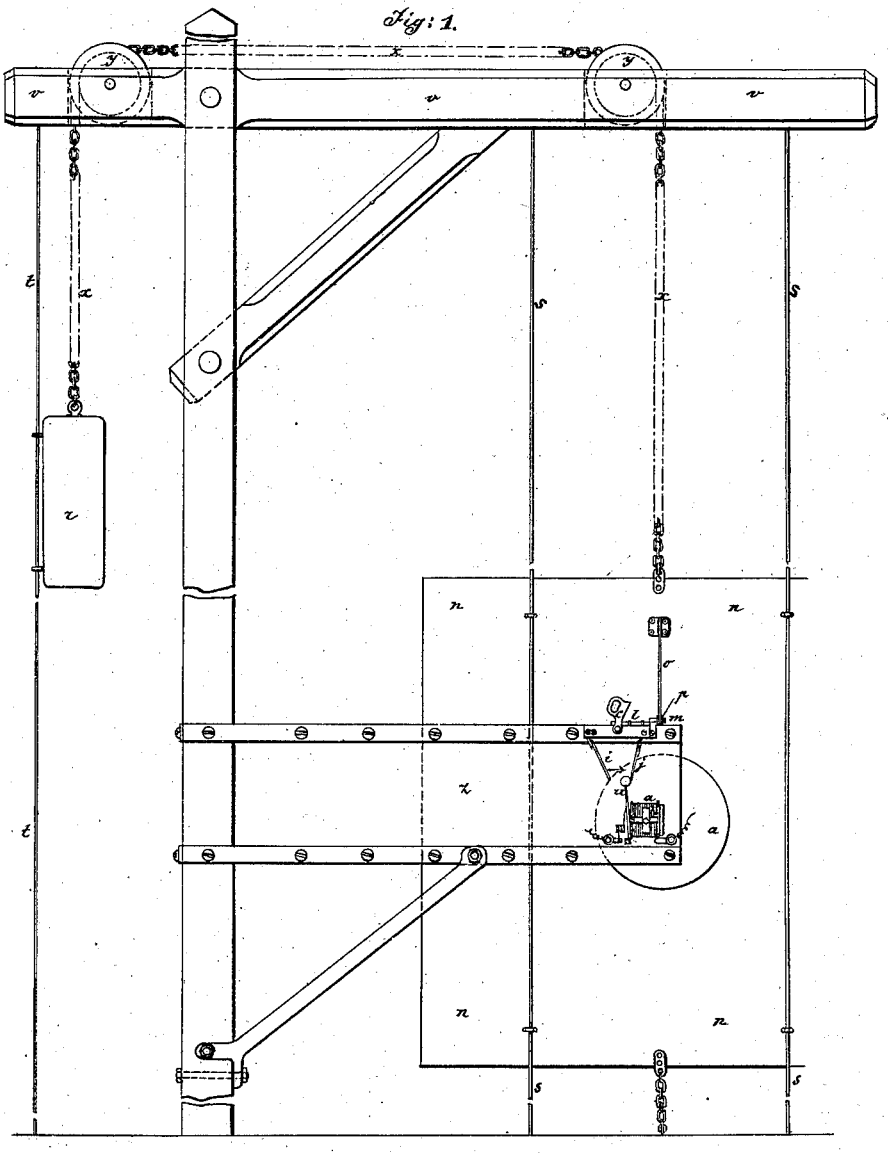
8 Sheets—Sheet 1.

U. JUSTON.

ELECTRICAL SEMAPHORES.

No. 194,777. Patented Sept. 4, 1877.

Fig: 1.



