

(No Model.)

2 Sheets—Sheet 1.

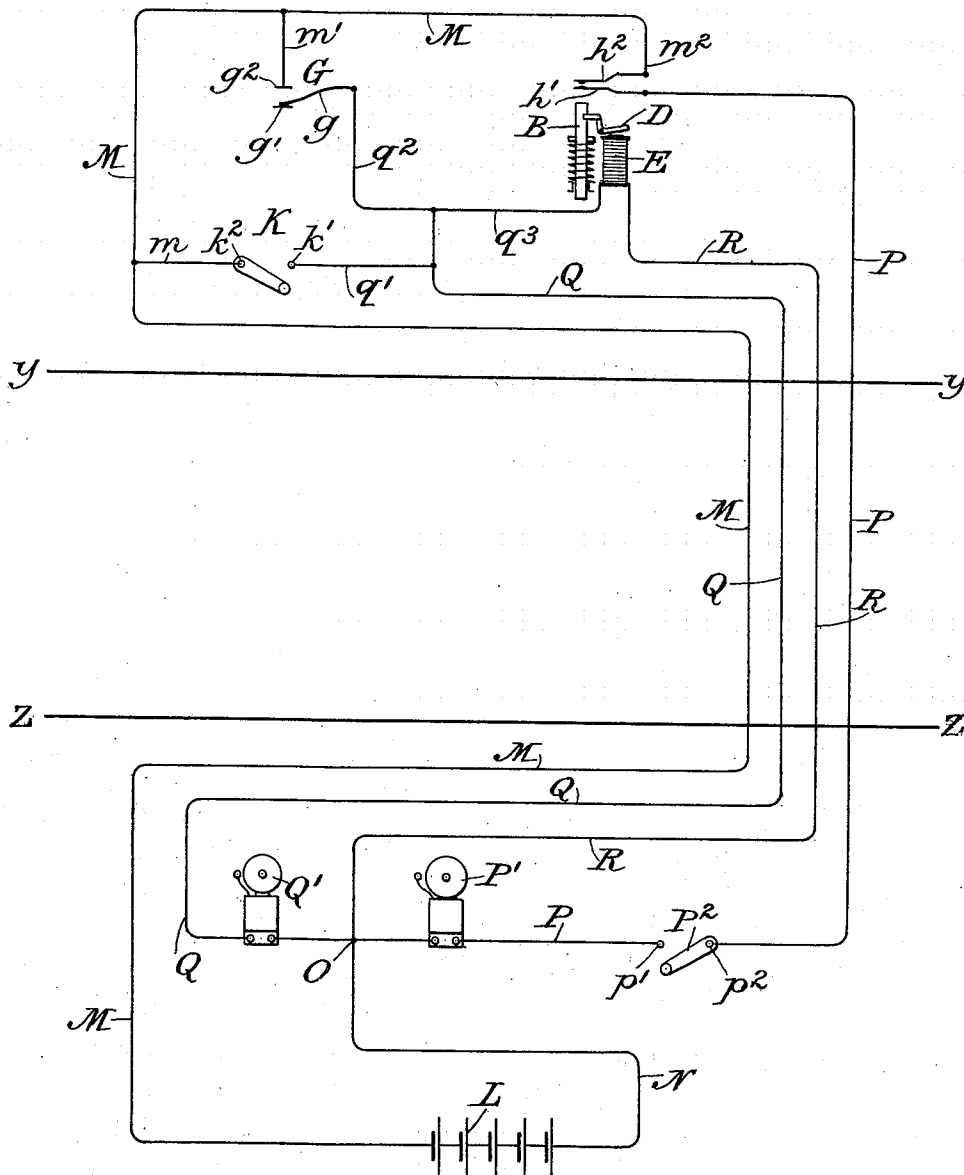
A. R. HOLMES.

ELECTRIC FIRE AND STABLE ALARM AND HORSE RELEASER.

No. 507,322.

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Fig. 1.



