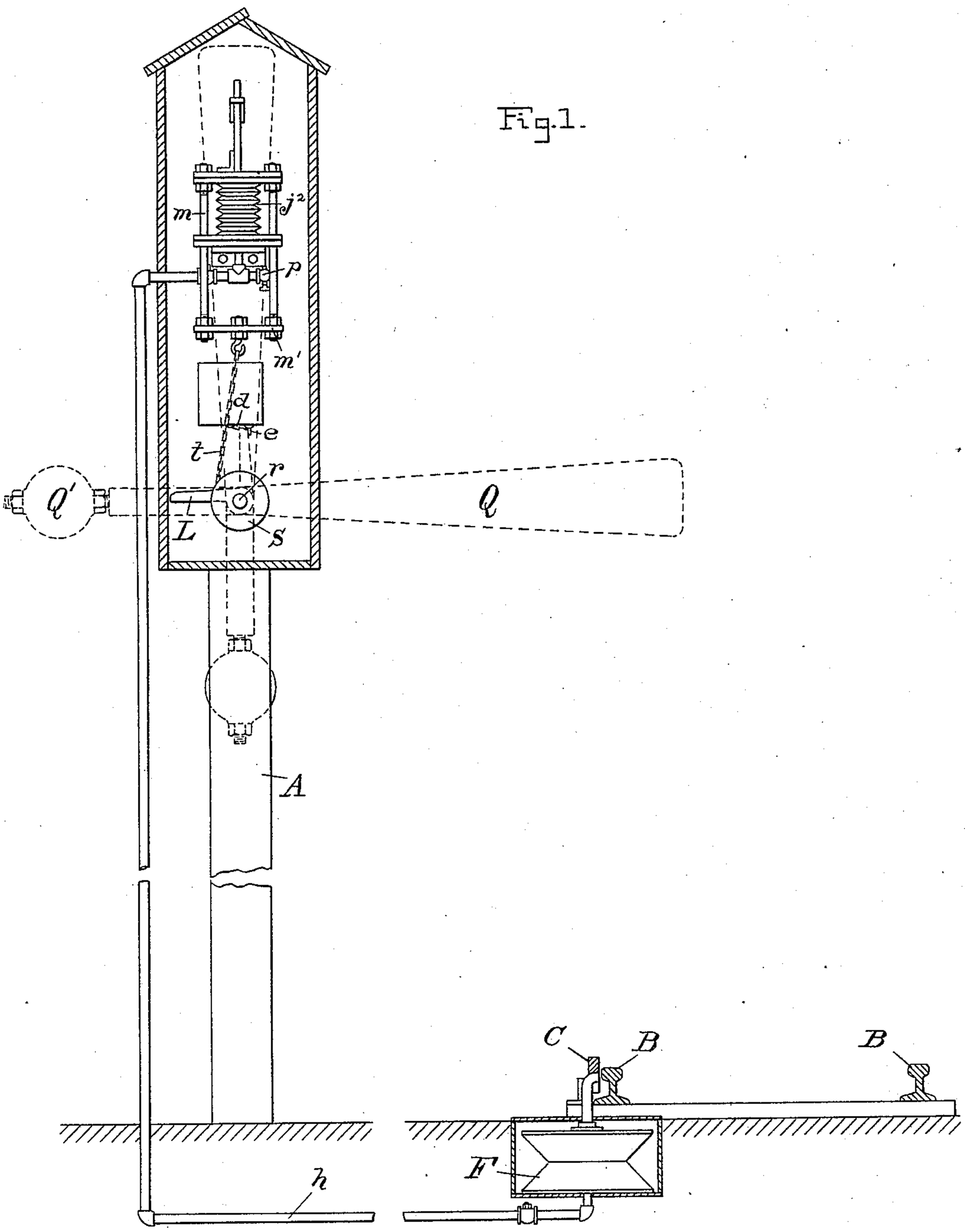
(No Model.) 2 Sheets—Sheet 1.

A. A. LEHMANN.

RAILWAY TIME SIGNAL.

No. 569,974. Patented Oct. 20, 1896.

Fig. 1.



