

C. DION.
Fire Alarm.

No. 49,686.

Patented Aug. 29, 1865.

Fig. 1.

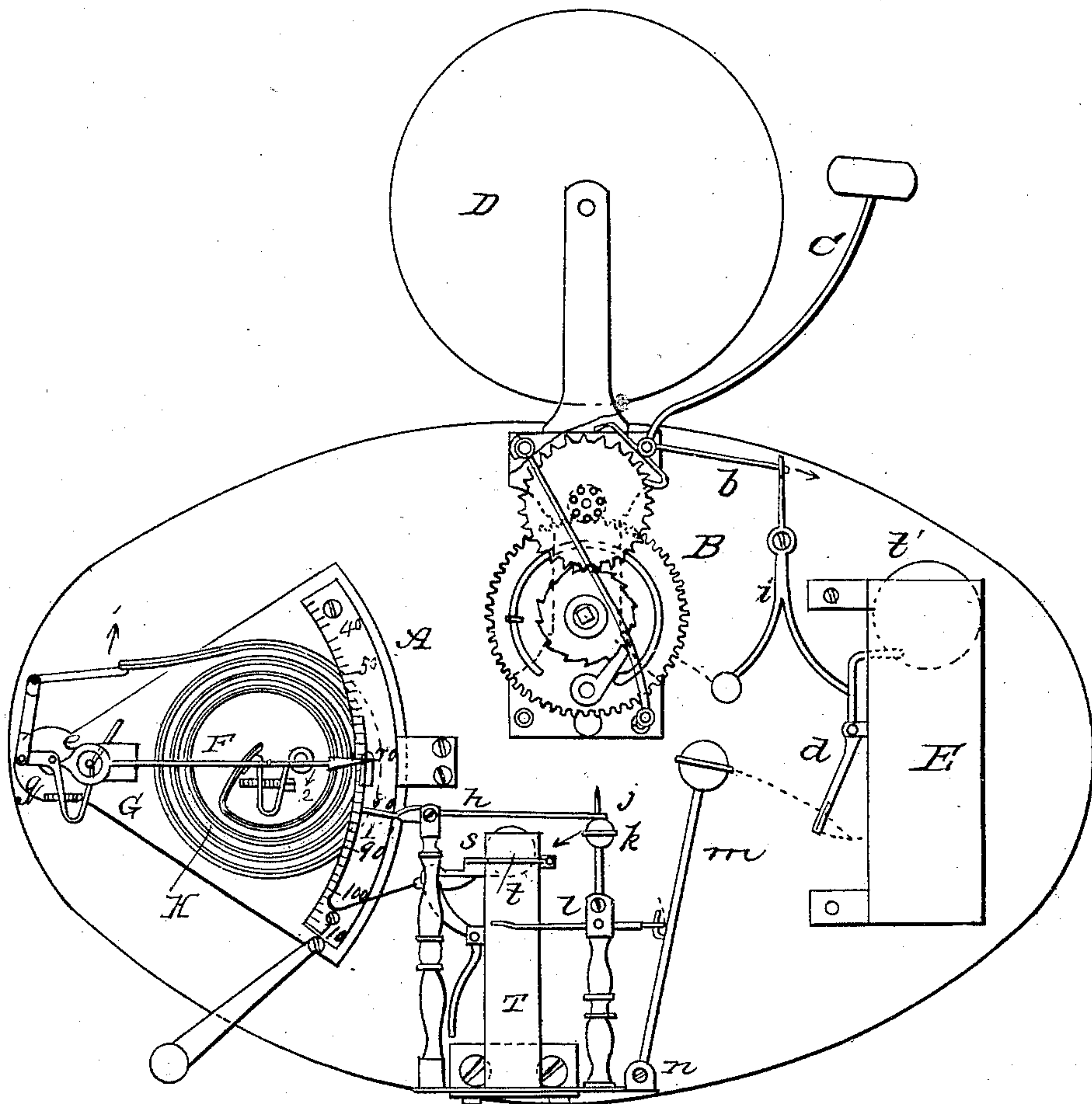
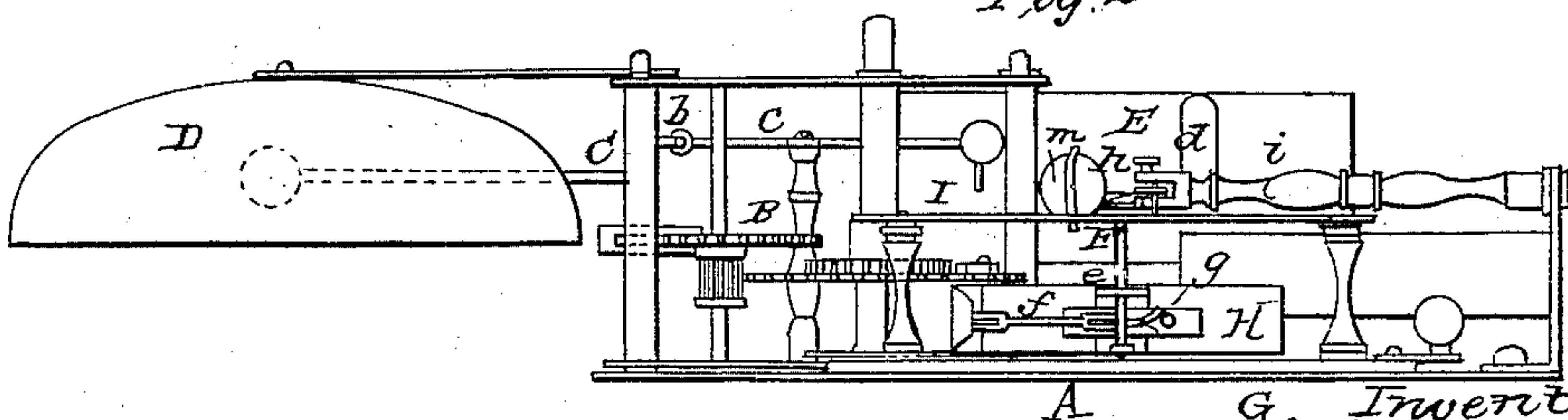


