

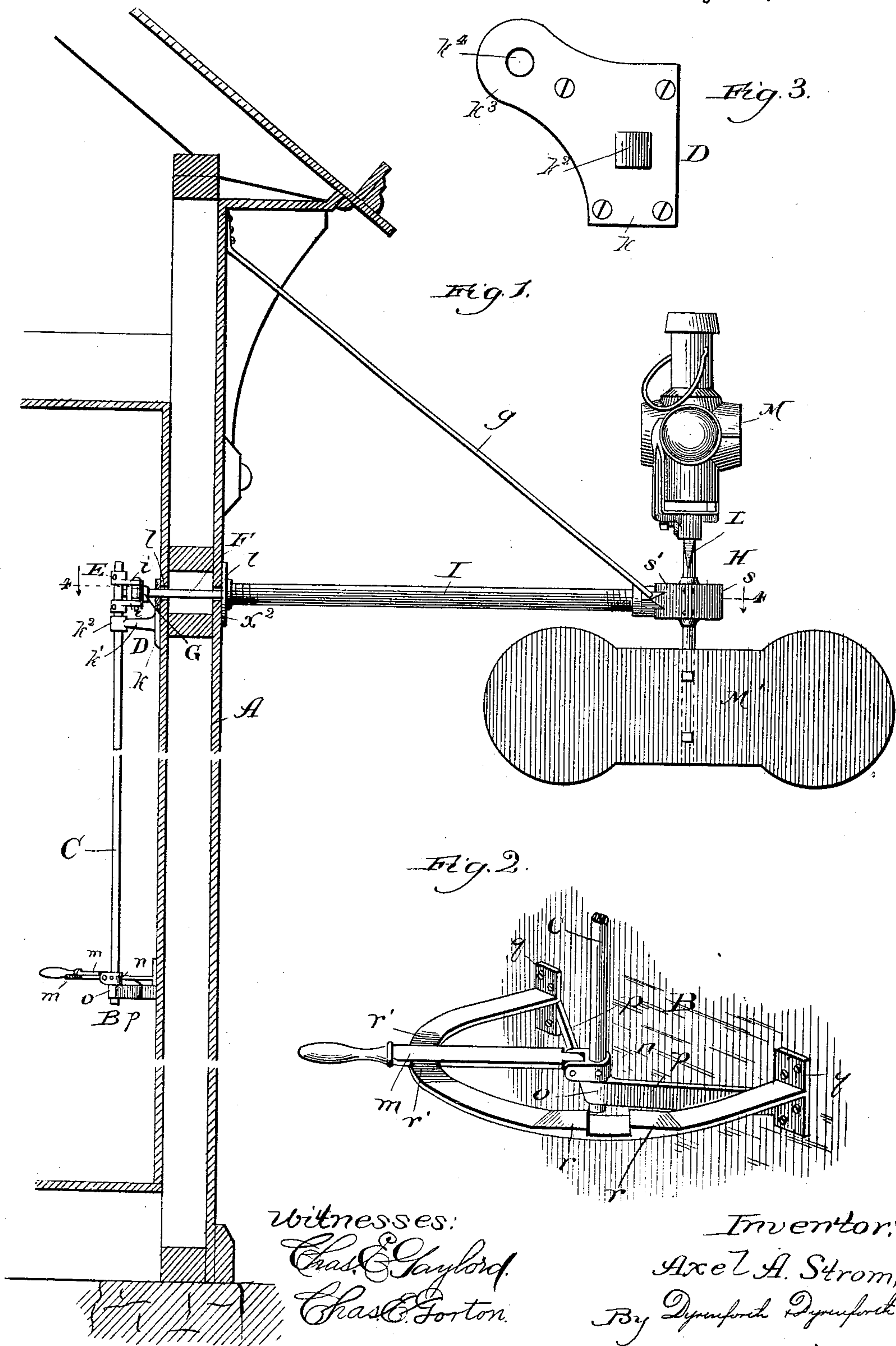
(No Model.)

2 Sheets—Sheet 1.

A. A. STROM.
TRAIN ORDER SIGNAL.

No. 385,883.

Patented July 10, 1888.



Witnesses:
Chas. E. Gaylord.
Chas. E. Gorton.

Inventor:
Axel A. Strom,
By *Dymforth Dymforth*
Att'y.