WITNESSES:
Chas. P. Heinemann.
Charles B. Mann Jr.

INVENTOR:
A. A. Lehmann
By Chas B. Mann
ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

A. A. LEHMANN.

RAILWAY TIME SIGNAL.

No. 569,974. **Patented Oct. 20, 1896.**

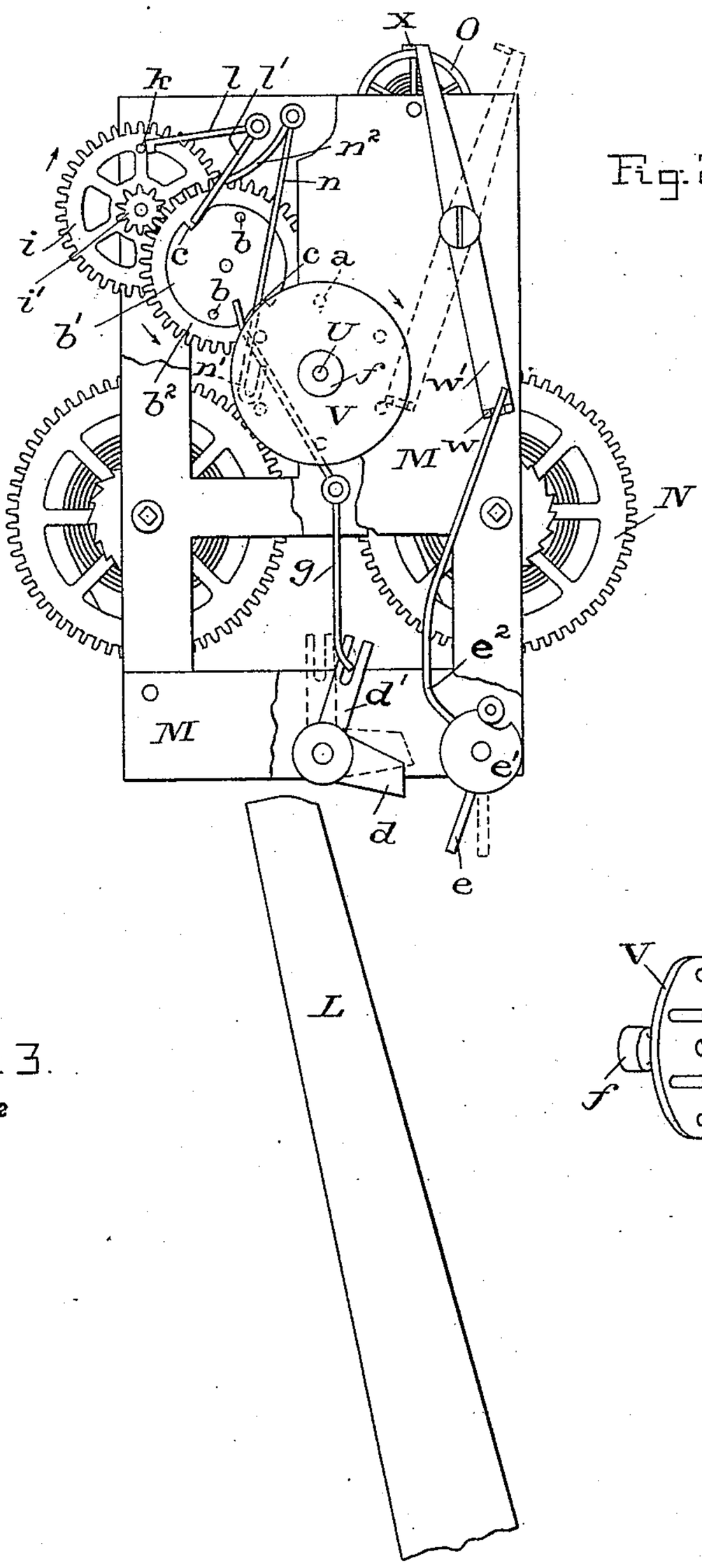
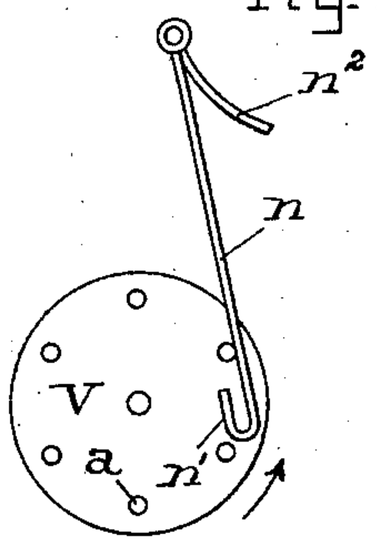


Fig. 2.

