

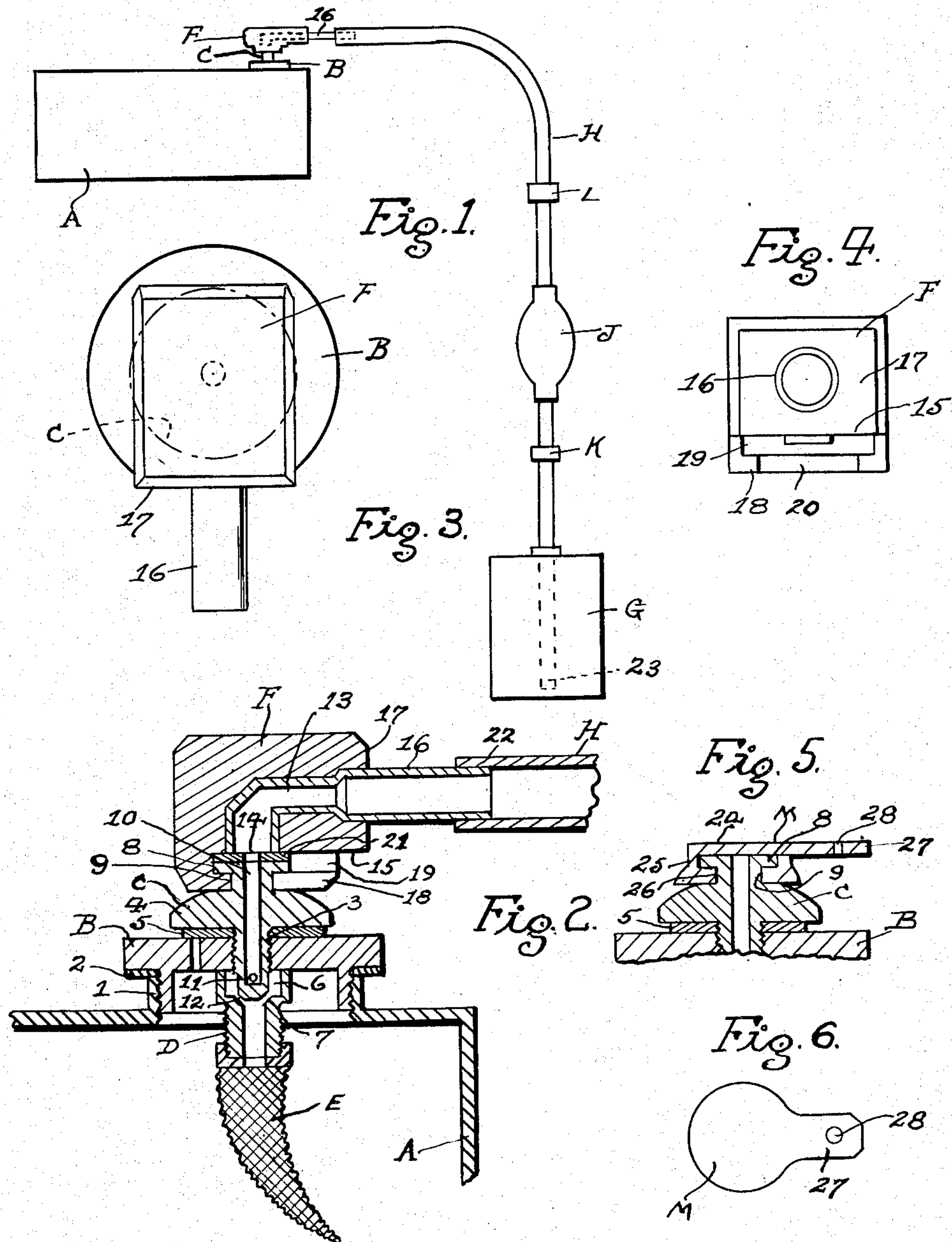
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FUEL TANK WITH DISCHARGE COUPLING

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## UNITED STATES PATENT OFFICE

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## FUEL TANK WITH DISCHARGE COUPLING

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1 Claim. (Cl. 220—86)

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This invention relates to a refueling system for motorboat outboard motors.