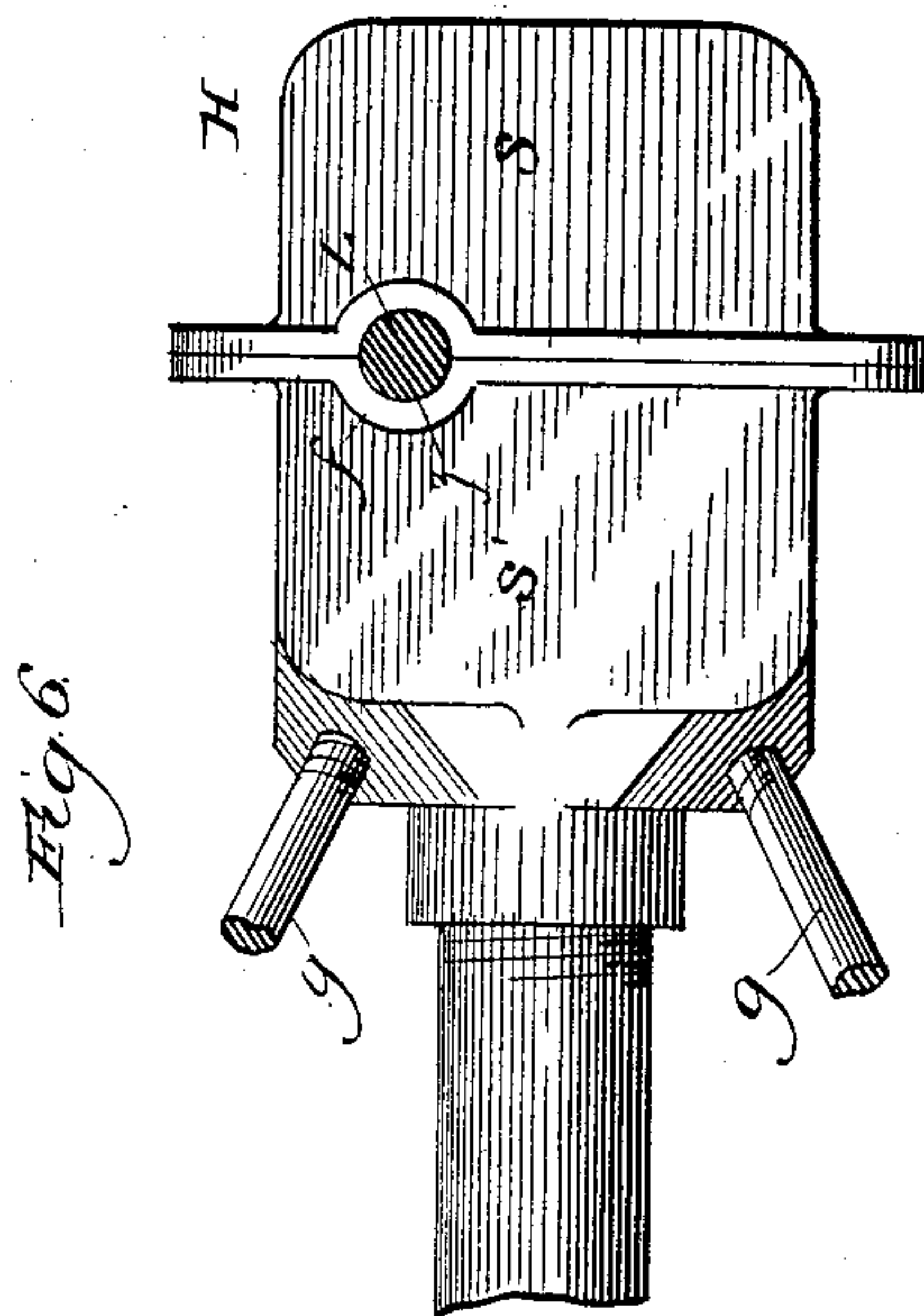
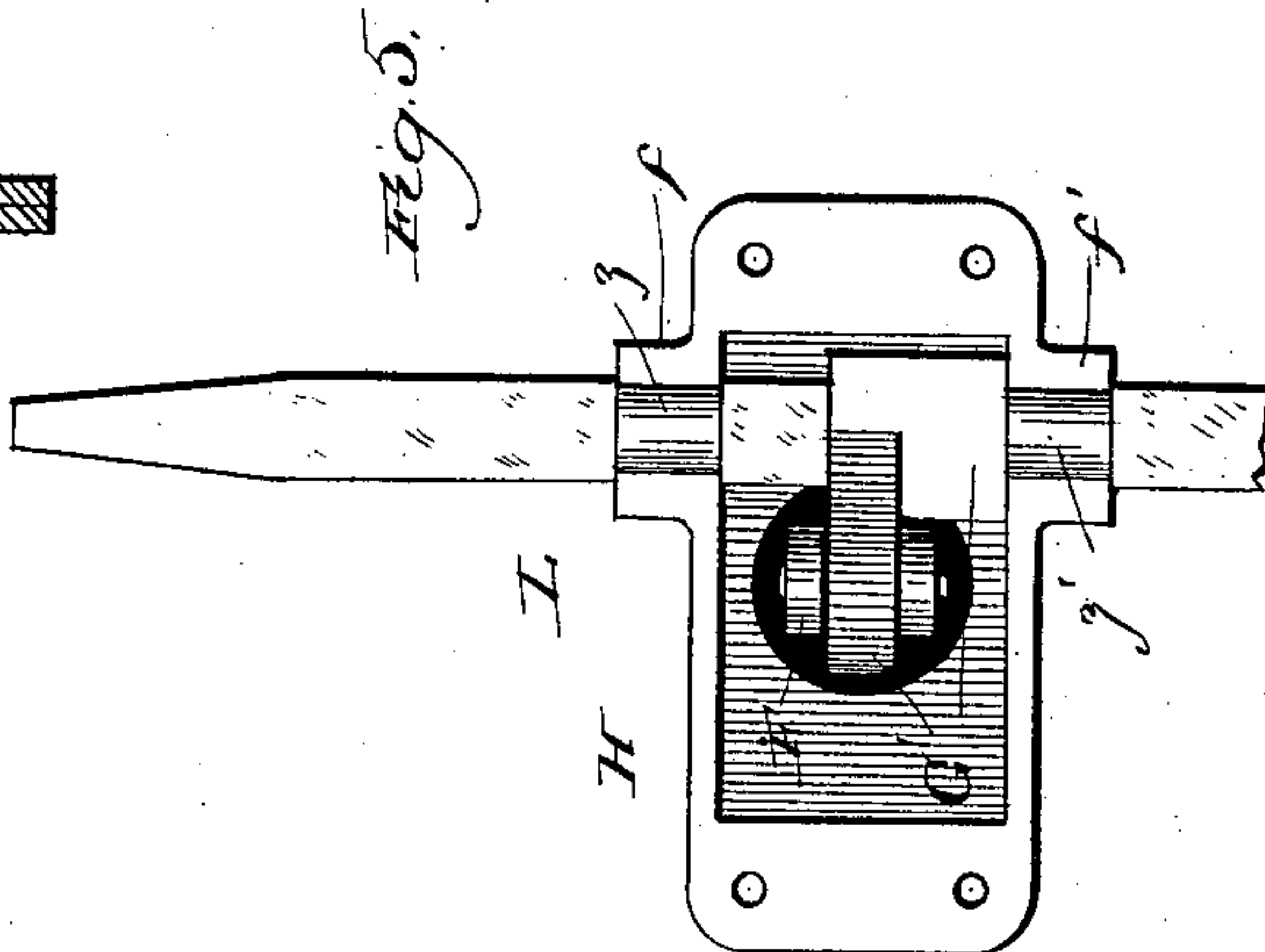
