

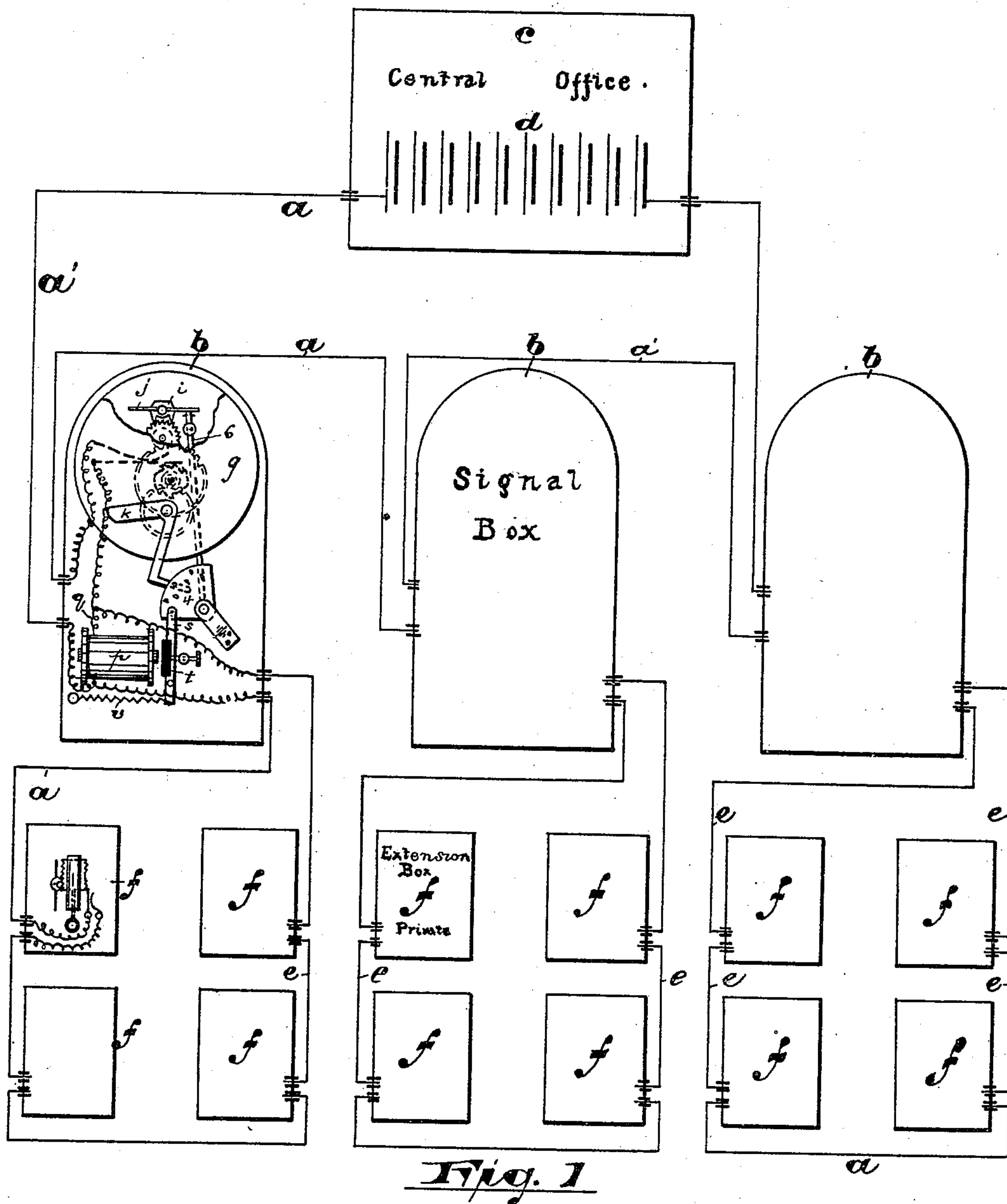
(No Model.)

3 Sheets—Sheet 1.

J. SPEICHER & F. T. FEAREY.  
FIRE ALARM TELEGRAPH SYSTEM.

No. 426,691.

