W. H. YETMAN.

AUTOMATIC STOPPING DEVICE.

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1,083,315.

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Fig. 2

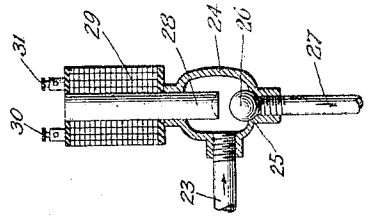
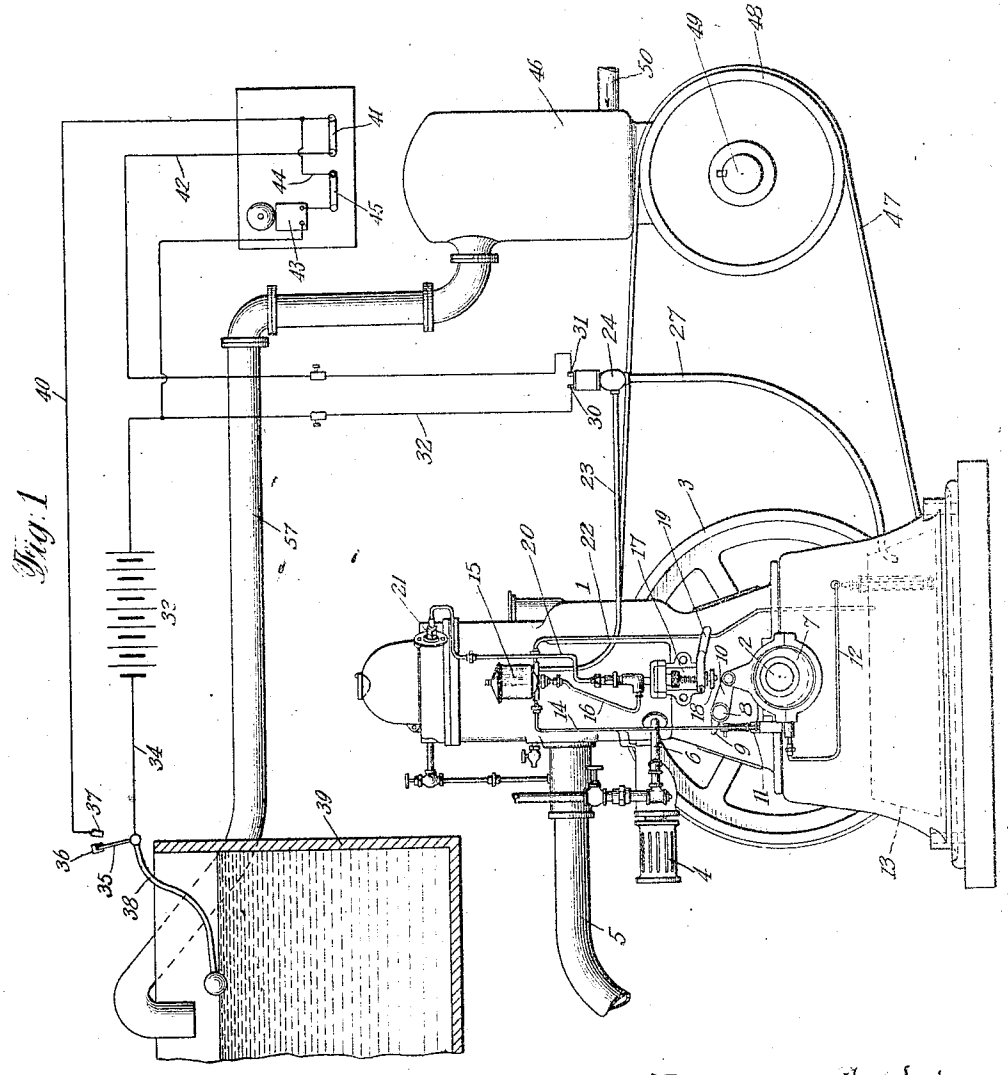


Fig. 1



Witnesses:

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AUTOMATIC STOPPING DEVICE.

1,083,315. Specification of Letters Patent. Patented Jan. 6, 1914.

