March 10, 1959 G. SCHUH 2,876,645

AUXILIARY STARTER

Filed Sept. 2, 1955

2 Sheets-Sheet 1

FIG. 1.

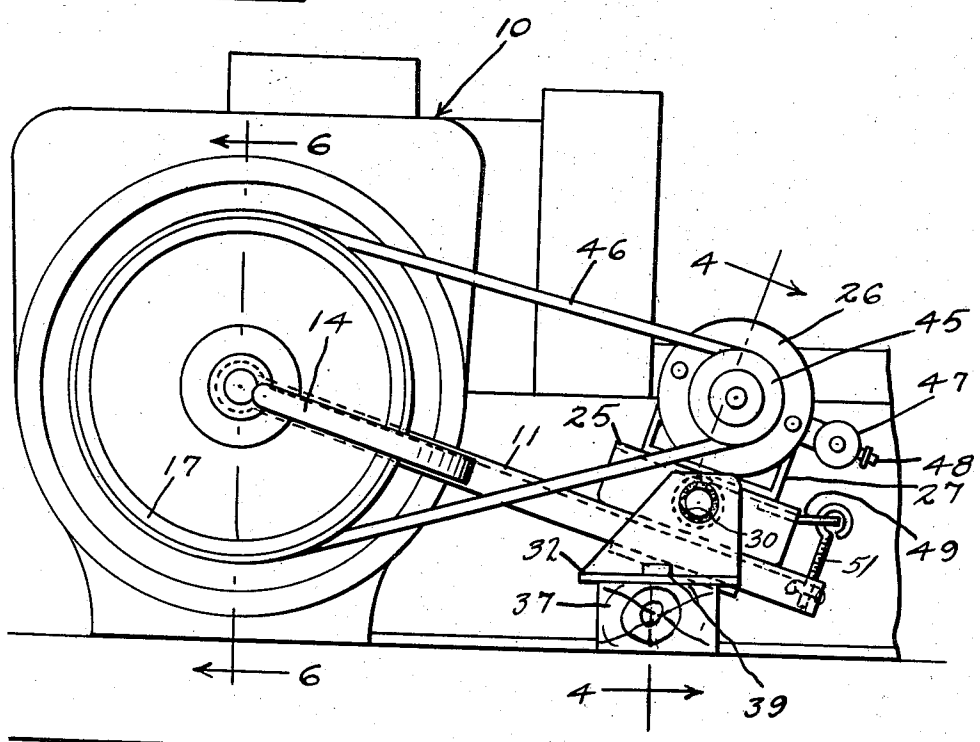
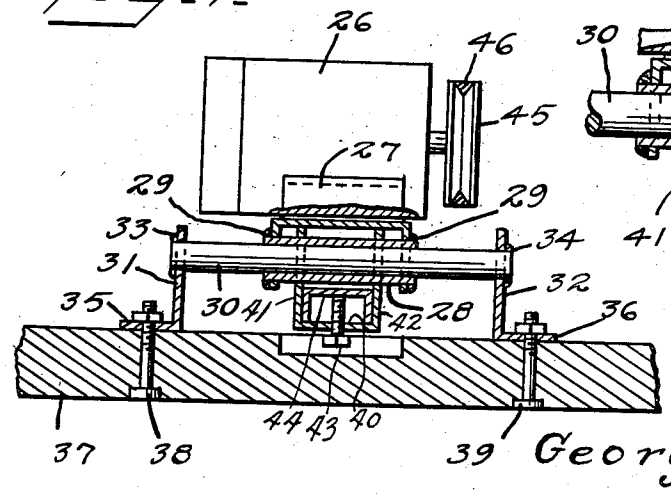


FIG. 4.



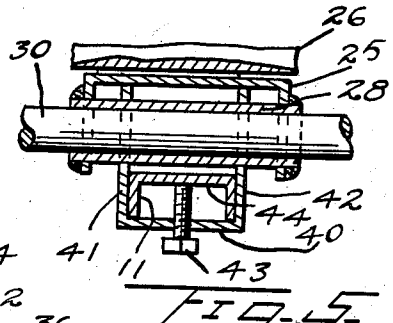


FIG. 5.

INVENTOR

George Schuh

BY Kimmel & Crowell

ATTORNEYS

March 10, 1959 G. SCHUH 2,876,645

AUXILIARY STARTER

Filed Sept. 2, 1955

2 Sheets-Sheet 2

Fig. 2.

