

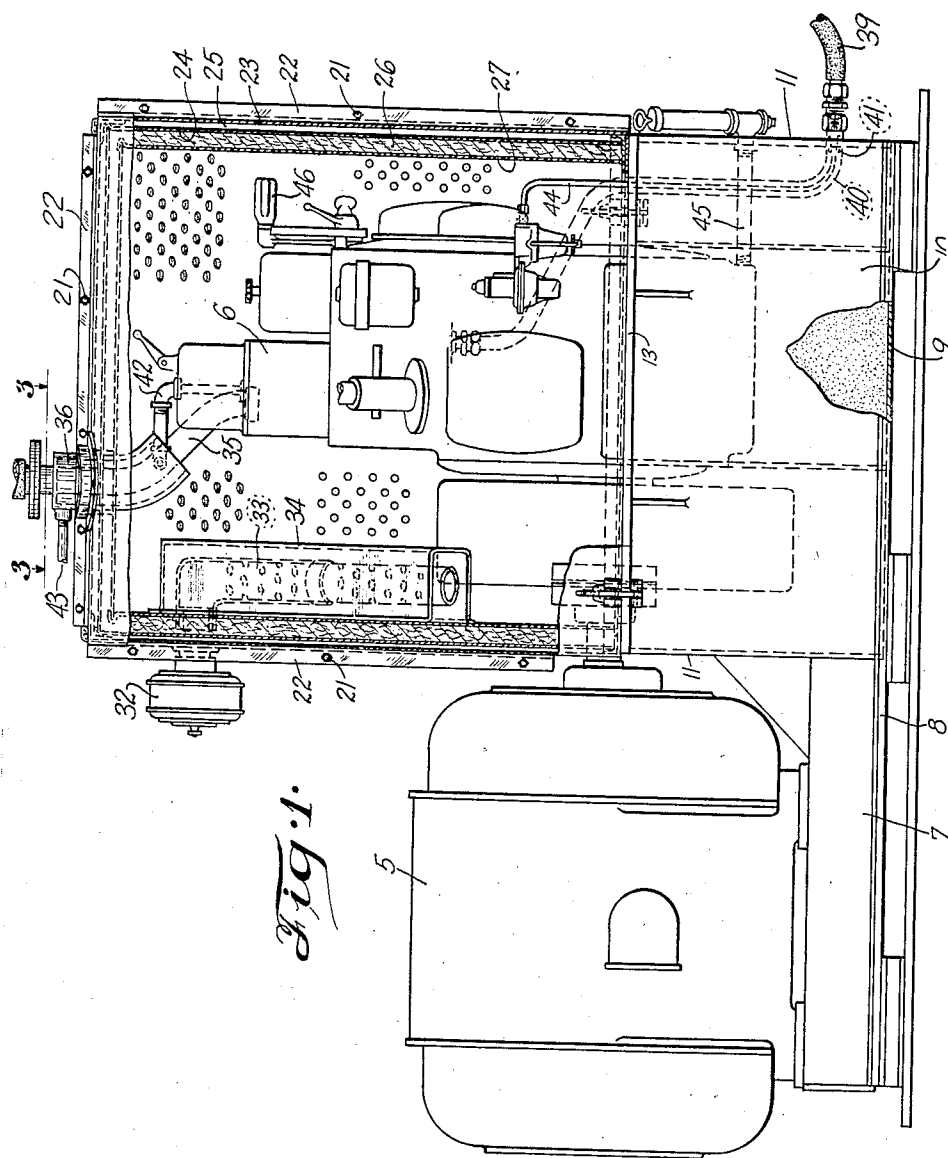
July 12, 1938.

