M. H. GARRISON.

COMBINED FOOT WARMER AND MUFFLER.

APPLICATION FILED JAN. 11, 1912.

1,049,695. Patented Jan. 7, 1913.

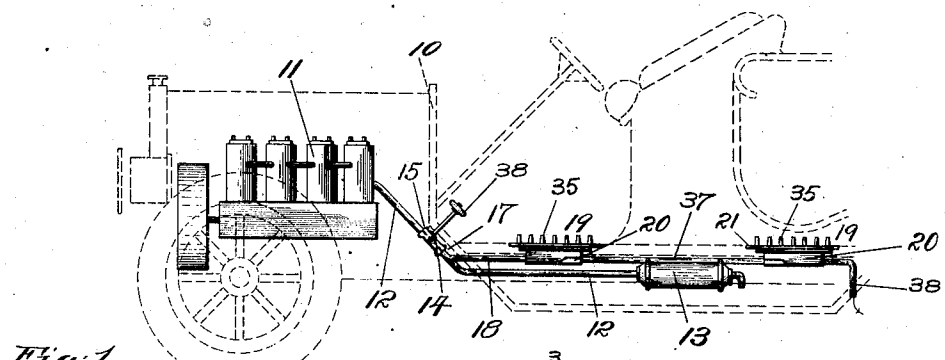

Fig. 1

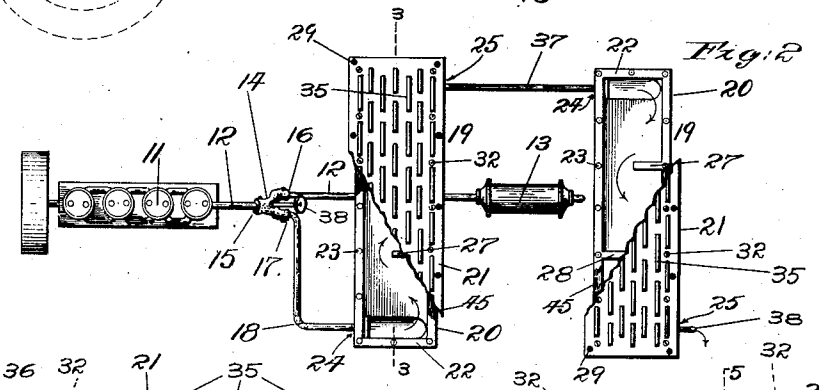

Fig. 2

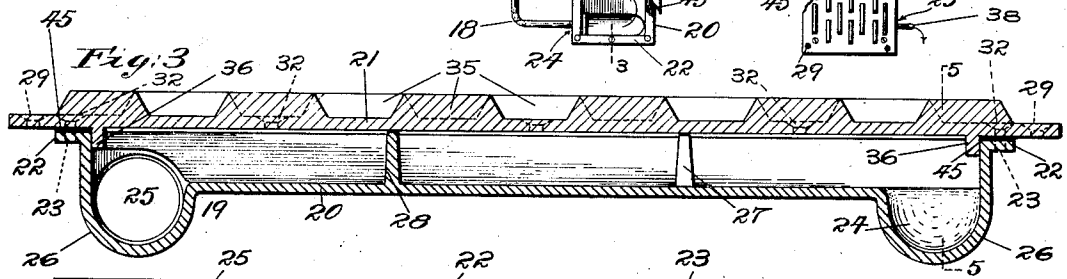

Fig. 3

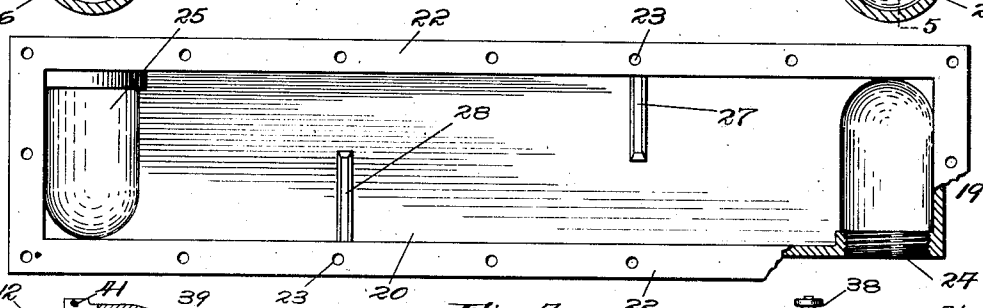

Fig. 4

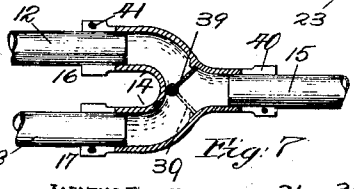

Fig. 7

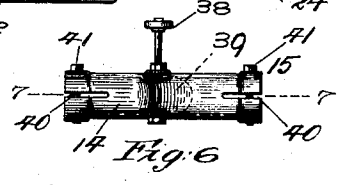

Fig. 6

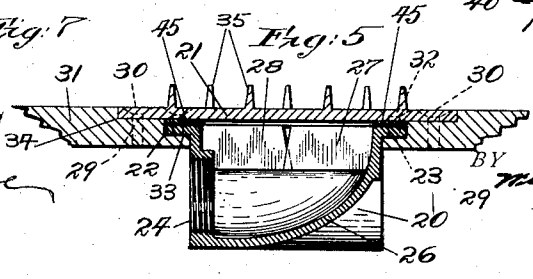

Fig. 5

WITNESSES:

Agnes E. Lackey

Grant C. Osborne

INVENTOR.

Milburn H. Garrison.

BY

William J. Jackson

ATTORNEY.

UNITED STATES PATENT OFFICE.

MILBURN H. GARRISON, OF OCEAN CITY, NEW JERSEY.

COMBINED FOOT-WARMER AND MUFFLER.

1,049,695. Specification of Letters Patent. Patented Jan. 7, 1913.

Application filed January 11, 1912. Serial No. 670,714.

To all whom it may concern:

Be it known that I, MILBURN H. GARRISON, a citizen of the United States, residing at Ocean City, in the county of Cape May and State of New Jersey, have invented a certain new and useful Combined Foot-Warmer and Muffler, of which the following is a specification.

This invention relates to a combined foot warmer and muffler for automobiles, motor boats, launches, air ships and the like and has for its principal object the providing of a construction and arrangement of parts whereby the exhaust gases, resulting from combustion of fuel for propulsion purposes, may be utilized for heating purposes.

A further object of the present invention is to provide a combined foot warmer and muffler so constructed and arranged that the exhaust gases may pass freely, with little or no noise, therethrough without the production of undesirable back pressure.

A still further object of the present invention is to provide a construction and arrangement of parts whereby the exhaust gases from an internal combustion engine may be caused to pass in the ordinary and well understood manner through a muffler; or said gases may be caused to exhaust partly through the combined foot warmer and muffler of the invention and partly through an ordinary muffler; or if desired said gases may be caused to exhaust entirely through the combined foot warmer and muffler of the invention.

A still further object of the present invention relates to the providing of a simple, compact, durable, efficient and comparatively inexpensive combined foot warmer and muffler, which may be readily attached to automobiles, motor boats, launches, air ships or the like without necessitating reconstruction or material change of the conveyance parts.

Other objects of the invention relate to the providing of general details of construction and arrangement of parts as will hereinafter appear.

