

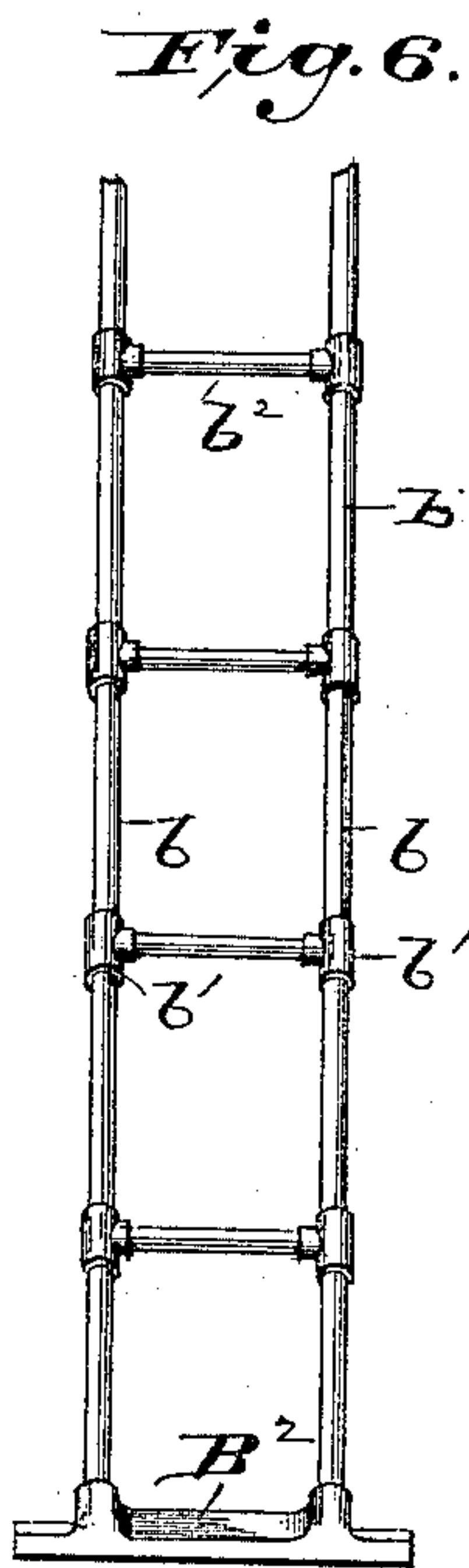
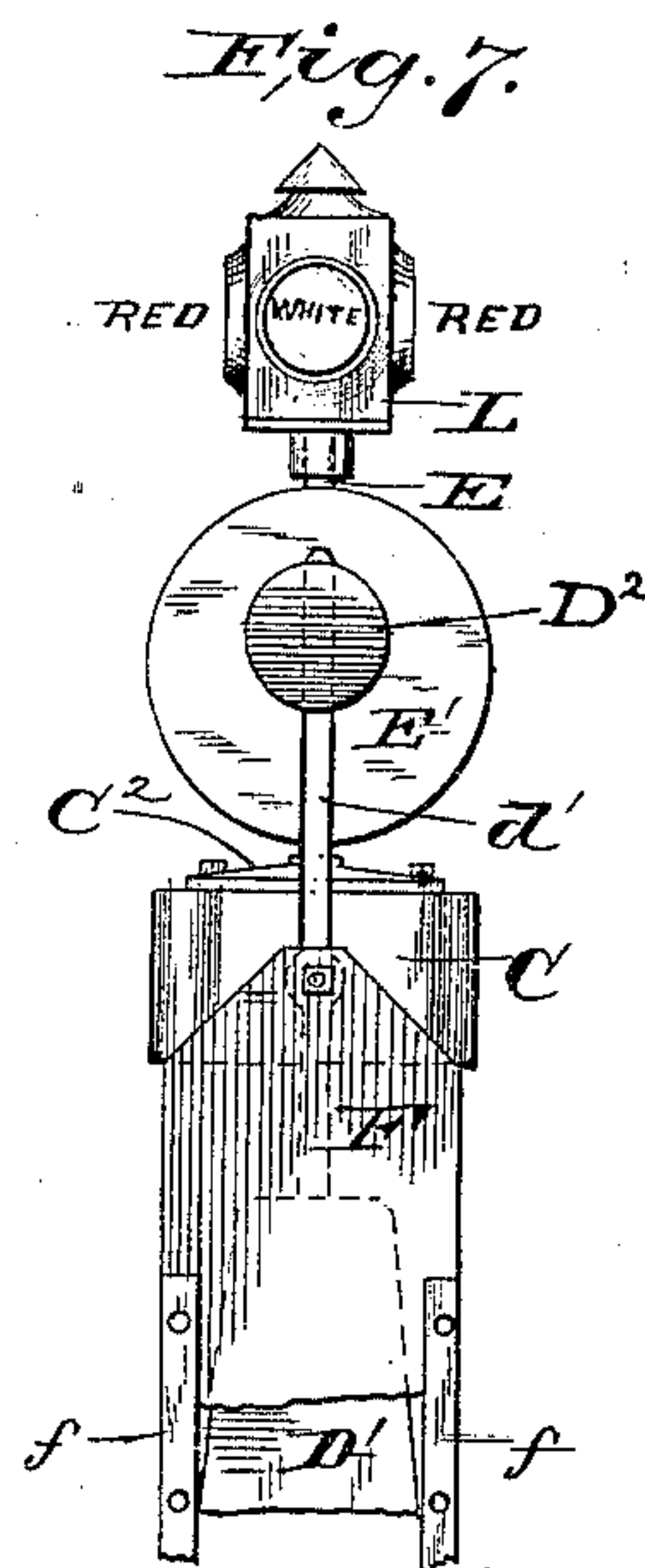
