

Dec. 5, 1961

D. W. KRATZ

3,011,349

COMPOSITE TOOL AND RECEPTACLE

Filed Dec. 4, 1958

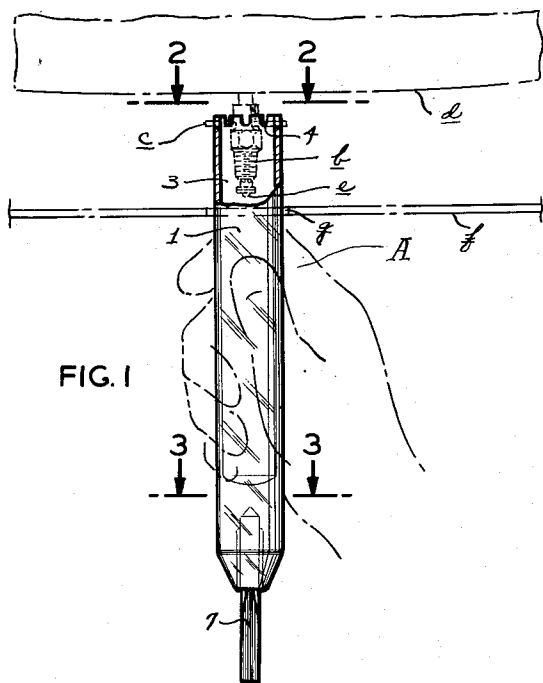


FIG. 1

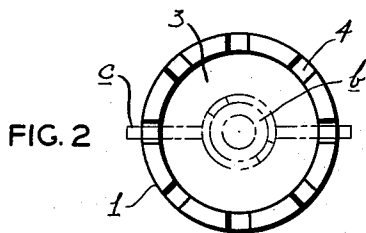


FIG. 2

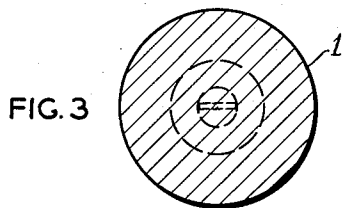


FIG. 3

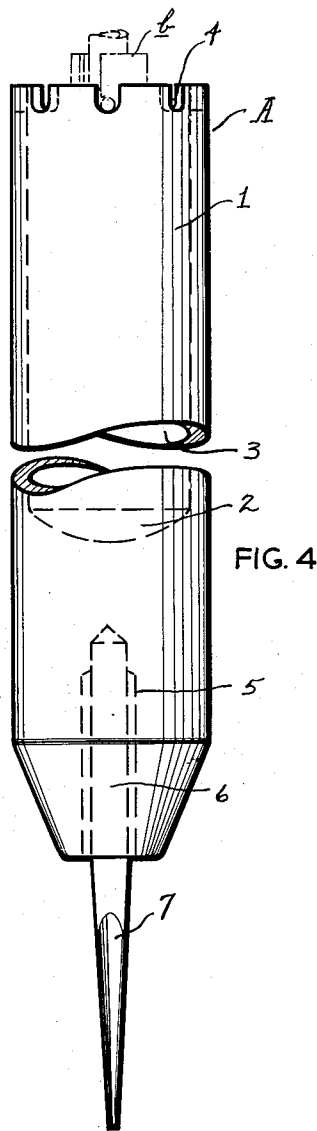


FIG. 4

INVENTOR.
DAVID W. KRATZ
BY *Ralph H. Kahle*
ATTORNEY

1

3,011,349

COMPOSITE TOOL AND RECEPTACLE
David W. Kratz, 17 Country Life Acres, Valley of
Country Life Acres, St. Louis County, Mo.
Filed Dec. 4, 1958, Ser. No. 778,218
1 Claim. (Cl. 73-421)

This invention relates in general to hand tools, and, more particularly, to a tool designed for use in conjunction with fuel tank valves and incorporating a receptacle for receiving a specimen of the tank contents.

