Jan. 23, 1923.

1,443,052

L. E. STEPHENS.
KEY PULLER.
FILED APR. 7, 1921.

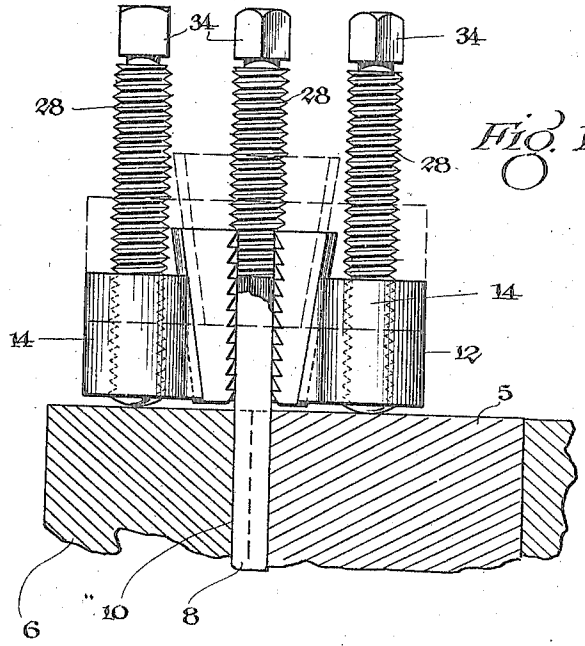


FIG. 1.

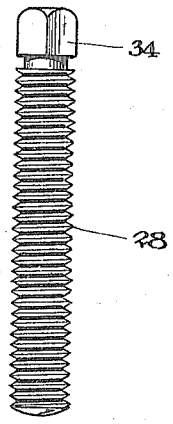


FIG. 3.

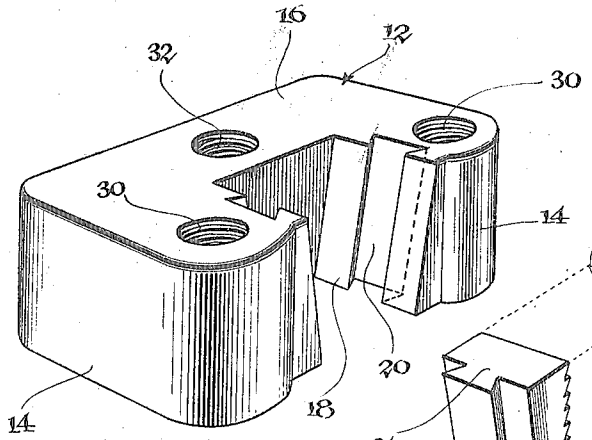


FIG. 2.

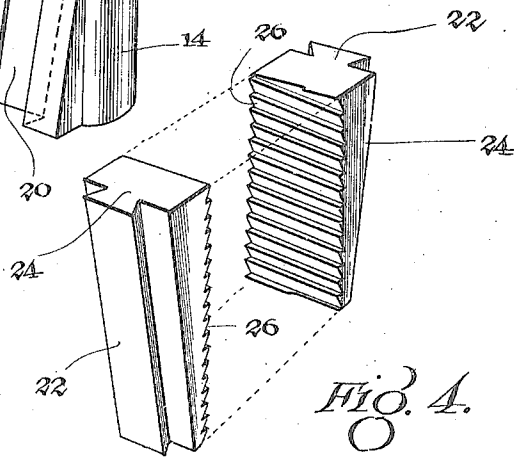


FIG. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

LEWIS ELY STEPHENS, OF FELLOWS, CALIFORNIA.

KEY PULLER.

Application filed April 7, 1921. Serial No. 459,457.

To all whom it may concern:

Be it known that I, LEWIS E. STEPHENS, a citizen of the United States, and a resident of Fellows, in the county of Kern and State of California, have invented certain new and useful Improvements in Key Pullers, of which the following is a specification.

This invention relates to key pullers especially adapted for removing keys from shafts.

