Oct. 18, 1927. 1,646,130

F. H. WAITE

MUFFLER AND SANDING DEVICE

Filed Jan. 3, 1927 3 Sheets-Sheet 1

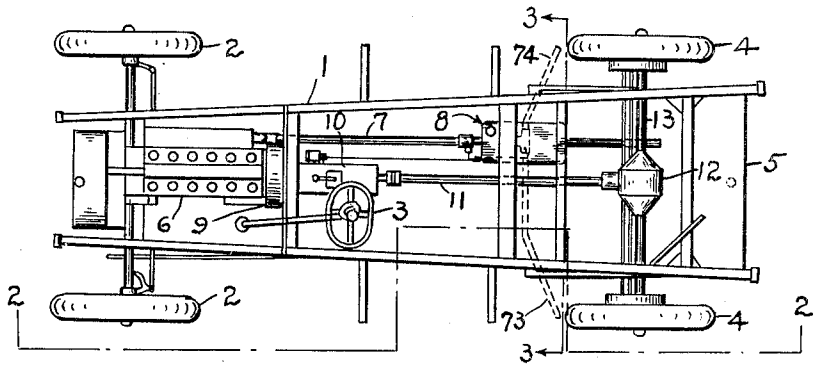


Fig. 1.

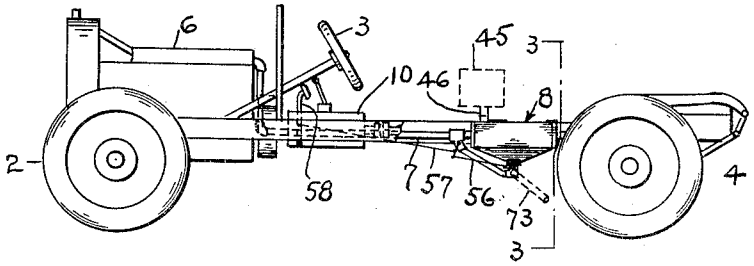


Fig. 2.

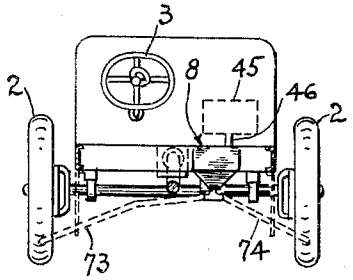


Fig. 3.

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MUFFLER AND SANDING DEVICE

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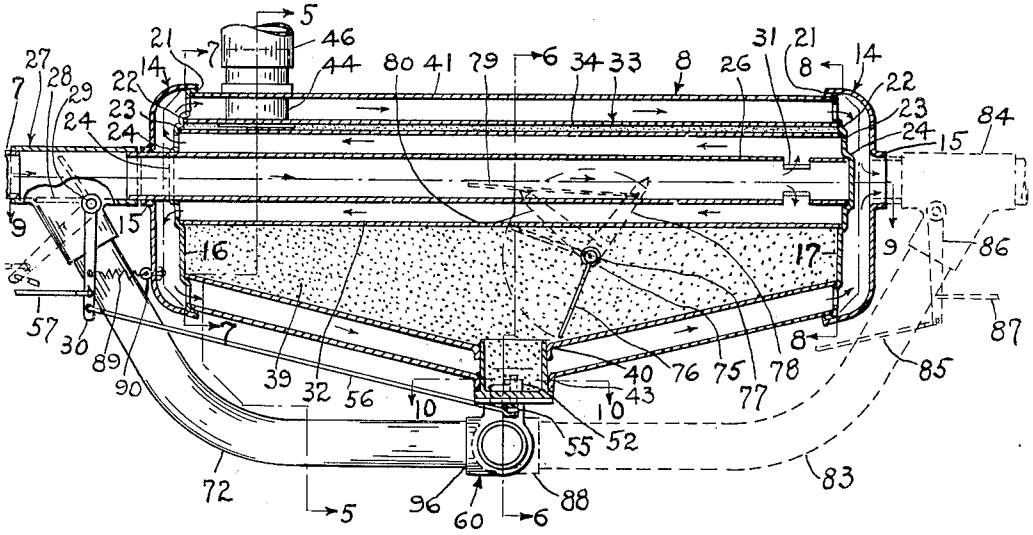


Fig. 4.