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D. W. Briesen

Inventor:
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by his attorney
A. V. Briesen

8 Sheets—Sheet 2.

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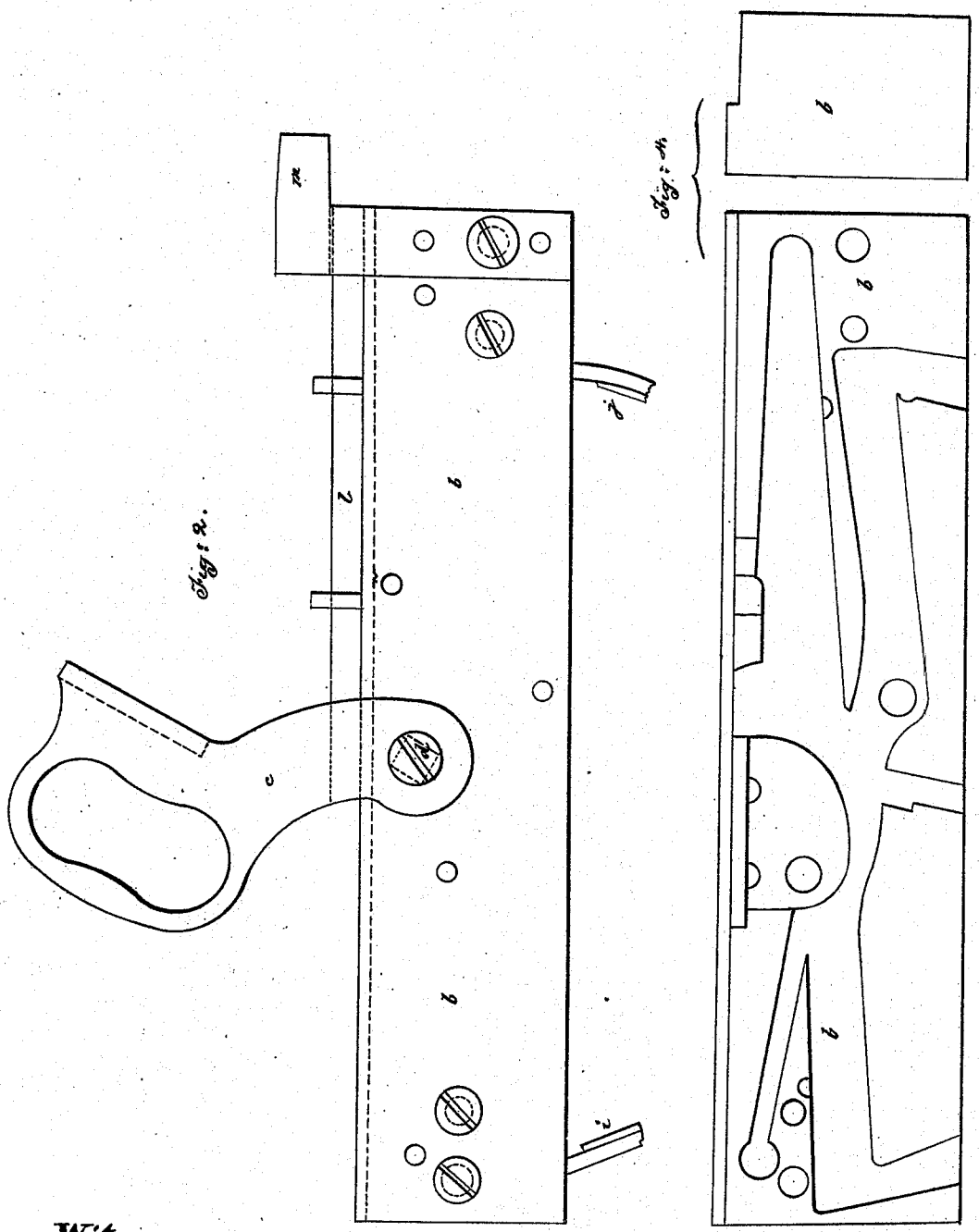
ELECTRICAL SEMAPHORES.

No. 194,777. Patented Sept. 4, 1877.



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8 Sheets—Sheet 3.

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ELECTRICAL SEMAPHORES.

