

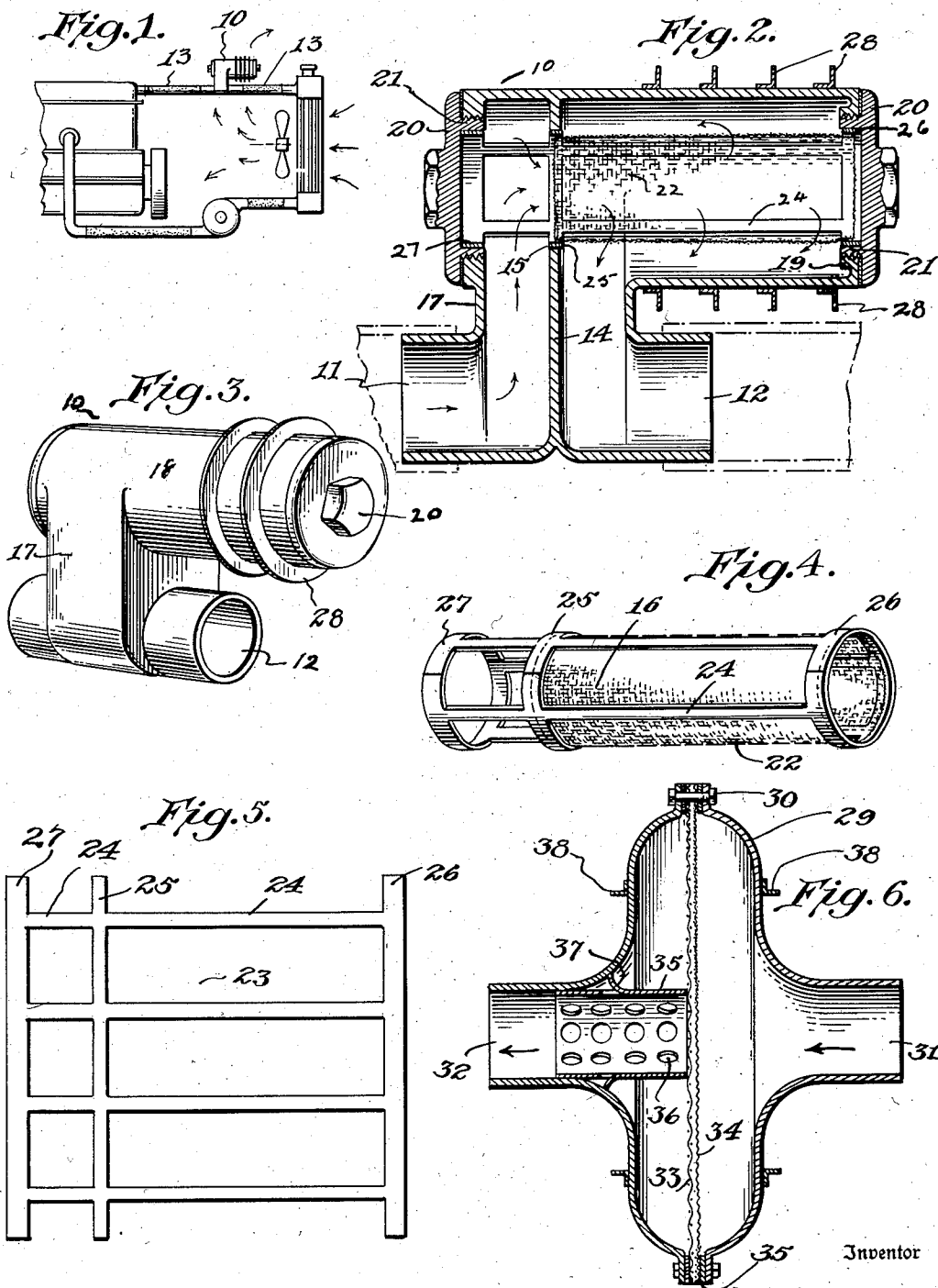
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W. T. BIRCH

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STRAINER FOR AUTOMOBILE COOLING SYSTEMS

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Inventor
 William T. Birch
 By *Chas. H. Hill*
 Attorney

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STRAINER FOR AUTOMOBILE COOLING SYSTEMS

William T. Birch, Chicago, Ill.