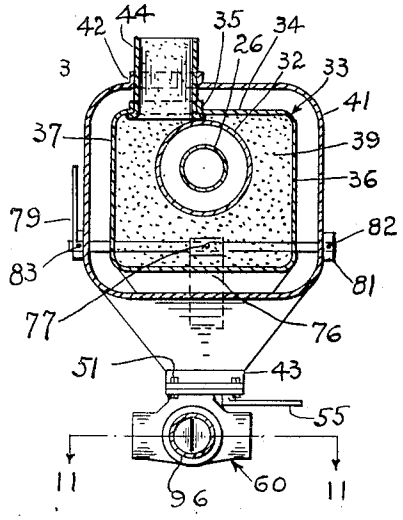


Fig. 5.

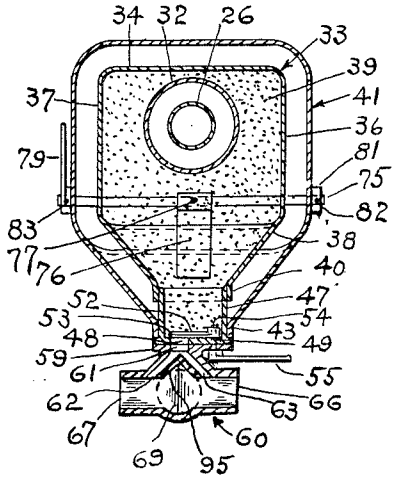


Fig. 6.

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F. H. WAITE

MUFFLER AND SANDING DEVICE

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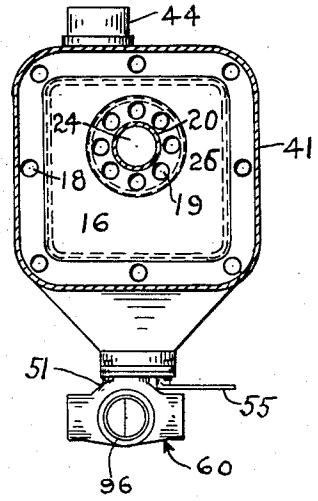


Fig. 7.

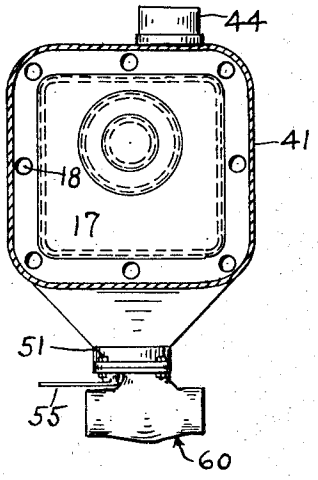


Fig. 8.

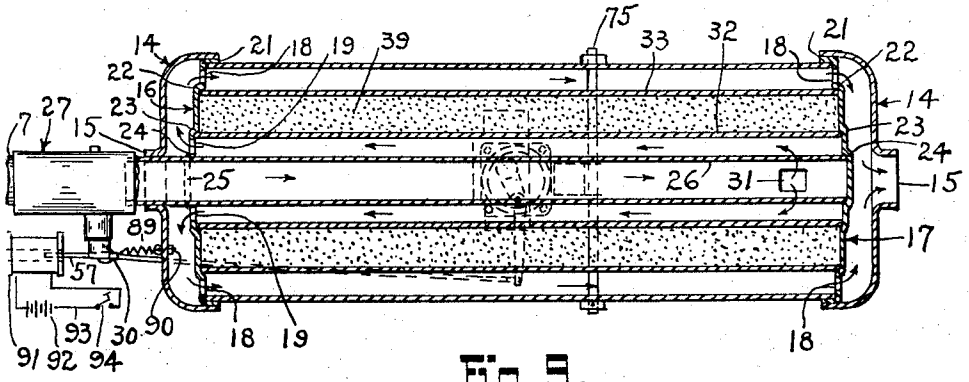


Fig. 9.