Patented Apr. 29, 1890.



WITNESSES:

E. L. Sherman  
Alfred Gartner

INVENTOR:

John Speicher,  
Frederick T. Fearey,

BY Drake & Co. ATTY'S.

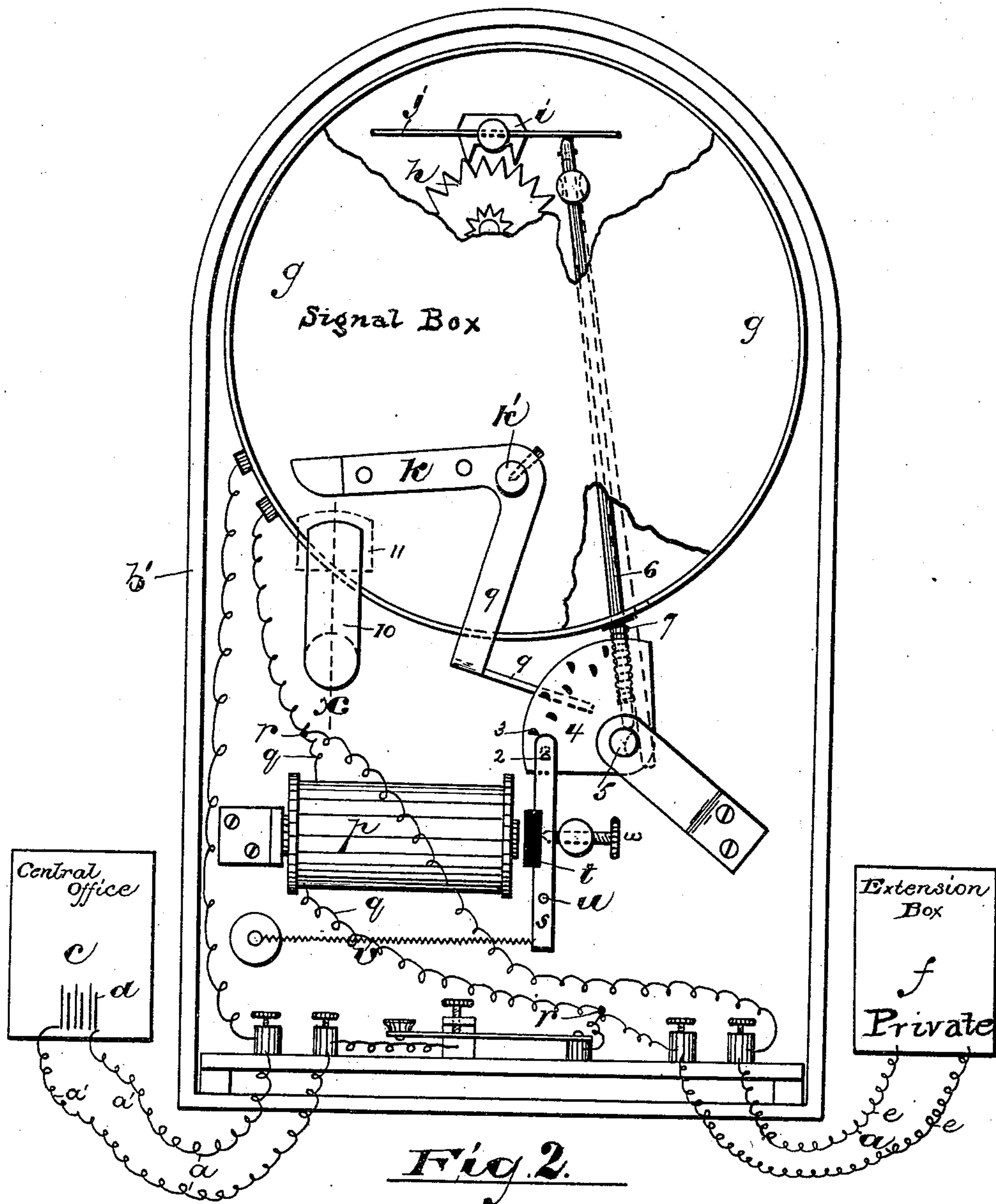
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3 Sheets—Sheet 2.

