

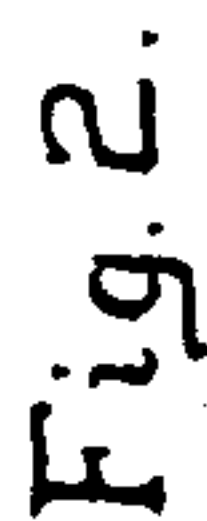
No. 798,197.

PATENTED AUG. 29, 1905.

H. A. MARSHMAN.

**FIRE ALARM.**

APPLICATION FILED APR. 22, 1905.



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# UNITED STATES PATENT OFFICE.

HENRY A. MARSHMAN, OF ALBANY, NEW YORK.

## FIRE-ALARM.

No. 798,197.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed April 22, 1905. Serial No. 256,853.

*To all whom it may concern:*

Be it known that I, HENRY A. MARSHMAN, a citizen of the United States of America, and a resident of the city and county of Albany, State of New York, have invented certain new and useful Improvements in Fire-Alarms, of which the following is a specification.

My invention relates to fire-alarm devices; and the object of my invention is to provide an automatic fire-alarm which will be set in operation when the temperature of the apartment in which it is placed reaches a certain degree and when in operation will sound the alarm, indicating the location of the fire, together with such elements and combinations as are hereinafter more particularly set forth and claimed. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation with parts broken away of the controlling device. Fig. 2 is a side elevation with parts broken away of the device for signaling and recording the location of the fire. Fig. 3 is a front elevation of Fig. 2.

Similar characters refer to similar parts throughout the several views.

For the purpose of controlling a fire-alarm apparatus I place a cylinder A, Fig. 1, which has at one end B a restricted opening C. Within the cylinder I place fine sand D, and to prevent the sand from escaping through the opening C when the cylinder is in position I arrange a spring-strip E, secured at one end e in such a manner that when it is against the resiliency of said spring brought in engagement with the latch G it will close the opening C in the end of the cylinder. For this purpose I preferably arrange a valve-seat, consisting of an enlarged projecting portion H, on the spring-strip E, which will engage said opening C, although I do not limit myself to this manner of closing the opening.

The latch G is preferably constructed of a material which has a low melting-point, and when the end of the latch G melts off the spring-strip E will spring away, uncovering the opening C and allowing the contents of the cylinder—the sand D—to escape.

Within the cylinder I place a plunger J, carrying a rod K, upon which is arranged a series of serrations L, adapted to engage the contact-finger M when the plunger descends through the cylinder A. On the end of the plunger I place a washer d to prevent the sand from working up. The rod K is also

provided with a series of projecting contact-points N O P, each series separated from the others and each series containing one or more contact-points, which points will engage the contact-finger M alternately as the plunger J moves down through the cylinder. I also arrange a contact-finger M' engaging with the rod K at all times, the contact-finger M' being connected with the electric wire m', which leads to the source of electric supply m<sup>2</sup>. (See Fig. 2.) The contact-finger M is connected with the wire m, which in turn is connected with the magnet 5, Fig. 2.

Within operative distance of the magnet 5 I place the armature 6, preferably hinged to a plate 7 at 8 and carrying a hammer 9, adapted to strike a bell 10 when the magnet is charged. On the armature 6 I arrange a punch or marker 11, which may register with an opening 12 in the plate 7. I also preferably arrange a hook 13 on the rod 14, which carries the hammer 9. Engaging with the hook 13 is one end of the trigger 15, which is pivoted at 16 and engages a hook 17, attached to the feed-roller 18. When the magnet is charged and the armature 6 is brought in contact therewith, the hammer 9 will strike the bell 10 and the punch 11 will enter the opening 12 in the plate 7, at the same time the trigger 15 will become disengaged from the hook 17, releasing the feed-roller 18. The hook 13, drawing one end of the trigger toward the bell, releases the other end and pulls it away from the hook 17.

I mount a wheel 19, which carries a roll of narrow paper 20, usually termed "tape," above the armature 6. The paper is brought downward between the armature and the plate 7 and engages the feed-rollers 18 and 21, passing between them and by them caused to unroll from the wheel 19. As thus arranged when the punch 11 is in operation it will penetrate the paper lying between it and the plate 7. For the purpose of causing the paper to leave the punch when the punch is withdrawn I place the wires or rods W W on the plate 7 over the paper and adjacent to the opening 12.

For the purpose of causing the feed-rollers 18 and 21 to revolve I place a gear-wheel 22, carrying a spring 23, which wheel 22 is wound against the tension of the spring 23, and the spring secured at 24 to the frame or wall of the building, and which wheel also has a dog 25 and ratchet 26. Meshing with the gear on the wheel 22 is a gear 27 on the



feed-roller 21. The tendency of the gear-wheel 22 is to revolve and in its revolution to set in motion feed-roller 21. The friction of the feed-roller 18 when it is held by the hook 5 17 from revolving upon feed-roller 21 will, however, keep the rollers from operating until the roller 18 is released. When the trigger 15 has been tripped, releasing the hook 17, the feed-rollers 18 and 21 will revolve, 10 causing the paper 20 to unroll from the wheel 19.

