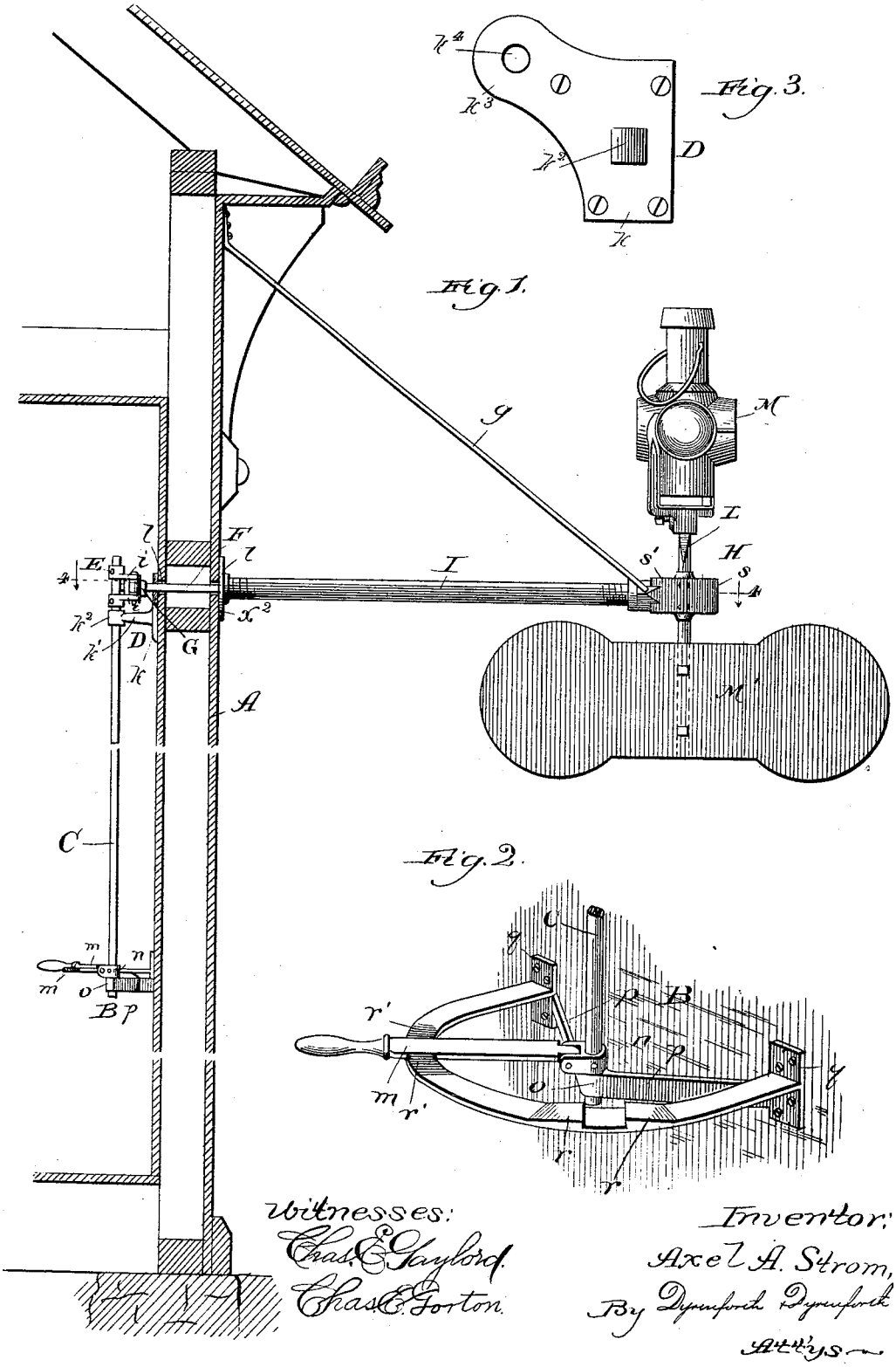
(No Model.)

2 Sheets—Sheet 1.

A. A. STROM.

TRAIN ORDER SIGNAL.

