

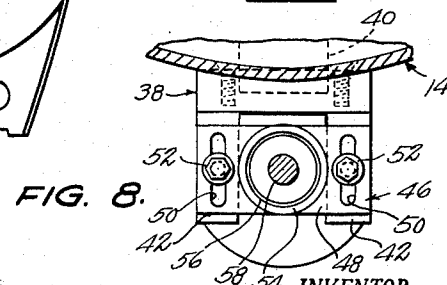
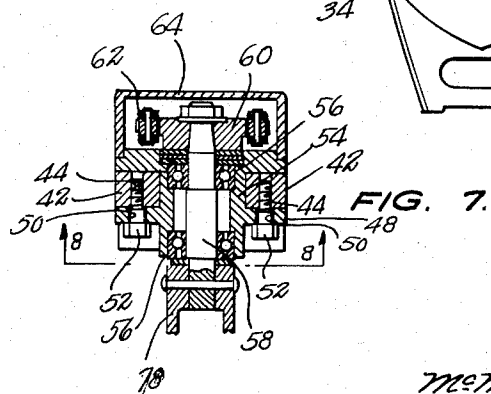
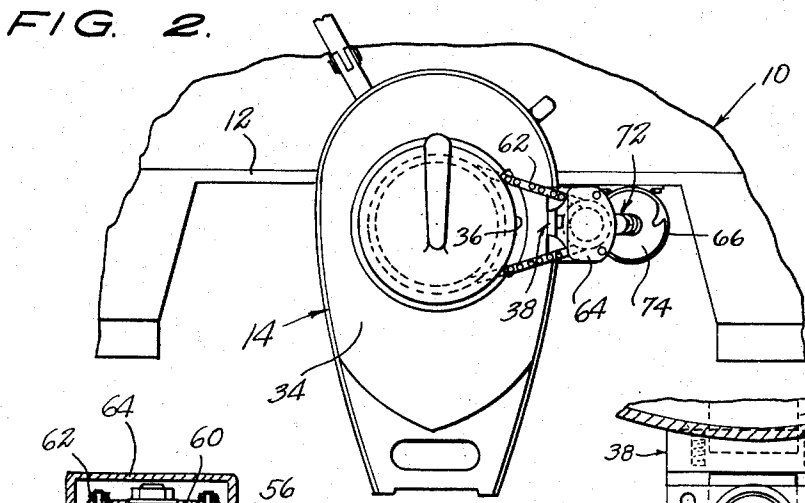
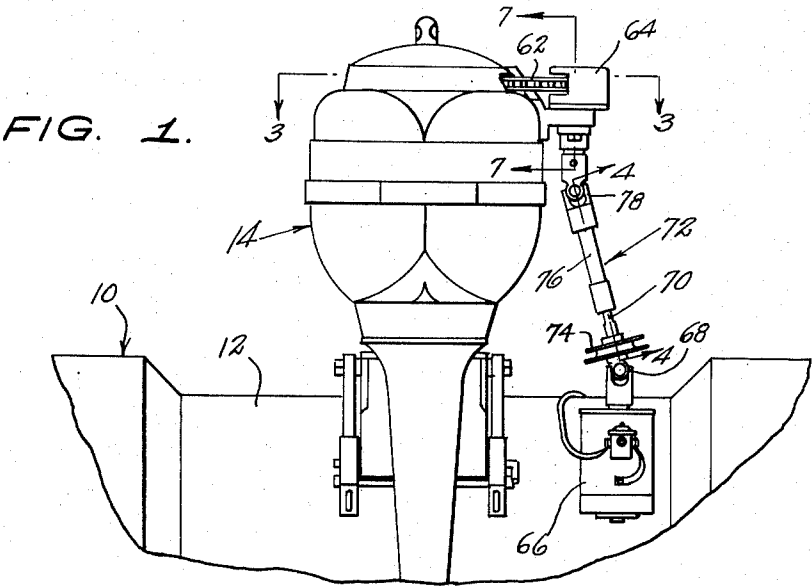
May 20, 1958

J. R. BROOKS
ENGINE STARTING DEVICE

2,835,241

Filed Sept. 16, 1955

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

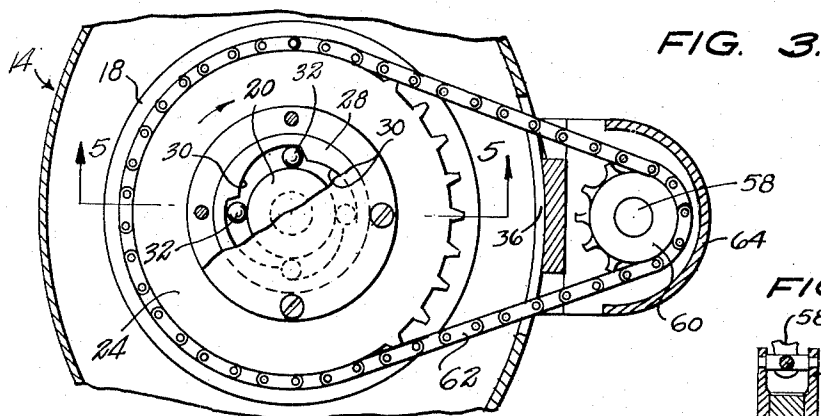


FIG. 3.