As a recognized safety precaution, the nature of the fuel in aircraft gas tanks must be checked before each flight to determine the presence of any contaminating agents as well as the octane rating. Heretofore, this inspection has been effected by the opening of the tank quick drain valve by any suitable means and allowing a portion of the fuel to flow outwardly for reception within any convenient type of container, such as a pan, or the like. A scrutiny of the withdrawn fuel by an experienced individual will readily indicate whether the fuel is clear or is contaminated, and, further, as to what the octane rating of such fuel might be since its coloration is indicative thereof. In addition to withdrawing a specimen of the fuel from each tank of the aircraft, a sample must be also taken from the lowermost location in the gas system, so that such procedure requires considerable time as well as effort in the requisite removal of any portions of the cowling to obtain access to the valve and operation of the valve itself, with the ingredients or tools for such purposes being of non-specific character.

Also, the like testing of fuels in the tanks of gasoline powered ground vehicles as, for example, in the military field, tanks, jeeps, half-tracks, and the like, is a desirable practice for assuring optimum operation, and prior to the present invention has been accomplished by the use of any convenient instrumentalities, with all the attendant inconvenience and time-consumption.

Therefore, it is a primary object of the present invention to provide a tool compositely incorporating means for opening a tank valve and a receptacle for receiving a sample of the tank contents.

It is a further object of the present invention to provide a device of the character stated embodying a transparent liquid receiving compartment whereby a withdrawn tank liquid specimen may be expeditiously examined simultaneously with the valve operating action.

It is an additional object of the present invention to provide a device of the character stated having an integrated element for effecting facile removal of vehicle structural parts shielding the tank valve, and which device is so designed as to permit ready insertion within a restricted opening in such structure for presentation to the valve to be operated.

It is a still further object of the present invention to provide a composite tool for sampling tank contents which may be most economically manufactured; which may be most easily utilized; and which is durable and reliable in usage.

These and other detailed objects are obtained by the structures illustrated in the accompanying drawing in which:

FIGURE 1 is a side view, partially broken away, of a composite tool constructed in accordance with and embodying the present invention, illustrating said tool in operative position.

FIGURE 2 is a top plan view taken on the plan 2-2 of FIGURE 1.

FIGURE 3 is a horizontal transverse section taken on the line 3-3 of FIGURE 1.

FIGURE 4 is an enlarged side view.

2

Referring now by reference character to the drawing which illustrates the preferred embodiment of the present invention, A broadly indicates a hand tool implement comprising an elongated, relatively narrow body 1 of circular cross section and tubular throughout the major portion of its length, and being fabricated, preferably, of a molded, durable transparent plastic, such as Plexiglas said body 1 is open at its upper end and is closed spacedly from its lower end in the provision of an upwardly concave or dished base or floor 2, whereby said body internally defines a compartment or receptacle designated 3.

The normally upper end edge of said body 1 is provided, throughout its extent, with a series of spaced apart, upwardly opening, generally U-shaped indentations or notches 4, each of which is diametrically aligned with a companion indentation for purposes presently appearing. Downwardly of said compartment portion 3, said body 1 may be solid, and may, if desired, have an inwardly tapering configuration. Suitably fixedly received within an axial recess 5 within the lower end of said body 1 is a shank 6 of a screwdriver 7 projecting beyond said lower end.

The tool of the present invention is designed for use in effecting the expeditious withdrawal of specimens of fuel from the tanks of gas powered vehicles, such as, particularly, aircraft. In actual practice, the user will grasp body 1 in the manner indicated in FIGURE 1 whereby said body 1 serves as a handle, and it is dimensioned for ready gripping. The upper, indented or notched end is presented to a quick drain valve, as delineated in phantom lines at b in the drawing, so that the actuating arms c thereof are snugly interfittingly received within a diametrically aligned pair of indentations 4. Thereon the user by undertaking the necessary, indicated motion, whether it be the simple turning of body 1 or the lifting thereof, causes valve b to be opened thereby allowing fuel from the associated tank, as at d to flow through the valve head e and into compartment 3 of tool A. It will be seen that body 1 of tool A is of greater diameter than valve b so that the latter, when engaged by tool A, will be disposed within the upper end portion thereof so that fuel dispensed therethrough will be fully received within said compartment 3.