No. 385,883. Patented July 10, 1888.



Witnesses:
Chas. E. Gaylord
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Inventor:
Axel A. Strom,
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Att'ys.

(No Model.)

2 Sheets—Sheet 2.

A. A. STROM.

TRAIN ORDER SIGNAL.

No. 385,883. Patented July 10, 1888.

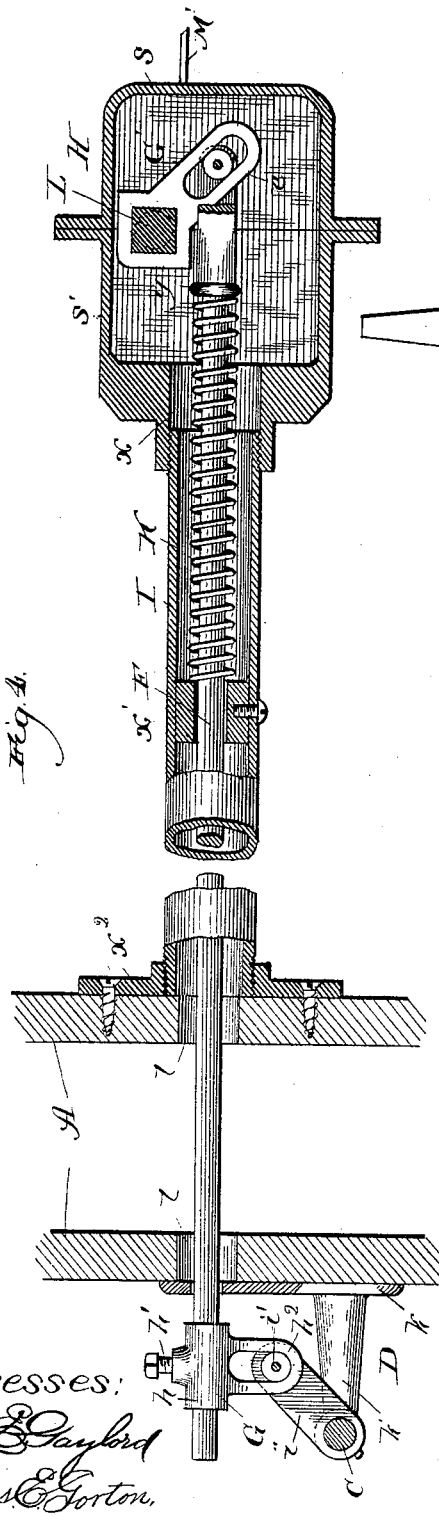

Fig. 4.

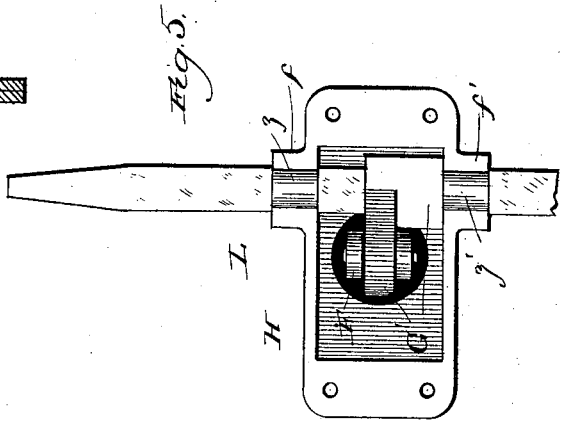

Fig. 5.

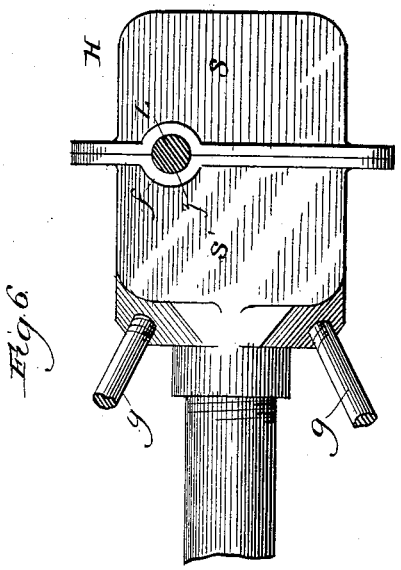

Fig. 6.