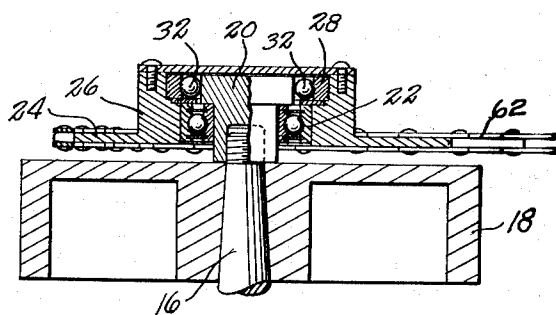


FIG. 5.

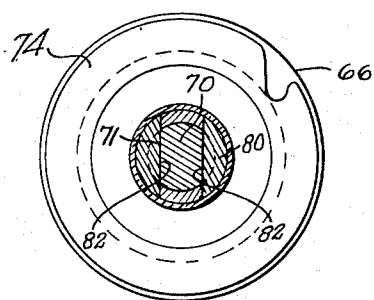


FIG. 6.

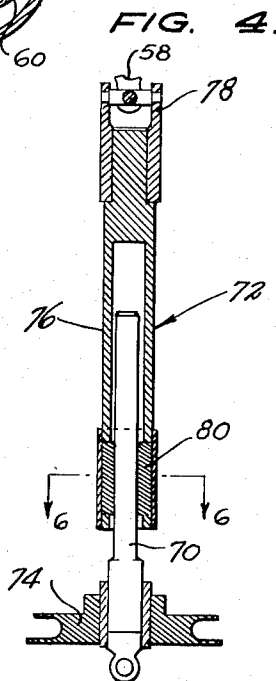


FIG. 4.

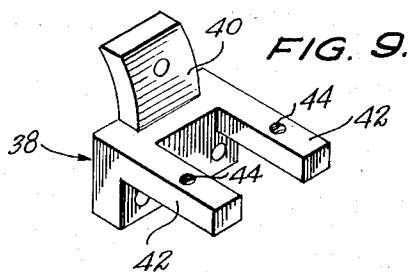


FIG. 9.

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2,835,241

ENGINE STARTING DEVICE

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Application September 16, 1955, Serial No. 534,747

2 Claims. (Cl. 123—179)

This invention relates to an improved starter for outboard motors.

The primary object of the invention is to provide a generally improved starter for outboard motors not so equipped, the starter being capable of being mounted on a boat transom alongside of the motor, and arranged to provide for rope starting of the motor when desired.

In the drawings:

Figure 1 is a fragmentary rear view of the stern of a boat showing a starter in accordance with the present invention mounted on the transom alongside of an outboard motor supported thereon;

Figure 2 is a top plan view of Figure 1;

Figure 3 is an enlarged horizontal sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is an enlarged sectional view taken substantially on the line 4—4 of Figure 1;

Figure 5 is an enlarged transverse sectional view taken substantially on the line 5—5 of Figure 3;

Figure 6 is an enlarged horizontal sectional view taken substantially on the line 6—6 of Figure 4;

Figure 7 is an enlarged fragmentary sectional view taken substantially on the line 7—7 of Figure 1;

Figure 8 is a horizontal sectional view taken substantially on the line 8—8 of Figure 7; and

Figure 9 is a perspective view of the supporting bracket.

Referring to the drawings in detail, a boat designated generally 10 has a conventional transom 12 on which is mounted a conventional outboard motor designated generally 14 having a vertical drive shaft 16 carrying a conventional flywheel 18 (Fig. 5). Removably secured to the upper end of the drive shaft 16 for rotation therewith above the flywheel 18 is a clutch disk 20, the purpose of which will hereinafter appear.

Carried by the clutch disk 20 is an antifriction bearing 22 on which is mounted for rotation about the clutch disk 20 a sprocket wheel 24 having a hub 26 which extends upwardly from the sprocket wheel 24 and encircles the clutch disk 20, as will be readily understood upon reference to Figure 5. Secured within the hub 26 of the sprocket wheel 24 is a clutch ring 28 having inclined cam faces 30 between which and the clutch disk 20 are clutch balls 32 which cooperate with the cam faces 30 and the clutch disk 20 in establishing driving connection between the sprocket wheel 24 and the shaft 16 when the sprocket wheel is rotated in the clockwise direction indicated by the arrow in Figure 3.

