

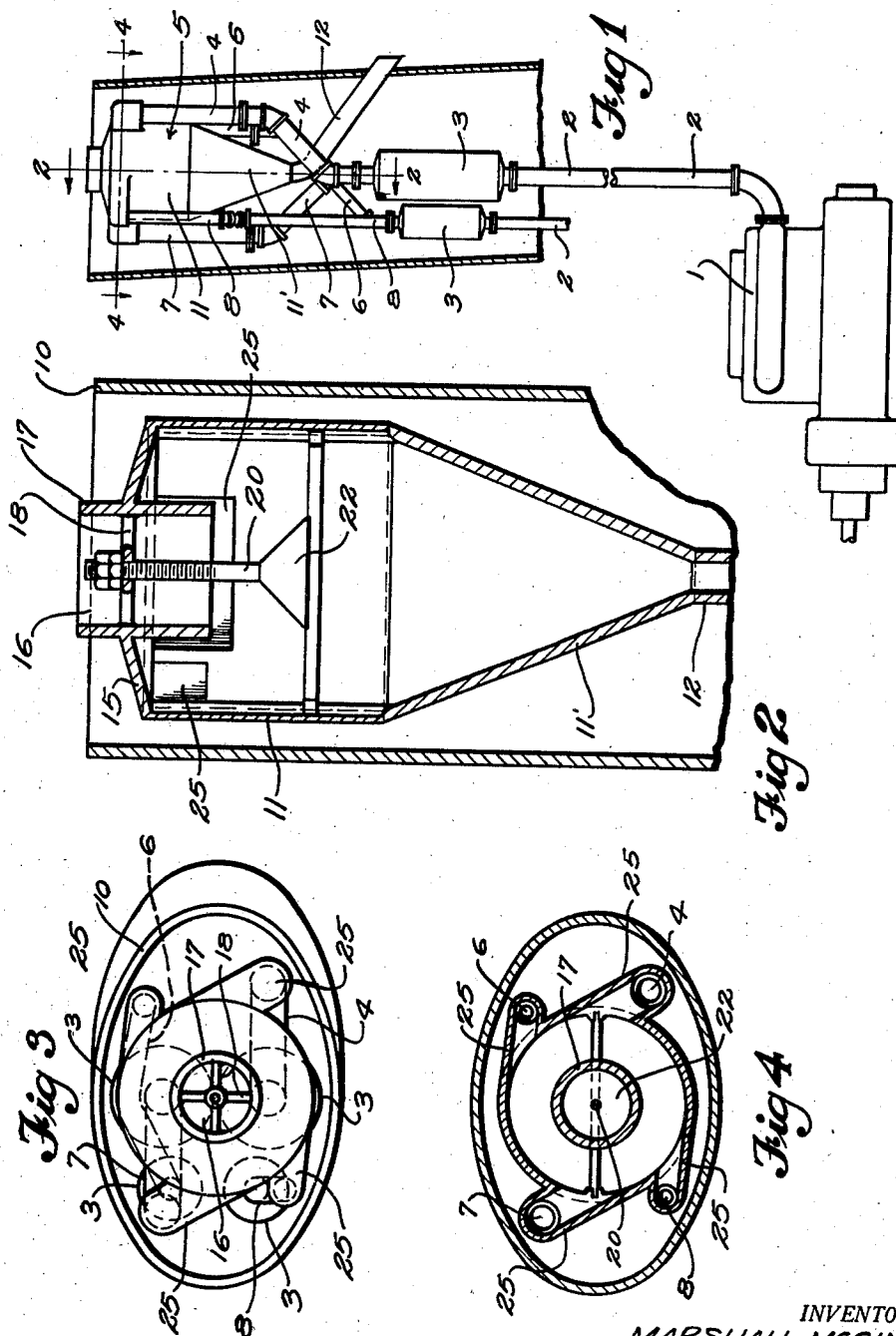
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SPARK ARRESTER

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SPARK ARRESTER

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1 Claim. (Cl. 183—86)

This invention relates to improvements in what are termed spark arresters, and has reference more particularly to devices of that character adapted to be used in conjunction with engines of the Diesel or semi-Diesel types; it being the principal object of the present invention to provide an improved form of arrester for sparks, soot and carbon cinders, which is in the nature of the common type of cyclone separator and capable of serving a plurality of engines at the same time.

It is a further object of the invention to provide a device of the above character that may be easily associated with the stack of a motor boat, ship, or the like, for the accommodation of one or more engines.

Other objects of the invention reside in the details of construction, in the combination of parts and mode of use of the device, as will hereinafter be fully described.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a view illustrating a spark arrester of the present character as applied within the stack of a boat or the like, and illustrating its connection with an engine.

Fig. 2 is an enlarged, cross-sectional detail of the spark arrester.

