

July 21, 1964

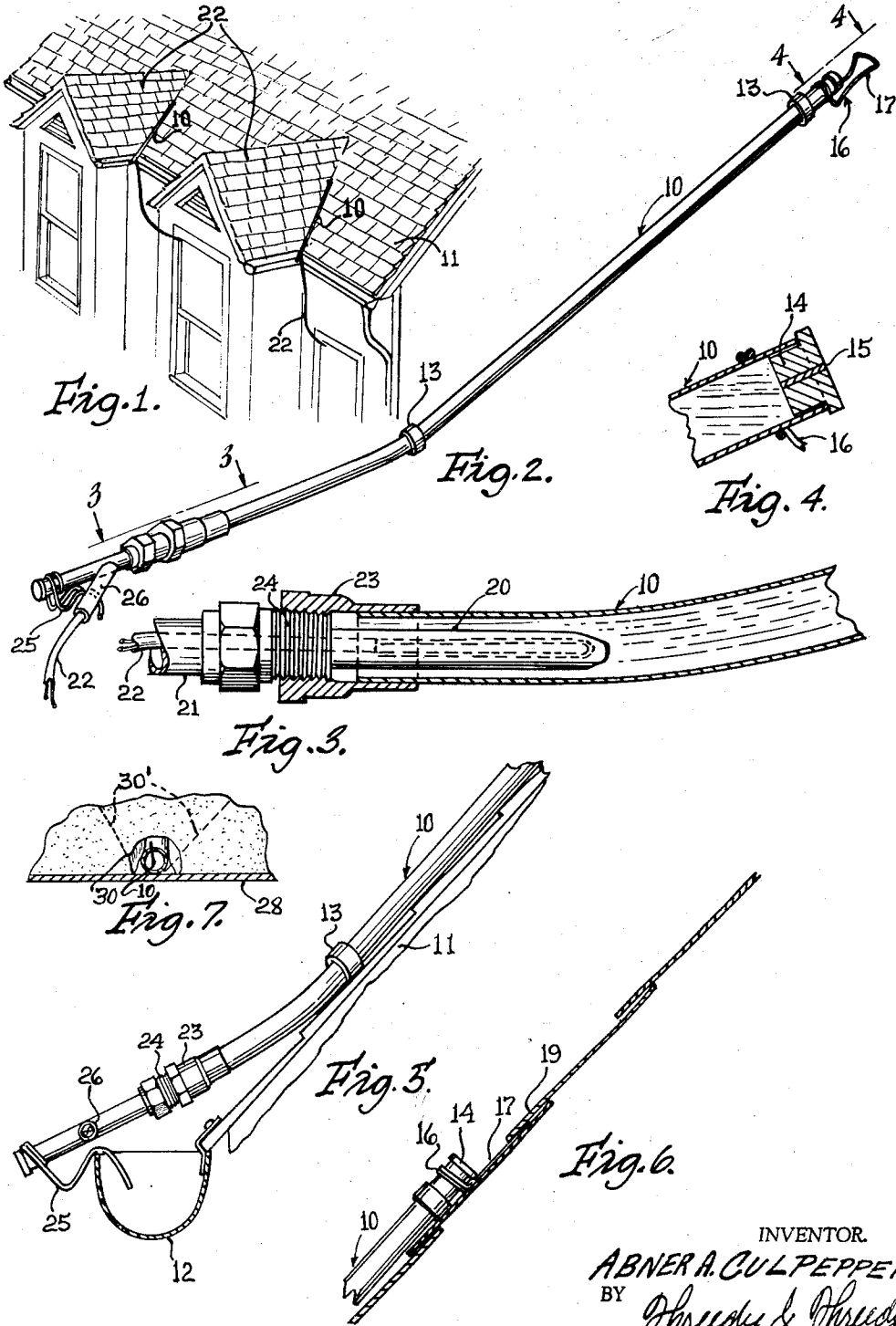
A. A. CULPEPPER

3,141,955

DEVICE FOR EFFECTING WATER-FLOW FROM A ROOF OR THE LIKE

Filed April 12, 1962

2 Sheets-Sheet 1



INVENTOR.
ABNER A. CULPEPPER
BY *Phredy & Phredy*
HIS ATTORNEYS.