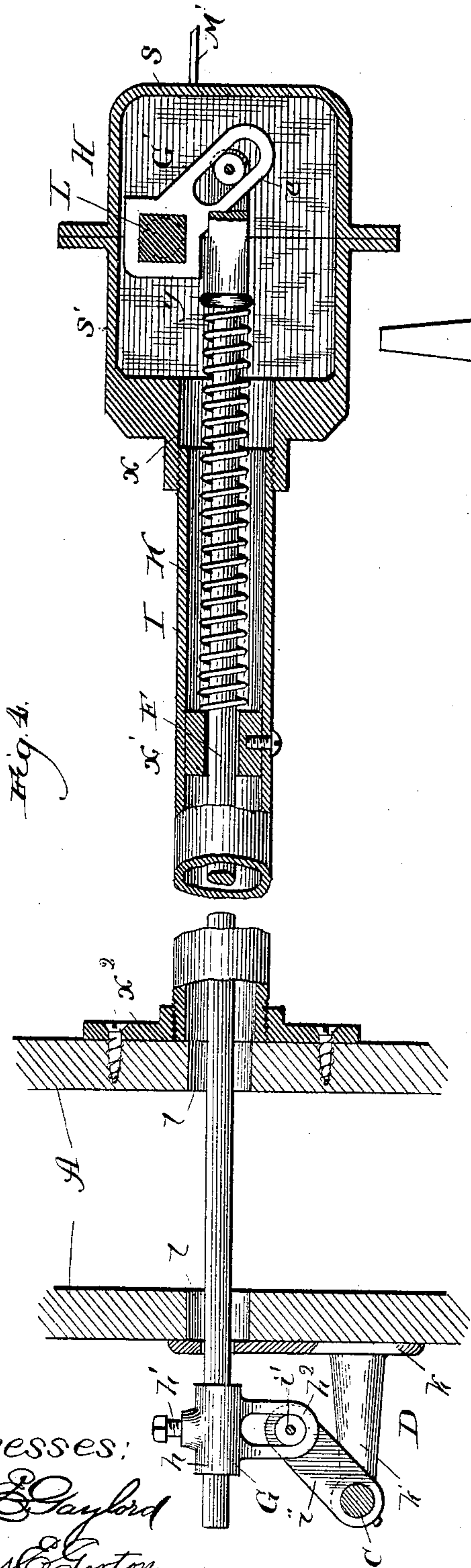
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2 Sheets—Sheet 2.

