W. H. JACOBS.

AUTOMATIC OIL SAVER.

APPLICATION FILED APR. 16, 1918.

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1,281,576.

Fig. 1.

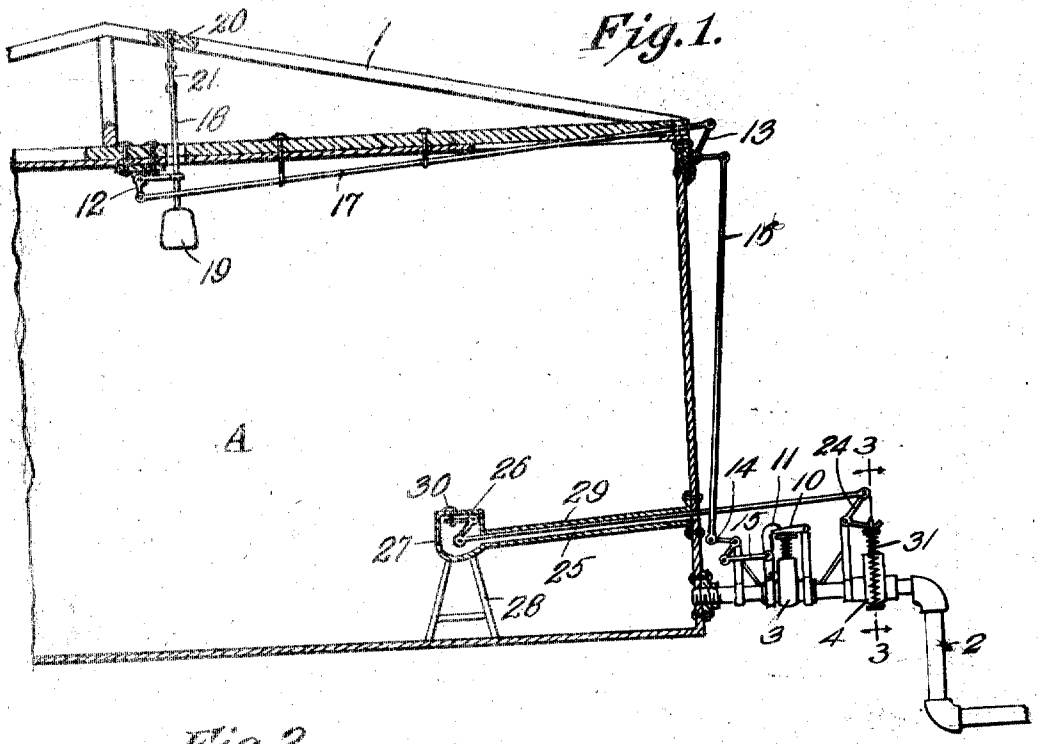


Fig. 2.

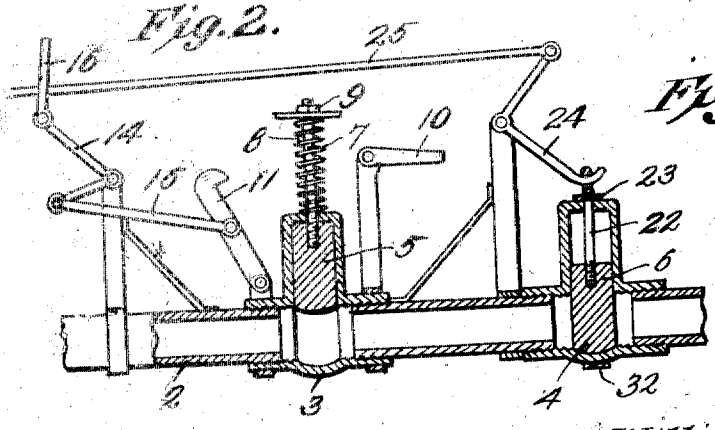
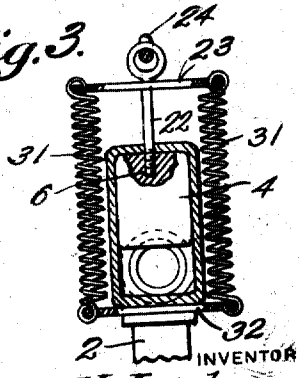


Fig. 3.



