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2,725,752

ENGINE STARTER

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Fig. 1

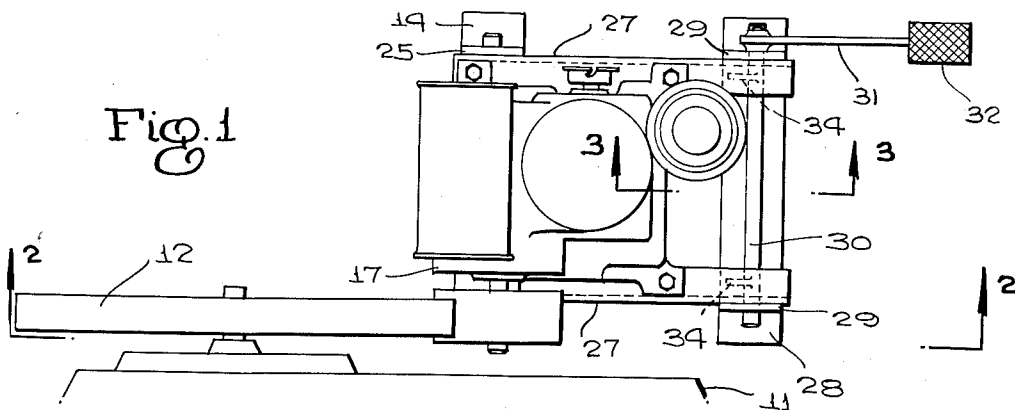


Fig. 2

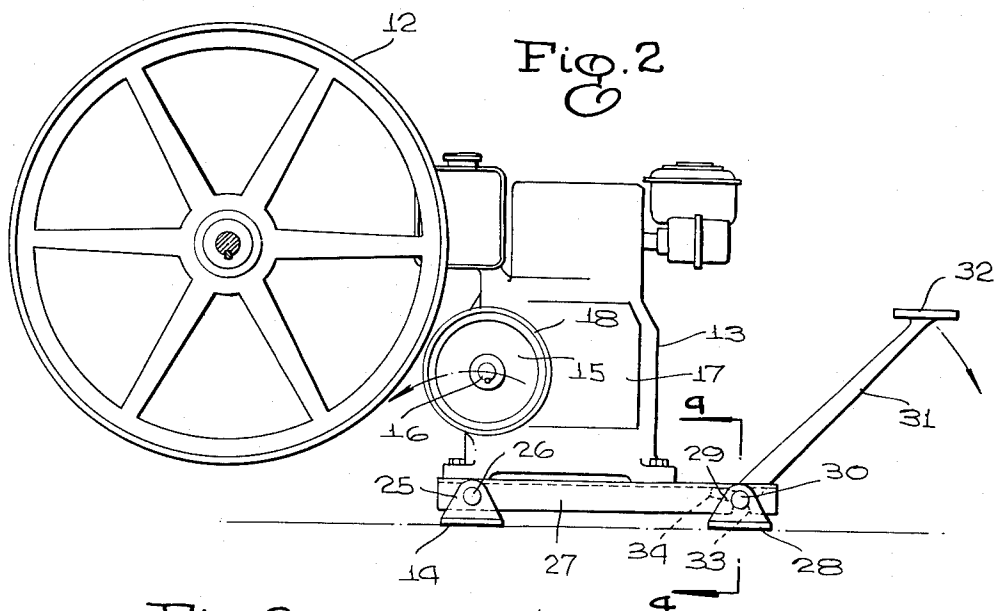


Fig. 3

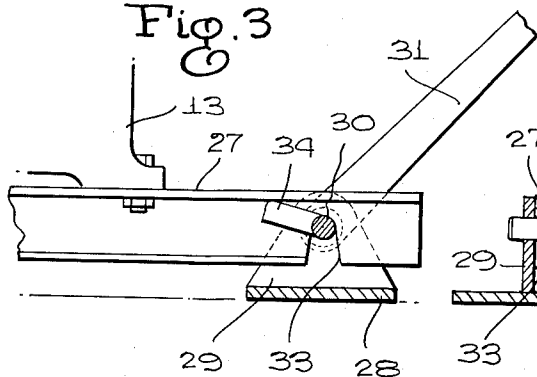
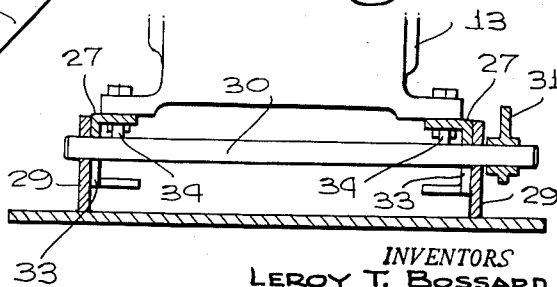


Fig. 4



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ENGINE STARTER

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1 Claim. (Cl. 74-8)

This invention relates to starting devices for large engines, and more particularly to an improved power unit provided with friction type power takeoff means for engaging the fly wheel of a large engine to start said large engine.

A main object of the invention is to provide a novel and improved starting means for initiating the operation of large engines, as for example, large horizontal engines, the improved means being of simple construction, being easy to manipulate and being safe to use.