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WITNESSES:

*Alfred Gartner*  
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# UNITED STATES PATENT OFFICE.

JOHN SPEICHER, OF JERSEY CITY, AND FREDERICK T. FEAREY, OF NEWARK,  
NEW JERSEY, ASSIGNORS TO THE NEWARK DISTRICT TELEGRAPH COM-  
PANY, OF NEW JERSEY.

## FIRE-ALARM-TELEGRAPH SYSTEM.

SPECIFICATION forming part of Letters Patent No. 426,691, dated April 29, 1890.

Application filed February 15, 1889. Serial No. 299,971. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN SPEICHER, of Jersey City, Hudson county, and FREDERICK T. FEAREY, of Newark, in the county of Essex and State of New Jersey, citizens of the United States, have invented certain new and useful Improvements in Fire-Alarm-Telegraph Systems; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings and to letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in fire-alarm telegraphy whereby the extension-circuit system, such as is described in the specifications of prior applications, more particularly in the one serially numbered 287,726, (now patent numbered 416,513,) may be applied effectually, economically, and conveniently to certain of the fire-alarm boxes commonly known in the market, the construction of which being well known it is deemed unnecessary to illustrate the same more fully.

Other boxes—such as a certain old style or variety of the Gamewell boxes—may receive our improvements.

The invention consists in the improved system of fire-alarm telegraphy and in the arrangements and combinations of parts thereof, substantially as will be hereinafter set forth, and finally embodied in the clauses of the claims.

Referring to the accompanying drawings, embraced in three sheets, in which like letters and numerals indicate corresponding parts in each of the several figures, Figure 1, Sheet 1, indicates in a general plan the system embodying our improvements. Fig. 2 is a front elevation of the improved box, in detail, showing its connection with the circuit. Fig. 3 is a side view, the sides of the box and interior case being broken away to show the relations of the working parts to one another more clearly. Fig. 4 is a section taken on line *x*, Fig. 2. Fig. 5 is a rear view of a stop cap or block for

limiting the downward movement of the pull-bar on the door of the box. Fig. 6 is a reduced elevation of the inside of the door; and Figs. 7, 8, and 9 are detail views of an escape-ment-pivot.

In said drawings, *a a* indicate the main-circuit wires, on which the ordinary street-boxes *b b*, commonly found in the streets of a municipality, are stationed.

*c* indicates the central office, in which the battery *d*, bells, and other devices for producing the alarm, are situated, and *e e* are extensions of the main-circuit wire, which center at or connect at both the negative and positive ends of said extensions, with the said ordinary street-boxes. Upon each of said extensions *e* are stationed what we have termed "extension-boxes" *f*, or boxes for private use arranged on the extension-lines.

Heretofore, or in the systems now in common use, the district or street boxes while comparatively convenient to a few living within easy access of them necessitated even to those living nearest a loss of time in transmitting an alarm, which gave headway to the fire and resulted in serious loss. To avoid this delay, auxiliary circuits, or circuits controlled by local batteries independent of the central-station battery *d*, have been provided; but these required large additional cost in the initial construction of the plant and required constant attention to keep them in proper condition, and, furthermore, were open to improper manipulation and the effects of frost or cold, and were thus constantly and greatly liable to become disarranged or rendered inoperative.

In our improved system the use of auxiliary circuits is entirely dispensed with, and the one main circuit is extended into the private residences, factories, &c., of subscribers, where the boxes thereon are immediately accessible to the person discovering the fire. Thus the person making the discovery may first send out the alarm and afterward lend his personal endeavors toward extinguishing the incipient conflagration as he could not were he compelled first to travel several blocks to a neighborhood



box, find a key, &c., before sending out the alarm, and this is done without the use of auxiliary circuits and batteries and the disadvantages occurring therefrom. Furthermore, in the use of the particular auxiliary circuits referred to, a single change in the circuit was sufficient to produce an alarm, and thus should a wire be inadvertently broken or other disconnection or break be made a false alarm would be transmitted.