July 21, 1964

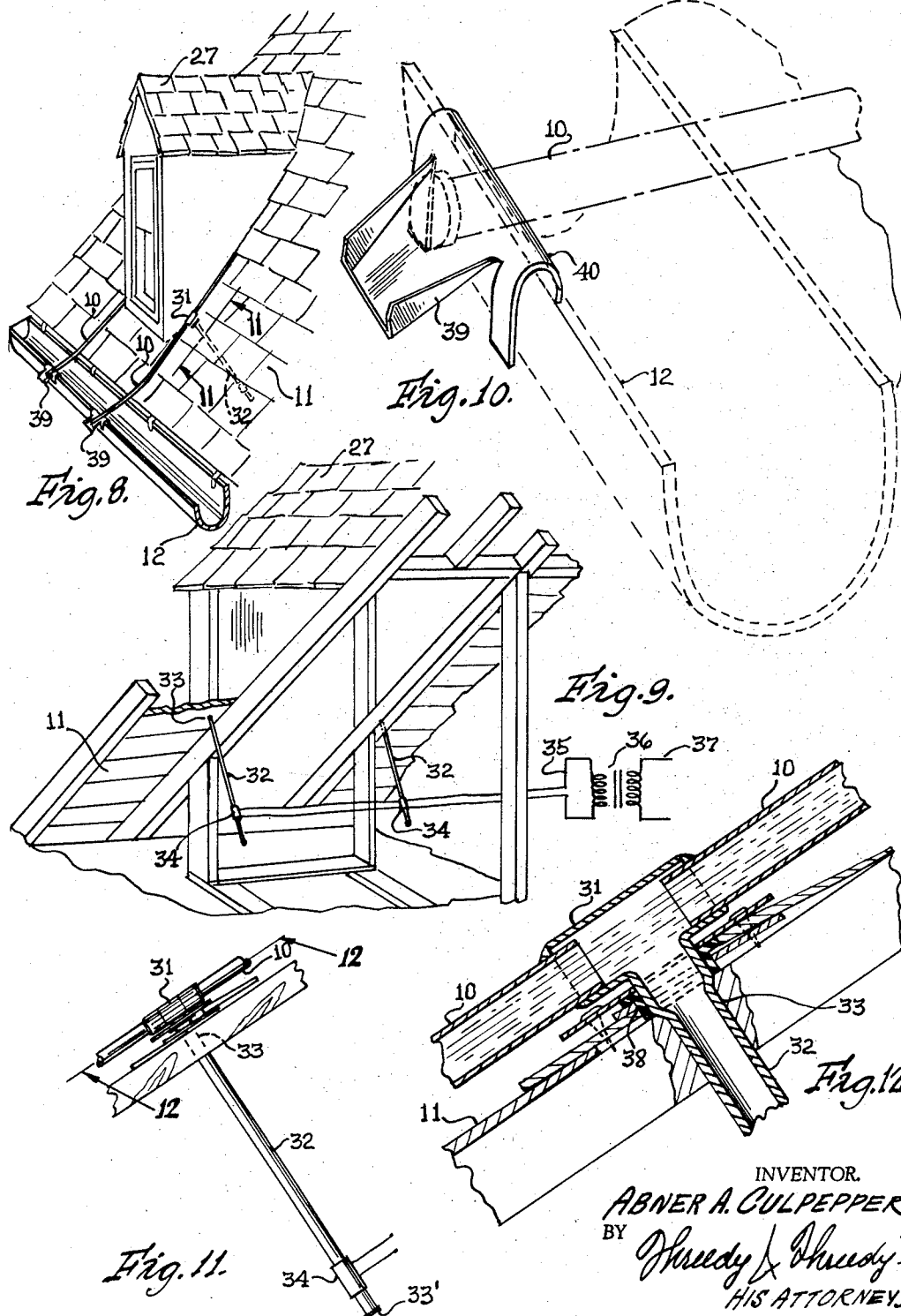
A. A. CULPEPPER

3,141,955

DEVICE FOR EFFECTING WATER-FLOW FROM A ROOF OR THE LIKE

Filed April 12, 1962

2 Sheets-Sheet 2



INVENTOR.
ABNER A. CULPEPPER
BY *Shuddy & Shuddy*
HIS ATTORNEYS.

1

3,141,955 DEVICE FOR EFFECTING WATER-FLOW FROM A ROOF OR THE LIKE

Abner A. Culpepper, 4027 Harvey Ave.,
Western Springs, Ill.

Filed Apr. 12, 1962, Ser. No. 187,080
2 Claims. (Cl. 219-213)

It is an object of this invention to provide an arrangement for draining from a roof water resulting from the melting of a snow blanket or ice dam upon the roof, thus eliminating water damage to the interior of a building.