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4 Claims. (Cl. 210-164)

This invention relates particularly to strain-
ers for cooling systems of automotive engines, or
the like, to remove from the cooling water such
foreign matter as is likely to become deposited
in the radiator of an automobile, and contem-
plates the removal of emulsified oil, other gummy
matter, and the dirt usually carried by the water
of the cooling system.

It is an object of this invention to provide a
fluid strainer for the cooling systems of the en-
gines of automobiles, or the like, which is at
once simple and inexpensive in construction, ef-
ficient in operation and easy to inspect and main-
tain.

It is also an object of this invention to pro-
vide a fluid strainer of novel construction where-
by the advantages already stated may be obtained.

Other objects of the invention will appear in
the description of the invention hereinafter.

In the drawing:

Figure 1 is a diagrammatic showing of the
strainer in position in the cooling system of an
engine.

Figure 2 is a sectional view of the strainer,
with parts in elevation.

Figure 3 is a perspective view of the strainer
of Figure 2.

Figure 4 is a perspective view of the removable
cartridge of the strainer shown in Figure 1.

Figure 5 is a developed view of the support-
ing cage of the cartridge shown in Figure 4.

Figure 6 is a sectional view of a modified form
of the strainer.

The strainer shown in Figure 3 comprises a
hollow case 10 provided with means defining an
inlet neck 11 and an outlet neck 12 for connec-
tion in the cooling system of the internal com-
bustion engine of an automobile by the rubber
hose 13 usually employed in such a system.

A wall 14 provides a partition separating the
inlet and outlet conduits of the strainer, and the
wall is apertured at 15 to provide a supporting
seat for a strainer cartridge 16, and to provide
a guiding support for the cartridge as it is being
removed for inspection. Since the fluid pressure
on the inlet and outlet faces of the wall 14 is
substantially equal and opposite, because the wall
is exposed to the ingoing and the outgoing fluid,
the wall may be made relatively thin.

The wall 14 bisects an upstanding portion 17
of the casing which communicates with a hori-
zontally extending and open-ended elongated
portion 18 adapted to house the cartridge 16.

The casing 10 may be a light casting or a
stamping, and the elongated portion 18 may be

provided with an inwardly extending bent an-
nular lip 19 which is screw-threaded to receive
a closure member.

End caps 20 are threaded in the casing to pro-
vide closure members therefor, and the caps are
each provided with a threaded annular flange
21 which defines a recess to receive an end of the
cartridge 16 for support by the flange.

The cartridge 16 comprises a screen 22 housed
in and supported by a sheet-metal cage 23. A
blank of sheet metal is cut to the shape shown
in Figure 5, the screen 22 is then laid on the
open-work form, and the blank is bent to the
circular shape shown in Figure 4, and the screen
is suitably secured to the ribs 24 or to certain
of the flat ring portions 25 and 26 of the cage.

It will now be evident that the cage 23 com-
prises the flat ring portions 25, 26 and 27 con-
nected by the ribs 24, and that the ring 25 co-
operates with the wall 14 to define a partition
separating the inlet and the outlet of the casing.
The rings 25 and 27, with their connecting ribs
define an inlet port, while the rings 27 and 26
are adapted to form sealing means cooperable
with the flanges 21, and provide a support for the
cartridge 16 while it is being withdrawn from
the casing upon the withdrawing of either of the
end caps. Fluid enters by way of the neck 11,
passes through the port defined by the rings 27
and 25 and the connecting ribs 24 against the
inner surface of the screen 22, and then leaves
by the outlet neck 12. It will be obvious that
the foreign matter is collected on the inner sur-
face of the screen, and that it is held on the
inner surface against dropping into the outlet
while the cartridge is being withdrawn for in-
spection and cleaning. It will also be obvious
that, because of the path taken by the fluid,
foreign matter will tend to collect on ring 25
and on its supporting flange and so seal the joint.
There is also a tendency for emulsified oil and
other light gummy matter to float towards the
right end of the casing where the outlet is rela-
tively long and large and the stream flow rela-
tively slow. Cooling fins 28 are suitably secured
to the casing to further encourage the deposition
of solid and gummy matter, and the casing 10
may be suitably positioned to be in the path of
the air from the cooling fan of the system, or of
the air passing through the radiator when the
automobile is in motion.