A further object of the invention is to provide an improved means for starting a large engine, whereby a large engine may be easily and safely started, the improved means involving inexpensive components, being safe to use, being durable in construction, and being relatively compact in size.

Further objects and advantages of the invention will become apparent from the following description and claim, and from the accompanying drawings, wherein:

Figure 1 is a fragmentary top plan view showing the fly wheel of a large horizontal engine and improved starting means according to the present invention, the starting means being shown located adjacent the fly wheel.

Figure 2 is a vertical cross sectional view taken on the line 2-2 of Figure 1.

Figure 3 is an enlarged vertical cross sectional detail view taken on the line 3-3 of Figure 1.

Figure 4 is an enlarged vertical cross sectional detail view taken on the line 4-4 of Figure 2.

Referring to the drawings, 11 generally designated a relatively large horizontal engine having a relatively large fly wheel 12 which must be rotated in order to start the engine 11. In accordance with the present invention, a relatively small air cooled internal combustion engine, generally designated at 13, is disposed adjacent the fly wheel 12 and is pivotally mounted on a support member 14 secured to the floor adjacent the engine 11, the support member 14 extending transverse to the plane of the fly wheel 12 and being formed with upstanding lugs 25, 25 through which extends a transverse pivot shaft 26. The engine 13 includes a base comprising a pair of channel bars 27, 27 extending parallel to the plane of the fly wheel 12, as shown in Figure 1, said bars being pivotally mounted on the shaft 26. Thus, the small air cooled engine 13 is pivotally mounted to rock in a plane parallel to the plane of the fly wheel 12 around the axis defined by the transverse shaft 26, said shaft 26 being located adjacent the left ends of the bars 27, 27 as viewed in Figures 1 and 2.

Designated at 15 is a friction wheel which is mounted on the output shaft 16 of the small engine 13, the output shaft 16 being driven in any conventional manner by the small engine 13, preferably through suitable gearing to provide a substantial speed reduction between the crank shaft of the engine 13 and the output shaft 16, as for example, a six-to-one speed reduction. The reduction gearing may be contained in a suitable housing or gear box 17 provided on the engine 13.

The friction wheel 15 is covered with a friction surface 18 which may comprise a rubber covering on the periphery thereof. As shown in Figure 2, the friction wheel 15 is located subadjacent to and in the same plane as the large fly wheel 12 and may be elevated into contact with the peripheral surface of fly wheel 12 by rocking the engine 13 upwardly around the shaft 26 toward the fly wheel 12.

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Designated at 28 is another transversely extending bracket member secured to the floor subadjacent the right end portions of the bars 27, as viewed in Figures 1 and 2, the transverse bracket member 28 being provided with the respective upstanding lugs 29, 29. Journaled in the lugs 29, 29 is a transverse shaft 30, rigidly secured to one end of the shaft 30 is a lever 31 provided at its end with the foot pedal 32. The end portions of the channel bars 27, 27 are formed with downwardly facing notches 33 in which the transverse shaft 30 is received, as shown in Figures 2 and 3. Rigidly secured to the shaft 30 and projecting to the right and upwardly, as viewed in Figures 2 and 3, from said shaft are the respective arms 34, 34, said arms underlying the top flanges of the channel bars 27, 27.

As will be readily apparent from Figures 2 and 3, when the pedal 32 is depressed, causing the shaft 30 to be rotated clockwise, as viewed in Figures 2 and 3, the arms 34 elevate the channel bars 27, 27, causing the motor 13 to be lifted and rotated counterclockwise, as viewed in Figures 2 and 3, thereby bringing the friction wheel 15 into contact with the periphery of the fly wheel 12. Thus, the friction surface 18 of the friction wheel 15 engages the fly wheel 12 and transmits torque to fly wheel 12, causing the fly wheel to rotate, whereby the large engine 11 may be started. After the engine 11 is started, the operator merely releases the foot pedal 32 and allows the small engine 13 to return to its normal position. Thus, the large engine 11 may be started by merely first starting the small engine 13, which may be easily accomplished in the usual manner, and then by depressing the foot pedal 32, whereby the friction wheel 15 of the smaller engine will engage the fly wheel 12 and initiate the rotation of the fly wheel, whereby the large engine 11 will be started.

While a specific embodiment of an improved starting means for a large engine has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claim.

What is claimed is:

In a starter for an engine having a flywheel, first and second floor engaging supports, said supports being spaced parallel from each other, a first horizontal shaft on and extending lengthwise of said first support, a second shaft journaled on and extending lengthwise of said second support, a base comprising a pair of spaced parallel bars having vertical flanges and horizontal flanges overlying the vertical flanges, said bars being positioned across and between said supports, means rockably mounting the vertical flanges of the bars at one end on said first shaft, notch means in the vertical flanges at the other ends of the bars, said notch means opening through the lower edges of the vertical flanges and freely receiving said second shaft, said notch means defining edges on the vertical flanges normally resting upon said second shaft, lateral arms on said second shaft beneath the horizontal flange of said bars, lever means on said second shaft for rocking said second shaft so as to engage said arms with the horizontal flanges of the bars and rock the said other ends of the bars upwardly, and a prime mover mounted on said bars and having a friction wheel engageable with the flywheel of an engine only in elevated positions of the base.

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