Another object of my invention is to provide a device for the purposes herein stated which will be simple in construction and highly economical and efficient in use.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

FIG. 1 is a fragmentary perspective view of a roof showing my invention associated therewith;

FIG. 2 is a perspective view of one form of the invention;

FIG. 3 is a fragmentary sectional detail view taken substantially on line 3-3 of FIG. 2;

FIG. 4 is a fragmentary sectional detail view taken substantially on line 4-4 of FIG. 2;

FIG. 5 is a fragmentary side elevational view of the invention showing the same in position upon a roof and gutter;

FIG. 6 is a fragmentary side elevational view of the invention showing the upper end thereof removably attached to a roof;

FIG. 7 is a fragmentary sectional detail view illustrating the resulting effect of the device with respect to a snow or ice pack on a roof;

FIG. 8 is a fragmentary perspective view of a roof showing a modified construction of the invention associated therewith.

FIG. 9 is a fragmentary internal perspective view of the roof shown in FIG. 8;

FIG. 10 is a perspective view of a drain plate embodied in the invention;

FIG. 11 is a fragmentary side elevational view of the invention taken substantially on line 11-11 of FIG. 8;

FIG. 12 is a fragmentary sectional detail view taken substantially on line 12-12 of FIG. 11.

Heat from the interior of a building slowly melts the under-layer of snow blanketing the roof of a building. Water resulting from such melting trickles down the roof until it reaches the unheated areas thereof and then refreezes. This process continues until there results an ice dam which keeps building up upon the unheated area of the roof. Water which is trapped under the dam eventually finds its way under the shingles or roofing and from thence seeps into the building interior, resulting in damage to the walls and ceilings. If there be a gutter associated with the roof, water flowing into the unheated gutter will freeze and eventually build up a substantial ice dam which will obstruct the flow of the water from beneath the snow blanket, and as the ice dam is built up, the result will be seepage of water through the roof boards beneath the shingles into the interior of the building.

It is therefore one of the principal objects of this invention to provide a device which when placed where such an ice dam is likely to form, will create within or beneath such dam a tunnel or open channel into which water resulting from the melting of snow blanketing the roof will flow to the gutter or, if the gutter is blocked

2

with ice or other matter, across the gutter and thence to the ground below.

To accomplish the several objects of my invention, one form of construction includes an elongated tube 10 of heat-conductive material. Preferably the tube 10 is flexible so that it may be bent or shaped to conform to the slope of the roof 11 and the gutter 12, such as suggested in FIG. 5. One or more rings 13 may be mounted on the tube 10 to support the same upon the roof 11. These rings are formed of such material as will best serve the purpose. The upper end portion of the tube 10 is closed by a plug 14 having a fusible insert 15 for reasons hereinafter explained.

Carried by the upper end portion of the tube 10 is a clip 16 having an elongated finger or projection 17 which, as shown in FIG. 6, is adapted to be inserted beneath a shingle 19 to retain the tube 10 in a predetermined position.

Projected into the lower end portion of the tube 10 is a heater element 20, the outer end portion 21 of which is tubular in form to provide a passage for conductor wires 22. This heater element 20 may be attached to the tube 10 in any desirable manner. In the present instance, I have shown a nipple 23 attached to the lower end portion of the tube 10 and threaded to receive a connector 24 which is carried by the tubular member 21. The lower end portion of the device as shown in FIG. 5, extends across the gutter 12 and is supported from the gutter by means of a suitable clip 25.

The tubular member 21 has a right-angular extension 26 through which the conductor wires 22 extend. This extension is to locate the outlet for the wires 22 remotely from the path of the water. The conductor wires 22 are connected to a suitable step-down transformer which in turn is connected to the power circuit within the building with which the device is associated. The power for operating the heater element 20 may be of a very low voltage, depending upon the construction and size of the heater and the length of the tube 10.

Filling the tube 10 is a liquid which has been treated so as not to freeze at low temperatures, which freezing would otherwise damage the tube 10. The antifreeze liquid within the tube 10 is heated and the heat from the liquid is in turn conducted to the tube 10. As a safety measure, I provide, as previously pointed out, a fusible insert 15 which will melt should the liquid within the tube 10 reach a temperature sufficiently high to cause such insert to melt.

The device thus far explained may be placed on any portion of the roof. As snow and ice are more apt to collect and accumulate in the valley defined by a dormer 27 and the roof 11, I have shown the device located in such valley. When the heater 20 is operative and when the liquid has conducted the heat to the tube 10, the heated tube 10 will cause the surrounding snow or ice to melt, forming a tunnel 30 or an open channel 30', as the case may be, the latter being indicated in dotted lines in FIG. 7. As the snow and ice continue to melt through the effect of outside temperature or by reason of heat emanating from the roof 11, the water thus produced will flow out the tunnel or channel and into the gutter 12, or across the gutter or roof edge to the ground. If, however, the gutter should be clogged with snow or ice, water will by capillary action or natural flow follow the tubes 10 and 21 and thence drop or drip from a point beyond the gutter to the ground surface.

