Jan. 8, 1957 J. C. NICHEL, JR 2,776,579

HAND GRIP CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

Filed Sept. 23, 1955

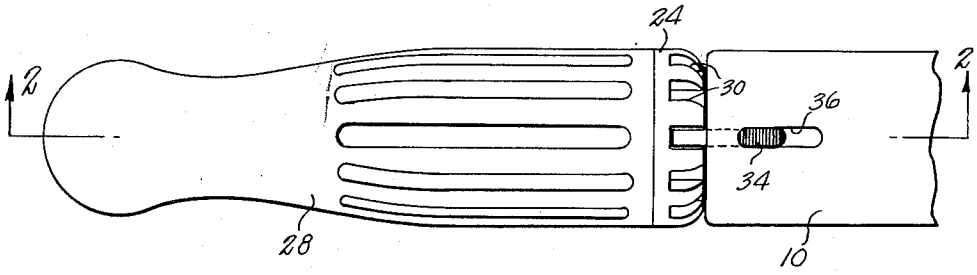


FIG. 1.

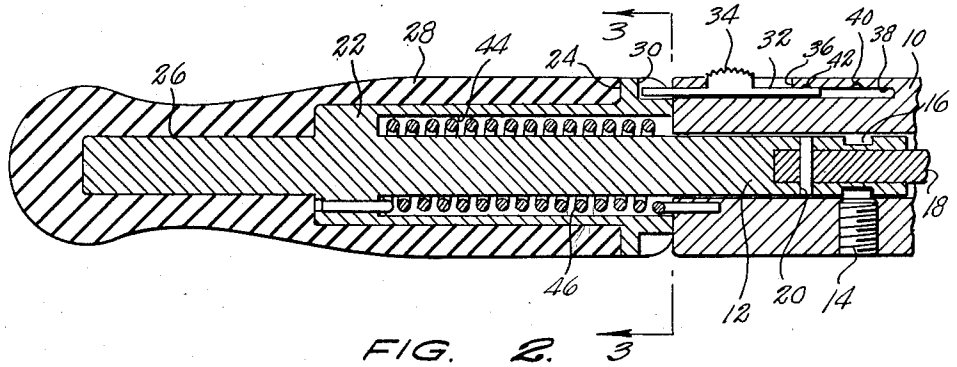


FIG. 2.

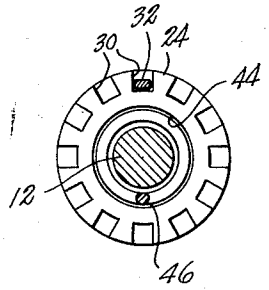


FIG. 3.

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HAND GRIP CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

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2 Claims. (Cl. 74—488)

This invention relates to a hand grip, of the type mounted upon the handle of an outboard motor engine or the like, for the purpose of controlling the speed of said engine.

Conventionally, a hand grip is provided upon the handle of an outboard motor engine, lawn mower engine, motor cycle engine, etc., for the purpose of controlling the speed of operation of said engine. In such instances, the hand grip is rotatably mounted and on rotation in one direction the speed is accelerated, while rotation in an opposite direction has the effect of reducing the engine speed.

Under these circumstances, injuries may sometimes result, as for example, when the operator due to some particular emergency or due perhaps entirely to accidental causes loses his grip upon the engine and is unable, for a period of time, to regain the grip. As a result, if the engine is operating at a high speed, continued high speed operation will result, with the engine running out of control.

In view of the above, it is proposed, in carrying out the present invention, to provide a safety hand grip which will be so designed as to automatically return to its start position should the grip thereon be released, thus to automatically cut the engine speed down to a minimum under these circumstances.

A more specific object of the invention is to provide means in association with said hand grip adapted to permit the handle grip to be locked or latched in selected positions to which it is rotated, so as to permit the engine to operate at a constant, selected speed without requirement so far as the user is concerned of maintaining the hold on the grip.

A further object is to provide a device of the type referred to which can be incorporated in conventional handle structures of engines of the type referred to previously, with a minimum of modification or redesign of said structure.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawings, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a fragmentary side elevational view of an engine control handle equipped with a hand-grip formed according to the present invention;

Figure 2 is a longitudinal sectional view substantially on line 2—2 of Figure 1; and

Figure 3 is a transverse sectional view on line 3—3 of Figure 2.