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UNITED STATES PATENT OFFICE.

AXEL A. STROM, OF AUSTIN, ILLINOIS.

TRAIN-ORDER SIGNAL.

SPECIFICATION forming part of Letters Patent No. 385,883, dated July 10, 1888.

Application filed February 17, 1888. Serial No. 264,412. (No model.)

To all whom it may concern:

Be it known that I, AXEL A. STROM, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Train-Order Signals, of which the following is a specification.

My invention relates to an improvement in the class of apparatus quite commonly employed at railway-stations to signal trains from within doors, and comprising, generically stated, a suspended semaphore operated by a lever from within the station-house or suitable inclosure, and with which lever the semaphore is connected by appropriate mechanism to effect turning of the semaphore by manipulating the lever.

The object of my improvement is to provide a simple and durable mechanism, thoroughly reliable in its operation, to work the semaphore; and it consists in the general construction of my improved device, and also in details of construction and combinations of parts.

In the drawings, Figure 1 shows my improved device in operative position. Fig. 2 is a perspective view, enlarged, of my improved lever and bracket detail; Fig. 3, a view in elevation, enlarged, of the adjusting-bracket detail for the horizontal signal-operating shaft; Fig. 4, a broken section taken on the line 4 4 of Fig. 1, viewed in the direction of the arrows and enlarged; Fig. 5, an end view of the box with one of the sections removed to show in elevation the mechanism connected immediately with the semaphore to operate it and contained within the box; and Fig. 6, a plan view of the closed box referred to in the description of Fig. 5, having indicated the brace-rods connecting it with the outer wall of the station-house.

A denotes the wall of the house from which the signal is operated. Within a properly-accessible distance from the floor in the house a bracket, B, is secured to extend horizontally from the wall, and comprises, preferably, a segment or approximate segment, having a flat upper surface provided with a cam-lug, *r*, or two pairs of cam-lugs, as shown, affording recesses, transverse ends *q*, at which the bracket is secured to the wall, and arms *p*, converging from the ends *q* toward the center of the segmental portion, where they meet at a vertical socket, *o*.

C is a vertical spindle, journaled at its lower end in the socket *o*, above which it is surrounded by a block or casting, *n*, recessed, as shown, to receive the pivotal end of a lever, *m*, which extends therefrom over the bracket B. Above the bracket B, at the height from which it is desired to suspend the signaling device, a hole, *l*, is formed through the wall A.

D is a bracket comprising a plate, *k*, having an arm, *k'*, extending from one surface, and provided at its extremity with a socket, k^2, and having an extension from one corner or ear, k^3, provided with a circular aperture, k^4, Fig. 3. The bracket D is secured to the wall adjacent to the hole *l* therein, and in a position to bring the aperture k^4 coincident with the hole, the purpose of having the bracket D constructed as described being hereinafter explained.

The spindle C extends, toward its upper end, through the socket k^2, which is in line with it, and carries above the socket a crank, E, comprising two arms, *i*, extending laterally from the spindle, and connected toward their free extremities by an interposed roller or thimble, *i'*.

F is a non-rotating horizontal longitudinally-reciprocating shaft or connecting-rod for operating the signal. It extends through the hole *l* in the wall and aperture k^4 in the bracket D, which latter forms its bearing for one end. The end of the connecting-rod F, which projects beyond the inner side of the wall A, carries an adjustable yoke, G, comprising a sleeve, *h*, to fit upon the connecting-rod, and through one side of which a set-screw, *h'*, extends to secure the yoke adjustably in place, and from the opposite side of which extends the yoke proper, h^2. The yoke G is connected with the vertical spindle C by the thimble *i'*, which passes through it, and is thus embraced between the arms *i* of the crank E.