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AUTOMATIC OIL-SAVER.

1,281,576. Specification of Letters Patent. Patented Oct. 15, 1918.

Application filed April 16, 1918. Serial No. 228,928.

To all whom it may concern:

Be it known that I, WILLIAM H. JACOBS, a citizen of the United States, residing at Augusta, in the county of Butler and State of Kansas, have invented certain new and useful Improvements in Automatic Oil-Savers, of which the following is a specification.

In the storage of oil in quantity, considerable loss and damage are experienced in the event of fire either by the direct loss of the oil contained in the tank on fire or by communication of the fire from one tank to another. The present invention primarily aims to save the oil contained in the tank which is on fire and incidentally to prevent the fire being communicated from such tank to other tanks or property in the immediate vicinity by the flowing of the burning oil from the tank on fire to other tanks or property.

The invention provides automatic means which are rendered active in the event of fire or in the presence of excessive heat whereby an escape is provided for the oil from the tank on fire.

The invention furthermore provides an automatic cut-off for the escaping oil whereby fire is prevented from being communicated from the burning tank to the tank or receptacle into which the oil is escaping, such cut-off being brought into operation when the oil in the burning tank reaches a low level therein tending to permit burning oil to escape and result in a spread of the fire.

The invention provides a novel valve mechanism and automatically operated means in conjunction therewith, the same being actuated by abnormal heat as a result of fire.

The drawing illustrates a preferred embodiment of the invention, however, it is to be understood that in adapting the same to meet different conditions, various changes in the form, proportion, and minor details of construction may be resorted to without departing from the nature of the invention as claimed hereinafter.

In the drawings:—

Figure 1 is a sectional view of a portion of a storage tank for oil, provided with safety means embodying the invention.

Fig. 2 is a detail view of the safety means showing the same on a larger scale and partly in section, the relief valve being open and the cut-off valve closed.

Fig. 3 is a section on the line 3—3 of Fig. 1 looking in the direction of the arrows showing the parts on a larger scale, the cut-off being in open position.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by like reference characters.

The tank, reservoir, or like container for receiving the oil is indicated at A, and the same may be of any capacity or construction. A super-structure 1 of any approved type is provided upon the tank. A pipe 2 leads from the lower portion of the tank and is connected with a reservoir or other receiving means into which the oil from the tank A may discharge in an emergency. The pipe 2 is provided in its length with a relief valve 3 and a cut-off valve 4, the relief valve being disposed at a point between the tank A and the cut-off valve 4. The valves 3 and 4 may be of like or any approved construction and to avoid confusion, they are designated by terms descriptive of their function. When the oil is escaping from the tank A, both valves 3 and 4 are open, and when the level of the burning oil in the tank A reaches a point of danger, the valve 4 automatically closes, thereby cutting off the out-flow of the oil from the tank A and preventing fire being communicated from such tank to the tank or container into which the oil is escaping.

In the drawing, the valves 3 and 4 are illustrated as of the gate type, the valve 3 embodying a gate 5 and the valve 4 embodying a gate 6. A stem 7 projects from the gate 5 and passes through the casing of the valve and receives an expansible helical spring 8 which is confined between the valve casing and a stop 9 at the upper end of the stem 7. Under normal conditions, the spring 8 holds the gate valve 5 in open position. This valve however, is held in closed position by suitable means which are automatically released under abnormal conditions, whereby the valve is permitted to open, thereby providing a relief or escape for the

oil from the tank A. A latch 10 pivotally supported at one side of the valve 3 is adapted to extend over the stem 7 and is engaged at its free end by means of a catch 11 disposed at the opposite side of the valve thereby holding the gate 5 repressed and the spring 8 compressed.

