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2,914,133

OUTBOARD MOTOR AIR INTAKE

Filed April 28, 1955

2 Sheets-Sheet 1

FIG. 1

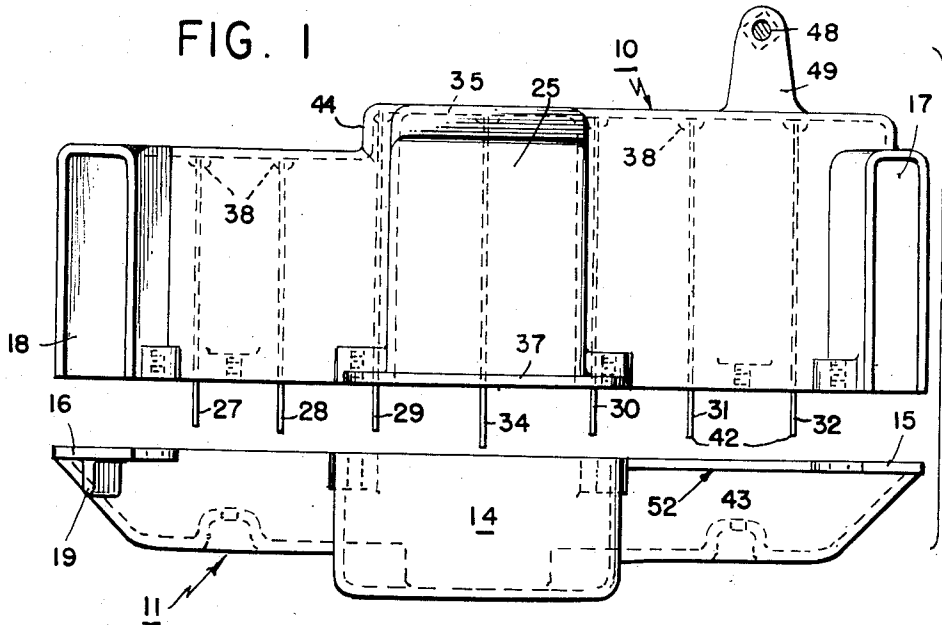


FIG. 2

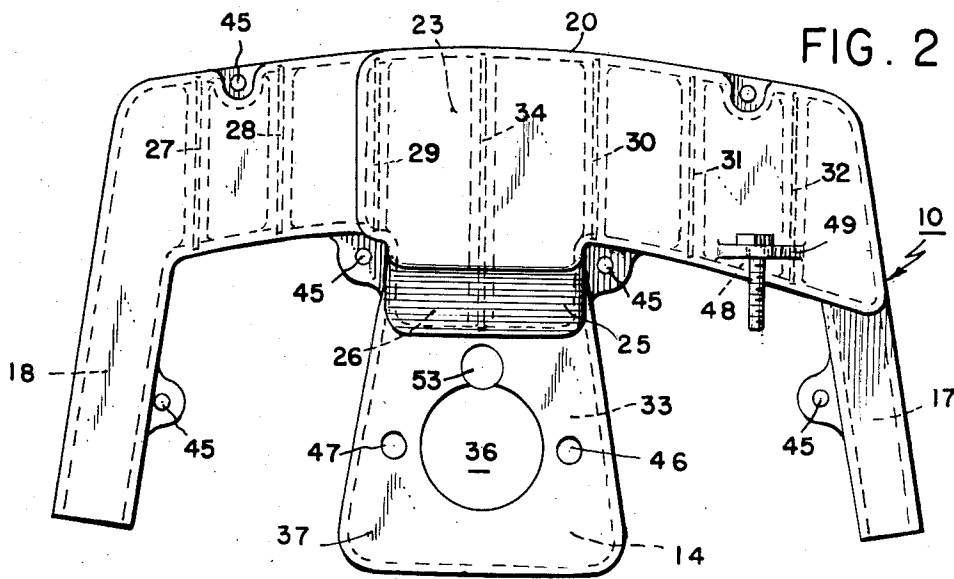
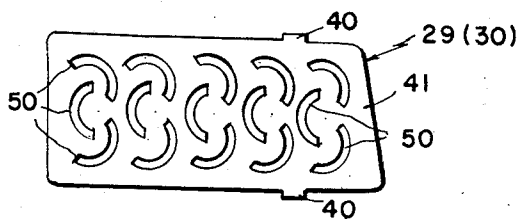