Fig. 2



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UNITED STATES PATENT OFFICE.

CHARLES DION, OF MONTREAL, CANADA.

FIRE-ALARM.

Specification forming part of Letters Patent No. 49,686, dated August 29, 1865.

To all whom it may concern:

Be it known that I, CHARLES DION, of Montreal, Canada, have invented a new and Improved Fire-Alarm; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a front elevation of this invention. Fig. 2 is a side elevation of the same.

Similar letters of reference indicate like parts.

This invention relates to an apparatus the operation of which is based upon the expansion and contraction of a spring composed of two different metals or other materials. The outer end of this spring is connected to an elbow-lever, which is secured to a vertical arbor bearing an index which sweeps over an adjustable scale, and when the temperature rises beyond the desired point said index, by coming in contact with the end of a lever, releases a tilting weight, and by the action of this tilting weight another similar weight is released, and thereby the escapement of a clock-movement is freed, and said movement being driven by a weight or spring causes a hammer to strike repeated and rapid blows on a bell, so that the attention of persons in the room, building, or other structure is called to the fact that the temperature has reached its maximum. The scale and spring are situated on a common bed-plate, and by adjusting this bed-plate the point, when the alarm is released, can be adjusted at pleasure. A similar arrangement is also used when the temperature sinks below a certain point. By the application of suitable tubes or guide-channels in which globes or balls of stone or other suitable material are retained by stops which are released by the action of the index or compound spring the room or place in a building in which the temperature rises or falls beyond the desired degree can be ascertained in the office or other place in which the several pipes center, the number of the room being ascertained by a corresponding figure or appropriate mark on the ball.