Fig. 4.

Fig. 3.



WITNESSES:
Chas. P. Heinemann.
Charles B. Mann Jr.

INVENTOR:
A. A. Lehmann
By Chas B. Mann
ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ANTHONY A. LEHMANN, OF BALTIMORE, MARYLAND, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO JOHN WILSON BROWN, OF SAME PLACE, AND ROBERT T. BOWNE, OF WIMBLEDON, MARYLAND.

RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 569,974, dated October 20, 1896.

Application filed March 31, 1896. Serial No. 585,579. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY A. LEHMANN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Railway Time-Signals, of which the following is a specification.

This invention relates to a railway time-signal where a visual signal device, such as an arm by day or a lantern by night, is employed to take a "danger" position and a "safety" position.

In my invention the visual signal device referred to is employed and also a clockwork movement, and I combine with said parts a stop device which so coöperates with them that when the signal device is at the "danger" position the clockwork will operate or run a certain definite length of time, and when the signal device is at the "safety" position the clockwork will stop. This combination is my invention.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a view of a railway signal device having a pivoted signal-arm, a pneumatic apparatus to turn the signal-arm from "safety" to "danger" position, and a clockwork movement having my stop device. Fig. 2 is a view in detail of the clockwork movement and stop device. Figs. 3 and 4 are views of two parts, detached, of said stop device.

My invention is an improvement on the railway time-signal invented by Robert T. Bowne, of Wimbledon, Harford county, Maryland, whose application for a United States patent was filed March 31, 1896, Serial No. 585,590.

The letter A designates a post; B, track-rails; C, a compression-bar; F, an air-forcing device; *h*, an air-pipe leading to an air-expansion chamber j^2 on the post. A vertically-movable slide-frame *m m'* is employed. A nozzle *p* allows air to escape from the expansion-chamber. The signal-arm Q is mounted on a rock-shaft *r*, having bearing in the post, and said shaft carries a pulley *s*. A chain *t* connects the pulley with the slide-frame of the said expansion-chamber.

The parts just mentioned belong to the application for patent of said Bowne and are no part of my invention, and are referred to here only for the purpose of making my invention clearly understood.

I attach to the rock-shaft *r* or to the pulley *s* on said shaft a lever L, which projects in a direction substantially at right angles with respect to the signal-arm Q. When the signal-arm is at the "safety" position, that is, vertical, the lever L will be about horizontal, but when said arm is at the "danger" position, that is, projecting horizontally, the lever will be upright or about vertical.

I provide the clockwork mechanism with a pivoted catch or detent *d*, and also a pivoted finger *e* in near relation thereto, leaving a space between them only sufficient for the end of the lever L. When the pneumatic apparatus turns the signal-arm to the "danger" position, the end of the lever L will pass the catch or detent *d* and press against the pivoted finger *e*, and thus takes position in the space between said two parts, where it will be held or retained a certain definite length of time, and during this period of time the signal-arm will be kept at "danger." When this period of time has lapsed or expired, the catch or detent *d* will be tilted, as shown in broken lines, so as to release the end of the lever L, and thereupon the lever will at once move away and turn down and the signal-arm will turn up. The moment the catch or detent tilts up to release the lever, as just stated, the weight Q', which overbalances the signal-arm, operates to move the lever down. The clockwork mechanism for effecting this result is shown in Fig. 2, and comprises a frame M, the front of which is partly broken away to show the mechanism. In this frame is mounted a spring-driven main gear-wheel N, which imparts motion to a train of intermediate gears (not shown) between it and the balance-wheel O of an escapement. The central arbor U carries a circular disk V, provided on its inner side near its edges with a series of pins *a*, extending circumferentially, and on its outer side with a knob *f*. In practice this disk makes one complete rotation every hour, and the pins, in this instance numbering six, are equidis-

tant from each other, so that a partial rotation of the disk for a distance equal to that from any one pin to the next pin will occupy ten minutes.