FIG. 5



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FIG. 3

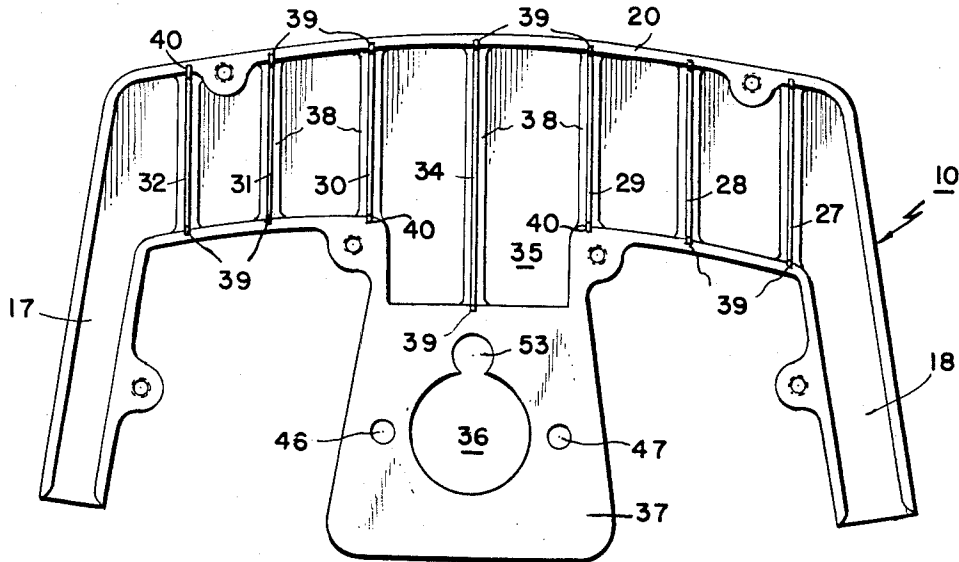
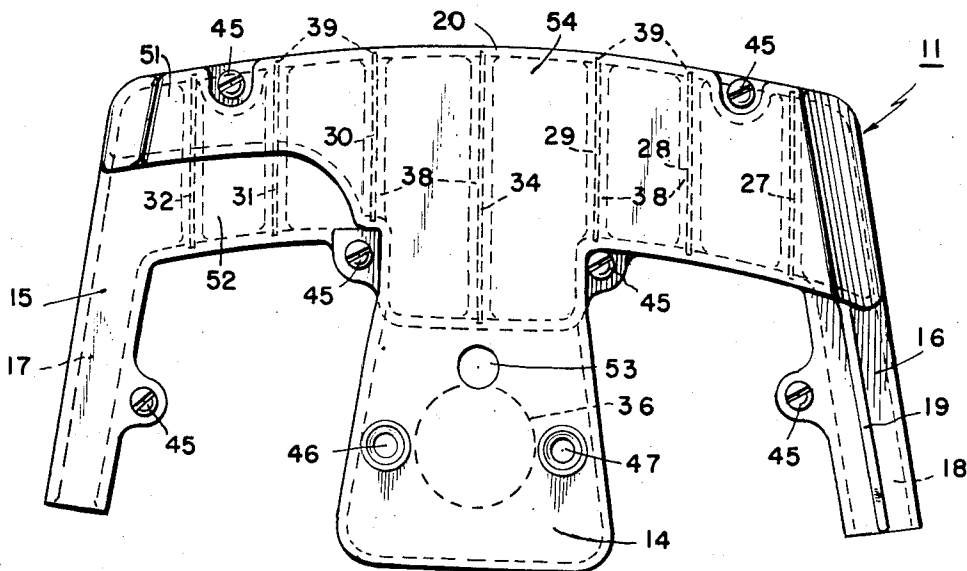


FIG. 4



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OUTBOARD MOTOR AIR INTAKE

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4 Claims. (Cl. 181-53)

This invention relates to devices for directing air to the carburetor of an outboard motor and has for its principal object the provision of a device which will cause no substantial decrease of the effective horse power of an outboard motor and will thus increase the top speed of the vessel driven by the motor.