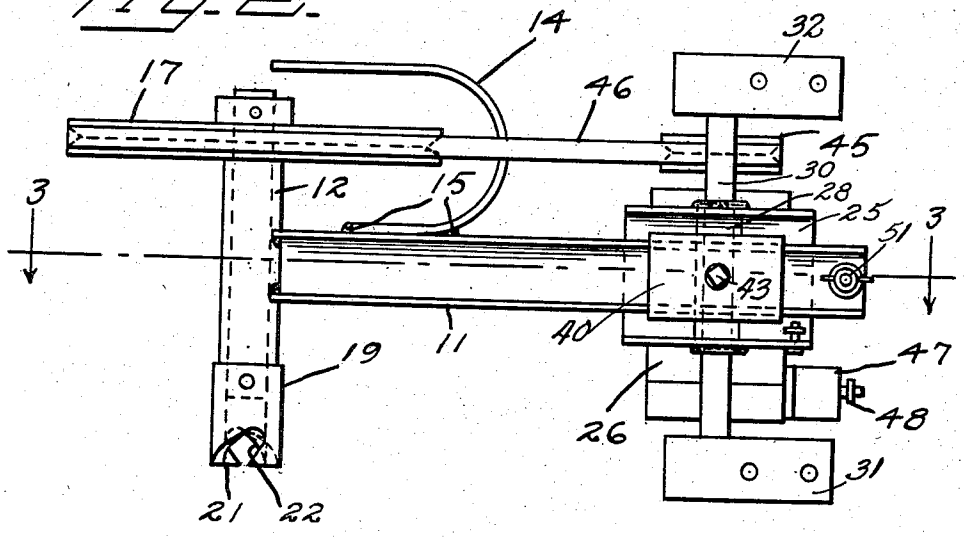
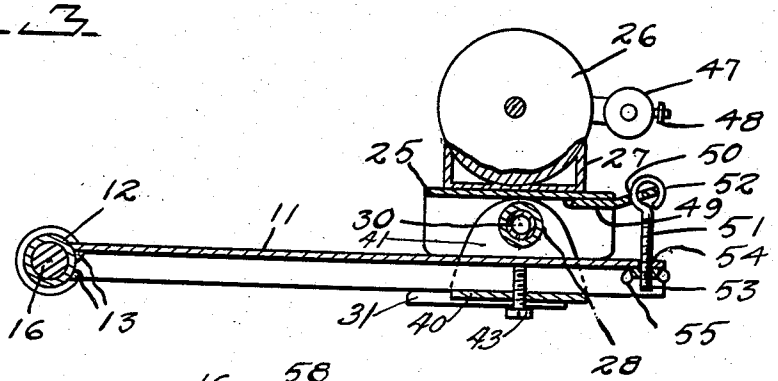


Fig. 3.



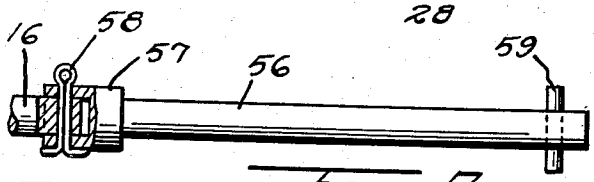


Fig. 7.

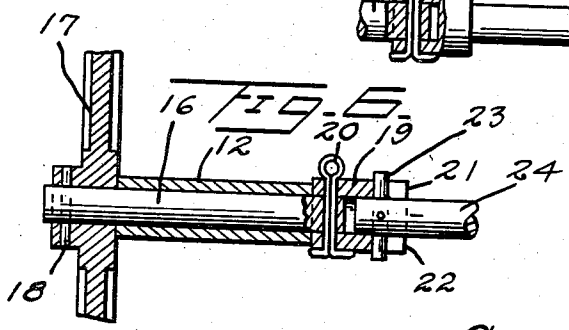


Fig. 6.

INVENTOR

George Schuh

BY Kimmel & Crowell

ATTORNEYS

United States Patent Office 2,876,645 Patented Mar. 10, 1959

2,876,645

AUXILIARY STARTER

George Schuh, Fargo, N. Dak.

Application September 2, 1955, Serial No. 532,345

5 Claims. (Cl. 74—8)

The present invention relates to auxiliary starters, and more particularly to power starter mechanisms which are adapted to be attached to internal combustion engines of the type not normally provided with a power starting mechanism.