Fig. 3 is an upper end, or plan view of the device.

Fig. 4 is a cross sectional view, as seen on the line 4—4 in Fig. 1.

Explanatory to the invention, it will here be stated that where Diesel engines have been used on passenger ships, objection has been made to the fire hazard set up by burning carbon sparks discharged from engine exhausts, and also soiling of clothes, and damage to fixtures, furniture, etc., by reason of the greasy soot and carbon particles that are discharged from the engine's exhaust. In view of the fact that such damage does occur, it has been the object of this invention to provide a means whereby it can be overcome; that is, a means for separating from the exhaust gases, all foreign matter to which objection is made.

Referring more in detail to the drawing—

1 designates what may be any one of the common types of Diesel engine, generally used for ships, etc., having an exhaust pipe 2 extended upwardly and into the lower end of a vertically disposed muffler 3; this muffler being connected

at its upper end through the mediacy of a pipe 4 with the separator embodied by this invention and which is designated in its entirety in Fig. 1 by reference numeral 5, or may be connected with engines without mufflers.

In Fig. 1, I have indicated but one engine connected with the separator. However, there is shown a plurality of pipes, as at 6, 7 and 8, which are the connecting pipes for other engines, not shown, but which are accommodated by the separator 5; it being understood that the manner of connection for each engine is the same, and therefore the description of the device insofar as it has reference to the engine shown, will apply to each of the others.

The separator 5 is primarily for the purpose of collecting the soot and burning carbon particles that are delivered with the exhaust gases from the engine. When the engine, or engines, to be accommodated are located in a boat, the separator may, as a matter of convenience and practicability, be located in the upper end of a stack, and in order that this may be better understood, the stack has been designated in several of the views of the drawing by the reference numeral 10, and the relationship of the separator thereto has been illustrated.

The separator 5 comprises a vertically disposed cylindrical housing 11 of substantial diameter and which, at its lower end, has a downwardly leading conical extension 11' from the lower end of which a pipe or tube 12 extends; the pipe 12 being open at its lower end for the discharge of soot and carbon particles that may be collected. The upper end of the cylindrical housing 11 is closed by a wall 15 having a central opening 16 in which is fitted a length of tubing 17, the opposite end portions of which tubing extend respectively above and below the wall 15, as will best be understood by reference to Fig. 2. Mounted in the pipe 17 is a spider 18 in which is fixed a rod or bolt 20 that extends downwardly to approximately a medial point within the housing 11, and at its lower end mounts a conical deflector or baffle member 22 of a diameter substantially equal to that of the tube 17, but spaced sufficiently below the lower end of the tube 17 as not to interrupt the free outflow of gas from the separator housing.

Cross bar 22a is fixed to the baffle member 22 to extend diametrically of the housing 11, and, at its ends, has vertical sliding contact with guideways 23 formed on the housing walls; the purpose of this cross bar being to prevent vibration of the baffle member and suspending bolt 20.

The various exhaust pipes, 4, 6, 7, 8, leading from the several muffler housings 3 enter the housing 11 at the upper end thereof and through the connections indicated at 25 in Figs. 3 and 4, whereby the exhaust gases are discharged horizontally and tangentially into the interior of the housing. Thus the exhaust charges delivered from the various engines into the housing 11 set up a cyclonic action therein about the axis of the housing.

Assuming that the engine as shown in Fig. 1 is connected with the separator in the manner illustrated, it is apparent that all particles of soot, carbon, or other matter exhausted from the engine will be received into the housing 11 and that the exhaust charge will, by reason of their direction of delivery, set up the cyclonic action in the housing which causes the particles to be cast centrifugally to the outer walls of the housing and to gradually settle into the discharge tube 12, whereas the lighter gases will be exhausted from the upper end of the housing through the tube 17, as is well understood by persons familiar with this type of separator.

Devices of this character may be made in various sizes, to accommodate one or more engines and may be used to great advantage on boats, trains, or in other places where it is desirable

that the burning particles of carbon and soot be collected so as not to cause damage to anything in the radius of the engine exhaust.

The material used for constructing the separator preferably would be metal.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is—

A spark arrester comprising a vertically disposed, cylindrical housing, closed at its upper end by a wall and terminating at its lower end in a conical extension provided at the end with a discharge opening; said top wall of the housing having a central opening, an outlet pipe extended vertically through the opening coaxial of the housing, passages opening tangentially into the housing near the upper end wall for the delivery of gases into the housing, a spider frame fixed in the outlet, a rod mounted in the spider frame and extending coaxially into the housing, means for effecting a vertical adjustment of the rod, a conical baffle mounted by said rod below and spaced from the lower end of the outlet pipe and a cross bar fixed to the baffle and having its ends engaging vertical guides on the housing wall.

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