Dec. 30, 1952 M. T. HENRY 2,623,556

STARTER MOTOR AND GENERATOR REPAIR TOOL

Filed June 1, 1949 2 SHEETS—SHEET 1

Fig. 1.

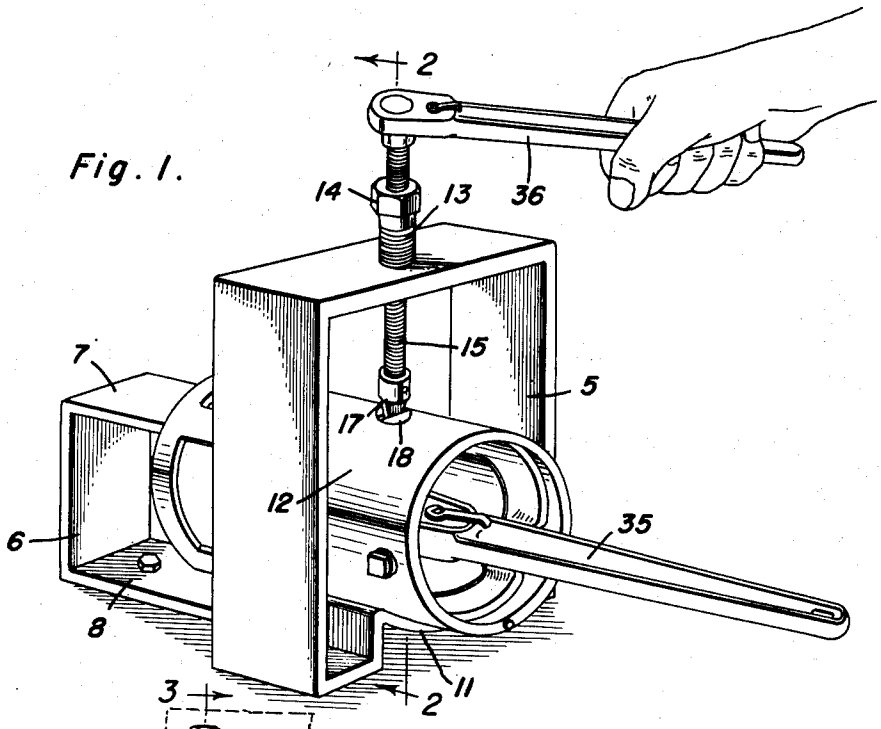



Fig. 2.

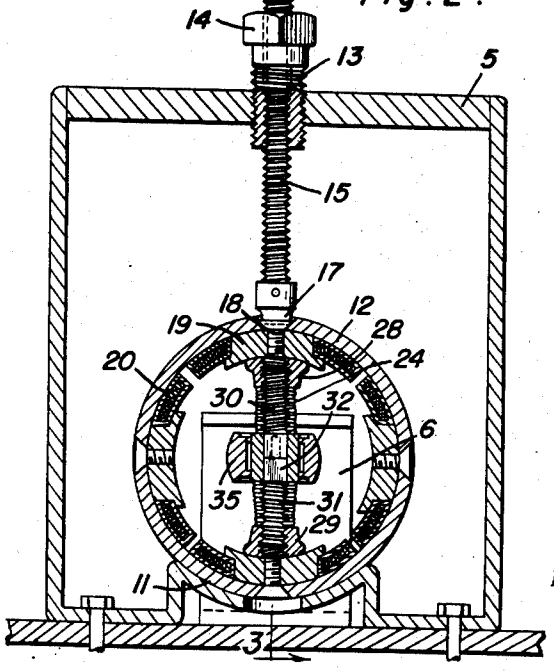
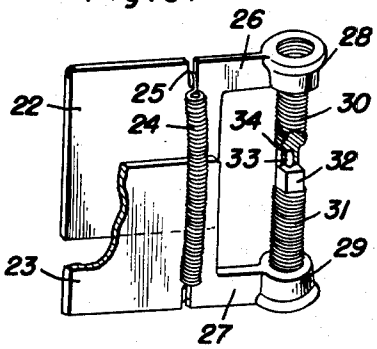



Fig. 5.




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Fig. 3.