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ENGINE SILENCING HOOD

2,123,358

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2 Sheets-Sheet 1



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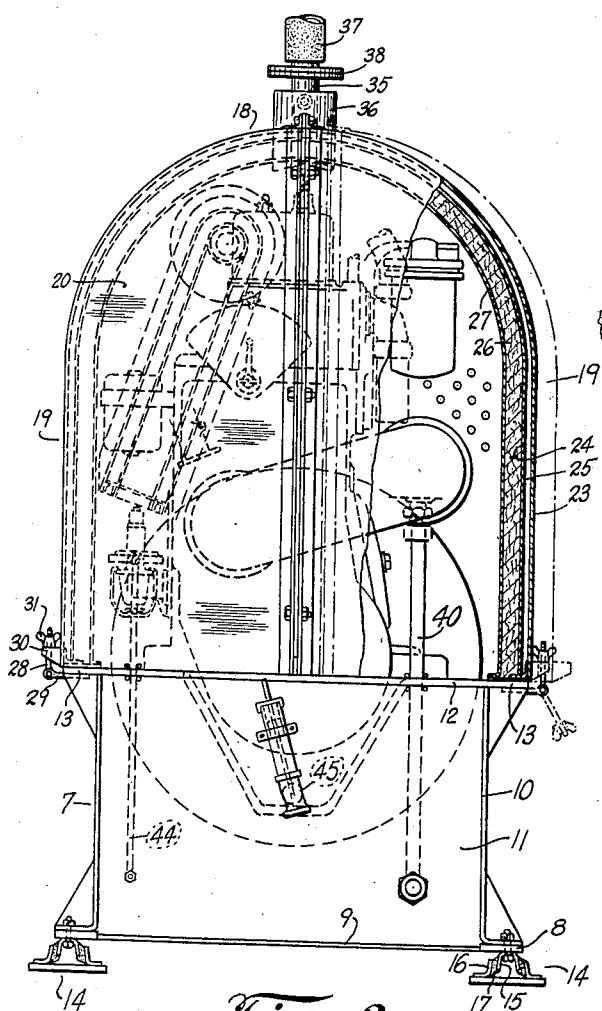


Fig. 2.

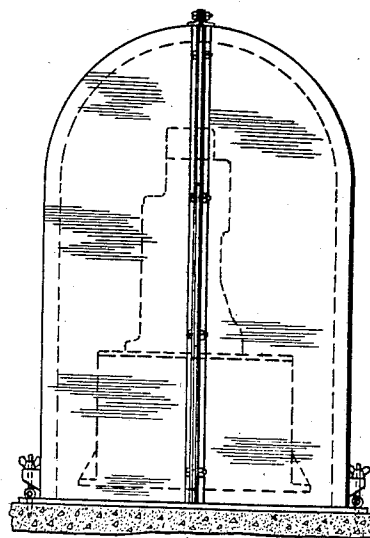


Fig. 4.

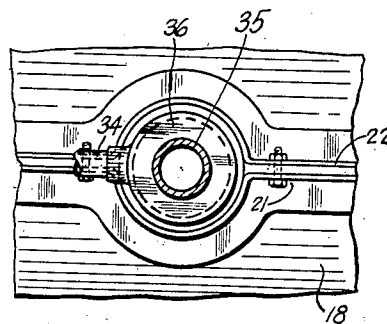


Fig. 3.

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## UNITED STATES PATENT OFFICE

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## ENGINE SILENCING HOOD

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5 Claims. (Cl. 123—198)

This invention relates to means for suppress-  
ing noise attending the operation of internal  
combustion engines, and more particularly to an  
improved silencing hood for internal combustion  
engines, especially useful for Diesel-generator in-  
stallations in residences, stores, theatres, and the  
like.

An object of the invention is to provide an im-  
proved silencing hood of the character described  
which is adapted to fit closely about the driving  
member of a Diesel-generator unit to completely  
house the same, and which is so constructed and  
mounted as to be readily removed and replaced  
for purposes of engine inspection or repair.

Other objects and advantages will appear from  
the following detailed description and drawings  
accompanying the same, setting forth preferred  
embodiments of the invention as applied to a Diesel-  
generating unit.