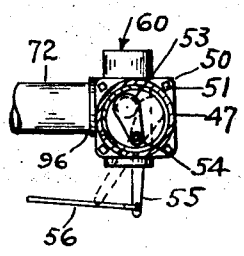


Fig. 10.

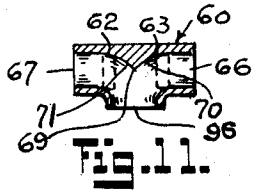


Fig. 11.

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ATTORNEY.

Patented Oct. 18, 1927. 1,646,130

UNITED STATES PATENT OFFICE.

FRANK H. WAITE, OF LONG ISLAND CITY, NEW YORK.

MUFFLER AND SANDING DEVICE.

Application filed January 3, 1927. Serial No. 158,758.

My invention relates to a muffler in combination with a sanding device and is confined to motor driven vehicles.

One object of my invention is to provide a muffler having a space for holding sand or the like intermediate of the gas passages therein.

Another object of my invention consists of the combination of a muffler and sanding device adapted to be utilized as an improved muffler or as a muffler and sanding device combined.

A further object of my invention is to blow hot sand or the like under the wheels of a vehicle.

A still further object of my invention is the novel means utilized in directing and controlling the sand and exhaust gases within and throughout the muffler.

It is well known to the art that mufflers have been employed, as mufflers alone and that sanding devices of various types have been used but none contemplate the unique combination of novel elements utilized in producing the remarkable results obtained by this particular device.

This invention is an improvement over my invention for a motor-vehicle sanding device, Number 1,606,277, dated Nov. 9, 1926.

With these and other objects in view, my invention consists of the novel construction, arrangement of parts, hereinafter referred to, described, claimed and substantially as illustrated in the accompanying drawings, wherein similar numerals refer to like parts throughout the several views, in which:—

Figure 1, is a plan view of the apparatus applied to a motor car.

Figure 2, is an elevation, partly in section, of Figure 1, taken on lines 2—2 of Figure 1.

Figure 3, is a cross section of Figure 1, taken on lines 3—3 of Figure 1.

Figure 4, is a longitudinal section of the device.

Figure 5, is a cross section of Figure 4, taken on lines 5—5 of Figure 4.

Figure 6, is a cross section of Figure 4, taken on lines 6—6 of Figure 4.

Figure 7, is a cross section of Figure 4, taken on lines 7—7 of Figure 4.

Figure 8, is a cross section of Figure 4, taken on lines 8—8 of Figure 4.

Figure 9, is a horizontal section of Figure 4, taken on lines 9—9 of Figure 4.

Figure 10, is a section in plan of Figure 4, taken on lines 10—10 of Figure 4.

Figure 11, is a cross section of Figure 4, taken on lines 11—11 of Figure 5.

Figures 1, 2 and 3, illustrate the device as applied to a typical motor vehicle in which the chassis 1, with the front wheels 2, steering wheel 3, rear wheels 4, and gas tank 5, carries an engine 6, exhaust pipe 7, with the muffler device 8, gear shift 10, drive shaft 11, driving the rear wheels 4, through the gearing 12, and the rear axle 13.

The combination muffler and sanding device 8, illustrated in Figures 4 to 11 inclusive, preferably is constructed of sheet metal end caps 14, with a flanged hole 15, into which end cap fits the formed holding plates 16 and 17, the plate 16, provided with openings 18, 19 and 20, and the plate 17, with the openings 18 only.

The plate 16, is recessed at 21, 22, 23 and 24, having the substantially rectangularly recessed part 21, provided with the holes 18, the circularly recessed part 23, with the holes 19, and the circularly recessed part 24, with the hole 25.

