July 8, 1952 G. A. NAWMAN 2,602,337

THROTTLE CONTROL

Filed Oct. 6, 1948 2 SHEETS—SHEET 1

Fig. 1

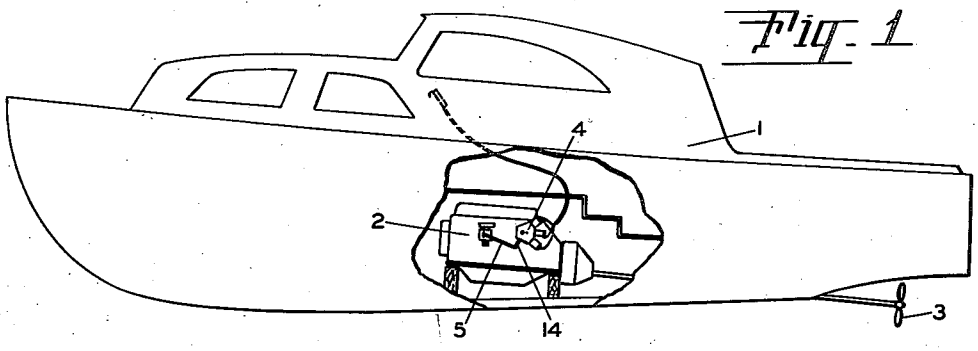


Fig. 2

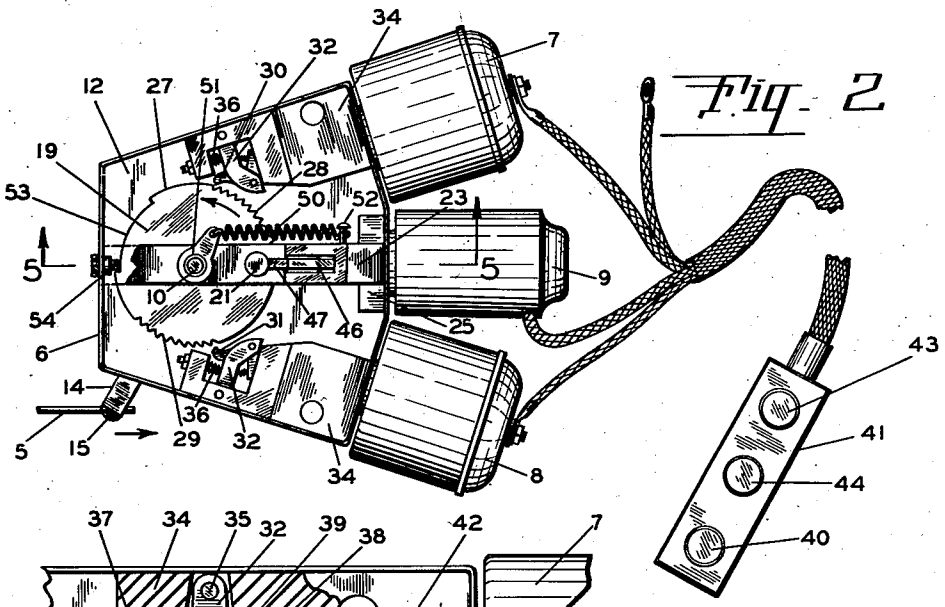


Fig. 3

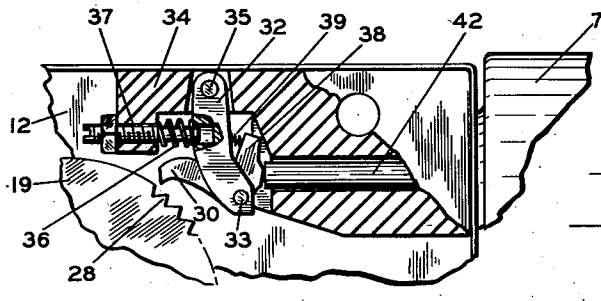
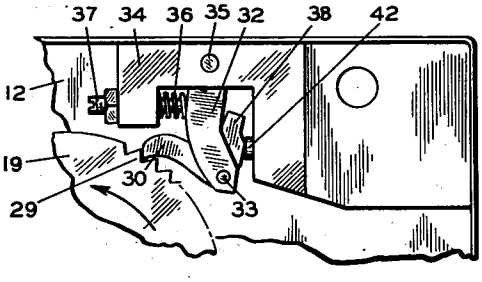