The primary object of the invention is the provision of a system by which the outboard motor of a motorboat can be refueled while in operation without danger of fire.

Another object of the invention is the provision of a system by which the outboard motor of a motorboat can be refueled while the engine is in operation and the boat is underway without danger of the operator falling overboard.

Another and still further object of the invention is a system by which the outboard motor of a motorboat while in operation and the boat is underway can be refueled without danger of spilling gasoline or the particular fuel being utilized.

A still further object of the invention is the provision of a refueling system for outboard motors of motorboats which is constructed in a manner whereby it is adaptable to outboard motors with a minimum amount of reconstruction of the normal parts of the engine.

Another and still further object of the invention is the provision of a system of the character described which is extremely simple of construction, highly efficient in operation, comparatively cheap of production yet durable in use.

Other objects, novel features of construction and improvements of the invention will appear from the following description when read in the light of the accompanying drawings.

In the drawings:

Fig. 1 is a side view, which is schematic to a degree, illustrating the system in combination with the fuel tank of an outboard motor.

Fig. 2 is a vertical sectional view through the attachment of the system to the cap of the engine fuel tank.

Fig. 3 is a top view of the fuel tank connection of the system.

Fig. 4 is an end view of the fuel tank connecting element of the system.

Fig. 5 is a vertical sectional view through the safety closure cap which is utilized when the system is not in operation.

Fig. 6 is a top view of the safety closure cap.

To those familiar with outboard motors for motorboats it is well known that the capacity of the engine fuel tanks, which tanks are built into and form a part of the engine, is comparatively small which necessitates numerous refuelings if the boat is to travel any appreciable distance and this necessity of refueling is troublesome and if the boat is in rough water it is quite dangerous

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in that gasoline can be spilled upon the hot engine and cause a fire or the operator can fall overboard when endeavoring to refill the gasoline tank. Additionally this necessity of refueling is particularly bad when the boat is taking part in a race.

The present invention presents a system which is easily, cheaply and quickly adaptable to the fuel tanks of outboard motors as they are ordinarily and conventionally made and additionally provides a system which is quickly and easily attachable and detachable from the fuel tank so that the system can be readily and quickly detached from the engine after the refueling operation has been completed.

Having reference now to the drawings which illustrate an embodiment of the inventive concept and in which like reference numerals and characters are utilized to designate similar parts, A is the fuel tank of the outboard motor and is provided with a conventional removable filler cap B which is threadedly attached to the tank at 1 and provided with the usual rubber gasket 2.

In the present system this conventional filler tank cap is utilized but it is slightly modified in that centrally it is provided with an internally threaded opening for the reception of the threaded stem 3 of a nut-like fitting C the enlarged head 4 of which is above the cap B. A suitable gasket 5 of rubber of the like is disposed between the nut head and the cap top. At its underside the cap B is provided with a hollow tubular conduit D. The upper end of this conduit is secured to the underside of the cap and at its upper end is provided with a chamber 6 the lower end of which is provided with a tapered valve seat 7 the purpose of which will hereinafter appear. This conduit D depends into the fuel tank A and at its outlet end is provided with a screen or filter E.

The nut-like fitting C is provided with a supplemental head 8 which is circular in shape. A channelway 9 separates the underside of the supplemental head from the flat top of the main head 4. The nut C is provided centrally with a bore 10 the lower end of which is closed with the exception of oppositely positioned transverse bores 11 which provide communication with the chamber 6. The lower end of the stem 3 is circumferentially tapered as at 12 so that upon tightening the nut C down the lower end of the stem will seat on the tapered valve 7 to close all outward or inward passage of fuel through the conduit D.