With these and other objects in view the invention consists of the improvements hereinafter described and finally claimed, reference being had to the accompanying drawings forming part hereof and in which:

Figure 1, is a view in side elevation of the combined foot warmer and muffler of the invention as applied to the internal combustion engine of an automobile, the vehicle parts being shown in dotted lines, Fig. 2, is a top or plan view of Fig. 1, with the vehicle parts removed, Fig. 3, is a longitudinal sectional view taken on the line 3—3 of Fig. 2, but drawn to an enlarged scale, Fig. 4, is a top or plan view partly sectioned of Fig. 3, with the cover of the base removed, Fig. 5, is a view in transverse section taken on the line 5—5 of Fig. 3, and illustrating the manner of applying the parts to the flooring of a conveyance, Fig. 6, is a view in side elevation of the regulating valve used in connection with the above apparatus, and Fig. 7, is a view in section taken upon the line 7—7 of Fig. 6.

The combined foot warmer and muffler of the invention is intended to be primarily applied to automobiles and like conveyances. It will be readily understood, however, that the parts about to be described may with equal readiness be applied to motor boats, launches, air ships and the like, in consequence of which, the following description taken in connection with the accompanying drawings wherein an automobile is shown and described as being equipped with the apparatus of the invention, is merely for illustrative purposes.

Referring to the drawings 10, designates an automobile of any approved construction equipped with an internal combustion engine 11, the cylinders of which discharge into a common exhaust pipe 12, connected with an ordinary muffler 13. Intermediate the engine 11, and muffler 13, the exhaust pipe 12, is divided into two sections and equipped with a bifurcated valve casing 14, the inlet end 15, of which receives that end of the exhaust pipe 12, adjacent the engine and the outlet ends 16, and 17, of which respectively receive the other section of the exhaust pipe 12, and a pipe or connection 18, which leads to the combined foot warmer and muffler 19, of the invention. The combined foot warmer and muffler 19, is shown as comprising a generally rectangular elongated two-part casting of which the base 20, constitutes a shallow open top or dish-like casing and of which the top comprises a removable cover 21. The base or casing 20, is marginally flanged as at 22, said flange being formed integral with the casing parts and being provided with screw or bolt receiving openings 23. The base or casing is pro-