Application filed March 11, 1912. Serial No. 683,151.

To all whom it may concern:

Be it known that I, WILLIAM H. YETMAN, of Elizabeth, in the county of Union and in the State of New Jersey, have invented a certain new and useful Improvement in Automatic Stopping Devices, and do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates particularly to a device which may be used for stopping the operation of engines or other types of apparatus which are dependent upon a supply of liquid, such as liquid fuel.

The object of my invention is particularly to provide a means whereby an explosive engine which is being supplied with liquid fuel may be stopped when a certain result which is to be accomplished by the operation of the engine has been completed.

My invention is especially applicable to the stopping of the operation of an engine used for pumping water into a supply tank when the tank in question has been filled. My invention is, however, applicable to many other uses as has been indicated above.

I have shown one embodiment of my invention in the accompanying drawings, in which—

Figure 1 represents an elevation of an engine equipped with my invention and Fig. 2 shows an enlarged detail of the electrical valve contained within the same.

In the drawings, 1 indicates an explosive engine having a main shaft 2 which carries a fly wheel 3. The engine is provided with an air inlet valve 4 and an exhaust pipe 5, said exhaust pipe 5 communicating with a waste water pipe 6 leading from the cooling jacket of the engine. The main shaft 2 carries an eccentric 7 which operates a rock shaft 8 carrying oppositely projecting arms 9 and 10. The arm 9 operates a main fuel pump 11 which connects with a supply pipe 12 leading from an oil tank located within the engine casing at the bottom thereof. The oil which passes through the pump 11 is driven through a pipe 14 to an auxiliary oil reservoir 15. A pipe 16 leads from the bottom of the auxiliary oil reservoir 15 to an auxiliary pump 17, said pump having a main operating rod 18 operated by the arm 10 and being also equipped with a hand lever 19 to force oil into the engine at the time when the engine is being started. The oil is led from the pump 17 through a pipe 20 into an injector nozzle 21 and thence into the explosion chamber in the engine. An overflow pipe 22 is also connected to the auxiliary reservoir 15 and has its end located within said reservoir at the point at which the level of the oil is to be maintained within the reservoir. This overflow pipe 22 leads from the auxiliary reservoir 15 back into the main reservoir 13. In order to stop the engine at the time when desired by cutting off the supply of oil, a pipe 23 leads from the bottom of the auxiliary reservoir 15 to one side of a valve casing 24. The bottom of the casing 24 carries a valve seat 25 to receive a ball check valve 26 which normally rests against the valve seat 25 to act as a check valve. From the bottom of the valve casing 24 a pipe 27 leads directly to the main oil reservoir 13 and into the top of the valve casing 24 projects a core 28 of an electro-magnet having windings 29 and terminals 30 and 31. One of the terminals 30 is connected by means of a wire 32 to one or more dry batteries 33. The other terminal 31 is connected by a wire 34 to an arm 35 having a contact 36 operating as a circuit breaker in connection with a contact 37. The arm 35 is carried by a float lever 38 which is supported upon a tank 39 to be filled with water through the operation of the engine 1. The contact 37 is connected by a wire 40 to one terminal of a hand operated switch 41. The other terminal of the hand operated switch is connected by a wire 42 to the other terminal 31 of the windings 29. An alarm device, such as a bell 43, is bridged between the wires 32 and 40 by means of a wire 44, said wire being provided also with a hand operated switch 45 to throw the bell out of operation once it has been actuated.

The engine 1 is adapted to drive a pump 46 by means of a belt 47 passing over a pulley 48 located upon a pump operated shaft 49. The pump 46 has an inlet pipe 50 and an outlet pipe 51, the end of the outlet pipe 51 being located over and directed into the tank 39.