There is a tube 26, connected at one end with the butterfly valve 27, which has a valve 28, stem 29, and lever 30.

This tube 26, passing through the hole 15, in the cap 14, through the hole 25, in the plate 16, rests against the circular recess 24, in the plate 17, and has holes 31, therein adjacent to the plate 17.

Outside of this tube 26, is the tube 32, which fits into the circular recess 23, in plates 16 and 17, and these concentrically arranged tubes are the only round tubes in the muffler proper.

Outside of this tube 32, is a tubular shaped casing 33, of substantially rectangular cross section at each end, the top 34, having a flanged opening 35, therein, the sides 36 and 37, forming with the hopper like bottom 38, a sand holding space 39, the said bottom having a similar flanged opening 40, therein.

Outside of this tubular shaped part 33, is another one of similar construction 41, except that it is larger and has a flanged opening 42, directly opposite the flanged opening 35, in the part 33, and also a flanged opening 43, directly opposite the opening 40, in the said part 33.

To admit sand or the like in the space 39,

entirely surrounded by the hot flowing exhaust gases, the flanged holes 35 and 42, are connected together by the flanged tube 44, which may be connected to an auxiliary sand box 45, by a tube or the like 46.

To control and direct the outlet of hot sand from this chamber 39, there is provided a tube 47, with one end closed, except for the holes 48 and 49, said end having ears 50, each with holes for holding the bolts 51, and this tube fits into the flanged hole 40, in piece 33, and flanged hole 43, in the piece 41.

There is a valve 52, with beveled edges 53, pivoted by the pivot 54, in the bottom of this tube 47, and operated by the arm 55, connected to the arm 30, of the valve 27, by the link or the like 56, the two valves being movable simultaneously, mechanically or electrically, by the link, rod or like 57, from some remote place or by a foot lever 58, or by any other suitable device.

This pivot 54, passing through the flange 59, of the directing and spreading element 60, of the device, illustrated in Figures 4 to 11 inclusive, there being a hole 61, in the said flange 59, directly opposite the hole 48, in the piece 47, and communicating with this hole 61, and the openings 66 and 67, in the part 60, shaped somewhat like a side outlet T, are two openings 62 and 63.

The hot sand is directed from the space 39, through the tube 47, holes 48 and 61, openings 62 and 63, into the tubular openings 66 and 67, at a point equidistant from the points 69, formed by the curved surfaces 70 and 71.

The point 69, and the baffle 95, are provided for mixing the exhaust gases and sand or the like, said gases passing through the tube 7, butterfly valve 27, pipe 72, opening 96, equally each side of the said point, so that there can be no back pressure of the exhaust gases upon the sand or in the openings 62 and 63.

It is obvious that the sand may be fed under the wheels by gravity, by using the pipes 73 and 74, as shown in Figures 1, 2 and 3.

To indicate when the device is either full or empty of sand or the like, there is an indicating means provided, consisting of a shaft 75, passing through the parts 41 and 33, through holes therein carrying a vane like part 76, held thereto by the pin 77, said shaft having a collar 81, pinned on one end by the pin 82, and an indicating lever 79, pinned to the other end of the said shaft by the pin 83.

When the device is full of sand, the vane 76, will be down and the lever 79, up and when empty, the vane 76, will be up and the lever 79, as shown by the dotted position 80.

It is obvious that the link, rod or like operating the lever 79, could be attached to any convenient place or operated in any convenient way to indicate at any suitable place whether there is any sand or the like in the muffler.

In Figure 4, there is shown by the dotted lines 83, 84, 85, 87 and 88, an alternative position or location of the valves 60, and 27, pipe 72, lever or arm 30, and links 56 and 57, so that the mechanism will be operable from the exhaust gases after passing through the muffler, as well as by the exhaust gases bypassed before the muffler.

In Figures 4 and 9, the valves 60 and 27, connected together by the link or the like 56, are held normally in the closed position by the spring 89, fastened at one end to the end cap 14, by the eye bolt 90, and the other end to the lever 30.