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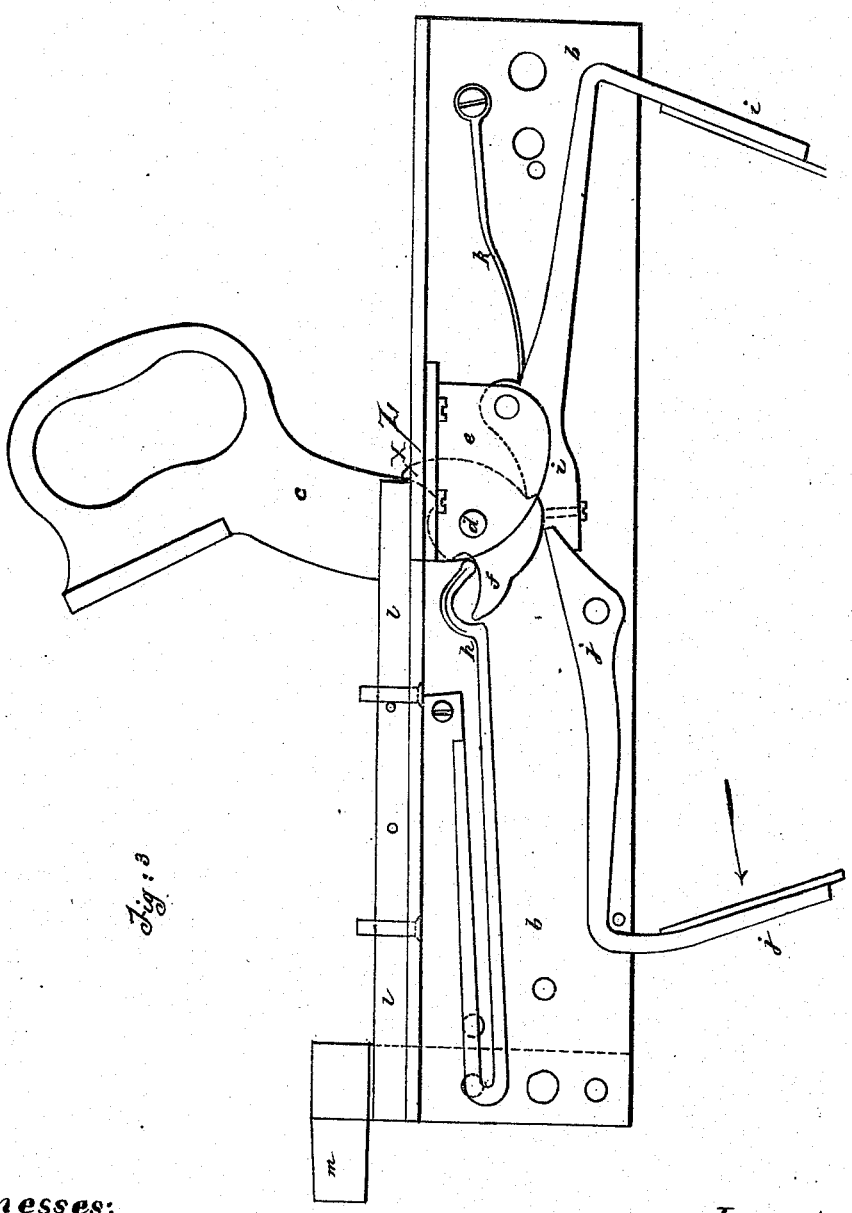

Fig: 3

Witnesses:
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ELECTRICAL SEMAPHORES.

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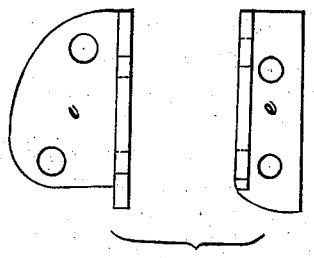

Fig: 6.