The operation of my invention is as follows: When the temperature of the room in which the cylinder A is placed is sufficiently 15 high to melt the catch G, the strip E will spring away from the opening C and the sand D will begin to escape, which will allow the plunger J to fall and bring the serrations L, which are preferably close together, to en- 20 gage the contact-finger M, and through the wire *m* will cause the magnet  $\delta$  to be charged, and therefore the bell to be rung, making a stroke for each serration on the rod. While the series L on the rod are making contact 25 one after the other with the finger M a series of quickly-repeated strokes will be made on the bell. When the series N on the rod engage the finger M, the contact-points being slightly farther apart the signals on the 30 bell will be more pronounced and may be counted. There would then be four strokes. At the same time on the paper tape 20 there would be formed four holes. When the rod descends until the series O engage the finger 35 M, there will be two strokes sounded on the bell and two punctures in the paper, and when the series P reaches the finger M there will then be sounded three strokes, and three punctures will be made in the tape. The 40 alarm would then show "No. 423," the first strokes on the bell while the series L were being recorded being simply to call attention to the further ringing of the bell, which would record the numbers.

45 Of course I do not limit myself to the arrangement of the contact-points on the rod or the number of strokes to be made on the bell or the order in which they are to be made and recorded. It is also apparent that 50 I may do away with the tape or paper and depend entirely upon the bell for giving the alarm. The paper, however, is very convenient, especially in a large building in which there are many of the operating-cylinders A 55 to be placed each in a different room or locality, since the paper may be consulted for the purpose of determining at once in what place the fire is burning even if the observer did not follow through his count of the strokes 60 on the bell.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a fire-alarm apparatus; a cylinder adapted to hold sand; a plunger; means within 65 the cylinder for supporting the plunger a rod

carrying said plunger; a series of contact-points on said rod; a means for conveying a current of electricity to said rod; a means for causing said contact-points to engage an electric conductor during the movement of said 70 plunger; with a means for opening said cylinder, allowing its contents to escape when the temperature in the room exceeds a certain predetermined degree, substantially as described. 75

2. A cylinder containing an opening at one end; a covering for said opening; a means for holding said cover in position; a means for releasing said cover when the temperature of the room in which it is placed reaches a cer- 80 tain predetermined degree; a plunger in said cylinder carrying a rod; means within the cylinder for supporting the plunger a series of contact-points on said rod; means for conveying electricity to said rod; a contact-finger 85 arranged to engage said contact-points respectively on said rod, as the rod enters the cylinder; a bell; a magnet; an armature carrying a hammer; a wire connecting said magnet with the said contact-finger, adapted to en- 90 gage said contact-points on the rod all substantially as described.

3. A cylinder; an automatic temperature-controlled means for opening said cylinder, allowing the contents to escape by gravity; a 95 plunger carrying an electrically-connected rod; means within the cylinder for supporting the plunger; a contact-finger; means on said rod for engaging contact-finger at certain predetermined intervals during the movement 100 of said rod; a magnet electrically connected to said contact-finger and said rod; an armature controlled by said magnet; a hammer connected to said armature; a bell adapted to be operated upon by said hammer, substan- 105 tially as described.

4. A cylinder; an automatic temperature-controlled means for opening said cylinder, allowing the contents to escape by gravity; a 110 plunger carrying an electrically-connected rod; means within the cylinder for supporting the plunger; a contact-finger; means on said rod for engaging contact-finger at certain predetermined intervals during the movement 115 of said rod; a magnet electrically connected to said contact-finger and said rod; an armature controlled by said magnet; a hammer connected to said armature; a bell adapted to be operated upon by said hammer, a paper; means for feeding the same; a punch carried 120 by said armature and adapted to engage said paper when the armature is attracted by said magnet, substantially as described.

5. A cylinder; an automatic temperature-controlled means for opening said cylinder, 125 allowing the contents to escape by gravity; a plunger carrying an electrically-connected rod; means within the cylinder for supporting the plunger; a contact-finger; means on said rod for engaging contact-finger at certain 130



predetermined intervals during the movement of said rod; a magnet electrically connected to said contact-finger and said rod; an armature controlled by said magnet; a hammer 5 connected to said armature; a bell adapted to be operated upon by said hammer, a wheel carrying a roll of paper; feed-rollers engaging said paper; a gear-wheel engaging one of said feed-rollers; a spring adapted to impart motion to said gear-wheel; a device for holding 10 said feed-rollers against the tendency of the said gear-wheel to revolve; a means for liberating said feed-rollers when the magnet is charged; a means for marking said paper corresponding to each stroke of the hammer on 15 the bell.

6. A cylinder; an automatic temperature-controlled means for opening said cylinder, allowing contents to escape by gravity; a 20 plunger carrying an electrically-connected rod; means within the cylinder for supporting

the plunger; a contact-finger; means on said rod for engaging contact-finger at certain predetermined intervals during the movement of said rod; a magnet electrically connected 25 to said contact-finger and said rod; an armature controlled by said magnet; a hammer connected to said armature; a bell adapted to be operated upon by said hammer, a wheel, carrying a roll of paper; feed-rollers engaging 30 said paper; a means for imparting motion to said feed-rollers; a means for holding said feed-rollers stationary; a means for liberating said feed-rollers when the magnet is charged; a means for marking said paper corresponding 35 to each stroke of the hammer on the bell.

Signed at Albany, New York, this 17th day of April, 1905.

HENRY A. MARSHMAN.

Witnesses:

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