April 27, 1948. E. J. ST. LAURENCE 2,440,619

AUTOMATIC FIRE DOOR FOR PARTS WASHERS

Filed June 9, 1944

Fig. 1

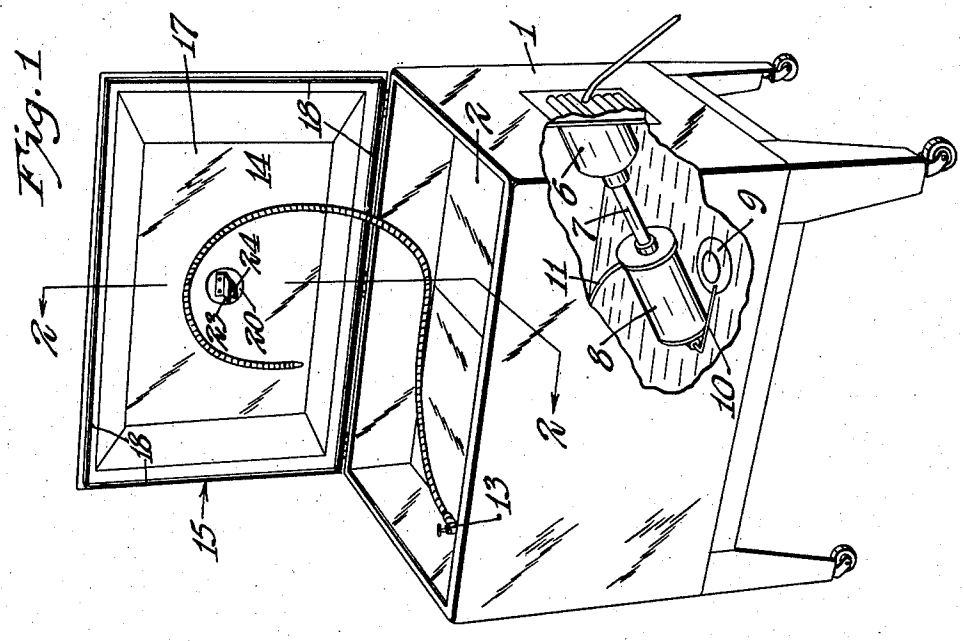


Fig. 2

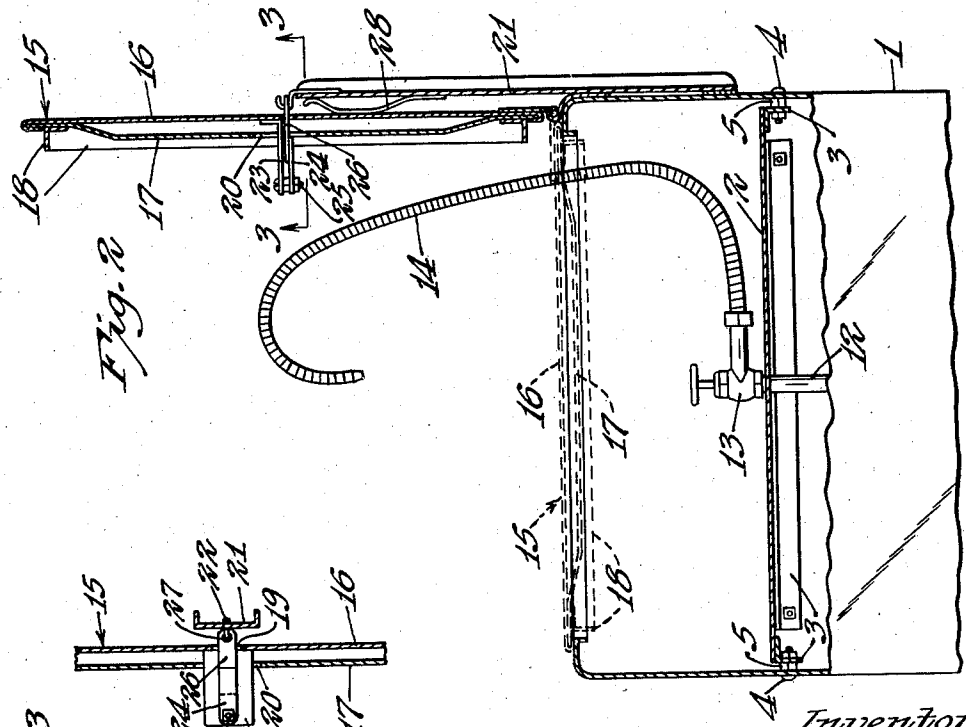


Fig. 3

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AUTOMATIC FIRE DOOR FOR PARTS WASHERS