Suitable connecting means are provided between the catch 11 and the automatic release whereby in the event of fire the catch 11 is actuated to release the latch 10 and free the valve 5 which automatically opens, thereby providing an escape for the oil from the tank A through the pipe 2. As shown, the connecting means embody a plurality of bell cranks 12, 13, and 14, the latter being disposed near the relief valve 3 and having an arm connected to the catch 11 by means of a link 15. The bell crank 13 is disposed near the top of the tank and at the side thereof, and a link 16 connects one arm thereof with the remaining arm of the bell crank 14. A link 17 connects the remaining arm of the bell crank 13 with an arm of the bell crank 12 which latter is preferably disposed within the upper portion of the tank. A rod or like member 18 is positioned to engage the remaining or horizontal arm of the bell crank 12 and passes through an opening in the upper end of such arm. A weight 19 is attached to the lower end of the rod 18 and the upper end of such rod is connected to an element 20 supported in the super-structure 1 by means of a fusible link or connector 21 which may be of lead or composition of a nature to melt at a relatively low temperature so that in the event of a fire, the link or connector 21 will be destroyed thereby releasing the rod 18 which descends by gravity force and operates the bell crank 12 and effects a release of the latch 10 through the intermediate connections between the bell crank 12 and the catch 11. The rod 18 operates through an opening in the top of the tank and its upper end is expanded and constitutes a stop which impacts with the horizontal arm of the bell crank 12 so as to operate the latter when the weight 19 is released and drops.

The cut-off valve 4 as hereinbefore stated is of similar construction to the relief valve 3 and under normal conditions is held in open position, but under certain conditions the valve 4 is permitted to automatically close and cut off the flow of oil through the relief pipe 2. A stem 22 extends from the gate 6 through the casing of the valve 4 and passes through a yoke 23 and is provided at its upper end with an eye which engages one arm of a bell crank 24. The remaining arm of the bell crank 24 is connected by means of a link 25 with a bell crank 26 disposed in a casing 27 arranged within the tank A at a predetermined position above the bottom thereof and supported upon a suitable stand 28. A tube 29 forms a housing for the link 25 and connects the casing 27 and side of the tank A through which the link 25 passes. A fusible link or connector 30 joins one arm of the bell crank 26 with the casing 27 and normally holds the gate 6 of the cut-off valve 4 in open position against the tension of the closing means, the latter consisting of a pair of contractile helical springs 31 which connect the ends of the yoke 23 with the ends of a companion yoke 32 at the lower end of the valve casing 4.

In the practical operation of the invention, the parts being assembled and disposed in the manner hereinbefore specified and illustrated in the drawing, the tank A is supplied with the oil to be stored therein. Under normal conditions, the cut-off valve 4 is held in open position against the tension of the springs 31 and the relief valve 5 is held closed against the tension of the spring 8. Under abnormal conditions, resulting from fire or excessive heat, sufficient to melt the fusible connector 21, the weight 19 drops and actuates the bell crank 12 and effects disengagement of the catch 11 from the latch 10, thereby permitting the relief valve 3 to open and the oil to pass from the tank A through the relief pipe 2 into a tank or other receiving container not shown. Should the oil be on fire, the flame will result in fusing the connector 30 when the level of the oil in the tank A reaches the casing 27 hence the cut-off valve 7 automatically closes and shuts off the out-flow of the oil and prevents the burning fluid from passing through the pipe 2 into the reservoir, container, or receptacle into which the oil is discharging with the result that the fire is prevented from being communicated from the tank A to adjacent property.

The foregoing description and the drawings have reference to what may be considered the preferred or approved form of my invention. It is to be understood that I may make such changes in the construction, arrangement, and combination of parts, materials, and dimensions, et cetera, as may prove expedient and fall within the scope of the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination, a storage tank for oil, a cut off normally held in closed position, means normally tending to open the cut off, a latch pivoted to one side of the cut off and adapted to extend thereover, a catch engaging the free end of the latch to hold the latter in operative position, and means for releasing the catch under extreme conditions of heat to release the cut off and admit of its automatic opening.

2. A storage tank for oil, a valve con-

nected therewith, upper and lower yokes, contractile helical springs at the sides of the valve and connecting the ends of the yokes, a bell crank having one arm in connection with the valve to normally hold it open, and means within the tank connected with the other arm of the bell crank and including a fusible element to effect release of the valve under extreme conditions of heat within the tank to admit of the automatic closing of the valve.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. JACOBS.

Witnesses:
LENA L. BALLARD,
C. W. MCVICKERS.