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ELECTRIC FIRE AND STABLE ALARM AND HORSE-RELEASER.

SPECIFICATION forming part of Letters Patent No. 507,322, dated October 24, 1893.

Application filed February 4, 1893. Serial No. 460,997. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER R. HOLMES, of New York, in the county and State of New York, have invented certain new and useful Improvements in Electric Fire and Stable Alarms and Horse-Releasers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The object of this invention is to provide an improved electric alarm system particularly designed for use in stables, by means of which an alarm shall be given in the office whenever a fire occurs at any point in the stable and a different alarm whenever a horse is released from his stall, and whereby the existence of fire in the stable will itself cause the release of all the horses in their respective stalls. Provision is also made for giving an alarm and releasing the horses from different points in the stable, and for permitting the release of any horse during the day time without sending in an alarm.

The invention consists in the system which is hereinafter fully described and in the mechanism which is operated by the system to release the horses and to indicate that fact.

In the drawings: Figure 1 is a diagram illustrating the improved system, with the various connections. Fig. 2 is a rear elevation of the halter-fastener and releasing device, the supporting plate being broken out. Fig. 3 is a plan view of the parts shown in Fig. 2. Fig. 4 is a detail view in side elevation of a portion of the devices shown in Fig. 2. Fig. 5 is a vertical section on the broken plane indicated by the line $x-x$ of Figs. 2 and 3. Fig. 6 is a front elevation of the halter-fastener and releaser, parts being indicated in dotted lines.

Reference will first be made herein to Figs. 2, 3, 4, 5 and 6, and to the construction shown therein in order that the system as a whole may be more readily understood when it is described in detail. A stout plate A is secured in a convenient position in each stall and is provided with a horizontal slot a and a vertical slot a' . On the rear face of the plate A are formed suitable bearings a^3, a^4 , in which a bolt B is free to move vertically. A spring

b tends to throw the bolt up whenever it is released, so that its lower end will clear the slot a , and a pin b' is fixed to the plate and projects through the slot a' so that the plate may be moved by hand against the stress of the spring b . The bolt is notched, as at b^2 , to be engaged by a latch C which serves to hold the bolt down against the stress of the spring b . A light spring c presses the latch against the bolt so that it shall engage with the notch b^2 whenever the bolt is moved down to bring the notch in line with the latch. The latch is adapted to be tripped by the movement of the armature D of a magnet E which is mounted upon the plate A. As shown, the armature is provided with a finger d which engages a hook c' which is fixed to the latch. A push-button F is mounted in the plate A so that its stem f is in line with the latch C and may be caused by pressure upon the button to thrust the latch backward and so release the bolt B. Above the bolt B and in line with the same, two contacts are supported by the plate A. Normally these contacts are separated but they are adapted to be pressed together to complete the circuit between them by the bolt B whenever it is released. The purpose of these contacts will be referred to later on.

Referring now to Fig. 1, the various electrical appliances and connections of the system will be described. In order that the different parts of the system may be more clearly distinguished two horizontal lines $y-y$ and $z-z$ have been drawn upon Fig. 1. That portion of the diagram which is above the line $y-y$ represents so much of the system as is located in the stable, while that portion of the diagram below the line $z-z$ represents the apparatus and connections which are located in the office, which may be, of course, either in the same building or remote therefrom. It is further to be observed that although the stable connections have been shown for but a single stall and a single floor, they might be extended by simple multiplication to cover many stalls and more than one floor.

At G, in Fig. 1, is represented a device which, in systems of the same general character as this, is called a thermostat or, in other words, a device which upon a rise of the temperature of the surrounding air to a predetermined degree is adapted to open or close an electric

circuit. There are many forms of such thermostats which might be used in this system, and I have indicated a simple form which will suffice for the purposes of explanation. It consists of a spring g having one end fixed while the other is normally held by a plug of fusible solder, as at g' . When the temperature rises to the degree at which the solder fuses the spring is released and rises against a contact point g^2 , whereby the circuit is completed between the spring and said point.

