Nov. 27, 1923. 1,475,810

G. E. FRISZ

PULLER IMPLEMENT

Filed Nov. 21, 1921

Fig. 1.

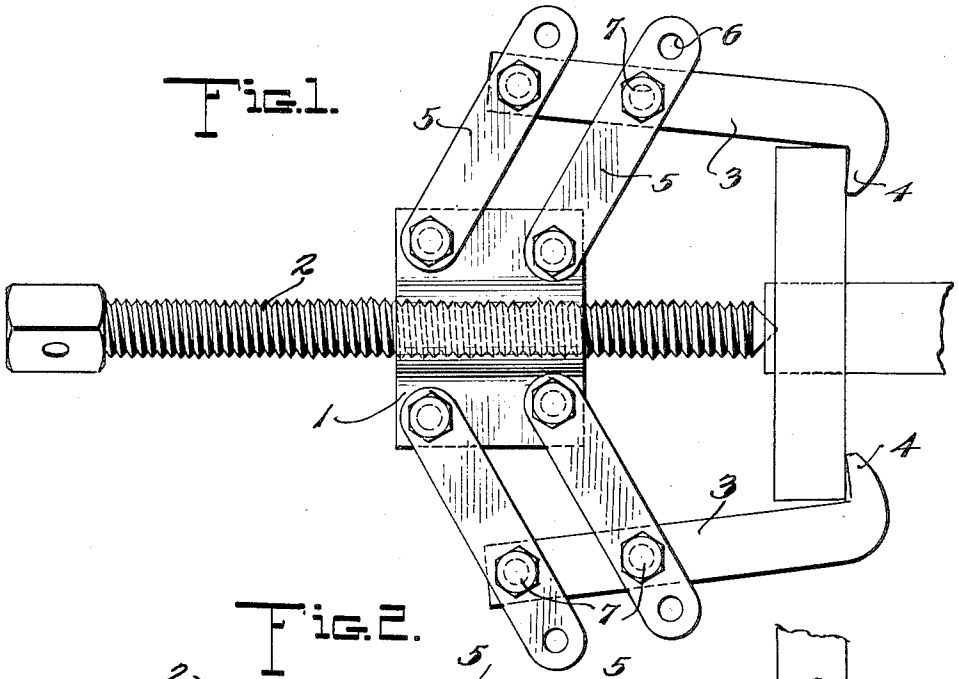


Fig. 2.

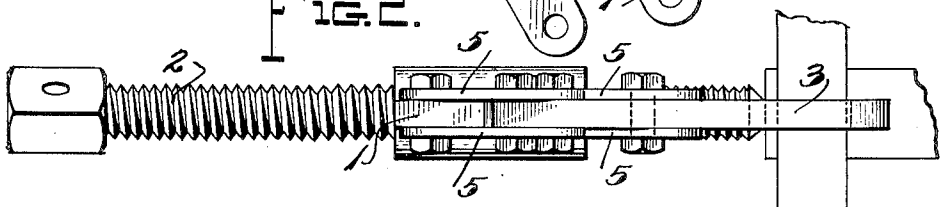


Fig. 3.

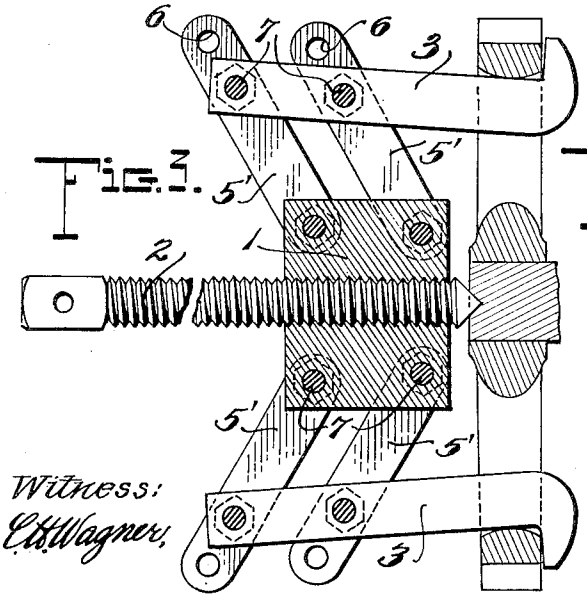


Fig. 4

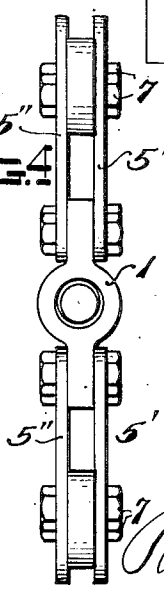
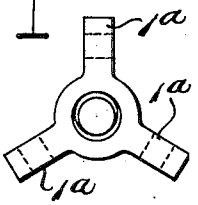


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE E. FRISZ, OF INDIANAPOLIS, INDIANA.