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5 Claims. (Cl. 220—89)

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My invention is in the nature of an improvement in power-actuated washing machines of the type disclosed and broadly claimed in the co-pending application of Victor N. Albertson, S. N. 392,267, filed May 7, 1941, now Patent No. 2,352,356 dated June 27, 1944, entitled "Auto parts washer," and is especially designed and particularly adapted for the washing of greasy airplane and automobile parts and the like and, generally stated, the invention consists of the novel device, combinations of device, and arrangement of parts hereinafter described and defined in the claims.

In parts washers of the above type, wherein a volatile and inflammable gasoline or other similar fluid is circulated, and in which the metallic parts often come into sharp contact, fires caused by sparks or frictional electricity are not uncommon. Such fires are not only ruinous to the device and sometimes even to the parts, but are undesirable from the angle of loss of time and jeopardy to other inflammable structures and objects.

Briefly stated my invention provides means whereby a hinged cover which normally serves only as an upward extension of the rear wall of the washer cabinet will, when subjected to the heat emanating from the fire in the washer drop over the open top to the washer, thereby smothering the fire.

A commercial form of the improved device is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a view in perspective looking downward from the washer, some parts being broken away;

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1; and

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Referring with more particularity to the drawings, the tank or reservoir containing gasoline or other inflammable cleaning fluid is a rectangular open top structure 1, preferably formed of sheet metal having a slightly inward turned rim. At a point somewhat more than midway above the bottom of the tank is a work table or deck 2 which is supported by brackets 3 which in turn are secured to the sides of the tank 1 by nut-equipped bolts 4. This table 2 is of slightly less area than the horizontal cross section of the tank 1 and is spaced from the sides of the tank by means of spacing lugs 5 which extend

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between the inside walls of the tank 1 and brackets 3 and through which the nut-equipped bolts 4 extend.

As shown in Fig. 1, positioned under the work table 2 is an electric motor 6 which by means of a shaft 7 is connected to a pump 8. Pump 8 draws from a lower section of the tank through a vertically adjustable intake device which, preferably involves a head 9, the bottom of which is open or screened and the body of which is connected to a metal pipe 10.

After leaving the pump the fluid is forced upward through a flexible pipe 11 which connects to a metallic circulating pipe 12, the delivery end of which, as shown, extends through a notch in the deck 2 and is provided with a manually operated valve 13. This valve 13 is connected to the receiving end of a flexible discharge pipe 14. This pipe 14 is preferably of the type known as flexible metal hose or tubing made up of frictionally interlocked spiral sections.

Hinged to the upper rear edge of the tank 1 is a cover 15 for the open top of the reservoir. Cover 15 is made up of two spaced plates or baffles 16 and 17 shown as being secured together at their outer edges by folding the former over the latter. However, it is understood these members may be secured together in any desirable manner such as by welding. Spaced inwardly from the edge of said cover 15 on what would be the normally lower surface of plate 17 is an angle iron 18 which extends completely around the rim of the cover 15 and the purpose of which is to greatly reinforce the cover and keep the same flat so that cover 15 will make a relatively air tight closure of open top of the tank under the action of gravity. Both cover plates 16 and 17 are provided with centrally located concentric apertures 19 and 20 respectively.

An upstanding post or support 21, shown as being preferably channel-shaped and cross section, is welded or otherwise secured to the outside of the rear wall of the tank 1, and projects upwardly to a height substantially that of the concentric openings 19 and 20 of the plates 16 and 17 respectively, of the cover 15, when the cover is in a vertical position. Secured to the upper end of post 21 is a hook 22. Welded or otherwise secured to the inside edge of plate 16, slightly above the opening 19, is a wide anchor supporting plate 23. Supporting plate 23 extends outwardly through opening 20 in baffle 17, preferably only a distance of a few inches. A narrow inwardly projecting anchor link 24, as

shown, is connected to the wider supporting plate 23, but spaced therefrom, by means of a nut-equipped bolt 25. A second link 26 is secured to link 24 by overlapping and fusing together the inside ends thereof. A metal, such as tin or the like, which becomes fusible at relatively low temperatures of heat, approximately 160° F. is used to secure links 24 and 26 together. The outer end of link 26 extends through the opening 19 in cover plate 16 and has an aperture 27 through which the hook 22 extends. The so-called links 24 and 26 jointly provide a composite fusible link and may hereinafter sometimes be jointly referred to as a fusible link.