A represents a plate of sheet metal or any other suitable material, and cut out in any desirable form or shape. This plate supports the

clock-movement B, which is driven by a spring or weight, and from the escapement of which extends a hammer, C, which, when the clock-movement is in motion, strikes repeated and rapid blows on a bell, D. The escapement is secured to a rock-shaft, *a*, and from this rock-shaft extends an arm, *b*, the point of which may be made to catch in the looped end of a swinging lever, *c*. The lower arm of this lever branches off, and one branch bears a small weight, whereas its other branch rests against the trigger *d*. This trigger is hinged to a piece of pipe, E, and it may be so arranged that its point arrests the chain or cord from which the weight is suspended which is intended to impart motion to the clock-movement.

The time when the escapement of the clock-movement is released is governed by the action of an index-hand, F, which is mounted on an arbor, *e*, that has its bearings in a bracket secured to a segmental plate, G. This segmental plate is pivoted to the bed-plate A, and it supports the coiled spring H and the scale I. The spring is composed of two strips of different metals—such as steel and brass—one of which expands less by the heat than the other, and it is secured at its inner end to the plate, whereas its outer end connects by a link, *f*, with a curved arm, *g*, secured to the arbor *e*. When the spring expands by the action of the heat the outer end of the same springs in the direction of arrow 1, and the index F turns in the direction of arrow 2.

If it is desired that the alarm shall sound when the temperature reaches 80°, the segmental plate is shifted in such a position that one arm of a lever, *h*, stands opposite to the figure 80 on the scale. Said lever is pivoted to a standard, *i*, and its long arm is furnished with a loop, *j*, which can be made to catch over the point of a weighted tripping-arm, *k*. This arm is so arranged that when the same is set free it turns down by the action of its own inherent gravity in the direction of the arrow marked near it in Fig. 1, and by striking a lever, *l*, releases another tripping-lever, *m*, which has its fulcrum on a lug, *n*, secured to the bed-plate in such a position that when the lever is set free the weight secured to its outer end comes down upon the tail of the trigger *d*. By this action the trigger is caused to turn the swing-

ing lever *c* in the direction of the arrow marked near it in Fig. 1, compelling the same to release the arm *b*, extending from the arbor of the escapement, and the alarm is sounded.

By turning the segmental plate *G* up or down, the alarm can be made to sound at any desirable degree of heat, and if the apparatus is hung up in a room or in a store-house or in the hold of a vessel and set to a certain temperature—say 80°—the alarm will be sounded as soon as the temperature rises beyond this point. A fire caused by some accident or by spontaneous combustion can thus be readily detected, and much property will be saved from destruction by a comparatively small outlay.

In order to sound the alarm when the temperature sinks below a certain degree, a weighted lever, *p*, is arranged in such a position that its end passes through a loop, *r*, which is secured to the end of the index *F*. When the temperature sinks below the required point the lever *p* tilts, and may be made to cause the alarm to sound, or it may be made to act on a stop, *s*, which extends into a tube, *T*, and retains a ball, *t*. When the stop is withdrawn by the tilting of the lever the ball rolls down through the tube and indicates the number of the room or the place where the temperature is below the desired point. A similar tube, *E*, and ball *t'* may be set free by the trigger *d* to indicate the place or room where the temperature is too high. The several tubes in a hotel or other building may be made to concentrate

in the office or other central place, so that the proper persons are enabled to ascertain the state of the temperature throughout the entire building.

If desired, the apparatus may also be connected to a system of telegraphic instruments, and thereby the fire department or the police may be advised instantaneously in which building a fire occurs.

I claim as new and desire to secure by Letters Patent—

1. The adjustable segmental plate *G*, bearing the composition spring *H*, index *F*, and scale *I*, in combination with the alarm-movement *B*, constructed and operating substantially as and for the purpose described.

2. The stop-lever *h*, tripping-lever *k*, stop-lever *l*, trip-lever *m*, trigger *d*, and swinging lever *c*, in combination with the index *F*, scale *I*, and alarm-movement *B*, constructed and operating substantially as and for the purpose set forth.

3. The use of a system of tubes extending from different places or rooms in a house or building to a single central position, in combination with balls which are held in said tubes by stops that are released by the action of the metallic thermometer, either when the temperature rises above or sinks below a certain point, substantially as and for the purposes set forth.

C. DION.

Witnesses:

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