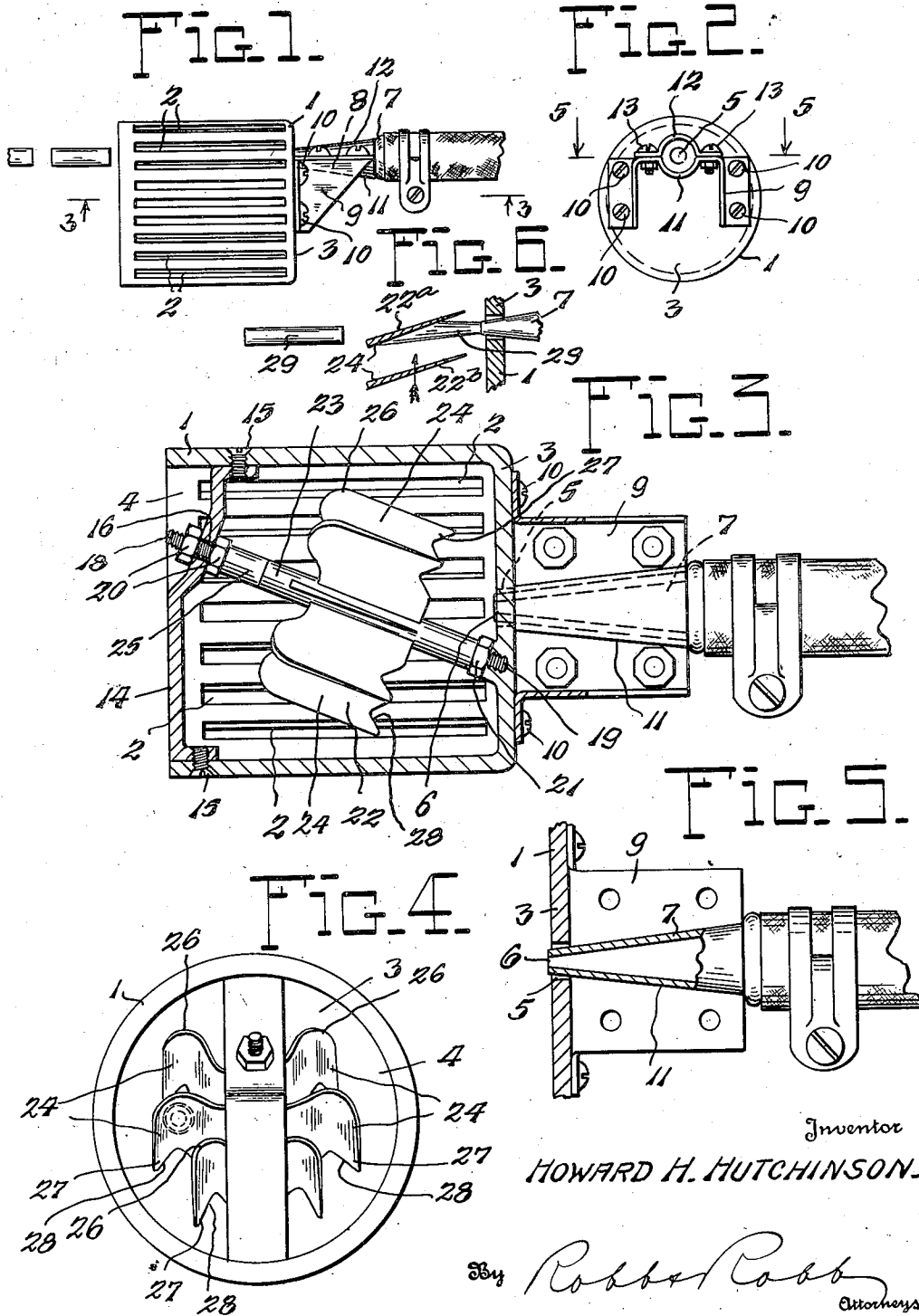


Sept. 14, 1937.