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Inventor,
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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''*, and having an extension from one corner or ear, *k'''*, provided with a circular aperture, *k''''*, 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''''* 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''*, 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 longitudinaly-reciprocating shaft or connecting-rod for operating the signal. It extends through the hole *l* in the wall and aperture *k''''* 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''*. 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 rectan-
 gular shape, as shown, and formed, preferably,
 in two parts, s and s' , flanged at the edges,
 5 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 lat-
 ter facing the wall A, and incases the connect-
 ing-rod F, guide-bearings x and x' being pro-
 10 vided 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
 15 within the sleeve and partly within the hous-
 ing, 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 aux-
 20 iliary 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
 25 bottom and top surfaces thereof, being tapered
 toward its upper extremity, where it carries a
 signal-lamp, M, for night-signaling, and cylin-
 drical, as at z and z' , where it fits in bearings
 f and f' , projecting, respectively, from the up-
 30 per and lower surfaces of the housing, the cy-
 lindrical formation producing shoulders, as
 shown, to sustain the spindle against longi-
 tudinal withdrawal. The lower end of the
 spindle L, where it projects beyond the hous-
 35 ing, carries a target, M', for use in day sig-
 naling.

The purpose of forming the housing in two
 parts, s and s' , is, owing to the mainly rectan-
 gular shape of the spindle L, to permit the ad-
 40 justment 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
 45 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 rect-
 angular portion of the spindle L, and engaged
 50 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
 55 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
 60 F, whereby the required extension of the lat-
 ter 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
 65 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 70
 the rod F may project beyond the same, the
 difference in the thickness of different walls to
 which my improved apparatus may be ap-
 plied producing difference in the extent of
 projection beyond them of the inner end of the 75
 connecting-rod.

To operate the apparatus to turn the sema-
 phore in one direction, (that is, from the nor-
 mal "danger" position, at which it is shown
 in Fig. 1, and for which the lever m is shown 80
 to extend in Fig. 2,) the proceeding is as fol-
 lows: 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 spin- 85
 dle 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 90
 spring K, the resilient force of which is pre-
 vented from acting to return the rod F and
 semaphore automatically to their normal posi-
 tions by the stop afforded to the lever m by
 means of the said cam or cams r . To permit 95
 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 "dan- 100
 ger," 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 direc- 105
 tion is positive, and neither movement auto-
 matic, I prefer to provide the cams r on the
 bracket B, as shown, to form a recess for hold-
 ing the lever at the end of the "safety" throw
 of the semaphore, and cams r' at the opposite 110
 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 115
 by Letters Patent, is—

1. In a train-order-signaling apparatus, the
 combination of a non-rotating rod, F, sup-
 ported in horizontal position and longitudi- 120
 nally reciprocating, a signaling device con-
 nected 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 ap-
 125erture, 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 hori- 130
 zontal reciprocating non-rotating rod, F, con-
 nected at one end with the said yoke and sup-
 ported 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.