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W. THEISSING

2,024,316

FIRE ALARM AND EXTINGUISHING APPARATUS

Filed March 23, 1934

Fig. 1

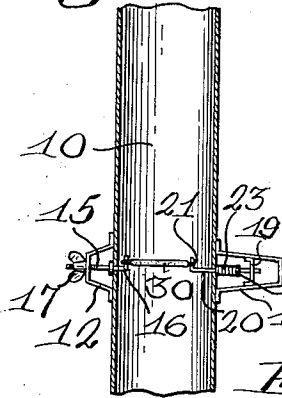


Fig. 3.



Fig. 2

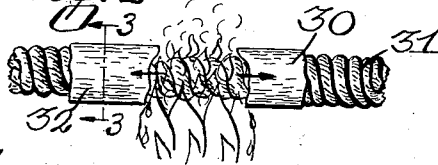


Fig. 4.

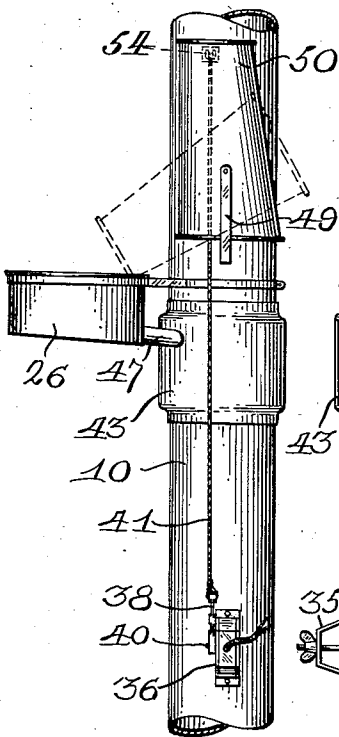


Fig. 5.

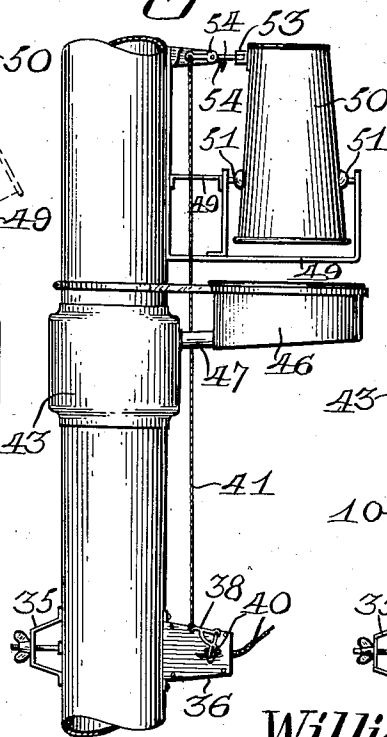
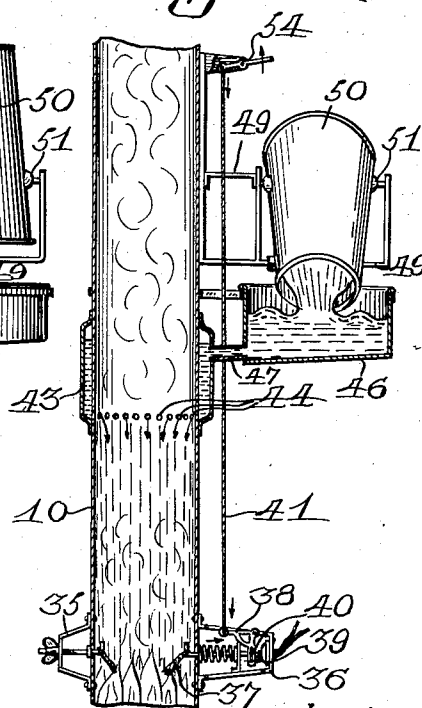


Fig. 6.