vided with an inlet port 24, in one side of the casing adjacent one end thereof and is provided with an outlet port 25, upon its opposite side adjacent the other end of the casing. These inlet and outlet ports are formed by first swelling out, as at 26, the bottom of the base or casing 20, to form a depression, see Figs. 3, and 5, and by providing the side walls of the base or casing with screw-threaded sockets of a diameter equal to the width of the depression for the reception of suitable pipings. As shown in Fig. 5, this brings the inlet and outlet ports substantially below the plane of the bottom of the base or casing 20, for a purpose to be presently described. Within the base or casing 20, and preferably formed integral with the side walls of the base or casing are vertically arranged transversely extending baffle plates 27, and 28. These baffle plates are disposed between the ports 24, and 25, and are suitably spaced with respect to the ends of the casing and to each other and extend from the same wall of the base or casing that has a port therein, or more properly speaking said baffles extend from the opposite side walls of said base or casing. As shown in Fig. 4, they terminate short of the opposite casing wall. In other words, the baffles divide the casing interior into compartments of equal size which constitute expansion chambers, three being shown in the drawings. By virtue of the fact that the inlet and exhaust ports are substantially below the plane of the two end expansion chambers said two end expansion chambers are of equal area to the center expansion chamber. Thus exhaust gases may pass freely through the combined foot warmer and muffler without the production of any undesirable back pressure calculated to retard the speed of the engine or such as would tend to stop the engine particularly when the same is being cranked preliminary to starting the same. Also this spacing of the baffles serves to reduce to a minimum, noise within the combined foot warmer and muffler when exhaust gases are passing therethrough. This is true because as gases first enter the end expansion compartment they expand and as they pass around the first baffle they somewhat contract only to immediately expand in the next expansion compartment and so on in regular succession to the exhaust port without choking or back pressure. Another advantage possessed of spacing the baffles is that ample room is present within the base or casing to prevent clogging of the parts by virtue of deposits of carbon from the waste gases, which cake and are very difficult to remove from crowded spaces. In the present case as the base or casing is shallow and the expansion chambers unobstructed, and of large area cleaning of the parts may be readily effected. By removing the cover 21, access may be readily had to the base or casing interior by virtue of its open top. This cover 21, considered in plan is of the same relative outline as the base or casing but it is of larger dimensions, so that its marginal edges project considerably beyond the marginal flanges of the base or casing 20. The cover 21, is provided in its marginal flanges with counter-sunk openings 29, for the reception of screws, bolts or the like 30, for securing the combined foot warmer and muffler to the floor 31, of the automobile 10, see Fig. 5. In this connection, it may be remarked that the cover 21, is further provided with counter-sunk openings adapted to register with the openings 23, of the flanges of the base or casing 20, for the reception of screws, bolts or the like 32, for securing the cover with respect to the base or casing 20. Between the flanged portion of the base 20, and the bottom of the cover 21, is a packing of asbestos 45, to prevent the escape of gases to the conveyance being heated. It may be here stated that in practice, the floor 31, has made therein an opening so that the base or casing 20, may be passed therethrough the flanged portion of the base or casing resting upon the counter-sunk portion 33, of the floor. The flooring is further counter-sunk as at 34, so that the marginal portions of the cover come flush with the top of the flooring. The cover is then secured to the flooring and to the base or casing as before described and as shown in Fig. 5. Formed integral with the top of the cover 21, are parallel longitudinally extending ribs 35. As shown these ribs are not continuous but constitute a series of short suitably spaced sections, alternate rows of ribs of which overlap the spaces between the sections of the other rows. By this construction and arrangement of parts a large heat radiating surface is provided.

It has been demonstrated in practice that it is necessary to make the ribs of short sections because of the fact that in casting, the cover cannot be withdrawn from the sand box if the ribs are continuous. In use these ribs serve to form a convenient foot rest for the occupants of an automobile, motor boat, launch, air ship or the like. The bottom of the cover 21, is provided with depending flanges 36, which serve as guides to properly aline the openings of the cover with the openings 23, of the flanged base or casing.