PULLER IMPLEMENT.

Application filed November 21, 1921. Serial No. 516,637.

To all whom it may concern:

Be it known that I, GEORGE E. FRISZ, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Puller Implements, of which the following is a specification.

The present invention appertains to improvements in pulling implements or tools, commonly known in the trade as wheel pullers, and designed not only for easily and safely removing such objects as wheels of motor vehicles, gears, couplings, fly wheels and cams, but also for straightening of bent shafting or similar purposes.

The invention is of simple construction, embodying a pressure head and screw therefor, pulling arms, and a linkage connection between the arms and the head such that the application of pressure in the removing operation tends to increase the gripping action upon the object engaged in ratio with the pressure force employed.

In addition to providing for the foregoing objective, the arrangement I employ is devised to readily adjust itself for application to objects to be removed of varying sizes, such adjustment being produced either by a relative movement of the pulling members about their connection with the head or by the variation of the position of said members on the connection means.

It is further an important object of this invention to provide a construction wherein the gripping action of the pulling members may be exerted in either an inward or an outward direction with respect to the object engaged or the line of pressure force, according to the position of the pulling members with respect to a transverse axis of said head.

These and such other objects as may hereinafter appear are attained by the novel construction, combination and arrangement of parts to be hereinafter specifically described and claimed.

Reference will now be had to the accompanying drawings forming a part of this specification, wherein:

Figure 1 is a front elevation of an implement constructed in accordance with the present invention.

Figure 2 is a side elevation thereof.

Figure 3 is a sectional view showing a reversal position of the pulling elements.

Figure 4 is an end elevation of the device as shown in Figure 3.

Figure 5 is a modified form of pressure head.

Throughout the following detailed description and on the several figures of the drawing, similar parts are referred to by like reference characters.

Referring to the drawings. 1 designates the body portion or pressure head and 2 the pressure producing screw having threaded connection with said head and adapted to be placed against the support such as a shaft for an object to be removed therefrom. In the construction of the device shown in Figure 1 I employ a pair of pulling arms 3 having a hooked extremity 4 at one end and connected adjacent their other ends with the pressure head at opposite sides. The connection between each arm and the head is in the form of a pair of link members 5 spaced apart in parallelism, one pivotally connected to the extremity of the arm opposite the hook and the other pivotally connected to the arm at a point intermediate the two extremities. While each of these links in the construction depicted is formed by spaced plates 5′ and 5″, one arranged at each side of the pulling arm, it will be apparent that these links may be of solid or integral form. The links are each provided with one or more openings 6 to receive the pivot bolts 7 and by means of these spaced openings the arms may be positioned farther or closer to the head according to the size of the object which it is desired to remove.

Passing now to the operation of the device, and speaking with reference to that form shown in Figure 1, it will be apparent that the connection of the arms to the head by the spaced link members 5 will impart to the arms a circulatory motion, throwing the hook end inwardly toward the axis of the screw when said arms are shifted in a direction forwardly. The degree of such movement will enable the adaptability of application of the device in engaging relation to objects of varying sizes or diameters and the motion which has just been referred to I term the gripping action of the pull arms as distinguished from that action produced by the pressure force of the