Designated at **10** is the control handle of an engine, such as an outboard motor engine or the like. In this connection, the handle **10** will be understood as including such devices as the steering bar of a motor cycle, the handle of a lawn mower, and any of various other structures in which an internal combustion engine is embodied and is controlled by a rotatable hand grip.

The handle **10** is formed with an axial bore, receiving a stem or spindle **12**, said spindle being rotatable

within the bore and being held against axial shifting by means of a set screw **14** threaded radially, inwardly of the handle **10** and engaging at its inner end in a circumferential groove **16** formed in the stem **12**. Pinned at **20** to the stem is a steel cable or flexible shaft **18**, which is adapted to control the speed of the motor, not shown.

The spindle **12** is formed with an enlarged intermediate portion **22**, one end of which has an outwardly directed collar or flange **24** extending circumferentially thereof, and the other end of which is formed with a reduced, axial extension **26**. A hand grip **28**, which can be formed of hard rubber or the like, has a recess mating with the portions **24**, **26**, and is cemented or otherwise fixedly secured to the same so as to effect rotation of the spindle responsive to turning of the covering sleeve **28**.

Formed in the collar **24**, at intervals spaced uniformly about the circumference thereof, are short slots **30**, any of which is adapted to receive one end of a detent **32** formed integrally intermediate its ends with an outwardly projecting button **34** shiftable within a longitudinal slot **36** of the control handle **10**. The detent **32** is slidably engaged in an elongated cavity **38** communicating with slot **36**, said cavity having one wall formed with longitudinally spaced indentations **40**, any of which is adapted to receive a small lug **42** formed upon the detent.

By reason of this arrangement, on shifting of the button **34** in the direction of the hand grip, the plunger or detent will engage in a selected notch **30**, thus to hold the hand grip and spindle against rotation relative to the handle **10**, in selected positions to which said hand grip is turned. On shifting of the button to the opposite end of the slot **36**, the hand grip is free for rotation and can be turned in either direction.

Within the enlarged intermediate portion **22** of the spindle **12**, there is formed an elongated, annular recess **44** opening upon one end of the intermediate portion **22** of the spindle. A torsion spring **46** is extended within said recess, and at one end is anchored to the adjacent end of the handle **10**. At its other end, the spring is anchored within the intermediate portion **22**.

By reason of this arrangement, it will be seen that with the hand grip free for rotation by shifting of button **34** to its hand-grip-releasing position, the motor can be accelerated by turning the covering in one direction. This places the torsion spring under increased tension, and as a result, should one accidentally release his grip upon the covering **28**, the spring, tending to unwind, will impart torque to the covering and spindle, tending to turn the same in an opposite direction back to its start position, in which position the motor is operating at a minmum speed.

At the same tme, in any position to which the covering sleeve and spindle are turned, the same can be locked, thus to maintain the engine operation at constant speed.

It will be seen that the device incorporates a desirable safety feature in the type of throttle for internal combustion engines in which the acceleration is controlled by rotation of a hand grip, such as the throttle of a motor cycle, as well as some lawn mowers or outboard motors.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A hand grip control device for internal combustion engines comprising a handle having an axial bore, a

spindle rotatably mounted in said handle bore and having a portion adjacent one end projecting out of and beyond said handle bore, a hand grip covering the projecting end portion of said spindle, a rotatable shaft secured to said spindle, a circumferential flange on the projecting end portion of said spindle, said flange having a plurality of slots arranged in spaced relation therearound, a plunger mounted in said handle for movement longitudinally of said handle between a first position in which said plunger projects into a slot of said flange and a second position in which the plunger is retracted wholly within the handle, hand actuable means exteriorly of said handle and operatively connected to said plunger for effecting the movements of the latter, and a torsion coil spring circumposed about the projecting end portion of said spindle and having one end attached to said handle and having the other end attached to said projecting end portion of said spindle.

2. The hand grip according to claim 1 which includes in addition a means carried by said handle and engaging the portion of said spindle within said handle for holding said spindle against axial shiftng.

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