Aug. 25, 1953 D. A. ARMSTRONG 2,649,848

SPEED INDICATING DEVICE FOR OUTBOARD MOTORS

Filed Feb. 11, 1949 2 Sheets-Sheet 1

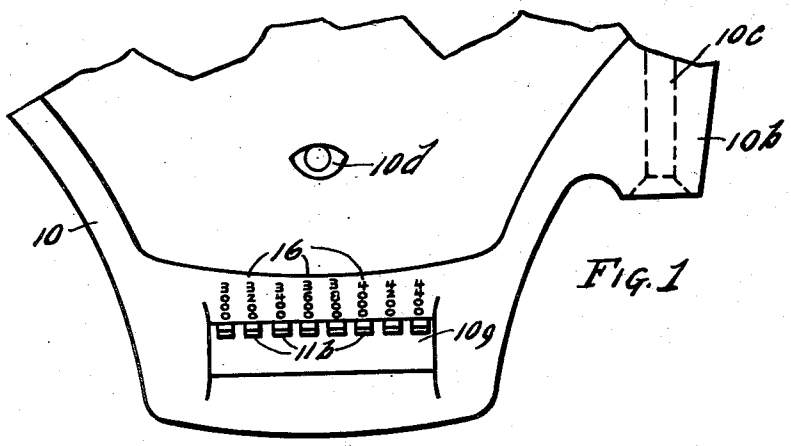


FIG. 1

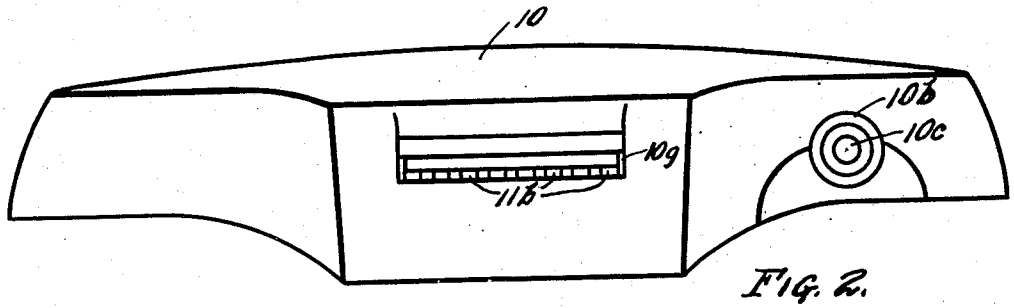


FIG. 2.

Inventor:
DANIEL A. ARMSTRONG
By Chas. C. Reif
Attorney

Aug. 25, 1953 D. A. ARMSTRONG 2,649,848

SPEED INDICATING DEVICE FOR OUTBOARD MOTORS

Filed Feb. 11, 1949 2 Sheets-Sheet 2

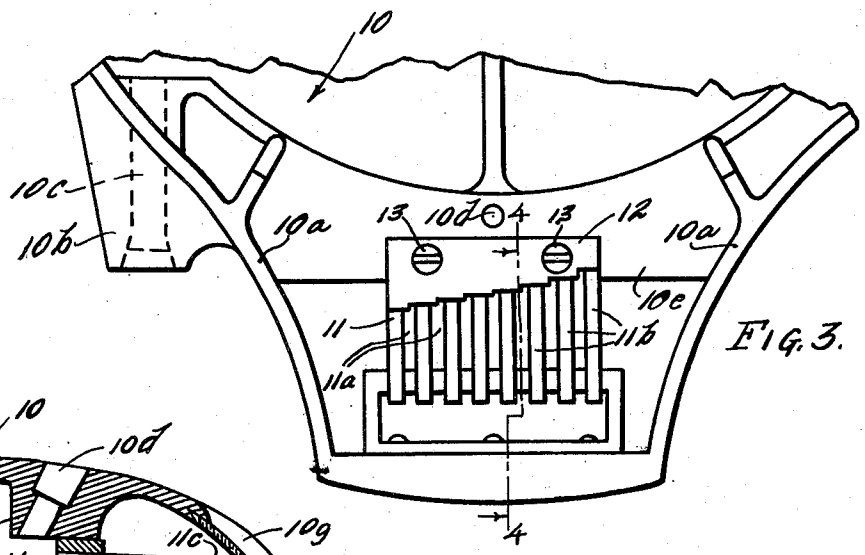


FIG. 3.