screw 2 which is actually the pulling stress. This pulling stress, in other words, is in a direction longitudinally of the pressure screw, but the gripping action is in a direction inwardly toward the axis of said screw. As the pressure is applied by means of the screw, relative movement of the parts is produced in the manner suggested, and as the pressure is increased the gripping action is proportionately increased so long as the position of the links 5 is at an angle to one side of a vertical plane passing through a transverse axis of the head. The opposite action, speaking with reference to the gripping action, may be produced by positioning the links to the other side of this transverse axis, or as shown in Figure 3. When so positioned the tendency is to move the hook end of the pulling arms 3 outwardly with respect to the axis of the screw or substantially at right angles to the said axis. Advantage is taken of this peculiar movement of the arms produced by the double link connection in adapting the implement to engagement about the periphery of an object to be removed or positioning the object to be removed exteriorly of the arms as shown in Figure 3. In other words, for removing fly wheels or discs the position of engagement of the pulling implement would be that shown in Figure 1, while for the removal of sprocket gears or similar objects the engaging position of the implement shown in Figure 3 is preferable. In this latter position the arms may be reversed so that the hooked extremities will be positioned outwardly to facilitate coaction of the hooked ends with the object to be removed. It thus follows that in either of the positions the adjustment, to accord with the diameter or size of the object is substantially automatic, so to speak, caused either by a shifting of the head 1 toward the head of the pressure screw, as by means of rotation of the screw, or by shifting the arms 3 in the opposite direction as the case may be.

Where the diameter of the object to be removed is greater than is easily accommodated by the position of the pivot connections between the links and the respective arms in the innermost openings of the links, the arms may be shifted outwardly of the links with the pivot members 7 in the outermost openings. Obviously any number of such openings may be provided in the links within a reasonable range to permit the device to be used in connection with objects with a very large range of sizes.

While in the preferred form I have employed but two arms 3, it will also be apparent that a greater number of such arms may be utilized, in which event the head 1 is suitably formed with the proper number of flanges or ribs 1^a, referring to Figure 5 of the drawing, wherein three such ribs are depicted. In an implement of this character a very difficult removing operation may be performed because of the extent of pressure which can be applied without mutilating or injuring the parts operated upon.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a pulling implement of the class described, the combination of a head and a pressure member engaging therewith, pulling arms, and means connecting the arms to the head, said means imparting to the arms a gripping movement incident to the operation of the pressure means in a direction other than that of the line of movement of the object.

2. In a pulling implement of the class described, the combination of a head and a pressure member engaging therewith, pulling arms, and means swingingly connecting the arms to the head such that said arms have imparted thereto upon operation of the pressure member a gripping action consonant with the pressure produced by the said pressure member.

3. In a pulling implement of the class described, the combination of a head and a pressure member engaging therewith, pulling arms, and linkage means connecting the arms to the head and arranged to impart gripping action through operation of the pressure member to said arms as an incident to movement of the head thereby with respect to the object engaged.

4. In a pulling implement of the class described, the combination of a head and a pressure member engaging therewith, pulling arms, and linkage means having pivotal connection with the head and with the arms, said pressure member imparting gripping action to the arms in a direction substantially at right angles to the line of pressure force simultaneously exerted on the object engaged through said pressure member.

5. In a pulling implement of the class described, the combination of a head and a pressure screw engaging therewith, pulling means adapted to be engaged with an object to be removed, and link members arranged in parallelism between the head and pulling means.

6. In a pulling implement of the class described, the combination of a head and a pressure screw engaging therewith, pulling means adapted to be engaged with an object to be removed, and link members connecting each arm to the head and arranged in spaced parallel relation to each other.

7. In a pulling implement of the class described, the combination of a head and a pressure screw engaging therewith, pulling means adapted to be engaged with an object to be removed, and link members connecting each arm to the head and arranged in

spaced parallel relation to each other, one of the links being connected to an end of the arm while the other of said links is connected to the arm intermediate its length.

8. In a pulling implement of the class described, the combination of a head, a pressure screw having threaded connection therewith, oppositely arranged pulling arms, a pair of link members connecting each of said arms to the head, and means whereby said arms may be adjusted with respect to said links.

9. In a pulling implement of the class described, the combination of a head, a pressure screw having threaded connection therewith, pulling arms adapted to be engaged with an object to be removed, spaced parallel link members connecting each arm to the head, said link members having a plurality of openings therein whereby said arms may be adjusted with respect to the head to accommodate objects of varying sizes.

10. In a tool of the kind described the combination of a nut-block, a screw passing through the nut-block, a pair of parallel jaws at opposite sides of the block, parallel links connecting said jaws to said block, and a lug on each jaw for engaging a part to be removed from a shaft.

In testimony whereof I affix my signature.

GEORGE E. FRISZ.