In the drawings, Fig. 1 is a side elevational view  
of such unit and silencing hood, with portions  
broken away to illustrate the preferred construc-  
tion; Fig. 2 is an end elevation of the assembly  
illustrated in Fig. 1 with a portion of the silencing  
hood broken away; Fig. 3 is a sectional view taken  
at line 3—3 of Fig. 1, and Fig. 4 is an end eleva-  
tion of an engine assembly and silencing hood  
thereof of alternate design.

Referring now by characters of reference to  
the drawings, a Diesel-electric generating unit to  
which the silencing hood of the present invention  
is especially applicable includes an electric gen-  
erator 5 operatively connected by a suitable cou-  
pling to the crank shaft of the engine, designated  
6. The engine and generator are mounted on a  
unitary sub-base 7 having anchoring flanges 8  
at the lower side edges thereof. That portion of  
the sub-base which underlies and supports the  
engine is substantially of box-like construction,  
having a bottom wall 9, side walls 10, and end walls  
11. A top plate 12, surmounting side and end  
walls 10 and 11, has suitable openings therein to  
accommodate the engine flywheel, oil-pan and  
other portions of the engine which extend below  
the crank shaft. Side margins of the top plate  
12 project outwardly beyond the side walls 10 of  
the sub-base, providing horizontal flanges 13 for  
receiving and supporting the silencing hood. For  
purposes of damping vibration and minimizing  
the drum effect of the box-like sub-base, the same  
may be partly filled with sand or gravel.

The sub-base is preferably anchored to a con-  
crete foundation or other solid footing, which  
may constitute the flooring of the room in which  
the unit is installed, by means of suitably spaced

sound- and vibration-damping mountings 14.  
Such mountings desirably comprise a bracket 15  
fastened to the sub-base, a companion bracket 16  
embedded or otherwise fixed to the foundation,  
and rubber blocks 17 which interconnect vertical  
arms of brackets 15 and 16.

The silencing hood is designed and constructed  
to fit over and enclose completely that part of  
the engine structure which rises above the sub-  
base. The hood embodies a rounded top portion  
18 which merges into vertical side walls 19 that  
terminate downwardly at the supporting flanges  
13, and end walls 20 that are substantially co-  
planar with the sub-base end walls 11. The hood  
is divided longitudinally into two complementary  
sections at a vertical, medial plane, the sections  
being detachably secured together by threaded  
elements 21 which engage flanges 22 disposed at  
the mating margins of the paired sections.

Each hood section preferably includes an outer  
casing member 23 of sheet metal, and a shell 24  
spaced inwardly of the casing 23, the casing and  
shell defining an air chamber 25 therebetween.  
At the inner surface of shell 24 is a layer 26 of  
sound-absorbing material such as felt or asbestos  
fibre, confined between shell 24 and a foraminous  
or reticulate inner lining member 27.

Detachable securement of the hood to the sub-  
base structure is preferably accomplished by  
means of bolts 28 pivoted on arms 29 which ex-  
tend laterally from flanges 13, the bolts being  
adapted to be swung into bifurcated, laterally  
projecting lugs 30 on the hood, wing-nuts 31 on  
bolts 28 serving to clamp the hood to the sub-  
base. The broken line showing in Fig. 2 illus-  
trates one of the hood sections as detached and  
displaced from its mating section.

Combustion air is drawn into the engine cham-  
ber through a filter silencer 32, of conventional  
type, mounted on one end of an intake pipe 33  
which extends through an end wall of the hood.

That portion of the intake pipe which is disposed  
internally of the hood extends substantially par-  
allel to the end wall and is provided with a mul-  
tiplicity of perforations. An open-ended sound-  
absorbing casing 34 carried by the hood surrounds  
the perforated portion of the air intake pipe.  
The assembly thus described provides an effective  
muffler which checks sound transmission through  
the air intake opening in the hood.