H. H. HUTCHINSON
ATTACHMENT FOR FIRE EXTINGUISHING EQUIPMENT

2,092,846

Filed Sept. 10, 1936



UNITED STATES PATENT OFFICE

2,092,846

ATTACHMENT FOR FIRE EXTINGUISHING
EQUIPMENT

Howard H. Hutchinson, Akron, Ohio

Application September 10, 1936, Serial No. 100,200

7 Claims. (Cl. 299—122)

The use of fire extinguishing equipment, or the like, at premises provided with electric wiring systems, constitutes quite often a hazard to the operator handling the same when the fluid stream discharged therefrom contacts a live wire of such system, the insulation of which has been destroyed. Water or other fluids used in connection with so-called fire extinguishers, or like equipment, are conductors for electric energy, and therefore, the operator of such equipment may receive an electric shock or may even be killed by electric current flowing from a live wire over the fluid stream to his body.

At the present time, office buildings, apartments, factories, or like premises, are equipped with fire extinguishing apparatus for use in cases of emergency. In the use of such equipment, the likelihood of injury of the operator in a manner as outlined above is very frequent because in moments of excitement and peril at the outbreak of a fire the necessary precautions against electrical hazards are not taken by a layman.

It is, therefore, the primary object of the present invention to provide an apparatus which may be very advantageously used in connection with fire extinguishing equipment, or the like, to eliminate the electric shock hazard thereof, and to prevent the flow of electric current to the body of the operator when the fluid stream discharged therefrom contacts a live wire.

A further object of the present invention is the provision of a device of the character mentioned herein, which may be readily attached to or detached from the fire extinguishing equipment in connection with which it is to be used.

A still further object of the present invention lies in the provision of instrumentalities for separating the stream of the fluid discharged from fire extinguishing equipment into separate sections insulated from each other by air spaces to eliminate the flow of electric current over the fluid stream.

A further object of the present invention is the provision of a rotor member directly driven by the fluid medium handled thereby and provided with blades of a special construction to permit a separation of the fluid stream into short portions without splashing or materially reducing the speed of flow of such fluid.

Other and further objects will become apparent from the description and accompanying drawing, in which:—

Figure 1 is an elevational view of the device of the present invention.

Figure 2 shows a rear view thereof.

Figure 3 illustrates a longitudinal section of the apparatus of the present invention, certain parts being shown in elevation.

Figure 4 is a front view of Figure 3.

Figure 5 shows a partial sectional view of the device of the present invention, and illustrates especially the mounting of the nozzle of a fire hose thereon.

Figure 6 is a diagrammatic view illustrating the operation of the device.

Referring now to the drawing, and especially to Figure 1, 1 indicates a housing or guard member which is provided with a plurality of slots or openings 2. The guard member 1, which forms a supporting structure for other elements of the device of the present invention, consists preferably of a cylindrical casing provided with a rear wall 3 while the front end of the casing is open, as shown at 4. The rear wall 3 comprises an opening 5 sufficiently large enough for the reception of the front end 6 of a nozzle 7 of a fire extinguishing apparatus, fire hose, or the like. As will be seen from Figure 3, the front end of the nozzle 6 extends slightly into the housing or guard structure 1.

Attached to the rear wall 3 of the member 1 are clamping instrumentalities generally indicated at 8. These clamping instrumentalities comprise a bracket 9 secured to the rear wall 3 by means of fastening instrumentalities 10. The bracket 9 is further provided with a portion 11 which is bent to properly fit the configuration, of the fluid discharge means of a fire extinguisher, or the like. The portion 11 is adapted to cooperate with a removable clamping member 12 of similar configuration. The clamping member 12 is secured to the bracket 9 by means of screws 13, or the like, to thereby exert a clamping action upon the nozzle 7 of a fire hose, or fire extinguisher, and to hold the guard or supporting structure 1 rigidly attached to the same.