The cover 34 which normally encloses the upper end of the head of the motor, including the drive shaft 16 and the flywheel 18 of the motor 14 is provided in one side with an elongated slot 36. Bolted or otherwise secured to the engine 14 adjacent the slotted side of the cover 34 is a bracket designated generally 38 which comprises a vertical arm 40 and laterally outwardly extending spaced arms 42 having internally screw threaded openings 44 extending therethrough substantially midway between opposite ends thereof. The vertical arm 40 is secured to the motor head. Mounted for sliding movement beneath

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and positioned between the arms 42 in a bearing block 46 comprising a plate 48 slidably bearing upon the lower sides of the arms 42 and having slots 50 which register with the threaded openings 44 and receive cap screws 52 which project through the slots 50 and threadedly engage the internally screw threaded openings 44 in the arms 42 to hold the bearing block 46 in selected adjusted positions on toward and away from the motor head. Carried by the plate 48 and extending upwardly and downwardly therefrom is a sleeve 54 on whose upper and lower ends are mounted antifriction bearings 56, 56' in which a stub shaft 58 is mounted to rotate about an axis which lies parallel to the axis of the drive shaft 16 of the motor 14. Secured to the upper end of the stub shaft 58 for rotation therewith thereof is a drive sprocket 60 which has driving connection with the motor sprocket 24 through the medium of a sprocket chain 62. In the preferred form of the invention the drive sprocket 60 is enclosed in a suitable hood 64 which may be removably mounted on the sleeve 54 of the carriage 46.

Mounted on the transom 12 at one side of the motor 14 is an electric starter motor 66 to the upper end of whose vertical shaft is connected one end of a conventional universal joint 68 whose other end is connected to a shank 70 of an extensible drive shaft 72 which carries adjacent the universal joint 68 a rope starter pulley 74 by means of which the engine may be started in the event that the motor 66 fails to operate. Telescopically receiving the shank 70 which, as illustrated in Figure 6, is provided on opposite sides with flats 71 is a tubular shaft section 76 which is connected at its upper end through the medium of a conventional universal joint 78, to the stub shaft 58. A bushing 80 on the lower end of the tubular shaft section 76 receives the shank 70, previously referred to. The bushing 80 is provided with flats 82 on its opposite sides which cooperate with the flats on the shank 70 in establishing driving connection between the shank 70 and the tubular shaft section 76. By thus making the shaft 72 extensible, it is obvious that relative distance between the starter motor 66 and the motor drive sprocket 60 is not critical. Moreover, by employing the universal joints 68 and 78, the angular relation of the motor 14 and the starter motor 66 are not critical.

In use, it will be evident that upon energization of the starter motor 66, the shaft 72 will be rotated to impart rotary motion to the sprocket 60 and through the medium of the chain 62, to the sprocket 24 and over-running clutch structure heretofore described, the shaft 16 of the motor 14 will be rotated for starting the motor. Obviously, when the motor 14 picks up speed, the clutch balls 32 will move into the wider portions of the spaces between the cam faces 30 and the clutch disk 20 so that the motor runs without driving the sprocket 24, chain 62 and drive sprocket 60. The motor 14 can be started either by energizing the starter motor 66, or operating the rope starter pulley 74.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What is claimed is:

1. In an outboard motor assembly, an outboard motor having a head at its upper end and a shaft having an upper end projecting above the head and a transom bracket spaced below said head, a bracket secured to and projecting laterally from said head, a bearing block mounted on said bracket and adjustable toward and away from said head, a starter shaft having an upper end portion mounted in said bearing block, an over-running op-

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erative connection between the upper end portion of the starter shaft and the upper end of the motor shaft, said starter shaft having a lower end portion, a starter motor operatively secured to the lower end portion of the starter shaft, and a transom mounting bracket on said starter motor, said starter shaft comprising a vertically extensible intermediate portion between said upper and lower end portions of the starter shaft, said intermediate portion having upper and lower ends universally connected to the upper and lower end portions of the starter shaft. 10

2. In an outboard motor assembly, an outboard motor having a head at its upper end and a shaft having an upper end projecting above the head, a starter shaft laterally spaced from said motor shaft and having an upper end portion supported from said head, means drivingly connecting the upper end portion of the starter shaft to the upper end of the motor shaft, said starter shaft 15

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having a lower end portion, and a starter motor operatively secured to the lower end portion of the starter shaft, said starter shaft comprising a vertically extensible intermediate portion between said upper and lower end portions of the starter shaft, said intermediate portion having upper and lower ends universally connected to the upper and lower end portions of the starter shaft.

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