At E, Fig. 1, is indicated the horse releasing magnet with its armature D and the spring-pressed bolt B, which have been described heretofore in detail. Above the bolt B are supported, as also already described, the spring contacts h' , h^2 , which are normally separated but are adapted to be brought together to complete the circuit by the bolt B. Also located in the stable is what is termed herein the stable switch K, which is adapted to be operated by hand to open or close the circuit between the points k' , k^2 .

In the office or at any other convenient point is placed a battery L or other suitable source of electrical energy from one side of which a conductor M extends to and through the stable or floor to be protected. From this conductor a branch m is led to one side of the switch K, a branch m' to one side of the thermostat G, and a branch m^2 to one of the contacts h' , h^2 . From the other side of the battery connection may be made by a single conductor N to a common point O from which three several conductors may extend to the stable, forming as many different paths or shunts. The conductor P includes in the office a stall-alarm P' , which may be either a bell, as represented, or a drop or other alarm either audible or visual, and a switch P^2 which is adapted to break the circuit through this conductor between two points p' , p^2 . This conductor is connected directly to the contact h' . A second conductor Q, including in the office a fire-alarm Q' , which may be either audible or visual and is represented as a bell, is extended to the stable or floor where it has a branch q' to the point k' of the switch K, a branch q^2 to one side of the thermostat G, and a branch q^3 to one side of the magnet E. A third conductor R from the common point O in the office is connected directly to the other side of the magnet E. I have herein referred to a single horse-releasing magnet, but it will be understood that as many of these devices may be employed as desired, it being necessary simply to connect these devices to the several main conductors in the manner herein described.

The operation of the improved system will now be readily understood, and in describing the operation it will be assumed that the switch P^2 is closed and the switch K is open. If a fire occurs at any point in the stable and causes the operation of a thermostat G near it, the circuit will be closed between the two

contacts g and g^2 . The current will then pass from the battery through the conductor M, branch m' , contacts g^2 and g , branch q^2 and conductor Q, through the alarm Q' to the common point O and thence by the conductor N to the other side of the battery, thereby indicating, by means of the alarm Q' , that a fire has broken out in the stable. The entire current back to the battery does not pass through the conductor Q, but by a proper arrangement of resistances a portion of the current is caused to pass through branch q^3 and so through the coils of the releasing magnet E and thence by the conductor R to the main point O. The magnet E thus becomes energized and releases the bolt B to be drawn by the spring b out of the halter-ring which is inserted through the slot a , thus setting free the horse. Furthermore, as the bolt B is released it brings the two contacts h' and h^2 together and completes the circuit between them. The result is, as the resistances are also arranged with a view to this, that a portion of the current flows through the branch m^2 and the conductor P, through the alarm P' , to the common point O, thereby indicating, by means of the alarm P' , that the bolt B has been released and the horse unfastened. It will be observed therefore that an alarm of fire is given in the office, that the horses are released, and that this last fact is also indicated in the office whenever a thermostat is operated through an increase of temperature. If the existence of fire is discovered by the watchman in the stable before the temperature has risen sufficiently to cause the operation of a thermostat he will immediately close the stable-switch K which will have exactly the same effect as the operation of a thermostat as just described. Should it be desired at any time to take out a horse the halter can be released by pressing the push-button F in the plate A which disengages the latch C and allows the bolt to be drawn up by the spring. As already described the movement of the bolt closes the circuit between the contacts h' , h^2 , and the current then flows from the battery L over conductor M, branch m^2 , contacts h^2 and h' , and conductor P, through the said alarm P' , to the conductor N and the other side of the battery. This causes an alarm to be given by the stall alarm P' alone and indicates that a horse has been taken out, without giving a fire alarm. As it may be desirable to permit horses to be taken out through the day without giving an alarm, the switch P^2 is inserted in the conductor P so that the latter may be opened in the office whenever desired, and the action of the stall alarm prevented. If it is desired to dispense with a stall alarm the branch m^2 , contacts h' , h^2 , conductor P and alarm P' may be omitted. The system will then operate, as already described, as a fire alarm and a horse-releaser. On the other hand the thermostat might be omitted and the system operated as a horse-

releaser and stall alarm alone, the switch to close the circuit through the magnet E being located at any convenient point.