The front portion of the housing 1 is provided with a cross bar 14 secured to the latter by means of set screws 15. The member 14 is provided with an opening 16 for the reception of a shaft 18 diagonally disposed within the housing 1 and secured to the rear wall 3 thereof at 19, as will be clearly seen from Figure 3. Both ends of the shaft or axis 18 are threaded to permit attachment thereof to the rear wall 3 of the housing 1 and to permit securing of the same to the cross bar 14 by means of nuts 20. A lock nut 21 is also provided to prevent unscrewing of the shaft 16 from the rear wall 3, and to become loose from its supporting structure.

Mounted upon the shaft or axis 16 which is stationary, is a rotor member 22 which comprises a sleeve 23 surrounding the shaft 18 and freely rotatable thereon, and a plurality of blades or vanes 24 radially extending from the sleeve 23 and secured thereto by soldering or welding. A sleeve 25 is further arranged between the sleeve 23 and the innermost nut 20 on the shaft 16 to prevent longitudinal movement of the rotor 22 on its axis 18.

The blades 24 are provided with a curved portion 26 and diverge from the curved portion 26 which is relatively thick in cross section to a blade-like edge 27, adjacent the rear wall 3. The blade-like sections of the vanes 24 are provided with cutout portions 28 of a peculiar angular formation as it has been found in practise that their presence facilitates considerably the intersection of a fluid stream and prevents splashing of the fluid during the operation of the device.

The rotor 22 which comprises the sleeve 23 and the blades 24 is freely rotatable upon its axis 18, and the nuts 20 and 21 must be arranged in such a manner that the sleeve 25 is not clamped against the sleeve 23, which otherwise would cause undue friction and interfere with the proper operation of the rotor.

As previously referred to herein, the forward end 6 of the nozzle 7 is positioned in such a manner that the blades 24 of the rotor 22 that when fluid is discharged from the nozzle 7, the same will strike the surface of the blades 24 at an angle and cause rotation of the latter, as will be clearly seen from Figure 6.

Of course, it must be understood that the fluid stream will be in contact with only one blade at a time, while the rotor rotates.

From Figure 6 it will be noticed that when the fluid stream 29 strikes the blade 22a, the same will be shifted in a direction as indicated by an arrow in this figure, and the rotation of the rotor member is thereby produced. The aforementioned rotation will now bring the blade 22b toward the fluid stream 29 and will cause the same to cut through the fluid stream with its blade-like edge 27. This causes an intersection of the fluid stream at that point. The blade 22b continues its rotation, and a following blade again will cut the stream of the fluid discharging from the nozzle 7, and with the rotation of the rotor the intersection of the fluid stream continues in rapid succession.

In this manner, the fluid stream is cut and divided into short sections spaced from each other, while it passes through the device of the present invention and its velocity of flow is not materially impaired.

It will, therefore, be seen that the fluid stream discharged from fire extinguishing equipment provided with the apparatus of my invention, will not be a continuous stream; in other words, it will be separated by the device of the present invention into separate portions with insulating air spaces therebetween.

It should be noted that the intersected stream of fluid may be directed against a live wire or other electrical equipment, under tension without any danger as it is impossible for the electric current to flow over the fluid stream to the body of the operator of the fire extinguishing equipment because of the insulating air spaces between intersected fluid portions.

It will, therefore, be seen that the device of the present invention may be employed as a safe means to protect an operator of fire ex-

tinguishing equipment against the hazards of electric shocks, or the like.

The rotor 22, may, if preferred, be manufactured from a single block of material if this should be desired, to obtain a more rigid and balanced structure. However, the separate production and subsequent assembly of the parts 23 and 24 may be preferable as such procedure will reduce the manufacturing costs of the rotor considerably.

The housing or guard structure 1 is provided with slots or openings 2, as previously mentioned. The openings 2 in the guard structure 1 permit any fluid which may assemble within the housing 1 to freely flow therefrom, and to prevent assemblage of the same within the housing structure, which would interfere with the proper operation of the device.

