other accessories forming part of the equalizing mechanism of a locomotive engine.

A further object of my invention is to reduce the labor incidental to removing the various parts of the equalizing mechanism of an engine. It has been necessary to engage several men to remove the equalizing hangers, springs, gibs and such parts as constitute the equalizing mechanism of an engine and by my present invention one man will be able to accomplish the very same result in less time.

A further object of my invention is to provide a hydraulic jack adapted to serve as an adjustable spring puller and in performing this office means is provided in conjunction with the spring puller for releasing the short equalizer bar forming part of the equalizing mechanism so as to give ready access to the remaining part for the purpose of removal and repair.

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

In the drawings wherein similar reference characters designate similar parts throughout the respective views, Figure 1 is a side elevation of my invention showing it in proper position on an engine frame, Fig. 2 is a cross sectional elevation thereof, and Fig. 3 is a detailed view of the hydraulic spring puller to be described.

Referring to the drawings which are merely illustrative of my invention 1 designates the jack broadly which may be of any suitable construction well known to those skilled in the art of hydraulic engineering.

2 designates the head or lift which is adapted to have movement relatively to the shank when acted upon by a head or column of oil in the conventional way.

3 designates a valve adapted to control the passage of oil to operate the shank, and 4 designates a handle or suitable operating member for the purpose of actuating the valve.

5 designates a longitudinal socket extending through the jack 1 and in the socket a shank 6 is adapted to be adjustably positioned. A series of holes 7 are formed in the shank 6 and a single hole 8 is formed upon each side of the jack 1 and a suitable key 9 may be passed through the openings 8 and 7 and in this way lock the shank 6 in adjusted position. The purpose of this adjustment is to assure that the hook 10 formed upon the shank may be brought into engagement with the appropriate equalizing hanger forming part of the equalizing mechanism of a machine frame since these parts vary in size and location in various types of engines.

The hook 10 is of any desirable construction and is so shaped that the same may straddle the short equalizer 14 to be hereinafter described. This hook 10 being deflected laterally from the axis of the shank 6 as will be readily understood, takes a firm grip upon the parts of the equalizing mechanism with which it engages so that the shank 6 may lie alongside of the side bars 11 of the engine where the axle boxes 12 are usually located.

13 designates the usual elliptical springs or semi-elliptical springs which are provided upon the engine frame and 14 designates the short equalizer positioned in the following manner: The elliptic springs 13 create an upward pull upon the short equalizer 14 because the spring posts 17 mounted at the opposite ends of the equalizer 14 are passed through or connected to the adjacent springs 13 and the spring gibs 16 are passed through the upper ends of said posts

17 so that the springs pressing against said gibs tend to pull upon the posts which in turn exert a pull upon the equalizer 14. The spring hanger 15 has a gib 18 at its upper end bearing upon the upper edge of the short equalizer 14 and another gib 18′ is disposed at the lower end of said hanger and bears against the side bar 11 in any suitable manner but in such a way that the upward pull directed against the short equalizer 14 will cause the latter member to bear against the gib 18 hence it will be held against further movement in a vertical direction by virtue of the tension of the springs 13.

19 designates a suitable guide or device carried by the side bars 11 adapted to surround or steady the jack 1 when the same is called into operation to prevent the slipping of the shank.

The following is a description of the mode of operation of my invention: The hydraulic jack will be connected to a suitable source of liquid supply in the conventional manner and a head of oil will operate in such a way that when the passing of the oil is suddenly stopped incidental to hydraulic practice, the jack will be moved downwardly in the following way: The head 2 will be disposed within the jack and the lower end of the jack will contact the lower edge of one of the side bars 11; when the parts are in this position and the hook 10 has been caught upon the short equalizer 14 the head of oil is suddenly stopped by manipulating the handle 4 and valve which it controls, so that the column of oil thus entrapped will cause that part to move which offers the least resistance and this will be the jack 1 which will slide telescopingly relatively to the head 2, the latter still bearing against the side bars 11 and as the jack 1 moves downwardly (since the force of the oil cannot cause it to flow toward the side bars) the shank 6 will move in unison with the jack 1 downwardly, and thereupon the hook 10 will force the equalizer downwardly and cause it to move out of range of the gib 18. In this way the posts 17 will also be pulled downwardly but temporarily, since the gib 18 can be removed as soon as the equalizer moves in advance thereof and thus the hanger 15 can be removed so that there will be no difficulty in removing the equalizer and hanger and the gibs 16.

From the above description it is thought that the advantages flowing from the use of my hydraulic adjustable spring puller will be readily appreciated.

This invention is designed to simplify the method in vogue for removing the equalizer, hanger, gibs and so forth and instead of requiring a force of men to operate for removing these parts the device herein described can be operated by one person and all the parts quickly removed.

Numerous modifications may be resorted to in practice within the scope of the appended claims without departing in principle from the details of construction herein disclosed.

What I desire to secure by Letters Patent on is:—

1. A spring puller consisting of a hydraulic jack, a lift head mounted in said jack, said jack being formed with an elongated socket, a shank disposed in said socket, means for locking said shank in said jack, and a hook formed integrally at the free end of said shank.

2. A device of the character described comprising a hydraulic jack, a valve carried by said shank, means for controlling said valve, a shank slidably mounted in said jack, a key for holding said shank in adjusted position in said jack, and a laterally disposed hook formed terminally upon said shank.

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

WILLIAM EMRY CHRISTOPHER.

Witnesses:

BEN DAVIS,

ETHEL SCHRECK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."