Fig. 4



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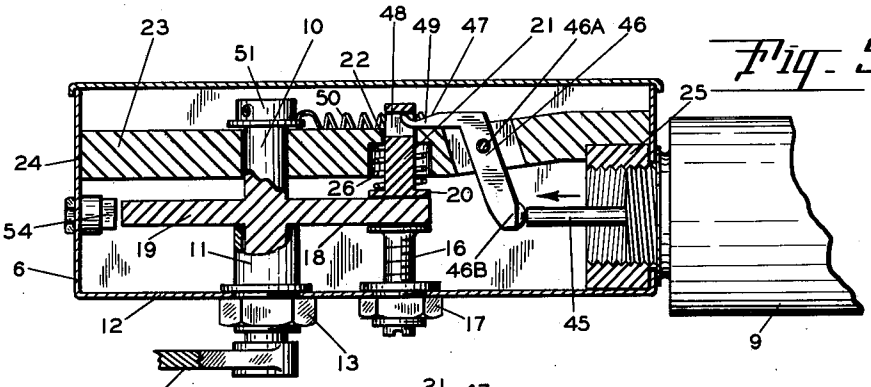


Fig. 5

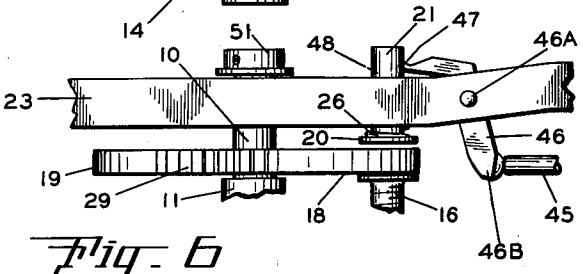


Fig. 6

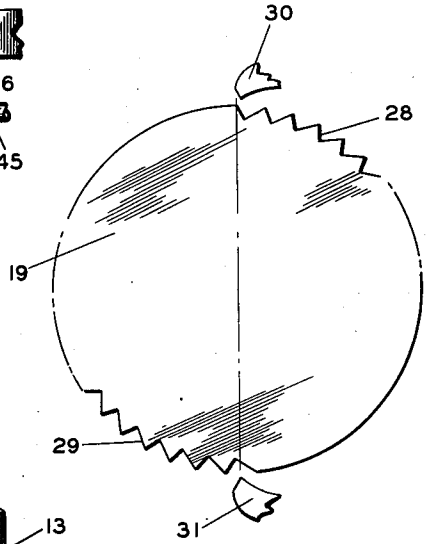


Fig. 8

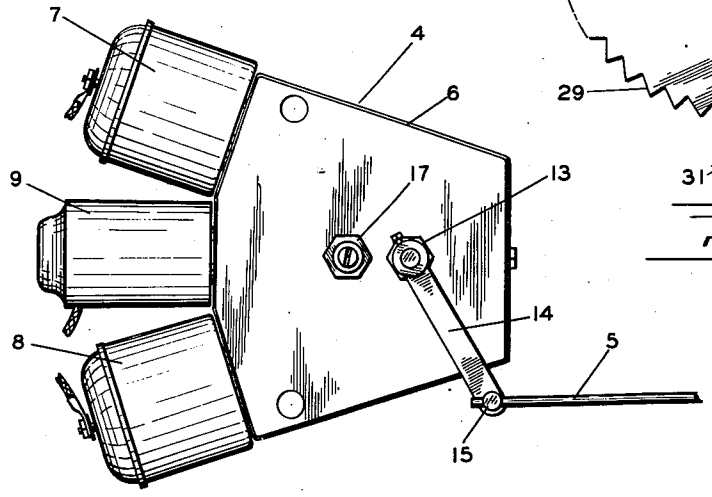


Fig. 7

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2,602,337

THROTTLE CONTROL

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Application October 6, 1948, Serial No. 53,130