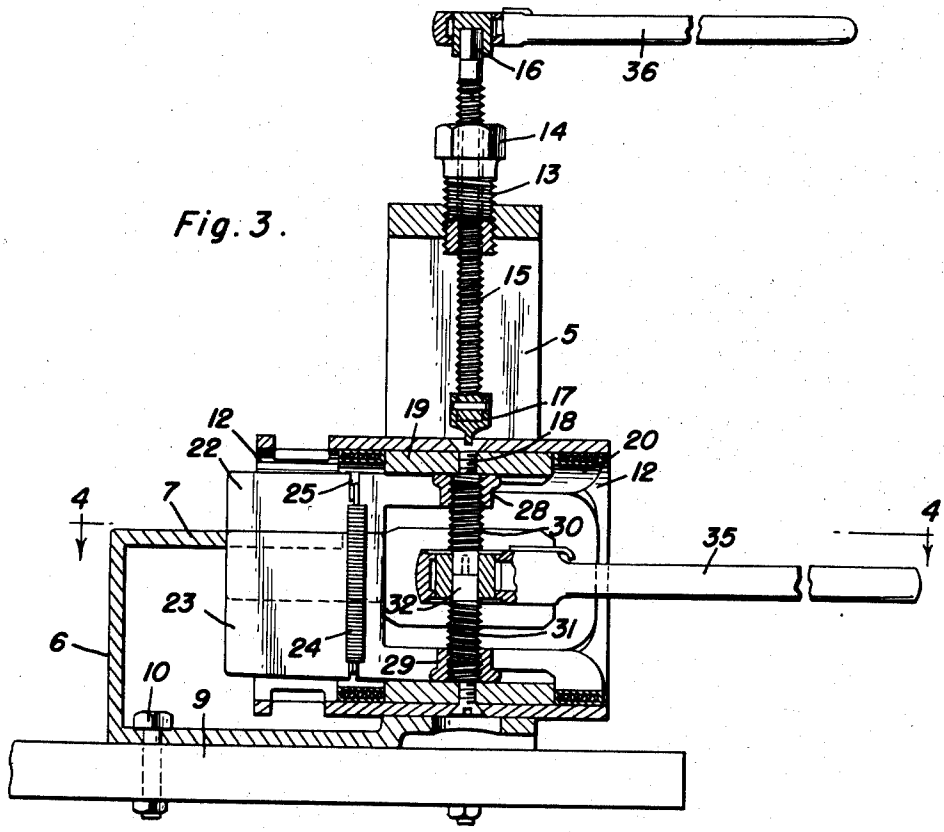
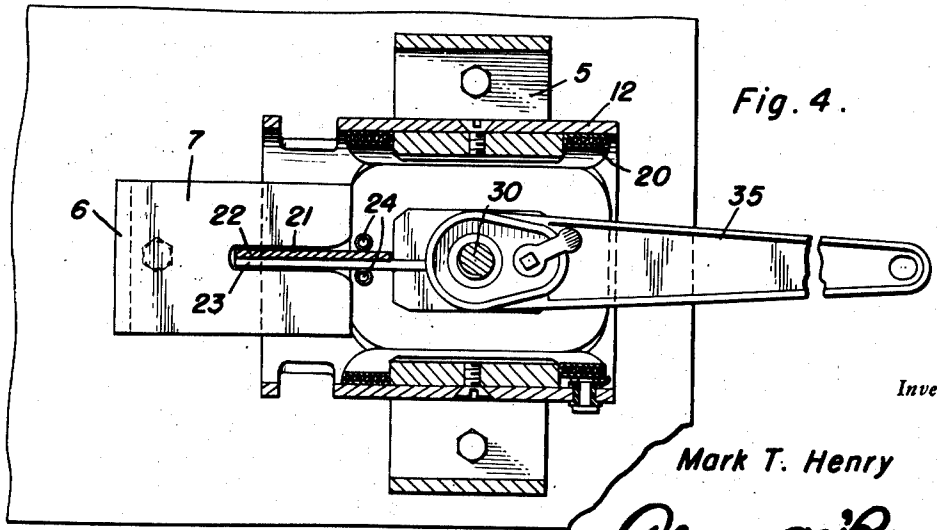



Fig. 4.




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# UNITED STATES PATENT OFFICE

2,623,556

## STARTER MOTOR AND GENERATOR REPAIR TOOL

Mark T. Henry, Marshall, Tex.

Application June 1, 1949, Serial No. 96,566

2 Claims. (Cl. 144—32)

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The present invention relates to new and useful improvements in tools for the assembly and repair of starter motors and generators of a type used with motor vehicles.

An important object of the invention is to provide a frame having a cradle in which the housing of a starter motor or generator is firmly held and providing a feed screw for a screwdriver carried by the frame to firmly hold the screwdriver in engagement with the field pole screws of the starter motor or generator while removing or replacing the same.

