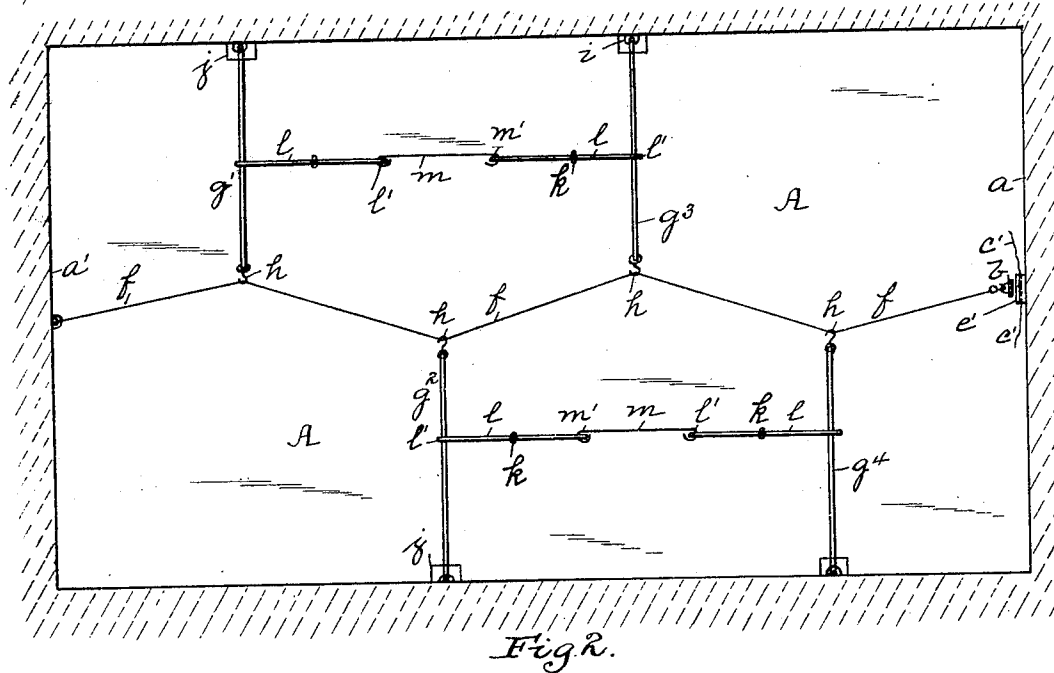
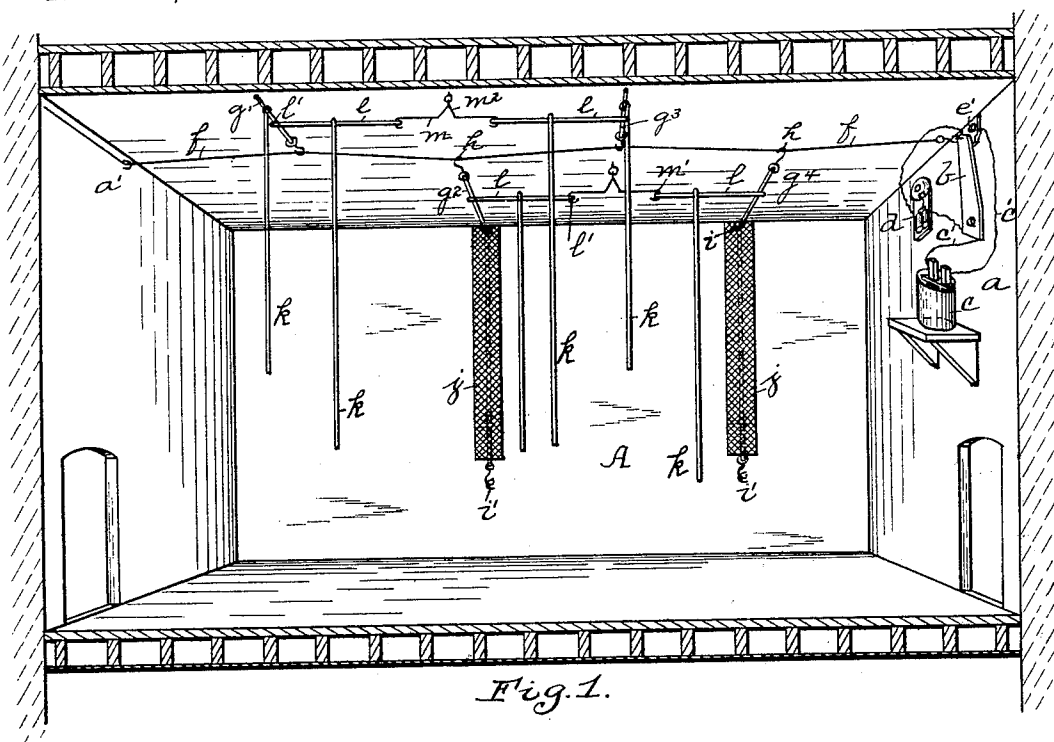