2 Claims. (Cl. 74—126)

1

This invention relates to throttle controls and is particularly adapted to be used in connection with trolling boats, as the primary object of the invention is to stabilize or maintain a predetermined throttle setting that has been found to be most satisfactory in the particular trolling operation.

In the trolling for fiish, it has been found that when the desired speed for that particular school of fish in question, or the water conditions has been determined, it is desirable to maintain this trolling speed throughout the fishing operations, and by using a throttle control where push button control is available from all parts of the boat, the throttle can be advanced a step at a time or it can be retarded a step at a time.

A further object of the invention is that the number of steps of advancement or retardment can be counted by the operator so that he will know that he has arrived at the proper setting of the throttle relative to the test run.

I do not wish to be limited to the adaptation of my throttle to trolling boats, as it is admirably adapted to all type of throttle control where the operator desires to reset the throttle to a predetermined position by a remote control.

These and other incidental objects will be apparent in the drawings, specification and claims.

Referring to the drawings:

Figure 1 illustrates my new and improved throttle mounted to an inboard motor of a boat.

Figure 2 is a side view of the throttle control with the cover plate removed and dismounted from the motor.

Figure 3 is an enlarged detail view of one of the magnetic plungers in its relation to the ratchet dog which is associated with the ratchet wheel, and in retracted position.

Figure 4 is the same as Figure 3 except that the dog is in forward position having moved the ratchet wheel one step.

Figure 5 is a sectional view taken on line 5—5 of Figure 2.

Figure 6 is an enlarged detail view illustrating the brake having been released from the ratchet feed wheel.

Figure 7 is the opposite side view to that illustrated in Figures 1 and 2.

Figure 8 is a detail diagrammatical view illustrating the method of moving the ratchet wheel one step forward and how the same can be returned one-half the distance as indicated on the return movement.

Referring more specifically to the drawings:

I have illustrated a boat indicated by numeral

2

1 with the usual inboard motor 2 for driving the propeller 3. My new and improved throttle control is indicated in general by numeral 4, and is preferably mounted to the motor, the same being connected to the throttle rod 5, best illustrated in Figure 1.

Describing my new and improved throttle control more in detail. A housing 6 forms the basis of the control and has solenoids 7, 8 and 9 fixedly mounted thereto. A shaft 10 is journalled within bearing 11, the bearing 11 is fixedly secured to the side 12 of the case 6 by the lock nut 13. The shaft 10 floats within the bearing and has the operating arm 14 fixedly mounted thereto. This arm being adapted to receive the throttle rod control 5 at 15 in the usual manner.

An adjusting guide and friction member 16 is adjustably mounted to the side 12 of the case and locked in the desired position by the lock nut 17. This guide bears against the under surface 18 of the ratchet wheel 19, which forms part of the shaft 10 either directly or indirectly. A floating friction brake 20 is formed on the end of the plunger 21, which is slidably mounted within the opening 22 of the cross frame member 23, which is mounted to the case at 24 and to the frame work 25 at the opposite disposed side of the case. The brake 20 is maintained against the side of the ratchet wheel 19 by the spring 26. This brake is normally in contact with the ratchet wheel, holding the same in a fixed position.

Located on the rim 27 of the ratchet wheel 19 are teeth 28 and 29 which are adapted to receive the pawls 30 and 31 which are pivotally mounted to the bars 32 at 33. The bars 32 are pivotally mounted to the framework 24 at 35. A spring 36 maintains the bars in the position indicated in Figure 3 while the adjustable stop screw 37 limits the movement of the said bars 32, as indicated in Figure 4. The pawls 30 have a bell crank portion 38 against which a spring 39 is disposed between said bell crank and the bar 32, maintaining the pawl in the position illustrated in Figure 3.

