AUTOMATIC ALARM AND BURNER CONTROL

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3 Sheets-Sheet 1
This invention relates to an unusual combination of devices and means mechanically co-ordinated to provide a unique control appliance or apparatus for boiler, cellar, and furnace room usage.

The invention has to do with an unusual co-relation of mechanical and electrical accessories forming an efficient and satisfactory electro-mechanical automatic control and fire extinguisher arrangement for use in conjunction with a boiler.

One purpose of the invention is to provide door actuated mechanical control means for automatically tripping electrical switches, one to operate an audible signalling alarm, and the other to cut-off the electric motor of an oil burner, the arrangement being such that the structure is brought into play in the event that any one of the doors on the boiler or furnace is blown open by gas or combustion explosion within the firebox of the boiler.

Another feature of the invention is predicated upon a multiple element fire extinguisher arrangement wherein the extinguisher unit is suspended in position to co-operate with an underlying device constructed to cut off the oil burner motor and sound the danger alarm.

The purpose of the invention is to provide a sort of silent watchman and fireman to speak which constitutes unique emergency means to cut off the oil burner, when a burner is used, and to sound an audible alarm to give signal to the janitor that something is wrong in the basement.

In the drawings:

Figure 1 is a diagrammatic elevational view disclosing the complete assembly and arrangement constructed in accordance with the present invention.

Figure 2 is a front end elevation showing the door arrangement on the boiler.

Figure 3 is a top plan view of one of the parts of the complete assemblage.

Figure 4 is an exaggerated section on the line 4—4 of Figure 1.

In Figure 1, the numeral 5 designates a conventional boiler, 6 designates a motor driven oil burner, 7 represents an audible alarm (preferably a gong), 8 indicates a switch for controlling the alarm, and 9 the second switch for controlling the motor of the oil burner 6.

The levers of the respective switches are distinguished by the numerals 10 and 11 respectively, and are tied together by a link 12 for simultaneous operation. The free end portion of the lever 11 is engaged in a keeper notch or seat of a trip finger 13 pivoted on the upper end of a standard 14 carried by suitable wall brackets 15. The numeral 16 designates an actuating spring connected to the intermediate part of the lever 11 and anchored on the bracket so that as soon as the lever 11 is released by the trip 13 both switches will be operated to sound the alarm and cut off the motor to the burner at substantially the same instant.

The trip finger 13 is controlled by a flexible chain 17 whose horizontal portion 18 is trained over pulleys 19 and 20 hung from appropriate ceiling brackets. The depending left-hand end of the chain 21 is anchored at 22 on a stationary wall bracket 23 located within the vicinity of the stack or pipe 24. This chain is actuated by automatically operable means which in turn is actuated by the doors on the boiler.

As seen in Figure 2, the upper doors are distinguished by the numerals 25 and 26, and the lower door by the numeral 27. Anchored on the front wall of the boiler as at 28 is a spring arm or finger 29 having a ball-like knob or head 30 co-operative with the door 27. The numeral 31 designates a similar spring which is bowed as indicated and rockably mounted between its ends in a bracket 32. This has terminal knobs or heads 33 and 34 in contact with the free swingable ends of the doors 25 and 26.

Connected by short cords 35 and 36 to the knob end of the actuating members 29 and 31 is a ring 37 which serves as a coupling between these short cords and the main pull cord 38, and this pull cord 38 extends through a guide 39 upwardly over a pulley 40 where it is connected with the horizontal part 18 of the switch control chain as seen in Figure 1.

It is evident that the knobs on the ends of the members 29 and 31 are located in the
path of swinging movement of the doors. Hence if an explosion takes place within the furnace and any one of the doors is blown open, the actuating members 29 and 31 will come into play to exert a pull on the cable or cord 38 which in turn will actuate the chain 17. The chain will lift the latch 13 and release the lever 11 and the spring 16 will operate both switches. Hence the alarm 7 will be sounded and the motor to the burner 6 will be cut off. The alarm will serve as a warning to the fireman or janitor so that he may investigate the trouble and reset the mechanism for further use.

Also suspended from the ceiling is a hanger supply pipe 41 from which a plurality of fire extinguishing devices are suspended. As seen in Figure 4, each extinguisher is denoted by the numeral 42 and comprises a glass bulb or globe-like container for suitable fire extinguishing liquid or chemical. This is so fashioned and shaped as to permit it to be seated in an annulus or ring 43 carried by a segmental fusible band 44 attached to the hanger pipe 41.

I next call attention to a trip device indicated by the numeral 45 and comprising a pair of horizontal spaced parallel rods 46 carrying longitudinally spaced impact discs 47. The discs are arranged in longitudinally spaced relation directly beneath the superposed chemical extinguisher. Hence in case of fire in the boiler room the fusible bands 44 are designed to give way, allowing one or more of the extinguishers to drop downwardly. As each extinguisher is located over an underlying disc 47 it will naturally strike against said disc, producing sufficient impact as to exert a pull on the device 45 which will in turn actuate the chains 17 and release the latch 13 to control the alarm and burner in the manner already described. Hence the fire extinguishing means not only aids in extinguishing the blaze but cuts out the burner and gives an audible danger alarm.

It is obvious from the drawings and description that there are two sources of control for the switches 8 and 9. In other words, they may be controlled in case any one of the doors on the furnace blow open from internal explosion or may be brought into play by the first extinguishers dropping on the trip device 45.

It is submitted therefore that the invention provides a satisfactory and efficient arrangement for safety purposes, and an ideal accessory for use in conjunction with a boiler, furnace, or the like.

It is thought that the description taken in connection with the drawings will enable a clear understanding of the invention to be had. Therefore, a more lengthy description is thought unnecessary.

While the preferred embodiment of the invention has been shown and described, it is to be understood that minor changes coming within the field of invention claimed may be resorted to if desired.

I claim:

1. In a structure of the class described, in combination, a furnace having a hinged door on its frontal portion, a motor equipped oil burner associated with the furnace, an emergency cut-off switch for the motor of said oil burner including an actuating lever, an audible alarm, a control switch therefor including an actuating lever, a link connecting the switch levers together for simultaneous operation, spring means for automatically actuating said levers, a retaining latch releasably connected with one lever to maintain said switches normally ineffective, and door actuated control means for the latch, said means including a pull chain connected with the latch, a spring member mounted on the furnace and having a knob in contact with the adjacent edge of said door, and a flexible connection between said member and chain, said spring member being operable when said door is blown open under excessive internal pressure in the furnace to exert a pull on said flexible connection and pull chain to operate and release said latch.

2. In a structural arrangement of the class described, a furnace provided with a plurality of hingedly mounted doors on its frontal portion, flexible spring members mounted on said furnace and having terminal knobs in co-operative contact with the adjacent edge portions of the doors, said spring members being operated when any one of the doors is blown open under excessive internal explosive pressure in the furnace, a switch equipped audible alarm device, a control latch therefor, a chain connected with said latch, and a flexible operating connection between the chain and said flexible members.

In testimony whereof I affix my signature.

HENRY C. VOOGT.