Briefly stated, an important object of this invention is to provide a key puller having novel means whereby the grip on the key is tightened as the key is being withdrawn so that the device will not slip when in use.

A further object of the invention is to provide a key puller having novel means for pulling keys of a variety of sizes and which is particularly useful in pulling or removing broken or headless keys.

The invention forming the subject matter of this application aims also to provide a key puller which is of highly simplified construction, durable in use, and cheap to manufacture.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of the improved key puller in use.

Figure 2 is a perspective of the body of the improved tool.

Figure 3 is a side elevation of one of the screws embodied in the invention.

Figure 4 is a group perspective of a pair of wedges or gripping devices embodied in the invention.

In the drawing wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 5 designates a shaft which may be extended through the hub or flange of a pulley or any other power-transmitting device such as a gear wheel. By way of illustration, I have shown the shaft 5 extended through the hub 6 and connected to the same by means of a key 8 which is received within a keyway 10 formed by registering grooves in the shaft and the hub.

The improved key puller includes a U-shaped body 12 which is cast from iron or the like and is formed with spaced parallel sides or arms 14 and with a connecting portion 16. The spaced parallel sides 14 and the connecting or bight portion 16 define what might be termed a socket or recess within which the outer end of the key 8 is received when it is desired to remove the same. The opposed sides of the arms 14 are inclined as indicated at 18 and are provided with dove-tail grooves 20, each one of which is of a uniform depth throughout and extends out through the upper and lower sides of the body. Each dove-tail groove 20 which has its side walls undercut freely and slidably receives the dove-tail shank 22 of a gripping jaw 24.

As illustrated in Figure 4, each jaw 24 has obliquely extending teeth 26 which cooperate with the teeth of the other jaw in securely gripping the outer or extended portion of the key. The jaws 24 are considerably greater in length than the thickness or height of the body so that as the body is drawn away from the shaft and the hub the jaws may remain relatively stationary and thereby be drawn firmly into engagement with the opposite sides of the key. The outer sides of the jaws 24 flatly and slidably contact with the inclined faces 18 of the arms 14 so that the obliquely extending teeth 26 will be uniformly engaged with the key.

The means employed for moving the body away from the shaft and firmly engaging the jaws with the key includes a plurality of screws 28 threaded through openings 30 in the terminal portions of the arms 14 and through a single opening 32 in the bight portion of the body. The forward ends of the screws are rounded and are adapted to engage the adjacent portions of the hub and shaft so that when a wrench is engaged with the heads 34 for rotating the screws the body will be withdrawn from the shaft.

By thus withdrawing the body 12 from the shaft and the hub the jaws 24 are firmly engaged with the key so as to withdraw the same from the keyway 10. The initial outward movement of the body serves only as a means for drawing the teeth 26 into gripping engagement with the key and the subsequent or continued outward movement of the body results in withdrawing the key.

Keys of a variety of sizes may be withdrawn since the space betwen the teeth may be readily varied by sliding the jaws with relation to the arms 14. By reason of the fact that the jaws are tapered toward their

lower ends to correspond to the inclination of the faces 18 the teeth 26 are arranged parallel and are uniformly engaged with the key.

With reference to the foregoing description it will be apparent that a key puller constructed in accordance with this invention may be readily and conveniently connected with a key for removing the same even though the key may be broken or without a head.

Having thus described the invention, what is claimed is:—

1. A key puller comprising a U-shaped body having spaced parallel side arms, the opposed sides of which are uniformly inclined in opposite directions and formed with dove-tail grooves opening out through opposite ends of the arms, jaws flatly abutting the opposed surfaces of said arms and having tongues received in said grooves, said jaws being substantially greater in length than the distance between the upper and lower ends of the arms whereby the jaws extend beyond the upper and lower sides of the arms at all operative positions of the tool, and screws threaded through the arms and the body of the U-shaped member.

2. The construction set forth in claim 1, said jaws having their opposed surfaces formed with diagonally extending teeth adapted to securely grip the key to be removed.

LEWIS ELY STEPHENS.