The primary object of the invention is to provide an auxiliary power starting mechanism which can be attached to the crank shaft of an engine for starting the engine and detach therefrom as soon as the engine has started.

Another object of the invention is to provide a starter mechanism of the class described which is readily portable and can be moved from point to point to start engines as needed.

A further object of the invention is to provide a starter mechanism of the class described which utilizes the conventional electric starter motor and a V-belt drive therefor.

A still further object of the invention is to provide an auxiliary electric starter mechanism having interchangeable means to engage with the crank shafts of unlike motors.

Another object of the invention is to provide a starter mechanism for attachment to starterless engines which will be inexpensive to manufacture, non-complex to operate, and simple to repair.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings, in which:

Figure 1 is a side elevation of the invention shown attached to an engine to be started;

Figure 2 is a bottom plan view of the invention;

Figure 3 is a longitudinal vertical cross-section taken along the line 3—3 of Figure 2, looking in the direction of the arrows;

Figure 4 is a transverse cross-section of the mounting structure of the invention taken along the line 4—4 of Figure 1, looking in the direction of the arrows;

Figure 5 is an enlarged detail cross-section of the mounting structure illustrated in Figure 4, taken on the same plane as Figure 4;

Figure 6 is a fragmentary detail cross-section taken along the line 6—6 of Figure 1, looking in the direction of the arrows, and

Figure 7 is a fragmentary side elevation shown partly in section of a modified crank shaft engaging member adapted for use with the starter mechanism.

Referring now to the drawings in detail wherein like reference numerals indicate like parts throughout the several figures, the reference numeral 10 indicates generally an engine of the type employed for auxiliary power purposes which is normally started by a hand crank detachably connected to the drive shaft or by a rope-pull starter, neither of which is shown.

An auxiliary starter mechanism is provided with a channel frame member 11 having a transversely extending journal 12 welded as at 13 to one end of the member 11. A U-shaped handle 14 is welded or otherwise secured at 15 to the end portion of the member 11 adjacent the journal 12. A shaft 16 is carried by the journal 12 and adapted to be rotated therein. A V-belt pulley wheel 17 is secured to the shaft 16 by means of a pin 18. The opposite end of the shaft 16 is provided with a tubular coupling 19 which extends over the shaft 16 and is secured thereto by means of a cotter key 20 which extends through the coupling 19 and the shaft 16. The coupling is provided with a pair of diametrically opposed spiral slots 21 and 22 to receive a drive pin 23 extending transversely of the drive shaft 24 of the motor 10.

A channel-shaped motor base 25 is positioned over the frame member 11 and carries a motor 26 on the upper face thereof by means of a motor bracket 27 which is secured to the motor base 25 by any suitable means. A tubular bushing member 28 extends between the parallel flanges of the channel member 25 and is welded thereto as at 29. A shaft 30 having a length substantially greater than the bushing 28 extends through the bushing 28 and is provided at one end with a right angular base plate 31 and at the other end with a right angular base plate 32 which are welded as at 33 and 34 to the shaft 30. The base plates 31 and 32 are provided with feet 35 and 36 for engagement with a base 37 to which they are attached by bolts 38 and 39.

A clamp 40 having a pair of upstanding parallel side plates 41 and 42 is positioned under the member 11 with the side plates 41 and 42 extending upwardly beyond the member 11. The bushing 28 is journalled in the side plates 41 and 42 and extend outwardly beyond the side plates 41 and 42 at each end. A clamp screw 43 is threaded through the clamp member 40 so as to engage the bight 44 of the channel member 11 so that pressure against the channel 11 will lock the clamping plate 40 thereto to maintain the motor 26 in spaced relation to the pulley 17.

The motor 26 is provided with a pulley 45 which is aligned with the pulley 17 and a belt 46 is trained over the pulleys 45 and 17 so that rotation of the motor 26 will rotate the pulley 17 and its shaft 16. A starter switch 47 is mounted on the side of the motor 26 and is connected to the source of electricity so that pressure on the push button 48 will close the switch 47 and energize the motor 26 to start it in rotation.

A bracket 49 extends rearwardly from the motor support 25 and is provided with a bore 50 adjacent the outer end thereof. An eye bolt 51 has the eye 52 thereof mounted through the bore 50 and the threaded portion 53 thereof extending through a bore 54 in the member 11. A wing nut 55 is threaded onto the eye bolt 51 and operation thereof will cause the motor 26 on its motor support 25 to pivot about the shaft 30 to tighten or loosen the belt 46 as required.