In the improved system a series of breaks on the extension-wires is necessary to effect the desired alarm, thus precluding the possibility of a false alarm because of a single break.

Referring now to Figs. 2 and 3 more particularly, *b'* indicates the outer case of the ordinary district-fire-alarm box arranged on the body portion *a'* of the main circuit *a*.

*g* indicates the inner case, having the ordinary circuit-wheel for breaking or changing the relation of the terminals of the body portion of the main circuit *a*.

*h* indicates the ratchet-wheel of the usual governor; *i*, the pawl thereof, and *j* the fan, connected with said pawl for regulating and controlling the speed of the circuit-wheel train in the usual manner.

*k* is a lever arranged on the outside of the inner case, adapted to be engaged by a projection *l*, formed on or secured to a sliding bar *m*, Figs. 3 and 6, arranged on the back of the door *n*. To said bar is secured a hook or pull *o*, which works in a slot in the door and allows of the bar *m* being drawn down.

When a fire occurs, the alarmist draws down the pull, and this action causes the lever *k* to turn on its axis or fulcrum *k'* and wind up the circuit-wheel train. On releasing the said pull and lever *k* the said circuit-wheel train makes automatically a return movement, which effects an alarm in the usual way. To effect this result electrically from a distant point on an extension of the main circuit, and thus save the loss of time caused by running to the district-box, and avoid the disadvantages incident to the use of auxiliary batteries, we have provided the following mechanisms:

*p* is an electro-magnet suitably secured in the box *b*, which said magnet is wound with wires *q*, which are finer or have greater resistance to the so-called "flow" of electricity than the wires of either the body portion *a'* or extension *e* of the main circuit *a*. Said magnet-wires connect with the main circuit *a* at *r*, where the body portion *a'* and extension *e* unite with one another or at any other suitable point between the extension-boxes and the terminals of the body portion of the main circuit in the district-box, as will be understood.

*s* indicates a lever provided with an armature *t*, controlled by the magnet *p*. Said lever is fulcrumed at *u* and is normally held away from the magnet by a spring *v* in any suitable manner.

*w* indicates an adjusting-screw for regulat-

ing and limiting the distance of movement of the lever away from the magnet. The said lever at the end opposite that having the spring-connection is provided with a pintle or lateral projection 2, adapted to engage with a series of co-operating projections 3 of an escapement-segment 4. Said projections are arranged in the manner shown in Fig. 2, or in any equivalent manner, so that by a vibratory movement of the lever *s*, occasioned by a series of changes in the extension portion *e* of the main circuit, the said pintle alternately engages first the inner and then the outer projections 3, and the escapement-segment drops by gravity step by step, and is finally released from said lever.

The escapement-segment 4 is carried by a pivoted shaft 5, and serves to turn the same pivotally by the gravitation thereof, as will be evident. Said shaft serves as a stay or support for a locking-rod 6, which extends up into the inner case *g* and engages any of the operating parts within the same to prevent them from moving. The said rod 6 preferably engages the governing-fan *i*, preventing the same from vibrating; but it may engage any of the cogs or other parts of the circuit-wheel train. At the lower end the locking-shaft is engaged by a spring 7, which, when employed at all, serves to facilitate the dropping or falling of the bar 6, and also tends to steady the said bar and hold it more securely on the pivotal shaft 5. The pivotal shaft is notched or rendered eccentric at 8, Figs. 3, 7, and 8, at a point in line with the bar 6, so that when the said pivot is turned under the influence of the escapement and the notch brought into line with the bar the latter will drop by gravity or under the influence of the spring, and thus release the circuit-wheel train. The said locking-rod 6 is also thrown from its bearings on the pivotal shaft 5 by an extension 9 of the lever *k*, so that when the district box is "pulled," or the mechanism therein is caused to change the circuit by an operator acting directly at said box, such direct operation will not be prevented or obstructed by the locking mechanism.

The downward movement of the lever *k* is limited by a stop or fixture 10, by which the lever on being forced downward will be prevented from forcing the locking-bar so far aside as to bend, break, or disarrange the same.