Since body 1 is made of transparent material, the quality and nature of the fuel being withdrawn can be determined visually very readily, as the relative clarity of the same will indicate the presence or absence of contaminated, foreign matter, while from its color, an experienced individual can ascertain the octane rating by comparative color methods. Furthermore, the presence of water within the fuel may be easily discovered as the separation of the former occurs. In this instance, it has been found that the provision of the concave base 2 to compartment 3 conduces to the visual determination of the presence of water as the latter, being heavier, may be more quickly perceived upon the rounded base rather than a flat base which would not provide the desired confinement. Thus, this inspection of the fuel will be made as the fuel is being discharged through valve b so that the time required therefor will be at a minimum, and as soon as the desired information has been obtained, tool A may then be appropriately operated for closing valve b.

In numerous types of aircraft and other vehicular construction, the fuel tank may be shielded by a structural element, such as a portion of a cowling, or fairing, as in aircraft, so that to operate the tank valve the tool must be passed through a suitable opening in such cowling or fairing as is indicated at f in the drawing. In many instances, a slotted latch-device is provided in such cowling f, and the same must be removed to allow ac-

cess to the valve. Thus, screwdriver 7 provides a ready and effective tool for opening such latch, and being integral with tool A, obviates the necessity of the user having to resort to a plurality of tools for effecting the inspection procedure in question. In other types of protective shields there may not be a removable latch but merely an opening such as shown at G. In either case, the tool of the present invention must be suitably adapted for facile insertion within the opening provided in the cowling or fairing so that no untoward obstructing action will develop. Hence, the narrow elongate construction of body 1, together with its limited cross sectional area, constitute structural features of great importance to the usefulness of tool A as the same conduce to the prompt and reliable execution of the sampling procedure.

Thus, in view of the foregoing, it will be seen that tool A in a most compact manner uniquely unites components necessary for the effective and quick sampling of contents of fuel tanks. To complete the entire operation, the user need use but one hand so that the other hand is at all times free for any other related activity. Tool A may be most economically manufactured and due to its materials of construction has proved most reliable and durable. It is of course obvious that tool A could be made of other material than molded plastic and that the compartment 3 may, instead of being entirely transparent could contain but a single window portion to allow inspection of the contents thereof. However, due to simplicity of manufacture and economy in production, it has been found that a single plastic material will serve the purpose of providing the desired transparency as well as the stability and rigidity desired in a hand tool of the present character.

It is understood that changes and modifications in the formation, construction, arrangement, and combination of the several parts of the composite tool and receptacle may be made and substituted for these herein shown and described without departing from the nature and principle of my invention.

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

For use with a fuel tank quick drain valve having a pair of radially projecting, axially aligned actuating arms, a hand-manipulative device for receiving a specimen of the fuel tank contents comprising an elongated, narrow body of circular cross-section, said body being fabricated of transparent, molded material and being open at its upper end, said body further being of tubular character throughout a portion of its length for defining a fuel-receiving compartment communicating with the open upper end of said body, said tubular portion being closed at its lower or other end and being internally upwardly concave, said body also having a plurality of spaced-apart indentations in its upper end edge throughout the full extent thereof, each indentation being diametrically aligned with a companion indentation and being of such width for easily receiving the actuating arms of said drain valve, the diameter of said body being of sufficient extent for projection of the drain valve into the said body.

References Cited in the file of this patent

UNITED STATES PATENTS

1,397,876	Meldal	Nov. 22, 1921
1,560,254	Jackson	Nov. 3, 1925