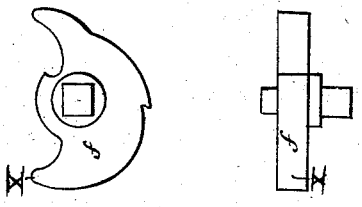

Fig: 7

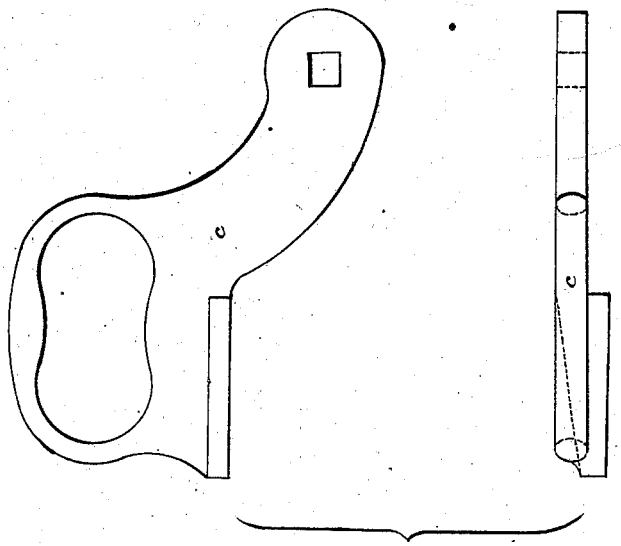

Fig: 5

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ELECTRICAL SEMAPHORES.

No. 194,777. Patented Sept. 4, 1877.

Fig: 8.

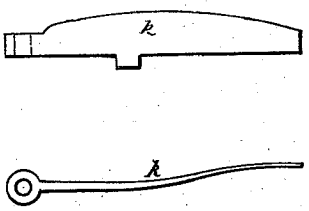


Fig: 9.

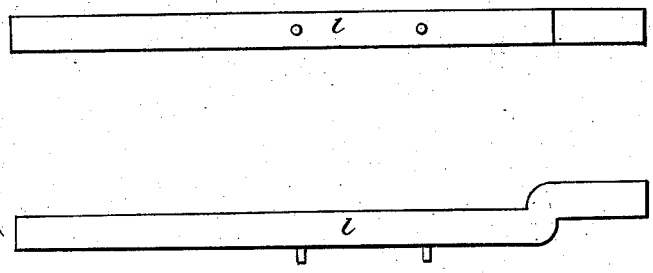
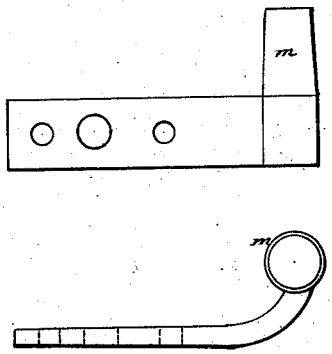


Fig: 10



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ELECTRICAL SEMAPHORES.

No. 194,777. Patented Sept. 4, 1877.

Fig: 11.