Other modifications of the system to meet different requirements may obviously be made at will and need not be enumerated here.

I claim as my invention—

1. The combination of a battery, a thermostat, a halter-fastener, a magnet to release said fastener, a conductor from one side of said battery to one side of said thermostat and a conductor from the other side of said battery to the other side of said thermostat and connected to said magnet, substantially as shown and described.

2. The combination of a battery, a thermostat, a halter-fastener, a magnet to release said fastener, a conductor from one side of said battery to one side of said thermostat, a conductor from the other side of said battery to the other side of said thermostat and including an alarm, and a shunt from said last named conductor through said magnet, substantially as shown and described.

3. The combination of a battery, a thermostat, a halter-fastener, two contacts adapted to be closed by said fastener when released, a conductor from one side of said battery having a branch to one side of said thermostat and a branch to one of said contacts, a conductor from the other side of said battery to said magnet and one side of said thermostat, a shunt from said last named conductor to the other of said contacts and an alarm included in said shunt, substantially as shown and described.

4. The combination of a battery, a halter-fastener, two contacts adapted to be closed by said fastener when released, a conductor from the one side of said battery to one of said contacts, a conductor from the other side of said battery to the other of said contacts and an alarm connected to said last named conductor, substantially as shown and described.

5. The combination of a battery, a thermostat, a halter-fastener, a magnet to release said fastener, means independent of the magnet to release said fastener, two contacts adapted to be closed by said fastener when released, a conductor from one side of said battery having a branch to one side of said thermostat and a branch to one of said contacts, a conductor from the other side of said battery to said magnet and the other side of said thermostat, and a shunt from said last named conductor to the other of said contacts with an alarm included in said shunt, substantially as shown and described.

6. The combination of the battery, a thermostat, a halter-fastener, a magnet to release said fastener, two contacts adapted to be closed by said fastener when released, a con-

ductor from one side of said battery having a branch to one side of said thermostat and a branch to one of said contacts, a conductor from the other side of said battery, and including an alarm, a shunt from said last named conductor through said magnet and a second shunt from said last named conductor to the other of said contacts and including an alarm, substantially as shown and described.

7. The combination of the battery, a stable-switch, a halter-fastener, a magnet to release said fastener, a conductor from one side of said battery to one side of said switch and a conductor from the other side of said battery connected to said magnet and having a branch to the other side of said switch, substantially as shown and described.

8. The combination of a battery, a stable-switch, a halter-fastener, two contacts adapted to be closed by said fastener when released, a conductor from one side of said battery with a branch to one side of said switch and a branch to one of said contacts, a conductor from the other side of said battery connected to said magnet with a branch to the other side of said switch, and a shunt from said last named conductor to the other side of said contacts and including an alarm, substantially as shown and described.

9. The combination of a battery, a stable-switch, a thermostat, and a halter-fastener, a magnet to release said fastener, a conductor from one side of said battery having a branch to one side of said switch and a branch to one side of said thermostat, a conductor from the other side of said battery connected to said magnet with a branch to said switch and a branch to the other side of said thermostat, substantially as shown and described.

10. The combination of a battery, a stable-switch, a thermostat, a halter-fastener, a magnet to release said fastener, contacts adapted to be closed by said fastener when released, a conductor from one side of said battery with a branch through said switch, a branch to said thermostat and a branch to one of said contacts, a conductor from the other side of said battery with a branch to said switch, and a branch to said thermostat, said switch, and a shunt through said magnet, and a second shunt from said last named conductor to the other of said contacts with an alarm included in said shunt, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALEXANDER R. HOLMES.

Witnesses:

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A. WIDDER.