A further object of the invention is to provide a device of the type described which will greatly lower the noise of the motor.

In the drawings:

Figure 1 is a bottom plan view of the device with the two portions of the casing slightly separated.

Figure 2 is a rear elevation.

Figure 3 is a vertical elevation looking into the rear section of the casing.

Figure 4 is a front elevation.

Figure 5 shows a muffle baffle.

The silencer is formed of two casing sections 10 and 11, the latter being smaller and including three sides of the downwardly extending central horn 14, as well as the front walls 15 and 16 of the air spouts or intakes 17 and 18. The front of portion 16 is strengthened by a generally vertical sloping flange 19.

Referring particularly to Figure 2, the upper wall 20 of the rear section 10 is arcuate and integral with the outer walls of the air spouts 17 and 18. A major chamber 23 is formed in the upper portion of the device and its vertical height is deepened centrally at its rear bottom by an inverted dome 25, which forms the bottom wall of a centrally enlarged portion 26 of the major or upper chamber which communicates freely with the two spouts or air intakes when the central partition 34 and the muffle baffles 27 to 32 are withdrawn. The partition 34 is a sheet of metal completely separating the various chambers into two equal paths, the edges of the partition 34 engaging the rear wall 35, the top wall 20, the front wall 54 and the bottom wall of the dome 25, and fitting snugly throughout its extent, but terminating with the bottom of the centrally enlarged portion so that the space 33 inside of the horn 14 is freely open below the bottom of the partition 34. The rear wall 37 of the horn is a front part of the major or rear portion 10 of the casing and has a circular opening 36 through which air passes rearwardly from the silencer to the carburetor of the outboard motor, neither of these two being shown.

The partition 34 and the various muffle baffles may be secured in any desired manner, a very excellent method of assembly being to provide pairs of ribs 38 in the rear wall 35 of the major portion 10 of the casting to receive the rear edge of the plates and to cut very slight short grooves, such as 39, in the upper and lower walls to engage short guides 40 at top and bottom of the partition and baffles adjacent their front sloping edges 41. The baffles 27 to 30 each engage the front wall 54 of the casing, which tapers or slopes upwardly and rearwardly to the angle shown by the edge 41. The baffles 31 and 32 at the right of Fig. 1 effectively terminate at the margin of the two sections and are held in position by small projec-

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tions 42 which also engage the front wall but in this case the path from the air intake 17 to the central partition 34 is nearer the rear wall 35 than the path from air intake 18 and is bounded by the less-forwardly projecting portion 52 of the front wall of the air spout 17. The path from air intake 18 to the central partition 34 is positioned further forwardly so that the two paths are laterally offset with respect to each other, this accounting for the jog 44 in the major or rear portion 10 of the casting. The device is extremely simple in form and although it has been described as having front, rear, top, and sides, it will be understood that this casing can be applied in any way depending on the location of the carburetor air intake. The two sections 10 and 11 of the casing may be permanently secured together instead of using the screws 45 illustrated. The silencer is secured to the engine by three screws to pass thru holes 46 and 47 in the horn and hole 48 in bracket 49.

In Figure 5 is shown muffle baffle 29 or 30 which are alike. The slots 50 are semi-circular and for a 12 H.P. engine, for example, are $\frac{3}{32}$ " wide, the outside and inside radii being $\frac{1}{2}$ " and $\frac{5}{16}$ " respectively with a minimum spacing between slots of $\frac{3}{32}$ ", the height of the baffle being $1\frac{1}{8}$ ", the top $2\frac{1}{2}$ " and the bottom $2\frac{1}{16}$ ". The total area of slots in each baffle is from $2\frac{1}{2}$ to $3\frac{1}{2}$ (preferably about three) times the area of the big central hole 36 in rear wall 37 of the horn 14. The smaller hole 53 above the air intake to the carburetor is to accommodate the needle valve (not shown) for the low speed jet used in starting.