From the outer side of the wall A the connecting-rod F extends horizontally as far as required to bring the signaling device, supported toward its outer end, in the proper position to be readily visible from railroad-trains, (moving on a track or tracks on the outer side of the wall A,) and at the outer ex-

tremity of the connecting-rod is a housing or box, H, of rectangular or substantially rectangular shape, as shown, and formed, preferably, in two parts, *s* and *s'*, flanged at the edges, which are adjusted together and secured by bolts, as illustrated. A sleeve, I, is screwed at one end into the box, at the end of the latter facing the wall A, and incases the connecting-rod F, guide-bearings *x* and *x'* being provided for the connecting-rod within the sleeve, the opposite end of which is flanged, as shown at x^2, where it abuts against and is secured to the outer side of the wall A. A spiral spring, K, surrounds the connecting-rod F, partly within the sleeve and partly within the housing, being confined between the bearing *x'* in the former and a collar, *y*, on the connecting-rod in the latter. Brace-rods *g* extend from the housing to the wall A, and form an auxiliary support for the device.

L is a vertical spindle, mainly rectangular, by preference, in cross-section, extending through the housing H, near one side of the same, as shown, and projecting beyond the bottom and top surfaces thereof, being tapered toward its upper extremity, where it carries a signal-lamp, M, for night-signaling, and cylindrical, as at *z* and *z'*, where it fits in bearings *f* and *f'*, projecting, respectively, from the upper and lower surfaces of the housing, the cylindrical formation producing shoulders, as shown, to sustain the spindle against longitudinal withdrawal. The lower end of the spindle L, where it projects beyond the housing, carries a target, M', for use in day-signaling.

The purpose of forming the housing in two parts, *s* and *s'*, is, owing to the mainly rectangular shape of the spindle L, to permit the adjustment of the spindle into its bearings in one part, after which the other part is secured to the first in the manner described. Of course, if the spindle were of a different form in cross-section, whereby it could be readily inserted lengthwise into place and secured, as by a set-screw, the housing could be made in one piece.

Within the housing is a yoke, G', extending normally in an oblique direction from a rectangular portion of the spindle L, and engaged by a roller or thimble, *e*, between the forks of the outer end of the connecting-rod F, which embraces the yoke.

In adjusting the apparatus in its operative position after forming the hole *l* through the wall A the bracket D is adjusted to bring the aperture k^4 into proper coincidence with the hole, and as the parts *k* and k^3 of the bracket are integral it is an easy matter to bring the aperture k^4 into line with the connecting-rod F, whereby the required extension of the latter in a true horizontal line is assured, and the aperture k^4 affords a durable bearing for the connecting-rod, which the hole *l*, being in wood, might not. It will also be seen that all the parts of the mechanism are incased, and thus protected from dirt, wet, frost, snow, and the like.

The adjustability of the yoke G renders it possible to bring it into desired proximity to the inner surface of the wall A, however far the rod F may project beyond the same, the difference in the thickness of different walls to which my improved apparatus may be applied producing difference in the extent of projection beyond them of the inner end of the connecting-rod.

To operate the apparatus to turn the semaphore in one direction, (that is, from the normal "danger" position, at which it is shown in Fig. 1, and for which the lever *m* is shown to extend in Fig. 2,) the proceeding is as follows: The lever *m* is turned in the bracket B beyond the cam or cams *r* thereon at the right, where the lever secures the signal at "safety," thereby, through the media of the vertical spindle C, crank E, and yokes G and G', drawing the rod F in a straight line into the house and rotating the spindle L to turn the semaphore to display the "safety" signal. The drawing out of the connecting-rod F compresses the spring K, the resilient force of which is prevented from acting to return the rod F and semaphore automatically to their normal positions by the stop afforded to the lever *m* by means of the said cam or cams *r*. To permit the resilient force of the spring K to act, the lever *m* is raised on its pivot to free it from the retaining effect of the said cam or cams *r*, when the parts automatically assume their normal positions with the semaphore at "danger," and the lever is there allowed to engage with the adjacent cam or cams *r'*, if provided, as by preference is the case. When a spring, K, is dispensed with, as it may be, whereby the movement of the semaphore in each direction is positive, and neither movement automatic, I prefer to provide the cams *r* on the bracket B, as shown, to form a recess for holding the lever at the end of the "safety" throw of the semaphore, and cams *r'* at the opposite throw thereof.

