

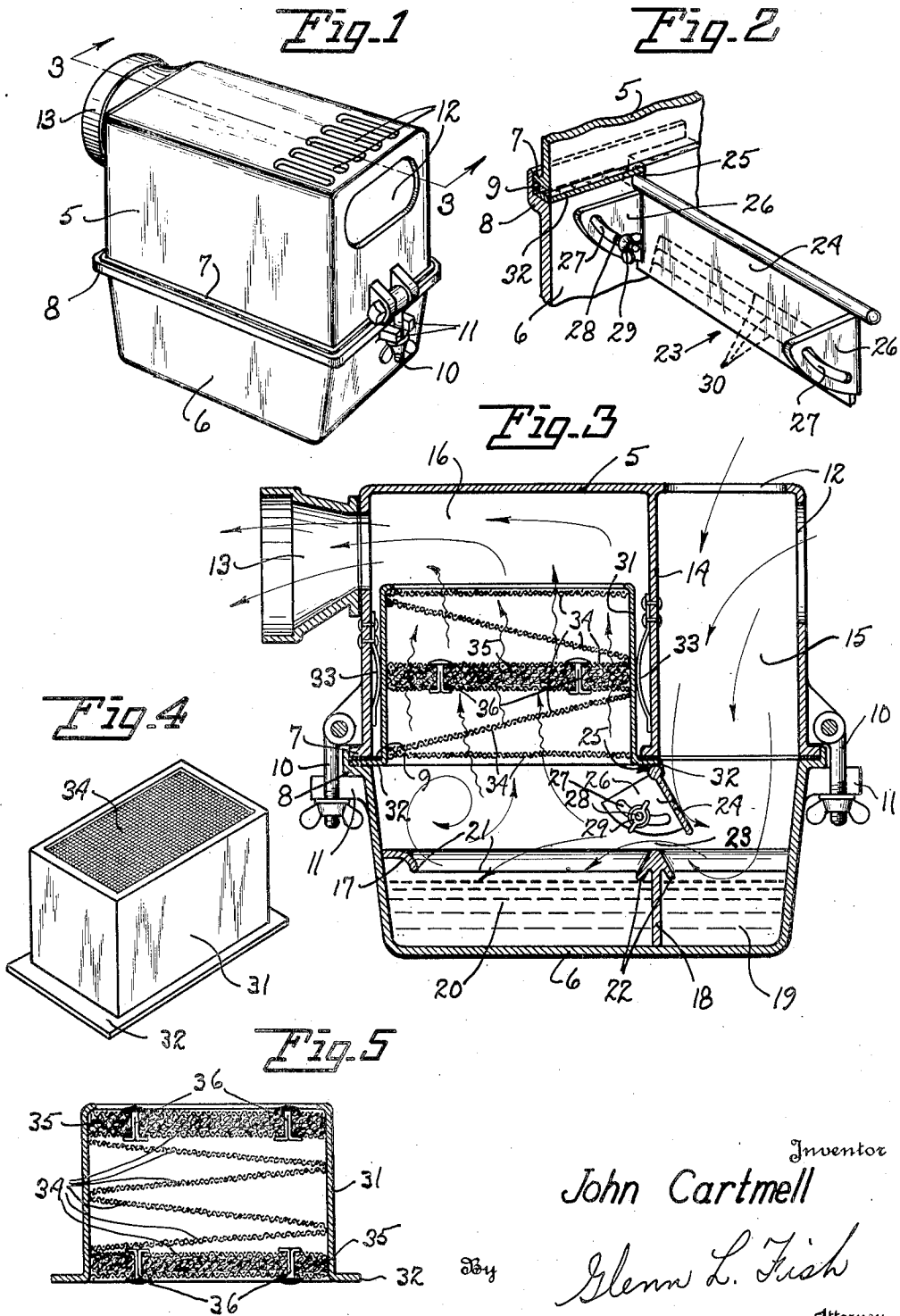
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J. CARTMELL

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AIR CLEANER

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Inventor

John Cartmell

Glenn L. Fish

Attorney

UNITED STATES PATENT OFFICE

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AIR CLEANER

John Cartmell, Spokane, Wash.

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My present invention relates to air cleaners that are particularly adapted for removing dust from air prior to its entry into an internal combustion engine and is an improvement over my co-pending patent application entitled "Air cleaner devices", Serial No. 578,031, and filed November 30, 1931. The primary objects of my present invention are to provide an air cleanser embodying an improved detachable cartridge screen device for removing dust and oil from air, and an adjustable gate for regulating the volume of air passing through the device.

In the drawing; Figure 1 is a view in exterior perspective of the air cleanser; Fig. 2 is a detail view in perspective of the adjustable gate; Fig. 3 is a view in longitudinal vertical section of the cleanser taken substantially on a broken line 3—3 of Fig. 1; Fig. 4 is a detail view in perspective of the screened cartridge; and Fig. 5 is a view in longitudinal vertical section of a screened cartridge of slightly modified form.