In the operation of the apparatus shown in the drawings, assuming that the engine 1 is operating and driving the pump 46, water is forced through the pipe 51 into the tank 39. When the tank 39 has been filled, the

float lever 38 is raised and as a result the circuit is completed through the contacts 36 and 37, the manually operated switches 41 and 45 being normally closed. When the circuit is completed through the contacts 35 and 36, the bell 43, which may be located at any desired point far removed from the rest of the apparatus but in proximity to the hand operated switches 41 and 45, is actuated, thereby giving the alarm and indicating that the tank 39 has been filled. Simultaneously the circuit is completed through the windings 29 of the electro-magnet attached to the electrically operated valve, and as a consequence the ball valve 26 is drawn upwardly against the end of the core 28, thereby opening communication between the drain pipe 27 and the valve casing 24. The oil in the auxiliary reservoir 15 is thereupon immediately drained back into the main oil reservoir 13 and as a consequence the oil supplied to the engine is cut off and the engine stops. The operation of draining the auxiliary reservoir 15 occupies at least a few seconds, and the operator, who is located at the point where the bell 43 and the switches 41 and 45 are located, therefore first breaks the circuit including the bell by operating switch 45 to stop the alarm, and then after waiting a few seconds breaks the circuit including the windings 29 and the electro-magnet by operating switch 41, so as to prevent the batteries from becoming exhausted by prolonged completion of the circuit. The ball check valve 26 thereupon drops back into its seat and the valve is again in position for the operation of the engine. When the level of the water in the tank has gone down sufficiently for the circuit to be broken through the circuit breaker attached to the float arm, then the manually operated switches 41 and 45 are again closed to place the apparatus in condition for operation. But the engine will, of course, not start until the engine shaft 22 has been cranked by rotating the fly wheel 3 and the hand lever 19 has been operated to inject an initial supply of oil into the engine.

While I have described my invention above in detail, I wish it to be understood that many changes may be made therein without departing from the spirit of my invention.

I claim:

1. In a device of the character described, the combination of an engine, a fuel supply tank therefor, and separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed.

2. In a device of the character described, the combination of an engine, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed, comprising a check valved drain pipe, and means for throwing the check valve out of operation automatically.

3. In a device of the character described, the combination of an engine, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed, comprising a check valved drain pipe, and an electro-magnet for throwing the check valve out of operation automatically.

4. In a device of the character described, the combination of an engine, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed, comprising a check valved drain pipe, and an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed.

5. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, and separate means for draining the fuel supply tank and stopping the engine when the tank has been filled.

6. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, separate means for draining the fuel supply tank and stopping the engine when the tank has been filled, comprising a check valved drain pipe, and means for throwing the check valve out of operation automatically.

7. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, separate means for draining the fuel supply tank and stopping the engine when the tank has been filled, comprising a check valved drain pipe, and an electro-magnet for throwing the check valve out of operation automatically.

8. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, separate means for draining the fuel supply tank and stopping the engine when the tank has been filled, comprising a check valved drain pipe, and an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed.

9. In a device of the character described, the combination of an engine, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, and

means for giving an alarm to indicate the stopping of the engine.

10. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the tank has been filled, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, and means for giving an alarm to indicate the stopping of the engine.

11. In a device of the character described, the combination of an engine, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, means for giving an alarm to indicate the stopping of the engine and means for silencing the alarm.

12. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the tank has been filled, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, means for giving an alarm to indicate the stopping of the engine, and means for silencing the alarm.

13. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the tank has been filled, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, means for giving an alarm to indicate the stopping of the engine, and means for resetting the valve.

14. In a device of the character described, the combination of an engine, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, means for giving an alarm to indicate the stopping of the engine, means for silencing the alarm, and means for resetting the valve.

15. In a device of the character described, the combination of an engine, a pump, a supply tank into which it discharges, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the tank has been filled, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, means for giving an alarm to indicate the stopping of the engine, and means for manually breaking the circuit after it has been closed.

16. In a device of the character described, the combination of an engine, a fuel supply tank therefor, separate means for draining the tank and stopping the engine when the work to be accomplished by it has been completed, comprising a check valved drain pipe, an electro-magnet for throwing the check valve out of operation automatically when the magnet circuit is completed, means for giving an alarm to indicate the stopping of the engine, means for silencing the alarm, and means for manually breaking the circuit after it has been closed.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM H. YETMAN.

Witnesses:
EMIL NIELSON,
R. J. M. WELCH.