The term "bracket" applied to the device B is intended to include a table for the same purpose.

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

1. In a train-order-signaling apparatus, the combination of a non-rotating rod, F, supported in horizontal position and longitudinally reciprocating, a signaling device connected with one end of the rod and turned from its normal position by actuating the rod in one direction, and a stationary bracket, D, having an extension, k^3, provided with an aperture, k^4, forming the bearing for the opposite end of the rod, substantially as described.

2. In a train-order-signaling apparatus, the combination of a vertically-supported rotatory spindle, L, carrying a signaling device to rotate with it, a yoke, G', on the said spindle, a horizontal reciprocating non-rotating rod, F, connected at one end with the said yoke and supported in rigid bearings, a yoke, G, connected with the opposite end of the rod, a crank, E,

engaging with the yoke G, and a vertical rotatory spindle, C, carrying the crank E, whereby turning the spindle C moves the rod in a straight line and turns the signaling device, substantially as described.

3. In a train-order-signaling device, the combination of a non-rotating rod, F, supported in horizontal position and longitudinally reciprocating in rigid bearings, a vertical rotatory spindle, L, supported near one end of the rod and carrying a yoke, G′, engaged by the rod, and a signaling device, a spring, K, compressed by moving the rod in one direction and operating by its resilience to return the rod to the position from which it is moved, a yoke, G, on the opposite end of the rod, and a vertical rotatory spindle, C, carrying at its upper end a crank, E, engaging with the yoke G, and operating, when rotated in one direction, to move the rod F in a straight line against the resistance of the spring K, and thereby turn the signaling device, substantially as described.

4. In a train order-signaling device, the combination of a non-rotating rod, F, supported in horizontal position and longitudinally reciprocating, a vertical rotatory spindle, L, supported near one end of the rod and carrying a yoke, G′, engaged by the rod, and a signaling device, a spring, K, compressed by moving the rod in one direction and operating by its resilience to return the rod to the position from which it is moved, a yoke, G, adjustable on the opposite end of the rod, and a vertical rotatory spindle, C, carrying at its upper end a crank, E, engaging with the yoke G, and operating, when rotated in one direction, to move the rod F in a straight line against the resistance of the spring K, and thereby turn the signaling device, substantially as described.

5. In a train-order-signaling apparatus, the combination of a vertically-supported rotatory spindle, L, carrying a signaling device to rotate with it, a yoke, G′, on the said spindle, a housing, H, for the yoke, a horizontal non-rotating longitudinally-reciprocating rod, F, extending at one end into the housing H, and connected therein with the said yoke and supported in rigid bearings, a spring, K, upon the rod, a sleeve, I, inclosing the rod and spring, a yoke, G, connected with the opposite end of the rod, a crank, E, engaging with the yoke G, and a vertical rotatory spindle, C, carrying the crank E, whereby turning the spindle C moves the rod in a straight line to turn the signaling device and compresses the spring, the resilient force of which when released returns the said rod and signaling device to the positions from which they were moved, substantially as described.

6. A train-order-signaling apparatus comprising, in combination with a wall, A, having a hole, *l*, formed through it, a horizontal non-rotating rod, F, extending at opposite ends beyond the opposite sides of the wall through the hole *l*, a housing, H, supported from the wall A, and into which the outer end of the rod extends, and carrying a vertical rotatory spindle, L, having upon it to rotate with it a signaling device, a yoke, G′, on the spindle L in the housing and engaging with the rod F, a spring, K, on the rod, a sleeve, I, inclosing the rod and spring between the housing and wall and containing rigid bearings *x* and *x′*, a bracket, D, having a bearing, *k′*, for the rod near its inner end carrying a yoke, G, a vertical rotatory spindle, C, on the inner side of the wall, a bracket, B, supporting the said spindle, a crank, E, on the spindle C, engaging with the yoke G, and a pivotal lever, *m*, on the said spindle, substantially as described.

AXEL A. STROM.

In presence of—
J. W. DYRENFORTH,
CHAS. E. GAYLORD.