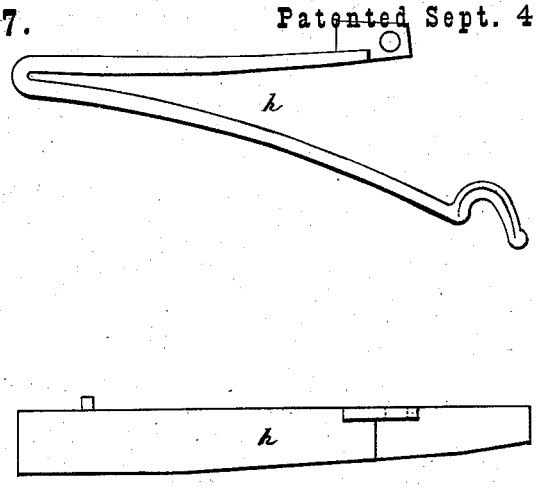
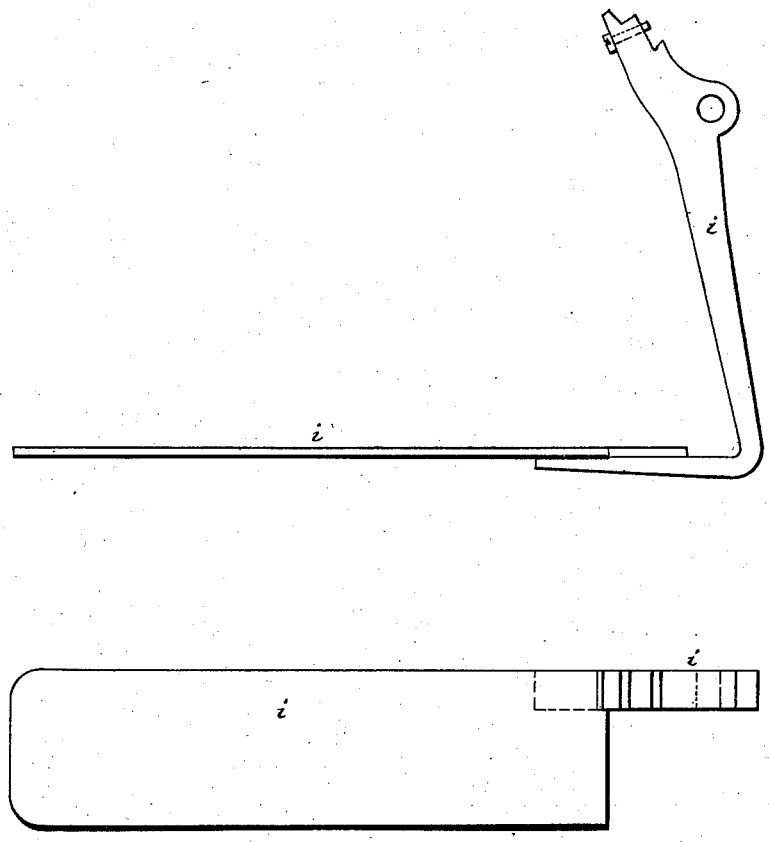


Fig: 12



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ELECTRICAL SEMAPHORES.

No. 194,777. Patented Sept. 4, 1877.

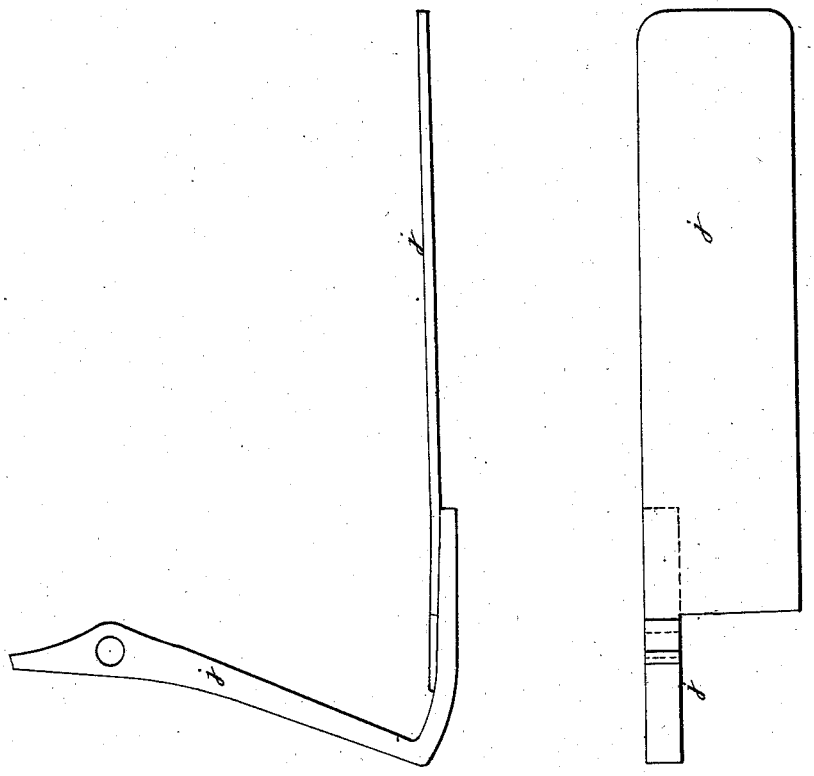

Fig: 12.

