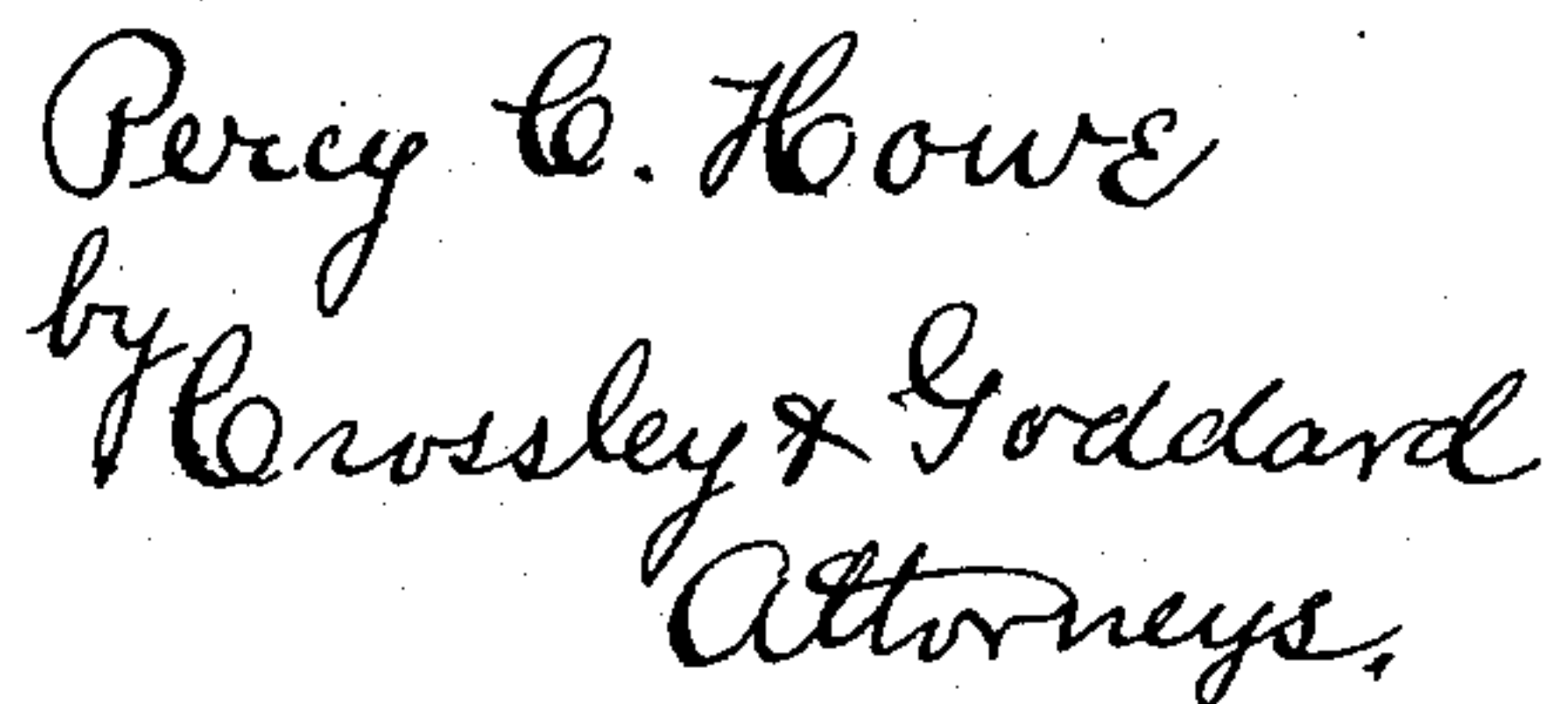


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UNITED STATES PATENT OFFICE.

PERCY C. HOWE, OF BOSTON, MASSACHUSETTS.

ALARM-CLOCK ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 596,680, dated January 4, 1898.

Application filed April 15, 1897. Serial No. 632,217. (No model.)

To all whom it may concern:

Be it known that I, PERCY C. HOWE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and
5 useful Improvements in Alarm-Clock Attachments, of which the following is a description sufficiently full, clear, and exact to enable those skilled in the art to which it appertains or with which it is most nearly connected to
10 make and use the same.

My invention relates to attachments for alarm-clocks, and has for its object to provide novel means which, without interfering with the time mechanism or the alarm mechanism,
15 will serve to indicate at any desired place a change in the temperature of the surrounding air at a predetermined point.

It consists in its main features of a thermostat arranged to release the alarm-train of
20 an alarm-clock, whereby the alarm on the clock or a distant alarm having electrical connection with the alarm-train is caused to sound by the action of the thermostat. This is accomplished without disturbing the time
25 mechanism and is so connected that the alarm may still be set to ring at any desired time without interfering with the thermostatic attachment or affecting its efficiency.

Of the drawings, Figure 1 represents a front
30 elevation of an alarm-clock, say, of the "Waterbury" type, a part of the face being broken away to reveal the alarm-train and my attachments thereto. Fig. 2 represents a side elevation of the same, the clock-casing being
35 broken away. Fig. 3 represents a modified form applied to a different style of clock, in which it has been customary to place the gong at the top of the clock. Fig. 4 is a diagrammatic view in perspective showing the detent,
40 the release mechanism, the thermostat, and the spring which serves as a means for disengaging the release mechanism from the detent, the bearings or supporting parts being omitted in order to show more clearly the
45 parts in operative relationship.

