No. 750,543. PATENTED JAN. 26, 1904.

H. F. JONES.

HEAT ALARM.

APPLICATION FILED APR. 13, 1903.

NO MODEL.

Fig. 6.

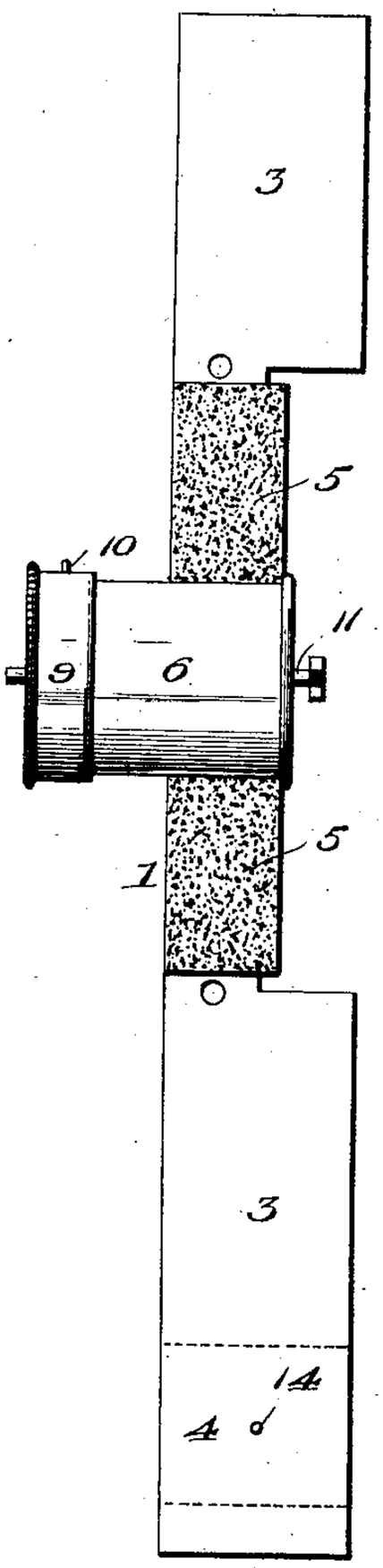


Fig. 1.

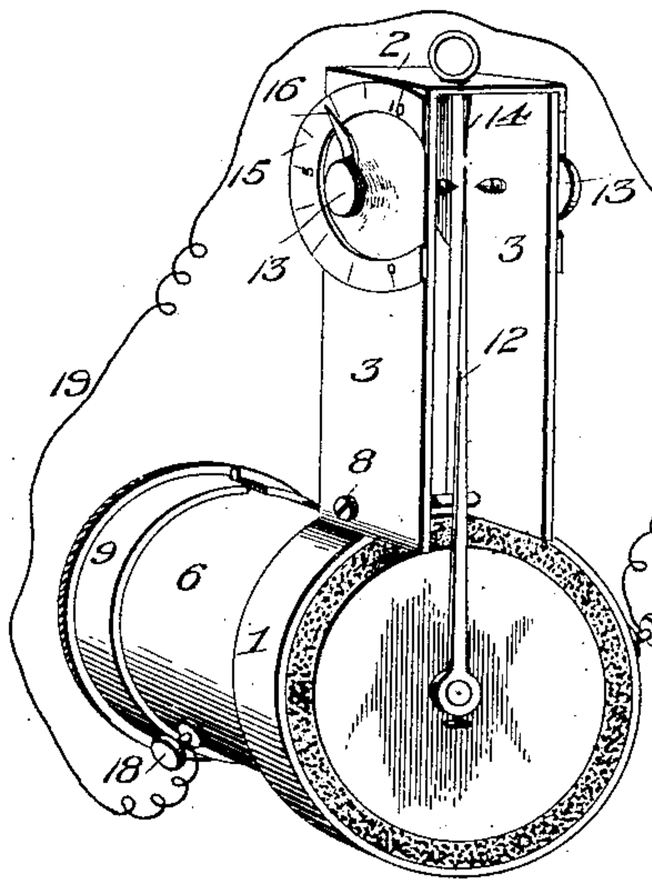


Fig. 5.

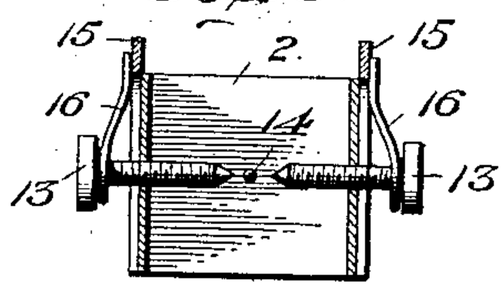


Fig. 2.