(No Model.)

F. J. THUNHORST.
FIRE ALARM APPARATUS.

No. 520,547.

Patented May 29, 1894.

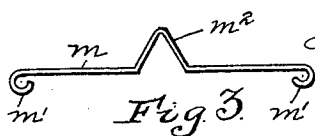


Witnesses:

L. B. Little.
L. H. Lux.

Inventor:

Frederick J. Thunhorst.
By Kay, Tatten & Cook,
Attorneys.



UNITED STATES PATENT OFFICE.

FREDERICK J. THUNHORST, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF TO CHARLES J. WEITERSHAUSEN, OF SAME PLACE.

FIRE-ALARM APPARATUS.

SPECIFICATION forming part of Letters Patent No. 520,547, dated May 29, 1894.

Application filed February 26, 1894. Serial No. 501,606. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK J. THUNHORST, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have
5 invented a new and useful Improvement in Fire-Alarm Apparatus; and I do hereby declare the following to be full, clear, and exact description thereof.

My invention relates to fire alarm apparatus.

10 To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

15 Figure 1 is a sectional perspective view of a room provided with my fire alarm apparatus. Fig. 2 is a plan view of the ceiling. Fig. 3 is a view of one of the connecting links.

Like letters indicate like parts in each of the figures.

20 In the drawings I have illustrated my invention in a simple form, although it will be apparent that the arrangement of the apparatus may be varied to suit the different conditions and circumstances under which it may
25 be applied.

Secured to the wall *a*, or at any other suitable position within the room *A* is the spring arm *b*, said arm being formed of metal possessing the required resiliency. The said
30 spring arm *b* is securely held at one end thereof in contact with the wire *c'* leading from battery *c* forming the electric circuit for the ringing of the alarm *d*, which may be located in the room or at a distant point, as
35 may be desired. The opposite end of said spring arm *b* is normally in contact with the plate *e'*, thereby closing the electric circuit and causing the ringing of the alarm. The alarm or annunciator may be of any form suitable
40 for the purpose, and as the construction and operation of such an alarm are well known it will not be described in detail. Secured to the free end of said spring arm *b* is the wire *f*. The other end of said wire *f* is secured to the
45 wall *a'* or other suitable point. In order to draw the wire *f* sufficiently taut to draw the free end of the arm *b* away from the wire *e* and break the circuit the tension cords *g'*, *g*², *g*³, &c., are employed. The cords *g'*, *g*², *g*³,
50 are composed of some inflammable material, and are provided with the hooks *h* on the