Referring in detail to the drawing, the housing of the device comprises an upper member 5 and a lower pan member 6. The open bottom of the upper member is provided with an outwardly projecting flange 7 and the open top of the pan member is provided with an angular flange 8 that is arranged to receive the flange of the upper member. A rubber gasket 9 is interposed between said flanges and forms an air tight connection when the two housing members are clamped together. The clamping means comprises bolts 10 that are pivotally connected to the upper housing member and arranged to pivotally swing in between prongs 11 fixed to the lower pan member so that when their wing nuts are set up the two housing members are drawn tightly together.

The upper housing member 5 is provided with the usual air intake ports 12 and air outlet 13. A vertical partition 14 divides said housing member into a small entry compartment 15 and a large outlet compartment 16. The lower pan member 6 is partly filled with oil and a frame plate 17 fits into said pan and rests on its slanting sides slightly above the oil. Said frame has a transverse partition 18 which rests on the bottom of the pan and is disposed vertically below the partition 14 of the upper housing member thus dividing the pan into a small compartment 19 and a large compartment 20. The frame plate has downwardly curved flanges 21 on its two sides and forward end, and its partition 18 has flanges 22 slanting downwardly from both sides of its top edge. As shown by direction arrows in Fig. 3 of the drawing, the incoming air strikes the surface

of the oil that is within the small pan compartment 19, violent agitation of the oil being prevented by the partition 18, and the flanges 21 and 22 prevent any of the oil from being lifted by the air in its upward passage through the outlet compartment 16.

The passageway 23 within the pan member 6 between the vertically aligned partitions 14 and 18 is provided with a gate 24 having its upper ends pivotally mounted in slots in the upper edges of the pan and directly below the bottom of the partition 14, as at 25. Said gate has end flange segments 26 which are provided with arcuate slots 27 that are arranged to receive bolts 28 which are threaded into the sides of the pan and which are provided with wing nuts 29 whereby the gate may be pivotally moved and adjustably fastened at any angle as will be understood. It will thus be seen that the passageway 23 may be regulated by means of the gate to permit the desired amount of air to pass therethrough. As shown in dotted lines at 30 in Fig. 2, portions of the gate 24 may be cut away to provide increased air passage space in case same is desired.

The large compartment 16 of the upper housing member 5 has a cartridge member mounted therein. Said cartridge member comprises an outer casing 31 which is open at its top and bottom and its bottom edge is provided with an outwardly projecting flange 32. Said flange fits between the forward and side portions of the flanges 7 and 8 and its rear portion fits between the bottom of the partition 14 and the top edge of the gate 24. It will thus be seen that the cartridge member may be readily removed for cleaning by disconnecting the bottom pan 6. Springs 33, fixed to the partition 14 and to the walls of the upper housing, also retain the cartridge in place. A fine wire mesh screen 34 is fixed in zig-zag fashion within the cartridge casing 31 and across its top and bottom as shown in Figs. 3, 4 and 5. Said screen may be looped upon itself to form pockets wherein steel wool or copper gauze 35 may be placed and secured by rivets 36 as shown either in Fig. 3 or in Fig. 5.

In the operation of my device, at each suction stroke of the engine to which its air outlet 13 is ordinarily connected, outside air is drawn in through the inlets 12 and passes downwardly through the small entry compartment 15 striking the oil within the small pan compartment 19. The air then passes through the adjustable gate 24 and some of it strikes the oil within the large pan compartment 20. The oil removes the heavy dust from the air which air then passes upwardly

through the wire screen 34 and steel wool 35 or other like substance therein whereby all finer particles of dust and any oil carried in suspension is completely removed from the air before it
5 passes outwardly to the engine.

Having thus described my invention, it being understood that the device shown herein is merely intended as an illustration of its principles and workings and that changes may be made therein
10 without departing from the scope and spirit of the invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. In an air cleanser comprising an upper housing member, a lower pan member detachably
15 connected to the bottom of the upper housing, a transverse partition dividing the upper housing into two compartments, and a transverse partition dividing the pan into two compartments and spaced in vertical alignment below the partition
20 of the upper housing whereby a passageway is left between said two partitions, the combination of a gate pivotally mounted in said passageway, and adjusting means for the gate whereby the

gate may be secured at any desired angle to regulate the area of the passage.

2. In an air cleanser comprising an upper housing member, a lower pan member, means for detachably connecting said two members together,
80 and a transverse partition dividing the upper housing into two compartments, the combination of a screen containing cartridge member mounted within one of said compartments, and said cartridge having a bottom flange interposed between
85 the connecting means of the upper housing and lower pan whereby the cartridge may be removed when said housing and pan are disconnected.

3. A cartridge member adapted for use in an air cleanser and comprising a casing having an
90 open top and bottom and a flange projecting outwardly from its bottom edge, a mesh screen secured in zig-zag fashion within the casing and across its open top and bottom, a portion of said
95 screen looped upon itself to form pockets, and a filtering material secured within said pockets.

JOHN CARTMELL.

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