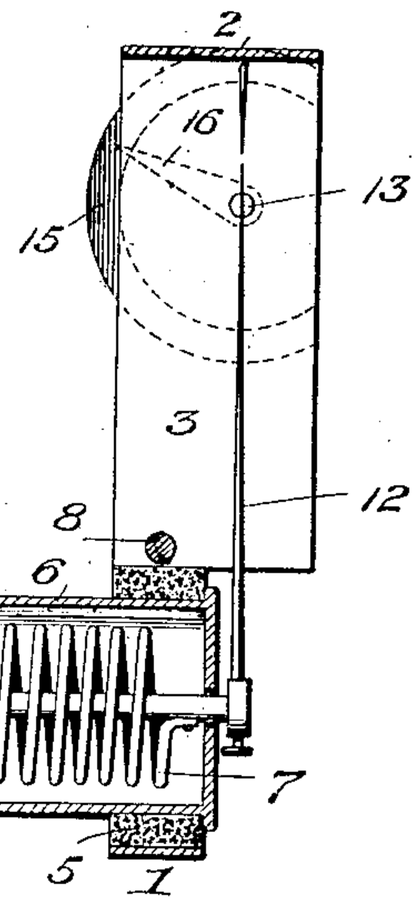


Fig. 4.

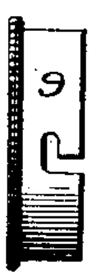
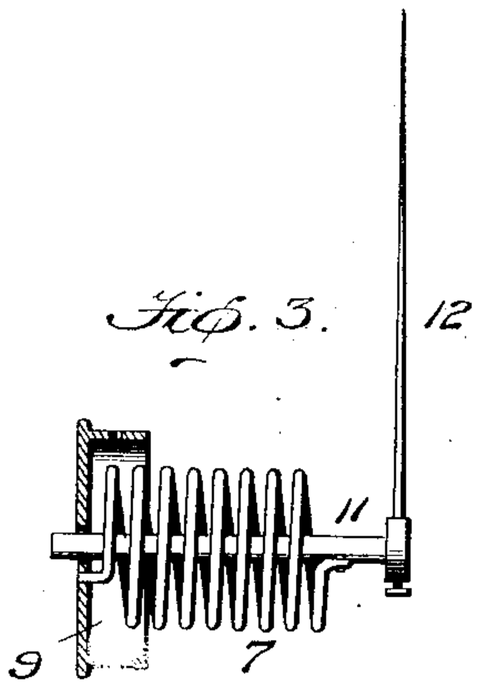


Fig. 3.



Witnesses.

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No. 750,543. Patented January 26, 1904.

UNITED STATES PATENT OFFICE.

HOWARD FEILD JONES, OF WILSON, NORTH CAROLINA.

HEAT-ALARM.

SPECIFICATION forming part of Letters Patent No. 750,543, dated January 26, 1904.

Application filed April 13, 1903. Serial No. 152,305. (No model.)

To all whom it may concern:

Be it known that I, HOWARD FEILD JONES, a citizen of the United States, residing at Wilson, in the county of Wilson and State of North Carolina, have invented certain new and useful Improvements in Heat-Alarms, of which the following is a specification.

The invention herein is directed to the production of an electrically-operated alarm device for use in curing bright tobacco and in which a thermostatic coil is used for calling the attention of the attendant when the heat rises above or falls below a temperature best suited in the operation of curing, and in the claims appended hereto I will point out the parts and combinations of parts which constitute my invention.

The following description, read with the accompanying drawings, will enable any one skilled in the art to which my invention relates to understand its nature and to practice it in the form in which I prefer to employ it; but it will be understood that my invention is not limited to the precise form and details of construction herein illustrated and described, as various modifications and changes may be made without exceeding the scope of the claims in which my invention is set out.

Referring to the drawings, Figure 1 represents in perspective an electrical heat-alarm device embodying my invention. Fig. 2 is a vertical section of the same. Fig. 3 shows the thermostatic coil and its connected rod, contact-arm, and cap as an entity. Fig. 4 shows the slotted cap. Fig. 5 is a cross-section at the contact-screws. Fig. 6 shows developed the metallic and the insulating strips, which are formed into a ring, within which the coil-case is clamped and fixed and which constitutes the frame and hanger of the device.

The frame, which contains the operative parts, consists of a strip of sheet metal (seen in Fig. 6) shaped so as to form a middle ring part 1 and a trough part 2, projecting from one side of the ring, the sides of the trough being formed by the parts 3, while the end of the trough is formed by upsetting the end 4 of the strip. A strip of mica or mica cloth 5 is rolled with and forms a non-conducting lining for the ring, and within this insulated ring the shell 6, which contains the thermostatic coil 7, is fitted and securely clamped by a screw-bolt 8, which passes through the trough-forming sides at or near their junction with the ring part, as seen in Fig. 1. Obviously the ring and trough may be otherwise made to form a suitable mounting for the operative parts. In its preferred form this mounting-frame is made of a strip of sheet brass or aluminium, and the insulating strip or pad is laid on the brass strip and rolled into a ring with it, and this rolling is preferably done upon the coil-containing shell or case, so that the latter thereby becomes a fixed part of the frame-strip. This shell forms a tube closed at its front end, which has a central hole, while its inner end is open and is fitted with a rotatable cap 9, which preferably telescopes with the tube externally and is held upon it by a pin 10 engaging a slot like a bayonet-fastening. Preferably within central holes in the fixed end and in the cap of the tube is mounted to turn freely a rod 11, which projects beyond the ends of the tube. The thermostatic coil is about one and a half inches long and is fastened by one end to the rod near the fixed end of the tube. The other end of the coil is fastened to the telescoping cap, which by its milled head may be rotated by hand. The front end of the rod has the electrical contact-making arm 12, fastened by a screw, and as in the construction shown the trough stands upward from the coil-containing shell so will the contact-arm stand upward within the trough and terminates in a platinum contact-surface. At each side of the platinum surface of the contact-making arm contact-points 13 are screwed into the sides of the trough or frame, whereby the coil-connected arm is caused by the action of the temperature on the coil to make contact with the point of either one of the screws to close the circuit to ring the bell. A marker 14 is set in the end of the trough to indicate the normal position of the point of the contact-arm and forms the starting-point for setting the arm to the right or to the left, or vice versa, by turning the telescoping cap. At each side of the trough or frames at its ends is fastened quadrant-scale 15, divided into degrees of tens. Each