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UNITED STATES PATENT OFFICE

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FIRE ALARM AND EXTINGUISHING
APPARATUS

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6 Claims. (Cl. 169—2)

The present invention relates to improvements in fire alarm and extinguishing apparatus particularly adaptable for chimney flues and the like.

5 An important object of the invention is the provision of fire alarm and extinguishing apparatus for chimney flues which will become automatically operative when blazing combustion occurs in the flue.

10 A further object of the invention is the provision of fire extinguishing apparatus which will quickly function to extinguish a conflagration in the flue.

15 Another object of the invention is the provision of apparatus of the above character embodying a simple and efficient combustible fuse for effecting automatic operation of the apparatus.

20 Still another object of the invention is the provision of apparatus of the above type which will be relatively simple and durable in construction and reliable in use.

Other objects and advantages of the invention will become apparent as the description progresses.

25 In the accompanying drawing forming a part of this specification and in which like reference characters are employed to designate corresponding parts throughout the same:—

Figure 1 is a longitudinal section through a flue showing only the combustible fuse arrangement,

30 Figure 2 is an enlarged elevational view of the combustible fuse,

Figure 3 is a section taken on the line 3—3 of Figure 2,

35 Figure 4 is a side elevational view showing the construction modified to include the extinguishing apparatus,

Figure 5 is a similar view taken at right angles to Figure 4, and

40 Figure 6 is a longitudinal section through the same showing the extinguishing apparatus in operation.

Referring to Figures 1 to 3, in which is illustrated the combustible fuse arrangement, the numeral 10 generally designates a conventional chimney-flue, in the present example constituting a tubular flue pipe. To one side of the flue is attached an approximately U-shaped bracket 12 projecting outwardly of the flue. At a diametrically opposite side of the flue is attached a somewhat similar outwardly projecting bracket 13.

55 The bracket 12 serves to support a rod 15 projecting radially through an opening in the flue and having a hook 16 formed at the inner end. Upon the outer end of the rod 15 is threadably

mounted a wing nut 17 for radially adjusting the rod.

The complementary bracket 13 is formed with a transverse guide bar 19 in which is slidably fitted the outer end portion of a horizontally disposed rod 20. The inner portion of the rod is slidably fitted through an opening in the flue and is provided at the extremity with a hook 21. A collar 22 is secured on the rod, spaced from the outer end, and forms a stop element for a coiled compression spring 23 arranged on the rod between the flue and the collar.

Under normal conditions, the hooks of the rods 15 and 20 are engaged by the ends of a combustible fuse generally indicated at 30 and embodying, 15 in the present example, a twisted rope 31 formed of cotton having wrapped about its exterior a roll of tin-foil forming a wrapper 32. The device 30 is adapted to form a fusible covering-ignescence-core connector in the apparatus and, as shown at 20 Figure 1, is disposed so that one end is attached to the hook 16 of the fixed rod 15 while the opposed end engages the hook 21 of the slide rod 20. When thus mounted, the connector 30 retains the slide rod 20 in an inwardly retracted position 25 compressing the spring 23.

When blazing combustion occurs within the flue, due to the ignition of soot or other matter therein, the flame therefrom will melt the tin-foil wrapper and burn the inner cord 31 as a result of which the spring 23 will slidably project the rod 20 outwardly and cause operation of extinguishing means described below.

The extinguishing apparatus shown at Figures 4 to 6 inclusive embodies brackets 35 and 36 supporting rods similar to the simplified construction shown at Figure 1, normally connected with a connector 37 corresponding to the connector shown at Figures 2 and 3. This construction is, however, augmented so that an angular bell crank lever 38 is attached to the bracket 36, this lever being provided with an elongated slotted part 39 at one end engaging a pin 40 attached to and projecting laterally from the slide rod. To the opposite end of the bell crank lever 38 is connected the lower end of a trip cord 41.

Secured about the flue, above the brackets, is a concentric tubular waist section 43 having the ends reduced to form water tight connection on the flue. As shown at Figure 6, the flue is provided with a plurality of spaced apertures 44 adjacent the lower end of the waist section.