While I have shown a cylindrical housing or guard structure 1, the same may be given any other configuration, and its sole purpose is only to form a supporting structure for the rotor and to also form a guard member protecting the hands of the operator against injury from the rotor or its sharp edges 27.

The apparatus of the present invention may be used as an attachment for fire extinguishing apparatus, or may form an integral part with the nozzle structure 7 thereof. When the device is to be used as an attachment, any other instrumentality for securing the same to a nozzle may be employed, which permits a quick detachability, and I, therefore, do not wish to be limited to the specific clamping construction disclosed herein.

While the specific details of construction have been herein shown and described, the invention is not confined thereto, as changes and alterations may be made without departing from the spirit thereof, according to the appended claims.

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

1. A device of the character described, comprising, in combination, fluid discharge means, and instrumentalities on said fluid discharge means for intersecting a stream of fluid discharged therefrom without diverting the direction of flow of said fluid.

2. A device of the character described, comprising, in combination, fluid discharge means, rotatable fluid intersecting means adjacent said discharge means for intersecting a stream of fluid discharged from the latter without diverting the direction of flow of said fluid, and instrumentalities for connecting said fluid intersecting means to the fluid discharge means.

3. A device of the character described, comprising, in combination, a guard structure, a rotor, means for rotatably supporting said rotor on the guard structure and in angular relation with respect to the same, and instrumentalities for attaching fluid discharge means to said guard structure in angular position to the rotor for co-operation with the latter and for producing intersection of a fluid stream discharge from the discharge means without diverting the direction of flow of said fluid stream.

4. A device of the character described, comprising, in combination, a cylindrical housing having an open end portion, a stationary shaft diagonally arranged within the housing, a rotatable sleeve on said shaft, a plurality of vanes on said sleeve, said vanes extending longitudinally and radially of the sleeve and being provided with

a blade-like edge portion at their ends opposite the open end portion of the housing, and clamping means on the said housing for connecting fluid discharge means thereto in angular relationship to the longitudinal surface of the vanes, the housing being provided with an opening adjacent said clamping portion for permitting protrusion of the discharge means into said housing.

5. A device of the character described, comprising, in combination, a cylindrical guard structure having an open end portion and a closed end portion, a cross bar on the open end portion of said guard structure, a shaft diagonally arranged with respect to the guard structure and rigidly secured to the closed end portion of the guard structure and the cross bar, a rotor comprising a plurality of vanes on said shaft, the closed end portion of the guard structure being provided with an opening eccentrically arranged with respect to the longitudinal axis of the cylindrical guard structure, instrumentalities on said guard structure for securing fluid discharge means thereto, said fluid discharge means extending into the guard structure through said opening and being angularly positioned with respect to said vanes for cooperation of the same with a fluid stream discharged from said discharge means for causing rotation of the rotor and intersection of said fluid stream.

6. A device of the character described, comprising, in combination, a cylindrical housing having an open end portion, a stationary shaft diagonally arranged within the housing, a rotatable sleeve on said shaft, a plurality of vanes on said sleeve, said vanes extending longitudinally and radially of the sleeve and being provided with a blade-like edge portion having a recess of angular configuration at their ends opposite the open end portion of the housing, and clamping means on the said housing for connecting fluid discharge means thereto in angular relationship to the longitudinal surface of the vanes, the housing being provided with an opening adjacent said clamping portion for permitting protrusion of the discharge means into said housing.

7. A device of the character described, comprising, in combination, a housing having an open end portion, a stationary shaft angularly arranged within the housing, a rotatable sleeve on said shaft, a plurality of blades on said sleeve, said blades extending longitudinally and radially a substantial distance with respect to said sleeve, and clamping means on said housing for connecting fluid discharge means thereto in angular relationship to the blades, said clamping means being provided with a conical clamping portion for the reception of the fluid discharge means.

HOWARD H. HUTCHINSON. 30