contact-screw has an index-pointer 16 fastened to it and extending to the quadrant-scale, so that by turning either screw to set it nearer to or farther from the contact-arm when in its normal position will cause the index-pointer to traverse the scale by a movement at right angles to the direction of movement of the contact-making arm. The coil-connected arm is always brought to a position at the marker when starting or resetting, and, the attendant knowing the temperature when setting by means of a contiguous thermometer, the screws can be turned to any position for contacting, and in making this adjustment the index-hand will be moved with the screw to show on the quadrant-scale how much the arm can move under the action of the coil before making the contact to give the alarm.

The electric circuit is through the fixed coil-containing shell and binding-post 17 through the contact-screws and contact-arm to the shell and binding-post 18 and wire 19 to the bell and the battery and by the wire 20 back to the binding-post 17.

At the starting-point the contact-arm is clamped by and between the contact-screws, and this puts the index-pointers of both quadrant-scales at the zero-mark, and from this point the screws are set at whatever degree it may be desired to make the alarm either for a high or for a low temperature. As fast as the contact-arm is moved by the action of the heat to the right or to the left to close the circuit to give the alarm the arm can be reset, and thus progress step by step to a higher or to a lower temperature, and in thus resetting the quadrant-scales are used repeatedly to show the limit of the movement of the arm in making the contact. This construction gives the thermostatic coil freedom for expanding and for contracting and for turning with its loosely-mounted core-rod when the arm is moved to make the contact with the screws. The quadrant-scale can be made of any divisions of degrees to suit the thermostatic coil—as, for instance, if the contact-arm moved one-eighth of an inch in a particular coil for ten degrees then a scale should be used for that kind of coil; but if another coil moved three-sixteenths of an inch for ten degrees then a different scale suited to such coil should be used. In this use of different scales there will be no necessity for changing the contact-screws to provide screws of different pitch of threads which would serve the same purpose. The front of the device may be fitted with glass to protect and to render visible the contacting points, and the device may be used for conservatories and for truck-farms. It will be noted that while the telescoping cap is free to be turned by hand to set its contact-arm in the desired relation to the contact-points yet the coil is free to be rotated independent of its connected cap by its expansion and contraction caused by the heat to make and to maintain the contact, and this freely-rotatable thermostatic coil is a feature of my invention.

To show the temperature, I set the screw contact-points at their maximum distance apart and then rotate the coil by means of a cap to bring the hand to the marker, and from this point the arm is moved to the right or to the left by the action of the heat on the coil to make the alarm by connecting with the readjusted screw contact-points at the determined alarm variation, and in this I use the thermometer as a guide for the temperature. It will also be understood that either quadrant-scale can be used exclusively. If I wanted entirely a low alarm, as in trucking, I would have to do with only the quadrant on the low side of the device, and if I wanted only a maximum alarm I would use only the quadrant on the maximum side of the device.

I claim—

1. In an electrical alarm and in combination, a suitable frame, a tube fixed therein, a rod loosely mounted centrally within the tube, a contact-making arm on said rod, a cap fitted to turn upon the inner end of said tube, a thermostatic coil attached at one end to said cap and its other end attached to the rod, contact screw-points for the arm, and electrical connections in the alarm-circuit.

2. In an electrical heat-alarm, a fixed tube, a rod mounted to freely rotate therein, a contact-arm on the front end of said rod, a cap free to rotate on the inner end of the tube, a thermostatic coil having one end connected to the rod and its other end connected to the cap, contact screw-points for the arm, index-pointers connected with the contact screw-points for indicating their set position, a scale indicating such position, and electrical connections in the alarm-circuit.

3. In a heat-alarm, a sheet-metal tube or shell, a rod mounted to rotate loosely therein, a thermostatic coil attached to the rod, a contact-making arm attached to the rod, contact-points, a sheet-metal frame rolled to form a case within which the tube or shell is fixed, an insulating-pad between the tube or shell and the frame-case, and electrical connections in the alarm-circuit.

In testimony whereof I affix my signature in presence of two witnesses.

HOWARD FEILD JONES.

Witnesses:

H. G. CONNOR, Jr.,

B. T. AMERSON.