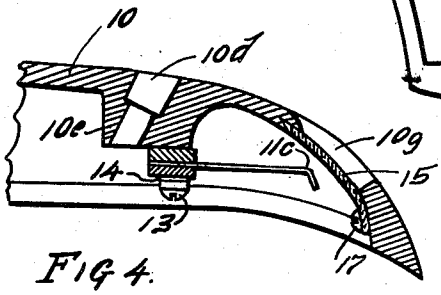


FIG. 4.

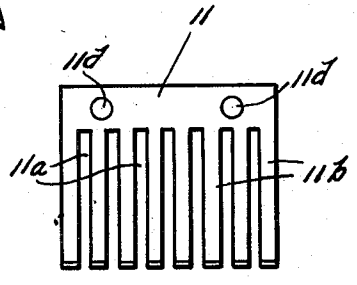


FIG. 5.



FIG. 6.

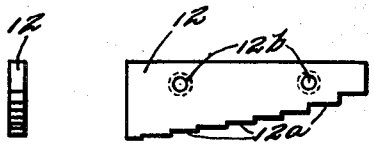


FIG. 8 FIG. 7.

Inventor:
DANIEL A. ARMSTRONG
By Chas. C. Reif
Attorney

Patented Aug. 25, 1953

2,649,848

UNITED STATES PATENT OFFICE

2,649,848

SPEED INDICATING DEVICE FOR OUTBOARD MOTORS

Daniel A. Armstrong, Minneapolis, Minn., assignor to Scott-Atwater Manufacturing Company, Minneapolis, Minn., a corporation of Minnesota

Application February 11, 1949, Serial No. 75,933

1 Claim. (Cl. 123—198)

1

This invention relates to an outboard motor and particularly to a structure of outboard motor adapted to have a speed indicator carried thereby. It is desirable to have an indicator on an outboard motor which will be disposed so that it can be easily and conveniently observed by the operator so that he can tell at what speed the motor is operating. The operator will thus be warned against overspeeding of the motor. It is also desirable to know the operating speed of the motor so that the propeller can be selected for most efficient performance.

It is an object of this invention to provide a very simple and yet very efficient speed indicating device which can be conveniently and inexpensively secured to the outboard motor.

It is a further object of the invention to provide an outboard motor structure comprising a frame, a motor proper secured to said frame, a second member secured in rigid relation relatively to said frame and motor, said second member having a surface to which is attached a plurality of spaced elongated narrow thin resilient strips, said strips having free ends disposed different distances from their points of support, said member being constructed and arranged so that the end portions of said strips are visible to the operator, and said second member having indications thereon adjacent each of said strips indicating speeds of said motor respectively.

It is more specifically an object of the invention to provide an outboard motor structure comprising a member secured to said motor, which member may constitute the gas tank cover and which preferably has a downwardly sloping exterior surface at one end, a thin plate-like member of resilient material having projecting from one end thereof elongated resilient strips, means for securing said plate-like member to said first mentioned member so that said strips project different distances from their points of support and thus have different effective lengths respectively, said first mentioned member having an opening therethrough through which the end portions of said strips are visible, and indications on said exterior surface aligned with each of said strips indicating rotative speeds of said motor.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a plan view of a portion of the gas tank cover of an outboard motor;

2

Fig. 2 is a view in end elevation of Fig. 1;

Fig. 3 is a bottom plan view of a portion of said gas tank cover;

Fig. 4 is a vertical section taken on line 4—4 of Fig. 3, as indicated by the arrows, but not being inverted;

Fig. 5 is a plan view of a reed-forming member used;

Fig. 6 is a view in side elevation of the device shown in Fig. 5;

Fig. 7 is a top plan view of a securing member; and

Fig. 8 is an end view of the member shown in Fig. 7.

Referring to the drawings, a member 10 is shown, and while this might constitute different parts of the motor, in the embodiment of the invention illustrated it shows the gas tank cover of the outboard motor. Said member 10 has a rim 10a which is arranged to engage the main portion of the gas tank (not shown) and be secured thereto. Member 10 has a lug 10b at one side provided with an opening 10c extending therethrough through which the pull cord for starting the motor extends. Member 10 has an opening 10d adapted to receive a bolt for attaching said cover. At its inner side member 10 is provided with a lug 10e which has a flat surface 10f. A member 11 is provided, shown in Figs. 5 and 6, which is made of a thin plate and which will be made of some strong resilient material which may be metal, fiber, plastic or other suitable material. Member 11 has a plurality of spaced slots 11a formed therein which divide one end of said member into a plurality or multiplicity of narrow elongated strips 11b. These strips are shown as of substantially equal widths and the slots 11a are substantially of the same width so that said strips as shown are equally spaced. The end portions of strips 11b are bent at an obtuse angle, as shown at 11c. Member 11 is provided with a pair of spaced holes 11d. A pair of attaching members 12 are provided, as shown in Figs. 7 and 8. Each of these members comprises a flat bar preferably made of metal having one straight side and straight or flat end portions, the other side of said member being provided with a series of steps 12a so that the width of member 12 is successively smaller toward one end. Members 12 are provided with a pair of spaced holes 12b. As shown in Fig. 4, the member 11 is secured between members 12 by bolts 13 extending through the holes 12b in members 12 and through the holes 11d in member 11. Spring washers 14 are