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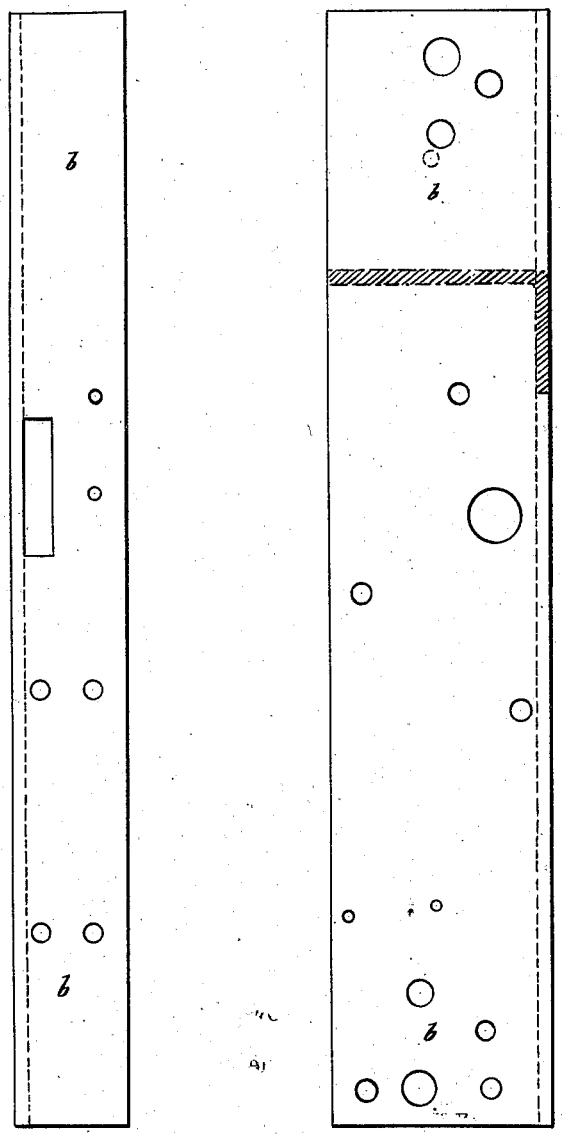
ELECTRICAL SEMAPHORES.

No. 194,777. Patented Sept. 4, 1877.

Fig: 1a.



Witnesses:
John C. Tunbridge
D. V. Briesen

Inventor:
Ursin Juston
by his attorney
D. V. Briesen

UNITED STATES PATENT OFFICE.

URSIN JUSTON, OF PARIS, FRANCE.

IMPROVEMENT IN ELECTRICAL SEMAPHORES.

Specification forming part of Letters Patent No. **194,777**, dated September 4, 1877; application filed June 14, 1877. Patented in France, March 17, 1877, for fifteen years.

To all whom it may concern:

Be it known that I, URSIN JUSTON, of Paris, France, have invented a Telegraphic Disk; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheets of drawings, making a part of the same.

This invention relates to an electric disk signaling apparatus, chiefly intended for use on railways as a means of giving instant warning, and thus preventing collisions in the event of accidents occurring through the negligence of carelessness of the employés in charge of the traffic.

The apparatus consists of three principal parts, viz: first, an electro-magnet; second, mechanism for retaining the disk in the lowered position, and for releasing it therefrom; third, a disk-signal.

In the accompanying drawings, Figure 1 represents an elevation on a small scale of the signaling apparatus, with the disk in the lowered position. Fig. 2 shows a face view of the unlocking mechanism, this and the following figures being drawn to a larger scale. Fig. 3 is a view of the opposite side of the unlocking mechanism to that shown in Fig. 2, the covering-plate being removed in order to show the internal arrangement; and Figs. 4 to 14 show face and edge views of the parts in detail.