At one side of the waist section 43 is durably supported a hopper 45 having communicative

connection with the interior of the waist 43 through the medium of a connecting tube 47.

Upon a bracket frame 49 attached to the side of the flue is pivotally supported a container 50. As illustrated, the container is in the form of a tapered bucket enlarged at the bottom end and pivotally supported on spindles 51 attached to the frame and pivotally engaging bearings on the bucket, the bucket being of somewhat asymmetric form and supported on an unbalanced pivot bearing connection so that the bucket tends to normally assume a downwardly swinging position for discharging the contents into the hopper 46. Adjacent the upper open end of the bucket is secured a grooved keeper piece 53 adapted to engage the outer end of a pivoted latch bar 54. To the inner end of the latch bar 54 is connected the upper extremity of the trip cord 41.

Under normal conditions, the extinguisher apparatus is disposed in the position shown at Figures 4 and 5, the latch bar 54 maintaining the bucket 50 in upright non-discharging position. When the connector 30 is subjected to burning action by flames in the flue the coiled rod projecting spring slidably extends the slide rod so as to operatively swing the bell crank lever 38 and, simultaneously, compress an electric switch button which may be provided (as shown in Fig. 6) at the end of bracket 49 and connected in circuit with a suitable alarm (not shown). As the bell crank lever is swung by the action of the slide rod it pulls the trip cord 41 and tilts the latch bar 54 causing the upper end thereof to swing out of engagement with the keeper 53 releasing the bucket which, due to its unbalanced pivot support, swings downwardly and discharges the contents, as for instance water, into the hopper. The water is conveyed from the hopper through the tube 47 into the waist section of the flue and discharged through the apertures 44 in the flue to extinguish the fire in the flue.

Thus, the apparatus is capable of use as an automatic extinguishing system providing means for automatically extinguishing flames within a flue and operating an electric alarm, if desired.

The combustible connecting member 30 is particularly formed to protect the inner connecting cord 31 from the heat generated within the flue and to avoid ignition thereof by sparks which may be carried upwardly. Consequently, the tin foil wrapper will prevent destruction of the fusible connector under ordinary conditions but will not prevent disruption thereof when subjected to the action of flames,

It is to be understood that the forms of my invention herein shown and described are to be taken as preferred examples of the same, and that various changes as to the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. In apparatus of the character described, a combustible connector comprising a cord destructible by the action of flames, and a wrapper of tin-foil upon said cord.

2. In apparatus of the character described, a combustible connector comprising a cotton cord, and an exterior wrapper of tin-foil enclosing the cord.

3. In combination with a flue pipe having a series of circumferentially disposed apertures, a waist chamber over the apertures, means adapted to convey a liquid from a tiltable reservoir to the waist chamber, and spring loaded means to remotely actuate the tilting of the reservoir, of a combustible connector disposed inside the flue and comprising a tin-foil wrapped cotton cord, said cord being tensioned between a fixed point and the remotely actuating means.

4. In a flue having circumferential apertures, the combination of a tiltable water reservoir, means to convey water from the reservoir to the apertures, a combustible element disposed inside the flue and covered with tin-foil, and spring means tensioning said element and adapted to cause tilting of the water reservoir upon destruction of said element, whereby flames in the flue will disrupt the element and enable water to flow through the apertures.

5. The combination of a flue pipe, a cotton-base foil-covered element adapted to be disrupted by flames but relatively unaffected by heat and sparks, said element being spring-tensioned inside the flue pipe, and means actuated by the element tensioning spring for causing tilting of a water filled bucket supported by the pipe so as to direct said water into apertures in the pipe, when flames disrupt the element.

6. In combination with a flue pipe, a cotton cord tensioned inside said flue pipe, an exterior wrapping of metal foil enclosing the cord and means for introducing water inside the flue pipe through apertures disposed above the cord, upon destruction of said cord by flames in the flue.

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