A coupling F is provided internally with a conduit 13 the inner end 14 of which terminates at



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the base 15 of the coupling while its outer end 16 extends considerably outwardly beyond the end 17 of the coupling. At its bottom the coupling is provided with an intumed flange 18 which is spaced from the base 15 to provide a channelway 19 the height or thickness of which is substantially the same as the channelway 9 in the nut-like fitting C. This channelway has an open end 20. The manner of application of the fitting to the nut C is clearly illustrated in Fig. 2 and its operation will be obvious. It need only be stated that the fitting is slid longitudinally onto and off of the nut C by reason of the open channelway end 20.

Although it is not essential the coupling F may be made of plastic and can be of a transparent material as can likewise the conduit 13 with the result that gasoline can be seen as it passes through the coupling and down into the fuel tank. To prevent leakage the outlet end 14 of the conduit is encircled by a rubber gasket 21 which is suitably secured in place by cement or the like. This gasket serves a double function in that it prevents leakage and also holds the coupling in place by resilient frictional tension to prevent accidental displacement of the coupling.

Extra gasoline is carried in any suitable can or container such as that designated G and this is placed at some point fairly closely adjacent the engine. A flexible conduit H has one end 22 connected to the coupling conduit extension 16 while its other end 23 extends downwardly into the gasoline or fuel can G to a point closely adjacent the bottom thereof. Intermediate its length the conduit H is provided with a rubber or other suitable resilient bulb J. Between the bulb J and the intake end 23 of the conduit a one-way valve K is provided and this valve opens only to permit fluid to travel toward the bulb. Between the bulb and the coupling F the conduit is provided with a second one-way valve L. This valve opens only to permit fluid to pass from the bulb through the conduit to the coupling F.

From the foregoing the manner of operation of the system should be understood. When it is desired to refuel the system is coupled and set up in the manner illustrated in Fig. 1. Periodic pressure on the bulb J will draw gasoline from the can G and deliver it through the conduit H through the coupling and down through the engine filler cap B and into the fuel tank through the screen or filter E. Once the refueling operation is complete the coupling can quickly be detached from the filler cap nut C and the system laid aside until refueling is again needed. Upon completion of a refueling operation the nut C can be tightened down and due to the compressibility of the gasket 5 the lower tapered end 12 of the stem 3 will seat on the valve seat 7 and prevent any outward movement of gasoline from the tank A.

When connection of the coupling F is broken with the nut C it is desirable to guard against the entry of dirt or foreign matter into the bore 10 of the nut C. For this purpose a safety clo-

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sure cap M is provided and its manner of application is illustrated in Fig. 5 of the drawings. This cap comprises a flat portion 24 with a depending circular cup-like portion 25 composed of resilient material. The flat portion 24 can also be composed of resilient material if desired. The cup-like portion is provided with an inwardly extending circumferential flange 26 which seats in the channelway 9 of the nut C. The cap has a handle-like portion 27 which is provided with a hole 28 for the reception of a chain or string by which the cap M may be secured against loss in the boat or overboard.

What I claim is:

An arrangement of the character described comprising, a fuel reception and storage tank provided in one side with a filling opening, a closure cap for the tank opening, a conduit attached to the underside of the cap and having an open lower end communicating with the interior of the tank, the upper end of the conduit being enlarged to form a chamber immediately below the cap, a valve seat in the lower end of the chamber, a fitting embodying a main head and a supplemental head positioned in spaced relation above the main head to provide a channelway between the heads, the fitting also embodying a stem depending from the main head and having a lower end in the form of a valve, the fitting being rotatably mounted in the closure cap with the lower valve end of the stem disposed in the conduit chamber whereby the stem valve is movable toward and away from the valve seat upon rotation of the fitting, the fitting being provided with a bore extending through both of the heads thereof and having an open upper end, the stem being provided with a continuation of said bore but the bore terminating short of the lower end of the stem, the stem above its lower end being provided with passageways communicating at their inner ends with the lower end of the stem bore and at their outer ends with the chamber of the conduit at a point above the valve seat thereof, and the supplemental head of the fitting adapted to detachably engage a fuel supply pipe for delivery of fuel thereby to the upper open end of the fitting bore.

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