The clock A, to which I have shown my attachments affixed, is one of that type in which the alarm-gong is situated at the back, the same being shown in dotted lines in Fig. 1.
50 From the top of the clock I remove the usual

screw-ring and insert in lieu thereof my thermostat attachment.

The thermostat attachment, as embodied in the form herein shown, comprises a thermostat *a*, secured in a suitable manner to the
55 lower half of a hollow shell or casing B, the screw-neck C, which serves as a support for the casing B, the connecting-rod *b*, having an enlarged head *c*, and the spring *d*, which serves to keep the head *c* pressed normally
60 upward in contact with the movable diaphragm.

I attach suitable ears or lugs *g* to the frame that holds the clock-movement, and by these ears I support in any appropriate manner a
65 rock-shaft *f*. This rock-shaft is connected with the rod *b* by means of the arm *e*, which is fixed to the said rock-shaft. Rigidly secured to the rock-shaft is a depending arm *h*, the lower end of which extends behind the
70 detent *i* of the alarm mechanism of the clock, so that the expansion of the diaphragm on the under side of the thermostat removes the detent through the medium of the releasing mechanism just described from the path of
75 the pin *j*, which is carried by the pallet-shaft *k*.

The above-described rock-shaft with its projecting arms, together with the connecting-rod *b*, serves as a release mechanism by
80 which the thermostat is enabled to release the alarm without in any way disturbing the clock-movement. The spring *d* operates as a means for disengaging the said release mechanism from the alarm-detent *i*.

Secured to the axis of the escape-wheel *l* of
85 the alarm-train is a pin *q*. This pin *q* is of sufficient length to form a contact with the brush *p*, which brush is connected electrically to the binding-post *m*, the said binding-post and brush being electrically insulated
90 from the clock-casing by means of the blocks or washers *n n'*, made of suitable non-conducting material. At another point in the casing I secure another binding-post *o*, but this binding-post I do not insulate from the
95 frame or casing of the clockwork.

The operation of my device is as follows: The alarm being wound up the alarm-pointer may be set for any time desired. If, meanwhile, there should be a rise in temperature
100

sufficient to cause the diaphragm of the thermostat to expand, the rod *b* will be depressed by such expansion. Through the medium of the release mechanism the detent *i* will be
 5 thrown out of engagement with the pin *j* and the alarm-train will be free to move under the action of its spring, thus causing the alarm-hammer to strike the gong on the back of the clock. The spring *d*, it will be ob-
 10 served, operates to disengage the releasing mechanism from the detent, so that if the expansion of the thermostat is only momentary, as in case of testing the apparatus, for example, the detent is allowed to return to its locking position again and the alarm at once ceases
 15 to ring. As the escape-wheel *l* rotates with its axis the pin *q* forms a contact with the brush once during each revolution and closes the electric circuit, in which is placed any
 20 suitable annunciator.

By means of the combination of parts above described I am enabled to secure a perfect thermostatic indicator without in the least impairing the efficiency of the alarm-clock
 25 itself, which is thus made to perform the two-fold function of an alarm-clock and of a thermostatic indicator at a very slight additional expense, besides securing the obvious advantage of using a single piece of apparatus.

30 Obviously it would still be within the scope of my invention to employ a thermostat which would remain expanded at an ordinary temperature operating normally to keep the release mechanism from pushing aside the de-
 35 tent, while the contraction of the diaphragm would allow the spiral spring to release the alarm-detent through the medium of the release mechanism, thus indicating a fall of temperature by sounding the alarm. This
 40 would be just the reverse of the arrangement previously described.

In Fig. 3 I have shown a modified form of my attachment applied to that type of alarm-clock in which the gong is placed on top of
 45 the clock. In such a case I dispense with the alarm-gong on the clock itself and employ only the electric bell. In this form the expansion of the diaphragm of the thermostat depresses the rod *b* and the end of the lever
 50 *r* to which it is connected. The other end of the lever *r*, forming the detent, is raised out of the path of the arm or pin *s*, thus allowing the alarm-train to be set in motion. The

brush of the circuit-closer is so placed as to form a contact with the pin *s* during a por- 55
 tion of its revolution.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which 60
 it may be made or all of the modes of its use, it is declared that what is claimed is—

1. The combination of an alarm-clock, of a thermostat, of means operated by the thermostat for releasing the alarm-train of the said 65
 clock and of a circuit-breaker operated by said alarm-train.

2. The combination of a thermostat, of a spring-pressed connecting-rod, of the rock-shaft having an arm connected with the con- 70
 necting-rod, of the depending arm secured to the rock-shaft, of the alarm-detent adapted to be engaged by the said depending arm, and of the insulated circuit-closer.

3. The combination of an alarm-clock; of a 75
 thermostat of mechanism independent of the clock-movement for releasing the detent of the alarm-train of the clock; of means for disengaging the said release mechanism from the said detent, whereby the ringing of the 80
 alarm is stopped as soon as the thermostat contracts.

4. The combination of an alarm-clock; of a thermostat; of mechanism independent of the 85
 clock-movement for releasing the detent of the alarm-train; of means for disengaging the said release mechanism from the said detent; and of a circuit-closer actuated by the said alarm-train.

5. The combination with a clock, said clock 90
 being provided with an alarm-train; of a detent for locking said train from movement; of a thermostat; and of a releasing mechanism adapted to engage the detent and operated by said thermostat independent of the 95
 time release, whereby the detent is moved without interfering with the time-alarm.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 13th day of 100
 April, A. D. 1897.

PERCY C. HOWE.

Witnesses:

GEO. N. GODDARD,
 ARTHUR W. CROSSLEY.