The downwardly extending air intakes are rectangular in cross section, four times as deep front to back as wide. The average cross-sectional area of the horn is twice the area of one of the intakes and the cross-sectional area of the major chamber is four times the latter area. The distance from the central partition 34 to the nearest baffle 29 or 30 is about the same as the distance apart of the two intermediate baffles, 28 and 29, or 30 and 31, in each path, the distance apart of the two outer baffles 27 and 28 slightly less and the distance from the outer baffle 27 or 32 to the sloping wall of the proximate intake being between the values of said two latter distances, suitable intervals being 1:1.78:31. The length of the air intakes is greater than the front to back measurement, and is over 3" for a 12 H.P. engine.

The air is drawn up the two intakes 17 and 18 and strikes the first baffle 32 or 27 at an angle of about 170° . The air then passes horizontally through the three baffles in each of the two opposite paths and strikes the solid partition 34 at right angles. The major chamber, however, at this point is increased at least one third of its height by virtue of the enlargement specified as the centrally enlarged portion. The bottom part of this enlargement is covered by the wall of dome 25, but at its front end the centrally enlarged portion, which is a reservoir to provide greater volume to prevent too high a vacuum with irregular motor action, and the central part of the major chamber are freely open to the downwardly extending horn on both sides of the central partition 34, hence, the air is directed past the large opening 36 at right angles and a stream of air strikes the bottom of the horn 14 and thus passes through the opening 36 in a direction substantially at right angles to the direction of air intake into the silencer.

What I claim is:

1. In a device for leading air to the carburetor of an outboard motor, a casing providing a major chamber having a centrally enlarged portion, an air intake spout extending downwardly from either end, and a downwardly extending horn communicating with the centrally enlarged portion and having in a wall below the centrally en-

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larged portion an opening through which air entering the two air spouts may pass rearwardly to a carburetor, the respective areas of the air spouts, the horn, and the major chamber being in the ratio 1:2:4 and the opening being well above the bottom of the horn.

2. In a device for leading air to the carburetor of an outboard motor, a casing providing a major chamber having a centrally enlarged portion, an air intake spout extending downwardly from either end, and a downwardly extending horn communicating with the centrally enlarged portion and having in a wall below the centrally enlarged portion an opening through which air entering the two air spouts may pass rearwardly to a carburetor, said horn having a front wall, a rear wall, and two side walls, the front wall and the two side walls each diverging downwardly from the centrally enlarged portion to a level approximately that of the bottom of the air spouts, the respective areas of the air spouts, the horn, and the major chamber being in the ratio 1:2:4 and the opening being well above the bottom of the horn.

3. A device for directing air to the carburetor of an outboard motor comprising a casing having an upper air chamber rectangular in cross section and wider from front to rear than from top to bottom, an air intake spout extending downwardly from each end of the upper chamber, and a horn spaced from each of the two air intakes and depending centrally from the chamber, the upper and lower walls of the chamber being curved and substantially parallel to each other, the vertical height of the chamber being deepened centrally, the rear bottom of the centrally deepened portion being an inverted dome, the downwardly extending air intake spouts being relatively deep front to back and relatively narrow from side to side, the wider dimension of the air intake spouts orientated in the same direction as the wider dimen-

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sion of the chamber, said horn being located slightly in front of and extending downwardly from the chamber and having an opening in its rear wall for directing air from the air intake spouts rearwardly to a carburetor, the side walls of the horn diverging downwardly while the front wall diverges downwardly from the wall having said opening and the air intake spouts diverging downwardly at approximately the same slope as the side walls of the horn.

4. The device of claim 3 in which the front wall of the chamber is formed in part as a continuation of the front wall of the horn and the rear wall of the chamber is in part a continuation of the rear wall of one of the air intake spouts and the chamber being deeper front to back from the margin of the other air intake spout to a position roughly centrally of the device than that part of the chamber bounded by said first-named part of the chamber rear wall, whereby the air passing through the upper air chamber from the two air intake spouts passes in two offset paths.

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