shown beneath the heads of bolts 13. Bolts 13 are firmly secured in the lugs 10e and one end of member 11 is tightly clamped between members 12 so that said member is very tightly secured in position. Owing to the step formation of members 12, the strips 11b will extend different distances from the points at which they are secured so that the free length or effective length of said strips 11b will be different. Member 10 is provided with an opening 10g through which the end portions of strips 11b are visible. This opening 10g is shown as covered by a transparent plate 15 which may be secured to member 10 by screws 17. Member 10 has placed thereon, as shown in Fig. 1, indications 16 which are respectively aligned with the strips 11b. Indications 16 indicate motor speeds or revolutions per minute of the motor.

In operation, when the motor is running, the resilient strips 11b which form in effect reeds, will be supported as described, with their projecting ends free. Said strips or reeds will vibrate at certain speeds of the motor. The reeds vibrate at twice the frequency of the revolutions of the motor. When the motor reaches a certain speed, say 3,000 revolutions per minute, the end one of said strips 11b, as shown in the left of Fig. 1, will vibrate in resonance with the revolutions or vibrations of the motor. The vibration or vibrating movement of said strip can readily be seen by the operator. This will indicate that the motor speed is then 3,000 revolutions per minute. As the motor speed increases the different strips or reeds 11b will vibrate in unison or in resonance with the motor speed. The operator thus needs only to observe which strip or reed is vibrating and the motor speed will be indicated by the respective indications 16. The strips or reeds 11b can of course be constructed and calibrated to indicate the desired R. P. M. of the motor.

From the above description it will be seen that I have provided a very simple and efficient structure of speed indicating means which can very easily and inexpensively be provided in an outboard motor. The speed indicator has a high degree of utility in its use with the motor and will enable the operator to avoid excessive speed or to avoid running the motor at too high a speed for long periods. It has been previously necessary in order to check the speed of the outboard motor to use a portable tachometer which would engage the driving shaft or propeller shaft. The operation of such a tachometer was difficult and particularly so with the modern outboard motors which have a hood surrounding the engine. The indicator will also have utility in indicating the speed of the motor so that the proper propeller

selection can be had. With the speed indicator the motor can be easily operated with much better efficiency. By constructing the reeds so that they will vibrate at twice the frequency of the motor revolution a much shorter reed can be used. The short reeds are more easily and inexpensively made and take up less room so that a compact structure is possible. The device has been amply demonstrated in actual practice and found to be very successful and efficient.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claim.

What is claimed is:

A combined outboard motor and tachometer structure having in combination, a motor body, a gas tank mounted on said body, and a gas tank cover secured to said gas tank so as to vibrate in unison with said motor body, said cover having a portion projecting at one side thereof, said portion having downwardly sloping sides and end and having a chamber therein, a boss in said chamber having a substantially flat surface thereon, a member attached to said surface, a plurality of spaced reeds secured to said member having downturned ends and projecting toward said end, said reeds being of different lengths, said portion having an opening therethrough through which the end portions of said reeds are visible, and numbers on the outer side of said first mentioned portion aligned with said reeds respectively for indicating speeds of said motor whereby said cover functions as a cover for said gas tank and also functions as a casing for said tachometer structure.

DANIEL A. ARMSTRONG.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
759,513	Frahm	May 10, 1904
1,028,488	Pontius	June 4, 1912
1,315,646	Sticht et al.	Sept. 9, 1919
1,416,550	Frank	May 16, 1922
1,613,727	Schmidt	Jan. 11, 1927
1,738,772	Harry	Dec. 10, 1929

OTHER REFERENCES

"Power," January 1944, an advertisement by the James G. Biddle Co. appearing at page 144 (62c).