Being flexible, the tube 10 may be bent to fit the shape of the valley provided between the gable 27 and roof 11. Should the device be placed upon a pitched roof, the same result will be accomplished.

While I have found it most desirable to fill the tube 10 with a non-freezing liquid, I have found by experience

that the device will operate efficiently without such liquid in the tube 10. In such instance, the heat from the heater will heat the air within the tube and the heated air will thus conduct the heat through the tube 10.

In FIGS. 8, 9, 11 and 12, I have shown the tube 10 5 constructed with a T fitting 31, to which fitting is connected a tube 32 which extends through an opening 33 formed in the roof into the attic or space beneath the roof. This tube 32 has a sealing cap 33' and within this tube, as well as within the tube 10, is confined anti-freeze liquid, when such is used. Mounted upon the tube 32 10 is a heating coil 34 which is connected to one side 35 of a transformer 36, the other side 37 of the transformer being connected to a suitable source of supply. To prevent leakage through the roof at the point where the tube 32 passes through to the space therebelow, I provide a 15 suitable seal 38. This seal 38 may be of any approved construction as will best serve the purpose. When a device is confined on each side of the gable 27, as shown in FIGS. 8 and 9, the heater units 34 may be connected in parallel as shown in FIG. 9. 20

To complete the invention, I provide a drain plate 39 comprising a U-shaped section 40 to afford connection to the outside wall of the gutter 12. Such plate functions to drain water to a point beyond the gutter to the ground. 25

From the foregoing, it is apparent that the device constituting my invention may be used on roofs of different angles and shapes, this being due to the flexibility of the tube 10.

When in use my device will effectively provide a tunnel or open channel for the draining of water resulting from the melting of snow and ice and thus prevent the water from building up or otherwise finding admission under the shingles or other roofing material and from thence seeping into the area beneath the roof, which might 30 result in substantial damage.

The tube 10 as well as the tube 21 may be of any length and of such material as will best serve the purpose.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I therefore do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims. 40 45

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

1. A device for forming a tunnel beneath a pack of snow or an ice dam on a roof to provide an outlet for water resulting from the melting of the snow or ice, comprising 50

(a) an elongated heat-transfer member positioned upon said roof and having one end portion extending across a gutter thereof to a point spaced from the outer side wall of the gutter, said member being 55

flexible to afford bending of said member to conform to the surface of the roof,

(b) a heater coil connected to said end portion of said member and having a power source,

(c) means for conducting heat from said heater coil to and longitudinally of said member to form said tunnel,

(d) and a drain plate supported from the outer side wall of said gutter and located beneath said end portion of said member extending beyond said outer side wall of the gutter and cooperating with the latter to direct the melted snow or ice away from said gutter.

2. A device for forming a water outlet within and beneath a pack or snow or an ice dam on a roof, comprising

(a) an elongated flexible tubular member of heat-transfer material and disposed upon said roof with one end portion beneath said pack of snow or ice dam, said member having one end portion extending from said roof to a point across and outwardly from the outer side wall of a gutter attached to the roof,

(b) a second tubular member connected to said first tubular member at a point between the opposite ends of said first tubular member and extending through said roof,

(c) a heater coil connected to said second tubular member beneath said roof,

(d) a power source for said heater coil,

(e) and means for conducting heat from said heater coil through said second tubular member to and longitudinally of said first tubular member to form said water outlet the full length of said first tubular member.

References Cited in the file of this patent

UNITED STATES PATENTS

1,809,714	Mathews	June 9, 1931
2,111,251	Spilsbury	Mar. 15, 1938
2,507,039	Miller	May 9, 1950
2,516,950	Bragg	Aug. 1, 1950
2,681,407	Miedema	June 15, 1954
2,699,484	Michaels	Jan. 11, 1955
2,755,499	Mays	July 24, 1956
2,758,194	Heron	Aug. 7, 1957
2,809,268	Heron	Oct. 8, 1957
2,877,630	Schultz	Mar. 17, 1959
2,911,513	MacCracken	Nov. 3, 1959

FOREIGN PATENTS

760,126	Great Britain	Oct. 31, 1956
---------	---------------	---------------

OTHER REFERENCES

Popular Science, vol. 174, No. 2, page 238; February 1959.