Supporting post 21 also carries a spring 28, shown as being in the form of a leaf spring, which is compressed between the cover 15 and the post 21 when the cover is in vertical position, as shown in Fig. 2.

Operation

In the event a fire starts in the gasoline containing reservoir or tank 1, due to a spark caused by the striking together of two pieces of metal, or from other causes, the flames coming out of the large opening in the top of the tank will make it difficult for anyone to get near the machine. However, the flames and the heat, in rising upwardly, will strike upon the exposed anchor member made up of links 24 and 26. Furthermore, because of the width of supporting plate 23, see Fig. 3, much of the heat will be deflected back down onto the fused links 24 and 26. Also, because of the spacing between the wide member 23 and the narrower members 24 and 26 the heat deflected and temporarily retarded by the supporting plate 23 will reach all of the exposed surfaces of the fused end portions. In other words, supporting plate 23 acts much like a deflecting plate aside from its normal function of supporting plate.

As has been stated supra the ends of anchor link 24 and 26 are fused together by a metal of low fusibility such as tin or the like, which will fuse at temperatures approximately 160°. When the low temperature fusing metal between links 24 and 26 reaches this temperature, the bond between them is broken and the cover 15 is given an original impetus to a closed position and away from its vertical, dead center position by virtue of the leaf spring 28 which has been compressed between the outer surface of plate 16 and vertical supporting post 21.

The action of gravity will, of course, result in the final closure of the cover 15 on the open top of the tank 1. In the event that flexible hose 14 should be projecting upwardly, the same will, by virtue of inherent flexibility, be forced into the inside of tank 1.

In this novel manner I have found that the hazard from fires is greatly reduced at a great saving of time, labor and material.

What I claim is:

1. In the structure of the kind described, a liquid containing, open top reservoir having a rear wall, a normally upstanding cover for said opening, hinged to the rear wall of said reservoir, said cover comprising spaced upper and lower baffles, aligned openings in said upper and lower

baffles, an upstanding supporting post secured to the rear wall of said reservoir, a supporting plate secured to the upper top baffle member and projecting out through the opening in said lower baffle and over the opening in said reservoir, an anchor link connected to the outer end of said supporting plate and extending backward in a direction of the aligned openings of the cover members, a second anchor link having its inner end overlapping said first mentioned link and secured thereto by means of a metal having a relatively low melting point and having its outer end secured to said upstanding post.

2. The structure defined in claim 1 in further combination with spring means used between the supporting post and cover for imparting initial impetus to said cover when the seal between the said anchor links is broken.

3. The structure defined in claim 1 in which the supporting plate overlies the said anchor links and is spaced therefrom and provides a heat retarding and deflecting shield for said anchoring links.

4. The structure defined in claim 1 in which said anchor links are much narrower than said supporting plate, the opening in the upper baffle being only sufficiently large to accommodate its cooperating relatively narrow anchoring link and the aligned opening in the lower baffle being sufficiently large to accommodate the wider supporting plate.

5. In a parts washer, an open top reservoir having a rear wall and adapted to contain a volatile cleaning liquid, a normally upstanding apertured cover hinged to the reservoir adjacent the upper rear edge thereof, an upstanding supporting post secured to the rear wall of the reservoir and projecting above the top of said reservoir, a supporting plate secured to the cover adjacent said aperture and projecting inwardly therefrom, and a fusible link extending through the cover aperture and having one end anchored to said supporting post and its other end portion anchored to the inwardly projecting end portion of said supporting plate, said supporting plate being located above and extending in close substantially parallel relation to the fusible link and being of materially greater width than said fusible link, whereby in case of fire in said reservoir said relatively wide supporting plate will serve to deflect rising heat waves downwardly against said fusible link to increase the heating rate of the fusible link.

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