The modified form of strainer shown in Figure
6 comprises a casing 29 formed of two similar
parts which are suitably held together by bolts
30. The casing 29 is provided with a central in-

let neck 31 and a central outlet neck 32 in alined relation.

Interposed between the two parts of the casing 29 is a wire screen 33 against which is laid a cloth screen 34, facing the inlet side, and both of the screens are suitably clamped between gaskets 35 by the two bolted parts of the casing. When the cooling system includes a pump it has been found that oil creeps along the impeller shaft into the water stream and is emulsified as it is churned in the pump. The cloth screen 34 is peculiarly adapted to trap this emulsified oil and similar gummy matter.

Because of space limitations on automobiles the space between the opposite inner surface of the casing is so small that should the screens 33 and 34 stretch they will be pushed against the inner end of the outlet neck 32 and then the fluid path is substantially that of the bore of the outlet neck instead of the normal path of the whole area of the screen. When the screens are loaded with foreign matter the difference in pressure between the inlet and outlet faces of the screen tends to cause bowing of the screen towards the outlet neck. To prevent the aforementioned diminution of the discharge area of the screens by the bowing of the screens, and to provide further straining means, there is entered in the outlet neck a tube 35 having a plurality of side apertures 36, and provided with struck-out tangs 37 which engage the wall of the casing and hold the tube in engaged supporting relation with the screens.

The casing 29 is connected in the cooling system in a manner similar to that indicated in connection with the strainer shown in Figure 3.

Cooling fins 38 are suitably secured to the casing 29 to encourage the deposition of salts and other foreign matter in the casing. It is well understood that precipitation of salts and other solid matter from a heated fluid is encouraged by cooling of the liquid and by a drop in the velocity of the liquid.

In the strainers of Figures 2 and 6 the area of the strainer surface is much larger than that of the inlet neck, and because of the drop in the velocity of the liquid in the strainer chamber, and the cooling of the liquid because of the means provided to cool the relatively large wetted area of the strainer chamber precipitation and adherence of the solids and gums at the screen surface is encouraged. Thus only clean water passes to the main radiator of the system, and

there are no solids to become deposited in the tortuous and cooled passages of the main radiator.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention, and it is therefore not the purpose to limit the patent granted hereon otherwise than is necessitated by the scope of the appended claims:

What is claimed is:

1. A fluid strainer and cooler comprising a casing having an elongated open-ended portion and a connecting neck provided with a partition to define an inlet and an outlet therefor, a pair of caps providing closure members for the open ends of said elongated portion, an elongated open-work circular frame in said elongated portion and supported at its ends by said caps, a circular screen in said frame, and cooling fins on said casing.

2. A fluid strainer comprising a casing having an elongated open-ended portion and a connecting neck provided with a partition to define an inlet and an outlet therefor, a pair of caps providing closure members for the open ends of said elongated portion, an elongated open-work circular frame in said elongated portion and supported at its ends by said caps, and a circular screen in said frame.

3. A fluid strainer comprising a casing having an open-ended elongated portion and a connecting neck provided with an apertured partition defining an inlet and an outlet therefor, a pair of caps providing closure members for the ends of said elongated portion, an elongated open-work circular frame in said elongated portion, said frame being supported at its ends by said caps and being supported at a point intermediate its ends by said partition, and an elongated circular screen in said frame.

4. A fluid strainer comprising an elongated and open-ended cylinder having an integrally connected neck extending normally therefrom and near one end thereof, partition means in said neck arranged defining an inlet and an outlet therefor, removable closure means closing the ends of said cylinder, an elongated open-work frame in said cylinder arranged supported by said closure means, and a screen supported by said frame.

WILLIAM T. BIRCH.