The same letters of reference indicate the same parts in all these figures.

The electro-magnet *a* may either actuate the unlocking mechanism or it may be so combined as to unlock the disk directly. The unlocking mechanism shown in Figs. 2 and 3 is mounted on a steel plate, *b*. (Seen in the inside face and end views, Fig. 4, and in outside view and plan in Fig. 14.) This mechanism, when released, liberates the disk from the catch that holds it down, and allows it to be drawn up by a weight into the displayed position. The mechanism resembles a gun-lock, and consists of a cocking or setting handle, *c*, Fig. 5, pivoted at *d* in the plate *b*, and in a plate, *e*, Fig. 6, attached to said plate; a tumbler, *f*, Fig. 7, fixed on the axis *d* of the setting-handle; a spring, *h*, Fig. 11, acting on the tumbler *f*; one or two triggers, *i j*, Figs. 12 and 13, of which one acts as a detent, engaging with the notch of the tumbler *f*; a detent-spring, *k*, Fig. 8; a square bolt or push-rod, *l*, of steel, Fig. 9, fitted in guides, and slid along therein when the tumbler *f* is released from the detent *i*; and, lastly, a lug, *m*, Fig. 10, fixed to plate *b*, by which the disk is retained in the lowered position.

The disk *n*, Fig. 1, is made of sheet metal, about five feet square, and has fixed to it a flat spring, *o*, whose free end has an eye, *p*, which hooks onto the lug *m*. The disk *n* is raised by the action of a weight, *r*, which is connected to the disk by chains *x* passing over pulleys *y*. The disk, as well as the weight, is guided by vertical iron wires *s s t*, attached at their lower ends to a metal plate buried in the ground, and at their upper ends to a beam, *v*, supported on a post erected for the purpose, or on one of the ordinary telegraph-posts. *z*, bracket fixed near the base of the post to carry the unlocking mechanism and the electro-magnet *a*.

The whole being arranged as described, and the disk in the lowered position shown in Fig. 1, the action is as follows: If a current is passed through the electro-magnet *a*, its armature *u* is attracted and presses in the direction indicated by the arrow in Figs. 1 and 2, on the trigger *j*, which acts in turn on the detent of the other trigger *i*, and thus liberates the tumbler.

The spring *h* acting on the tumbler oscillates it, and the nose X of the tumbler, which passes through the mortise Z, strkes the end of the bolt *l* and drives it forward, so as to push the eye *p* off the lug *m*, whereupon the disk *n* is liberated and drawn up to the beam *v* by the weight *r*.

The electro-magnet armature may be made to act directly upon trigger *i* instead of through the other trigger *j*.

The disk is set in the lowered position by the attendant in charge pulling it down by means of the chain attached to its lower edge, and hooking eye *p* on the lug *m*, the handle *c* having been first raised.

One of these disks should be placed at each curve, at such intervals as to allow a clear view of the line from one disk to the other.

The disk remains under the control of the officials at the departure and arrival stations,

whatever may be the distance, provided the electric circuit is unbroken. A battery and circuit are necessary to simultaneously actuate all the apparatus at any distance, which enables the station officials to constantly control the movements of all the trains, and to communicate therewith by means of a portable telegraphic apparatus, the locality of which will be indicated at the disk.

Working of the apparatus: There must be a voltaic pile and a telegraphic wire in order to move simultaneously all the apparatus, whatever may be the distance, permitting thus the station-master to dispose constantly of all the trains in motion, and to communicate with them by means of a movable telegraphic apparatus, the place of which will be indicated on the disk.

I claim—

In a railroad signaling apparatus, the combination of the frame *v* with the disk *n*, that is suspended by ropes *x* over pulleys *y*, so as to be capable of up-and-down motion, and with counter-weight *r*, locking-catch *m*, and electric unlocking-armature *u*, all arranged so that the disk *n* may be locked in its lowermost position, and unlocked by an electric current, substantially as and for the purpose herein shown and described.

URSIN JUSTON.

Witnesses:
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