The catch or detent d has the form of a bell-crank lever, whose lower arm serves to hold the end of the lever L, as already described, and whose upper arm d' is slotted. The detent is tilted in order to release the lever L by the following mechanism: The lower end of a pivoted trip-lever g engages the slot d' in the detent. The upper end of the trip-lever is in position to engage either one of two diametrically opposite pins b on a disk b', which is fixed to and revolves with a gear-wheel b^2. The periphery of this disk b' has two notches c, one adjoining each pin b. The wheel b^2 and disk b' revolve in reverse directions to the knob-disk V. Another gear-wheel i has a small pinion i', which meshes with the larger wheel b^2. This wheel i is provided with a pin k. The two arms $l\ l'$ of a double pawl are adapted to engage, respectively, with one of the said pins k and notches c. A releasing-lever has a long arm n formed at its lower end into a rounded loop n', which is in position to be engaged by one of the pins a on the knob-disk V and a short arm n^2, which bears against the arm l' of the double pawl. When the knob-disk rotates and one of the pins a thereon bears against the rounded loop end n' of the releasing-lever, the said loop end will be swung or moved outward, causing its short arm n^2 to release the double pawl $l\ l'$ and allow the gears b^2 and i to rotate. The action just described takes place when the clockwork is running and when the balance-wheel is released, as hereinafter described. When the particular pin a which forces the rounded loop n' of the releasing-lever outward has passed said loop by a partial rotation of the disk, the loop will fall back in position to be engaged by the next succeeding pin a.

The finger e is on a pivoted head e', which has a long arm e^2 projecting upward and engaging the lower slotted end w of a pivoted stop-lever w'. The upper end of this stop-lever has a lateral projection x, which, when the lever swings one way, is brought into engagement with the balance-wheel O to prevent oscillation of the latter.

The operation is as follows: When the signal-arm is moved by the pneumatic apparatus to a horizontal or "danger" position, the lever-arm L will assume a vertical position and slide past the detent d, which serves as a catch or latch to prevent its return. The lever L will then strike against the pivoted finger e and cause the stop-lever w' to be moved to the broken-line position out of engagement with the escapement balance-wheel O, whereupon the clockwork will start to running. At the expiration of ten minutes, in the present instance, the pin b on the disk b' will strike the upper end of the trip-lever g and cause its lower end to tilt the detent d to the broken-line position, (shown in Fig. 2,) leaving the lever L free. The weighted end Q' of the signal-arm will then draw said arm to the vertical or "safety" position. As the lever L will then no longer bear against the pivoted finger e the latter will resume its normal position and bring the upper end of the stop-lever w' into engagement with the balance-wheel O and thus stop the clockwork.

The number of pins a on the disk V may be varied so as to have the time interval for displaying the "danger" signal either longer or shorter than ten minutes. If the disk had only four pins, the time interval or predetermined period would be fifteen minutes. If it had twelve pins, the interval or period would be five minutes. This and changes in the construction of the stop device, it is obvious, may be made without affecting the scope of my invention.

Having thus described my invention, what I claim is—

In a railway time-signal, the combination of a pivoted signal-arm having a weighted end and provided with a lever-arm; means to move the signal-arm to the "danger" position; clockwork mechanism having a detent to engage said lever-arm and hold the signal in the "danger" position while the clock runs for a prescribed period of time; and a stop device which is held out of action by the lever-arm while it is in the "danger" position but which prevents the clockwork from running when the said lever-arm is released, whereby when the detent releases the lever-arm the weighted end of the signal-arm will move the latter to the "safety" position and the stop device will automatically stop the clockwork from running.

In testimony whereof I affix my signature in the presence of two witnesses.

ANTHONY A. LEHMANN.

Witnesses:

THOS. C. BAILEY,

CHAS. B. MANN, Jr.