ends thereof. These hooks *h* engage with the wire *f* and are so arranged as to draw said wire *f* taut enough to draw back the free end of the arm *b* from contact with the wire *e*.
Accordingly the tension cord *g'* engages the wire *f* and extends toward the rear wall of the room, thence through a staple *i* down the said wall to be hooked to a staple *i'*. To protect
said tension cords where they pass down the walls, I employ the wire covering *j*. While this covering *j* acts to prevent the handling of said cords, at the same time in case of fire the flames can pass through said covering
and ignite the cords. The next tension cord *g*² engages the wire in like manner at a point beyond the cord *g'* and passes to the front wall of the room and down said wall to a point where it is secured. The next tension
cord *g*³ extends toward the rear wall in the manner of the tension cord *g'*, and the tension cord *g*⁴ to the front wall in the manner of the tension cord *g*². In this manner, by
drawing the wire *f* by the tension cords *g'*, *g*², *g*³, &c., until it assumes a zigzag course the arm *b* will be drawn back and the electric circuit
broken. There are a multiplicity of ways in which the wire and tension cords may be arranged, and I do not limit myself
in any way to the arrangement shown. Cords *l* of inflammable material may be hung from the tension cords *g'*, *g*², *g*³, *g*⁴, and said cords
l may be at any desired distance from the floor so that in case the fire originates at the center of the room among goods stored there-
in, as in a ware-house, the flame will easily reach said suspended cords and, traveling up the same, ignite the tension cords *g'*, *g*², *g*³, &c.
The tension cords *g'*, *g*², *g*³, &c., are connected by the cords *l*, but in order to prevent the flame traveling in both directions where one of the cords *l* is the first of the apparatus
to ignite the hooked links *m* are employed. These links *m* are formed of suitable metal, or other non-combustible material, and have
the hooks *m'* formed on the ends thereof. The links *m* are suspended from the ceiling by the ears *m*². Hooks *l'* on the ends of the
cords *l* connect said cords with said links and with the cords *g'*, *g*², &c.

A cord of sufficient strength may be substituted for the wire *f*, but I prefer to employ

the latter owing to its superior strength and to its being incombustible.

As stated herein before, I do not confine myself to any particular arrangement of the apparatus, as there are so many different ways in which the wire and different cords may be arranged.

The apparatus having been arranged in the manner shown, in case a fire breaks out in the room, for instance, adjacent to the tension cord g' , said cord being of inflammable material will readily ignite. Immediately upon the ignition of said cord it will separate and release the tension on the wire f . The spring arm b will then be free to contact with the plate e and complete the electric circuit, thereby giving the alarm. In case the fire originates in the central portion of the room one of the suspended cords k will be ignited, and the flame traveling up the same will ignite one of the tension cords g' , g^2 , g^3 , &c., or one of the cords l . As before, the spring arm b will be released and complete the circuit. There is no danger of the cords transmitting the flames in both directions owing to the connecting links m .

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

1. In fire alarm apparatus, the combination with an electric signal, of a spring arm adapted to close the electric circuit, a wire secured to said arm and to a fixed support, a series of tension cords of inflammable material engaging said wire and drawing said wire sufficiently taut to cause said arm to break said

circuit, inflammable cords connecting said tension cords, and non-combustible links between the ends of said connecting cords, substantially as and for the purposes set forth.

2. In fire alarm apparatus, the combination with an electric signal, of a spring arm adapted to close the electric circuit, a wire secured to said arm and to a fixed support, a series of tension cords of inflammable material engaging said wire and drawing said wire sufficiently taut to cause said arm to break said circuit, non-combustible links having hooked ends, and inflammable cords engaging the ends of said links and connected to said tension cords, substantially, as and for the purposes set forth.

3. In fire alarm apparatus, the combination with an electric signal, of a spring arm adapted to close the electric circuit, a wire secured to said arm and to a fixed support, a series of tension cords of inflammable material engaging said wire and drawing said wire sufficiently taut to cause said arm to break said circuit, non-combustible links having hooked ends adapted to be suspended from a suitable support, and inflammable cords engaging the ends of said links and connected to said tension cords, substantially as and for the purposes set forth.

In testimony whereof I, the said FREDERICK J. THUNHORST, have hereunto set my hand.

FREDERICK J. THUNHORST.

Witnesses:

ROBT. D. TOTTEN,
J. N. COOKE.