Another object of the invention is to provide a spreader to hold the usual pole pieces for the field coils of the starter motor or generator while the field pole screws are being removed or replaced, and for holding the field coils and pole pieces in assembled relation while assembling or repairing the starter motor or generator.

A still further object is to provide a tool of this character of simple and practical construction, which is efficient and reliable in operation, strong and durable, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view;

Figure 2 is a transverse sectional view taken on the line 2—2 or Figure 1;

Figure 3 is a longitudinal sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a horizontal sectional view taken on the line 4—4 of Figure 3; and

Figure 5 is a perspective view of the spreader.

Referring now to the drawings in detail wherein, for the purpose of illustration, I have disclosed a preferred embodiment of the invention, the numeral 5 designates a substantially square-shaped frame positioned upright and 6 is a substantially U-shaped frame positioned horizontally to provide upper and lower legs 7 and 8 and with the lower leg 8 welded or otherwise suitably secured at its end to the lower portion of frame 5 to secure frame 6 in a rearwardly projecting position with respect to frame 5. The lower leg 8 of frame 6 and the lower portion of frame 5 may be secured to a work bench or the like 9 by bolts and nuts 10.

The bottom portion of frame 5 is formed with a raised curved seat or cradle 11 on which the

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housing 12 of a starter motor or generator is seated with one end of the housing projecting rearwardly over upper leg 7 of rear frame 6.

An adapter screw 13 is threaded into the top of frame 5 and is formed with a wrench engaging head 14. The screw 13 is internally threaded to receive a feed screw 15 having a wrench engaging upper end 16 and a screwdriver bit 17 suitably secured at its lower end to engage the uppermost field pole screw 18 employed for securing the field pole pieces 19 in the housing 12 and which secure the field coils 20 in assembled position in the housing.

The upper leg 7 of rear frame 6 is formed with a longitudinal slot 21 for slidably receiving and supporting in an upright position a pair of upper and lower spreader plates 22 and 23 positioned in overlapping relation with respect to each other and held in a contracted position by coil springs 24 having their ends engaged in notches 25 at the upper and lower edges of plates 22 and 23, as shown in Figure 5 of the drawings.

The upper edge of plate 22 is provided with an arm 26 and the lower edge of plate 23 is provided with a similar arm 27 provided with aligned internally threaded collars 28 and 29 and in which upper and lower oppositely threaded screws 30 and 31 are engaged.

The screws 30 and 31 are positioned vertically between collars 28 and 29 and the adjacent ends of the screws are formed with square-shaped wrench engaging portions 32, one of said wrench engaging portions being formed with a guide pin 33 slidably engaged in a recess 34 in the other of said wrench engaging portions 32 to rigidly connect the adjacent ends of screws 30 and 31 during movement thereof relative to each other.

In the operation of the device, the housing 12 of a starter motor or generator is seated on the cradle or seat 11 at the bottom of frame 5 and the spreader plates 22 and 23 are positioned in slot 21 and with the upper and lower collars 28 and 29 bearing respectively against a pair of upper and lower pole pieces 19 in the housing 12.

A ratchet wrench 35 is applied to wrench engaging portions 32 of screws 30 and 31 and the screws turned to force collars 28 and 29 tightly against the pole pieces 19 in the manner of a screw jack.

Screw 15 is then turned by a wrench 36 to remove screw 18 by screwdriver bit 17 at the lower end of screw 15.

The several screws 18 for holding the pole pieces 19 may thus be removed by turning housing 12 on seat 11 to bring the screws in position

for engagement by screwdriver bit 17 and the field coils 20 removed and repaired or replaced.

The collars 28 and 29 of spreader plates 22 and 23 likewise hold the pole pieces 19 in position while assembling the field coils.

In view of the foregoing description taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention, the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A repair tool of the class described comprising a frame having a work supporting seat and also including a slotted part overlying the seat, extensible means adapted for placing internally of work supported on the seat and including a pair of vertically extensible plates held in an upright position in said slotted part, spring means connecting the plates to each other, and oppositely threaded screw means carried by the plates to spread the plates apart internally of the work.

2. A repair tool of the class described comprising an upstanding frame having a work supporting seat at its bottom position, a second frame extending rearwardly from said upstanding frame and including an upper horizontal arm having a slot in its free end and adapted for placing internally in work supported on said seat, an expander including a pair of plates supported in confronting upstanding position in said slot, spring means contracting the plates, upper and lower internally threaded collars carried by the plates, oppositely threaded pressure screws threaded in the collars to oppositely move the plates into clamping engagement with an internal part of the work to hold the same in assembled position in the work, and means carried by said upstanding frame engaging and holding the work on the seat.

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