In connection with this stop we also employ a stop cap or block 11, which, when resetting the box after it has been pulled, is arranged on it or in connection with the ends of said stop 10, so that the lever *k* cannot be drawn down in setting to such a distance as that the extension 9 will throw the locking-bar from its bearings and cause a false alarm.

The extension-boxes are provided with circuit-changing mechanism such as illustrated in application, Serial No. 287,082, filed October 3, 1888, in which a box is shown having terminals and mechanisms for producing a



series of breaks sufficient in number to free the escapement-segment or turn the pivotal bar and release the locking mechanism.

A single break in the extension—such as might happen by severing a wire—while being sufficient to partly turn the segment would not produce a release of the locking mechanism, as will be evident, and thus the danger resulting from improper manipulation, as by children playing with the devices in the private houses, will be avoided.

In operating the systems in accordance with our own improvements by operating the extension-box circuit-changing mechanism and producing a series of breaks or changes the current which normally flows over main circuit is interrupted in passing over the extension portion thereof and is forced through the wires *q*, causing the magnet *p* to attract its armature, producing a series of vibrations and finally a release of the locking-bar and the circuit-wheel train of the district-box.

It will be clearly apparent that detail changes may be made when adapting our improvements to other boxes than those above referred to without departing from the spirit or scope of this invention.

What we claim as new is—

1. In a fire-alarm box, the combination, with the circuit-wheel train inclosed in an inner case *g*, a locking-bar *6*, controlled by an escapement, a magnet *p*, an armature *t*, arranged on a lever *s*, said lever extending from engagement with said circuit-wheel train through said casing into engagement with said escapement, whereby the said circuit-wheel train may be released after a series of changes or impulses produced by the magnet-train, substantially as set forth.

2. In a fire-alarm-telegraph system, the combination, with the fire-alarm-box circuit-wheel train, a lock *6*, for preventing the operation of the said train, a segment *4*, for releasing or unlocking said lock, a lever for preventing the turning of the segment, an armature co-operating with the segment and magnet, and an extension-wire connecting with the main circuit and controlling said magnet, and a private box arranged on said extension-wire and provided with circuit-changing mechanisms, and a handle for operating the same, all arranged and combined substantially as and for the purposes set forth.

3. In a fire-alarm-telegraph system, the combination, with the outer box or case *b'*, a circuit-wheel train and circuit-wheel arranged within an inner casing *g*, a locking-bar *6*, extending from the outside of said inner casing into engagement with said circuit-wheel train within said casing, a notched pivot *5*, arranged in suitable bearings within said box outside of said inner casing, segment *4*, projections *3*, lever *o*, having projections *2*, armature *t*, magnet *p* on wires *q*, circuit *a*, having body portion *a'* and extension *e*, extension-box *f*, and battery *d*, all arranged and combined substantially as and for the purpose set forth.

4. In a fire-alarm-telegraph system, the main circuit connecting with the central office and having a district-box thereon, a circuit-wheel train and circuit-wheel, and hand mechanisms for operating the same, whereby an alarm may be transmitted from said district-box to said central office directly from said box, an extension-wire of said main circuit connecting with said main circuit at said box and controlling a lock therein, and an extension-box stationed on said extension-wire and containing circuit-breaking mechanisms and a handle for operating the same, whereby the box in said district-box may be unlocked from said extension-box and the alarm transmitted to the central office, the said lock consisting of a sliding bar adapted to engage the circuit-wheel train of the district-box, an armature-lever, a step-by-step escapement, and a magnet controlled by the extension-wire, substantially as set forth.

5. In combination, in a fire-alarm-district box, the circuit-wheel train, having a governing-fan *j*, rod or bar *6*, notched pivot *5*, segment *4*, projections *3*, pintle *2* on lever *s*, armature *t*, magnet *p* on wire *q*, body portion *a'*, and extension portion *e* of the main circuit, extension-box *f*, and battery *d* on the body portion of said main circuit, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 6th day of February, 1889.

JOHN SPEICHER.

FREDERICK T. FEAREY.

Witnesses:

CHARLES H. PELL,  
W. C. WALSH.