As shown in Figs. 1, and 2, a pair of combined foot warmers and mufflers are disclosed. In this connection, it may be remarked that one of the foot warmers and mufflers is located at the rear end of the hood of the automobile and the other is positioned at the rear of the seat of the operator. Where a pair of combined foot warm-

ers and mufflers are used a pipe or connection 37, couples together the pair of foot warmers and mufflers and an exhaust connection 38, leads to the atmospheric air from the rear foot warmer and muffler. For controlling the passage of exhaust gases through the muffler 13, or partly through the muffler 13, and partly through the combined foot warmer and muffler of the invention or entirely through the combined foot warmer and muffler, use is made of the hereinbefore mentioned valve. As shown in Figs. 1, and 2, the bifurcated valve casing 14, is arranged adjacent the foot board of the automobile 10, and has extending upwardly therefrom through the said foot board a manipulating handle 38. This handle 38, is equipped with a valve 39, of damper like construction, see Figs. 6, and 7, and is mounted for partial rotation through the valve casing. In operation, if it is desired to exhaust all of the waste products of combustion from the engine through the combined foot warmer and muffler the damper-like valve 39, is moved to the position shown by full lines in Fig. 7. If desired to cut out the combined foot warmer and muffler entirely and exhaust through the muffler 13, the damper-like valve 39, is moved to the position shown by dotted lines in Fig. 7. Obviously, movement of the damper-like valve to a point intermediate of these two extreme points will cause waste products of combustion from the engine to pass partially through the combined foot warmer and muffler and partially through the muffler 13. A convenient form of securing the pipes 12, and 18, with respect to the valve casing is to provide the various branches of the valve casing with split ends 40, and clamp said pipes with respect to said valve casing by means of bolts 41.

What I claim is:

1. In a combined foot warmer and muffler designed for utilizing the exhaust of an internal combustion engine the combination of a shallow open top elongated casing having formed integral therewith marginal flanged portions, said casing having an inlet port in one side adjacent one end and an outlet port on the opposite side adjacent the other end, vertical baffles arranged transversely within said casing between said ports, one extending from the side of the casing that has the inlet port therein and the other extending from the side of the casing that has the outlet port therein, each baffle terminating short of the opposite side of the casing, a removable cover having a ribbed top said ribs being arranged longitudinally of said cover and means for clamping the cover to the casing.

2. In a combined foot warmer and muffler designed for utilizing the exhaust of an internal combustion engine the combination of a shallow open top elongated casing having formed integral therewith marginal flanged portions, said casing having an inlet port in one side adjacent one end and an outlet port on the opposite side adjacent the other end, vertical baffles arranged transversely within said casing between said ports, one extending from the side of the casing that has the inlet port therein and the other extending from the side of the casing that has the outlet port therein, each baffle terminating short of the opposite side of the casing, a removable cover having a ribbed top said ribs being arranged longitudinally of said cover, packing strips between the flanged portions of said casing and said cover and means for clamping the cover to the casing.

3. In a combined foot warmer and muffler for utilizing the exhaust of an internal combustion engine the combination of a shallow open top elongated casing having a flanged marginal portion, the ends of said casing being swelled out at its base line to form internal depressions below the plane of the casing base and the side walls of said casing being provided immediately adjacent said depressed portions with inlet and outlet ports, vertical baffles arranged transversely within said casing between said ports and suitably spaced with respect to each other and to the ends of the casing one extending from the side of the casing that has the inlet port therein and the other extending from the side of the casing that has the outlet port therein each baffle terminating short of the opposite side of the casing and a removable cover for said casing.

4. In combination an internal combustion engine and its complemental muffler, a combined foot warmer and muffler for utilizing the exhaust of the engine said foot warmer and muffler comprising a shallow open top elongated casing having an inlet port in one side adjacent one end and an outlet port on the opposite side adjacent the other end, vertical baffles arranged transversely within said casing between said ports one extending from the side of the casing that has the inlet port therein and the other extending from the side of the casing that has the outlet port therein each baffle terminating short of the opposite side of the casing, a removable cover for said casing, a two-part exhaust connection for the engine one section leading to the muffler and the other section leading to the combined foot warmer and muffler and a valve at the junction of said sections adapted in one position to divert the exhaust gases through the muffler and in another position to divert exhaust gases through the combined foot warmer and muffler and in an intermediate position to divert the exhaust gases partially through the muffler and partially through the combined foot warmer and

muffler said muffler and combined foot warmer and muffler having separate and distinct exhausts to the atmospheric air.

5. In a combined foot warmer and muffler designed for utilizing the exhaust of an internal combustion engine the combination of a shallow open top elongated casing having formed integral therewith marginal flanged portions, said casing having an inlet port in one side adjacent one end and an outlet port on the opposite side adjacent the other end, vertical baffles arranged transversely within said casing between said ports, one extending from the side of the casing that has the inlet port therein and the other extending from the side of the casing that has the outlet port therein, each baffle terminating short of the opposite side of the casing, a removable cover for said casing and means for clamping the cover to said casing.

In testimony whereof I have hereunto signed my name.

MILBURN H. GARRISON.

Witnesses:
AGNES C. CASKEY,
WILLIAM J. JACKSON.