Exhaust gases are discharged through a pipe  
35 which projects through an opening at the  
juncture of the upper edges of the casing sec-  
tions, such opening being formed by comple-  
mentary, semi-circular recesses in the casing

sections. It is desirable to protect the sound-absorbing material 26 from heat from the exhaust pipe 35, and accordingly the latter is provided with a water jacket 36 supplied with cooling fluid which also serves to cool the engine. The hood sections are adapted to fit snugly around the jacket 36 as best appears from Fig. 3. Flexible exhaust tubing, a portion of which is indicated at 37, Fig. 2, connects with pipe 35 by means of a flanged union 38, serving to conduct gases to the desired point of discharge. By the provision of flexible exhaust tubing, the transmission of engine vibration and sound through this connection is avoided.

Cooling water is conducted through flexible tubing 39, Fig. 1, and a water pipe 40 which extends through openings in the engine sub-base. Metal to metal contact between pipe 40 and the engine supporting structure is prevented by rubber sleeves 41 which line the openings in the sub-base through which the water pipe extends. A conduit 42 connects the engine water jacket with the exhaust pipe water jacket 36, the cooling water being discharged from the assembly through pipe 43.

Connections for fuel and lubricating oil are made through the sub-base, rubber silencing sleeves being provided at the conduit openings for the fuel and oil pipes 44 and 45 respectively. The engine starting and speed controls 46 in the present illustration shown as being inside the hood, may be extended through suitable openings in the hood for external manipulation, in which event the opening in the hood for the control member should be provided with a rubber silencing sleeve.

An alternative construction of the silencing hood illustrated in Fig. 4 shows the hood extending to the floor or foundation, and being spaced on all sides from the engine. The hood is split centrally, and is similar in general construction to the hood illustrated in Figs. 1 and 2. However when this hood assembly is employed, flexible conduit for water, oil exhaust gases and fuel should extend between the engine and hood to permit the engine to oscillate on its resilient mounting relatively to the fixed hood, and to prevent transmission of sound and vibration to the hood.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A silencing hood for stationary internal combustion engines comprising a perforated inner casing member, an imperforate outer casing member paralleling said inner member, an intermediate shell spaced between said inner casing mem-

ber and shell, and sound-absorbing material filling the space between the inner casing member and shell, said hood being divided at a vertical, longitudinal medial plane into paired, complementary sections, and means detachably securing said sections together.

2. In combination with an internal combustion engine, a base structure supporting the engine, a silencing hood enclosing the engine and carried by said base structure, said hood comprising top, side and end walls and being divided into complementary sections at a vertical, longitudinal, medial plane, means detachably securing said hood sections together, and means detachably securing the hood to said base structure.

3. An engine-enclosing and sound-proofing structure including a base portion, horizontally projecting flanges at the bottom of the base portion for securement thereof to a floor or like sub-jacent support, a plurality of horizontal projecting flanges carried by the upper wall portions of the base and attached directly to support the engine, an upper housing portion formed of a plurality of detachably connected sections and characterized by spaced wall elements, a layer of fibrous sound-proofing material between a pair of said wall elements, a plurality of ports or openings in said upper enclosure and adapted to receive air and exhaust piping for the engine, and means for detachably securing the upper enclosure to said base structure.

4. In an engine-enclosing and sound-proofing structure, a hood formed of connected sections and adapted to be disposed about the upper portion of the engine, said hood being provided with openings to accommodate the engine air- and exhaust-piping, and a hollow element in one of said openings providing a water jacket and adapted for connection to the engine cooling system, said element adapted to enclose an engine exhaust conduit and tending thermally to insulate said conduit from the hood structure.

5. In an engine-enclosing and sound-proofing structure, a hollow structure formed of detachably connected sections and a layer of fibrous insulating material carried by the walls of the hood structure, said structure being provided, between a pair of its connected sections, with an opening to pass the exhaust line from the engine, and an annular water jacket member adapted for connection to the engine cooling system, and disposed in said opening about the exhaust pipe.

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