In operating these valves electrically, an electromagnet 91, may be used and operated by a battery 92, wires 93 and a switch 94, which switch and battery may be located at any convenient point.

Having thus described and illustrated the preferred embodiment of my invention, I do not wish to limit myself to the exact construction shown, since it is evident that modifications may be made without departing from the spirit of the invention or scope of the claims.

I claim:—

1. In combination with a motor vehicle, a muffler having a relatively large space for containing and heating sand, intermediate of the gas conducting spaces therein, with an inlet at the top and an outlet at the bottom thereto.

2. In combination with a motor vehicle, a muffler having a relatively large space for containing and heating sand, intermediate of the gas conducting spaces therein, with an inlet at the top and an outlet at the bottom thereto provided with an opening and closing means.

3. In combination with a motor vehicle, a muffler having a space for containing and heating sand, intermediate of the gas conducting spaces therein, with an inlet and an outlet thereto, provided with a valve mechanism and means directing sand to pass under the wheels of said vehicle.

4. In combination with a motor vehicle, a muffler having a space for containing and heating sand, intermediate of the gas conducting spaces therein, with an inlet and an outlet thereto, provided with a valve mechanism co-operating with an exhaust gas controlling valve and means directing sand under the pressure of said exhaust gases, beneath the wheels of the vehicle.

5. In combination with a motor vehicle, a muffler having a space for containing and heating sand, intermediate of the gas conducting spaces therein, with an inlet and an outlet thereto, provided with a valve mecha-

nism co-operating with an exhaust gas controlling valve and means directing sand under the pressure of bypassed exhaust gases, beneath the wheels of the vehicle.

6. In combination with a motor vehicle, a muffler having a space for containing and heating sand, intermediate of the gas conducting spaces therein, with an inlet and an outlet thereto, provided with a valve mechanism co-operating with an exhaust gas controlling valve and means directing sand under the pressure of exhaust gases taken either from the inlet or outlet side or end of the said muffler and passed beneath the wheels of the vehicle.

7. In combination with a motor vehicle, a muffler of the character described having sand carrying and heating means intermediate of the parts thereof, with an inlet for said sand having an auxilary supply means thereto, an outlet provided with a valve mechanism co-operating and simultaneously operating with an exhaust gas valve, means manually operating said valves and means directing said sand under the wheels of the vehicle.

8. In combination with a motor vehicle, a muffler of the character described having sand carrying and heating means intermediate of the parts thereof, with an inlet for said sand connected to an auxiliary supply means, an outlet provided with a valve mechanism co-operating and simultaneously operating with an exhaust valve, means electrically operating said valves and means directing said sand under the wheels of the vehicle.

9. In combination with a motor vehicle, a muffler of the character described having sand carrying and heating means intermediate of the parts thereof, with an inlet for said sand connected to an auxiliary supply means, an outlet provided with means directing sand to flow downwardly in a multiple of directions, tangent to the flow of the exhaust gas which is directed to flow horizontally in a multiple of directions, tangent to the flow of the said sand, under the wheels of said vehicle.

10. In combination with a motor vehicle, a muffler having a space for containing and heating sand provided with means therein indicating when said space is empty or full, said space intermediate of the gas conducting spaces therein, with an inlet and an outlet thereto, provided with a valve mechanism and means directing sand to pass under the wheels of the vehicle.

11. The method of heating sand in a muffler and utilizing the same by heating the sand in a space intermediate of the gas conducting spaces within said muffler and directing the hot sand under the wheels of a vehicle.

12. The method of heating sand in a muffler and utilizing the same by heating the sand in a space intermediate of the gas conducting spaces within the said muffler and diverting part of the exhaust gases behind the sand feeding means and directing the hot sand under the wheels of a vehicle.

Signed at Jackson Heights in the county of Queens and State of N. Y. this 29th day of Dec., A. D. 1926.

FRANK H. WAITE.