Referring now to Figure 7, a modified form of crank shaft engaging mechanism is disclosed wherein a shaft 56 is provided with a socket 57 to engage over the end of the shaft 16 to which it is secured by a cotter key 58. The outer end of the shaft 56 is provided with a cross pin 59 for engagement with a crank shaft (not shown) of the type having diametrically opposed spiral slots formed about a socket portion. The extended shaft 56 permits the use of the starter with trucks, motor vehicles and other engines requiring elongated shafts to reach the crank shaft.

In the use and operation of the invention, a base member or board 37 is positioned adjacent an engine 10 and secured in place by any suitable means (not shown). Base members 31 are secured to the board 37 by bolts 39 with the coupling 19 in alignment with the drive shaft 24 of the engine 10. When it is desired to start the engine 10, the handle 14 is grasped in one hand and the bushing 28 is slid endwise on the shaft 30 to move the

starter toward the engine **10** so that the coupling **19** will be brought to a position so that slots **21** and **22** therein will engage the pin **23** on the crank shaft **24**, whereupon the starter button **48** on the starter switch **47** is depressed causing the motor **26** to rotate and through its belt drive to rotate the coupling **19**, revolving the crank shaft **24** of the engine **10** until the engine **10** starts under its own power. Immediately the starter is disengaged from the engine **10** by pulling outward on the handle **14** to move the starter away from the engine **10**.

To utilize the device with other engines, the bolts **39** are disengaged from the base plates **31** and **32** and the starter is moved to a similar board **37** adjacent the engine to be started. Since internal combustion engines are constructed with both right- and left-hand revolving crank shafts, it is contemplated that the coupling **19** will be constructed with reversed slots **21** and **22** for cooperation with reversely turning crank shafts, and the motor **26** in such cases will be replaced with a reversely turning motor.

Having thus described the preferred embodiments of the invention, it should be understood that numerous structural modifications and adaptations may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. A starter mechanism for attachment to a motor comprising a base, a transversely extending horizontal shaft secured to said base, a bushing member mounted on said shaft for pivotal and lateral sliding movement thereon, an elongated channel member, means journalled on said bushing member securing one end of said channel member to said bushing member, a motor base secured to said bushing member, a motor mounted on said motor base, a pulley on said motor, a second shaft, means fixed to the oher end of said channel member journalling said second shaft thereon, a pulley mounted on one end of said second shaft, a coupling mounted on the opposite end of said second shaft for detachably securing said second shaft to an engine to be started, and a belt trained over the pulley on said motor and the pulley on said second shaft whereby rotation of said motor will rotate said second shaft, said coupling being engageable with an engine to be started upon lateral sliding movement of said channel member, said motor and said second shaft whereby said engine will be started upon rotation of said motor.

2. A device as claimed in claim 1 wherein means are provided for clamping said channel member against said bushing member.

3. A device as claimed in claim 1 wherein said coupling member includes a third shaft axially aligned with said second shaft and detachably secured thereto, and a cross pin secured to the outer end of said third shaft for engagement with the crank shaft of said engine.

4. A starter mechanism for attachment to a motor comprising: a base, a transversely extending horizontal shaft secured to said base, an elongated channel member, means adjacent one end of said channel member securing said channel member to said horizontal shaft for pivotal and lateral sliding movement thereon, a second shaft, means fixed to the other end of said channel member journalling said second shaft thereon, a pulley mounted on one end of said second shaft, a coupling mounted on the opposite end of said second shaft for detachably coupling said second shaft to an engine to be started, a motor, means cooperating with the means securing said channel to said horizontal shaft pivotally securing said motor to said elongated channel member, a pulley on said motor, and a belt trained over the pulley on said motor and the pulley on said second shaft whereby rotation of said motor will rotate said second shaft, said coupling being engageable with an engine to be started upon lateral sliding movement of said channel member, said motor and said second shaft whereby said engine will be started upon rotation of said motor.

5. A device as claimed in claim 1 wherein means are provided extending between said motor base and said channel member for arresting the pivotal movement of said motor with relation to said channel member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,224,576	Mutschler	Dec. 10, 1940
2,623,393	Morrison	Dec. 30, 1952

FOREIGN PATENTS

541,505	France	May 3, 1927