Referring to Figures 2, 3 and 4, when it is desired to advance the throttle of the motor, we will assume that the button 40 of the push button control switch 41 is pushed, energizing the solenoid 7 whose extended core will then move to the left as viewed in the drawings, rocking the pawl 30 into engagement with the teeth 28, as indicated in Figure 4. Further movement of the core 42 will then pivot the bar 32 to this position, also moving the ratchet wheel and the arm

14 in the direction of the arrow, pulling the throttle rod 5 to an advanced position. Each time this button is pushed the ratchet wheel will be moved the distance of one or more teeth, depending upon the adjustment of the stop screw 37. This adjustment may also compensate for wear.

Each time the ratchet wheel is moved it will be held in this position by the brake shoe 20, as above described. If it is found that the throttle has been advanced too far or it is desired to retard the same, we will assume the push button 43 is operated, energizing the solenoid 8, which will bring the pawl 31 into engagement with the teeth 29 reversing the direction of the ratchet wheel moving the throttle towards retarded position.

Referring to Figure 8, it will be noted that the teeth located on the ratchet wheels are off center relative to one another. This means when the solenoid 8 is operated the ratchet wheel will move back a half step on the first operation, this gives a fine throttle adjustment between the increased throttle and beginning to decrease the throttle, but it would only happen for one operation of the solenoid 8.

In the event it is desired to completely retard the throttle after it has been adjusted, the button 44 will be operated, energizing the solenoid 9. This will operate its core 45 in the direction of the arrow, Figure 5, against the arm 46B of the bell crank 46, which is pivotally mounted at 46A to the cross frame 23. This will raise the arm 47 of the bell crank together with its point 49 which operates within the opening 48 of the plunger 21, thereby raising the said plunger and releasing the brake shoe 20 from the ratchet wheel 19 permitting the spring 50 to return the ratchet wheel to its retarded position as indicated in Figure 2. The spring 50 is secured to the crank 51, which is fixedly secured to the shaft 10 at its one end and to the cross frame 23 at 52 at its opposite end.

A cut away portion 53 formed on the rim of the ratchel wheel engages the stop 54, limiting the movement in either direction of the ratchet wheel. The plunger 21 is permitted to be lowered engaging the brake face 20 with the ratchet wheel as soon as the solenoid 9 has been demagnetized, due to the action of the spring not here shown, within the solenoid returning the core to the opposite direction of the arrow, Figure 5.

What I claim is:

1. A speed control comprising a disk having teeth on it periphery, a frame, a lever pivoted in the frame, an L-shaped pawl pivoted on the lever to cooperate with the teeth to step by step rotate the disk in one direction, a spring for returning the lever to its normal position, a spring for holding the pawl in its normal position out of contact with the teeth, a solenoid positioned to first act against the L-shaped pawl to rock it in position to engage the teeth and thereafter rock the lever and pawl together to partially rotate the disk, an automatic brake for holding the disk in operated position, means for releasing the brake, and means for returning the disk to normal position when released by the brake.

2. A speed control comprising a disk having oppositely disposed teeth on its periphery, opposed frames, a lever pivoted to each frame, an L-shaped pawl pivoted to each lever, a spring engaging each lever to retain the pawls in normal position out of engagement with the teeth on the disk, a spring between each L-shaped lever and frame to hold the forward end of the pawls elevated in normal position, a solenoid adjacent each L-shaped pawl to first tilt the lever into teeth engaging position when one of the solenoids is operated and thereafter move the adjacent lever and rotate the disk in one of two positions, a brake for automatically holding the disk in set position, manual means for releasing the brake, and means for restoring the pawls and levers to normal position when the brake is released.

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