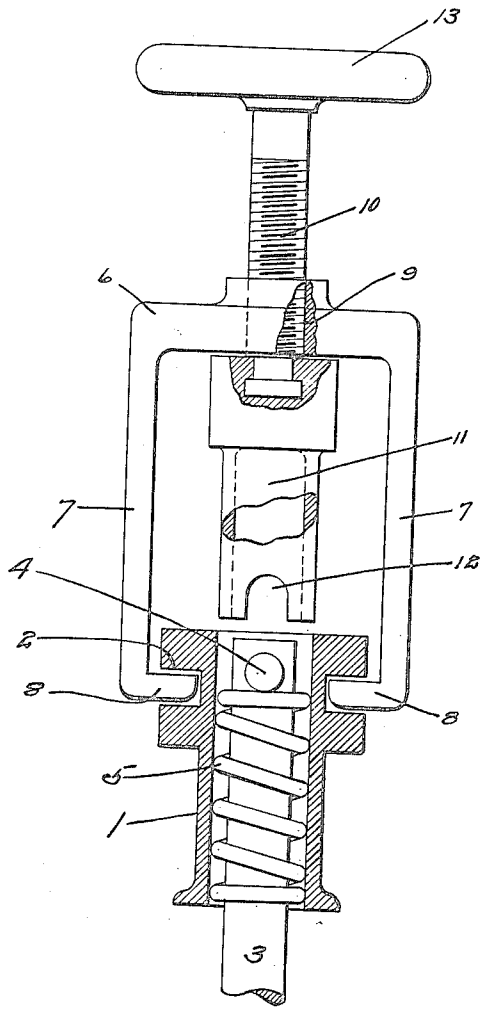
Apr. 17, 1923.

1,451,852

N. VERDOORN

CLUTCH SPRING REMOVER

Filed Nov. 11, 1920



INVENTOR
NEAL VERDOORN
BY
Milton S. Crandall
ATTORNEY

Patented Apr. 17, 1923. 1,451,852

UNITED STATES PATENT OFFICE.

NEAL VERDOORN, OF SHELDON, IOWA, ASSIGNOR OF ONE-HALF TO JOSEPH ZYLSTRA, OF SHELDON, IOWA.

CLUTCH-SPRING REMOVER.

Application filed November 11, 1920. Serial No. 423,446.

To all whom it may concern:

Be it known that I, NEAL VERDOORN, a citizen of the United States, and a resident of Sheldon, in the county of O'Brien and State of Iowa, have invented certain new and useful Improvements in Clutch-Spring Removers, of which the following is a specification.

My invention has for its object the production of an improved tool particularly adapted for separating and assembling the members of the clutch mechanism of the type employed on Chevrolet cars.

Furthermore, the invention contemplates an improved clutch-mechanism tool, simple and inexpensive in construction and thoroughly efficient in operation.

With these and other objects in view, the invention, consisting in the construction, combination, and novel arrangement of parts will be clearly understood from the following description, reference being had to the accompanying drawing, which forms a part of this application and which is a plan of a device constructed in accordance with the invention and as applied to the clutch members with which it is used, parts being cut away and shown in section.

While I have illustrated and hereinafter described a preferred embodiment of the invention, I would not be understood as being limited to this specific construction, for various alterations and modifications may be made in the details of construction and arrangement of parts herein disclosed without departing from the spirit and scope of the invention as defined in the appended claims.

Referring, now, to the illustrations, 1 represents a cylindrical housing, one end of which is in practice, fixed to a removable clutch-member (not shown), and the other end thereof is enlarged and provided with an annular groove, 2, in which is engaged the usual clutch-shifting member. The housing encloses a shaft, 3, one end of which is fixed to the fly-wheel (not shown), and the other end of which carries a cross-pin, 4, which extends through the pin and serves as a seat for one end of a compression spring, 5, which encircles the shaft, 3, within the housing.

The tool which I have invented includes a yoke having a web, 6, arms, 7, having their free end portions extended inwardly, as at 8, to engage the annular groove, 2, after the shifting means have been removed. The web, 6, is provided with an opening, 9, through which is threaded a bolt, 10, having swivelly mounted thereon a hollow head, 11, adapted to enter the end of the clutch-spring housing when the bolt, 10, is rotated in the appropriate direction. The bore of the head, 11, is adapted to freely receive the end of the shaft, 3, and notches, 12, in the end of the head admit the pin, 4, permitting the extreme end of the head to engage and force the spring, 5, inwardly to permit insertion or removal of the pin through the usual transverse hole in the housing (not shown). The bolt is provided with a suitable hand-grip, 13.

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

1. A tool for clutch-mechanism, having a shouldered housing, a shaft therein, a compression-spring encircling the shaft, and a pin extending transversely through the shaft, and against which the spring seats, comprising a yoke having arms engageable with the shouldered housing and a web having an opening, a bolt threaded into the opening, and a hollow swivel-head on the bolt adapted to enter the housing, receive the shaft and engage the spring.

2. A tool for clutch mechanism having a shouldered housing, a shaft therein, a compression-spring encircling the shaft, and a pin extending transversely through the shaft, and against which the spring seats, comprising an internally threaded cross-member, a bolt threaded therein, a hollow swivel-head on the bolt to enter the housing and receive the shaft, the head having recesses to receive the pin and permit the head to engage the spring, and arms on the cross-member engageable with the housing.

3. In a device of the class described, the combination of a substantially U-shaped

frame provided with inwardly-extending outer ends, a bolt threaded upon said frame and having its inner end extending between portions thereof, and a swivel open at at its outer end and mounted upon the inner end of the bolt between portions of the frame.

4. In a device of the class described, the combination of a frame provided with means for hooking on portions of a clutch hub, a rotatable, adjustable member on said frame, and a slotted swivel mounted upon the inner end of said rotatable, adjustable member.

In testimony whereof, I have hereunto set my hand this 30th day of October, 1920.

NEAL VERDOORN.