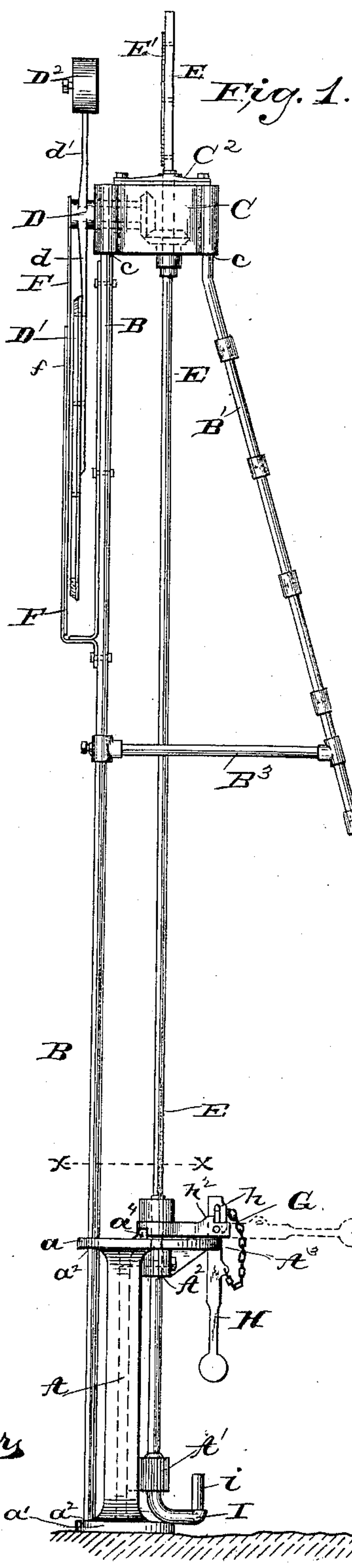
(No Model.)

2 Sheets—Sheet 1.

K. H. WADE.  
SWITCH SIGNAL.

No. 401,869.

Patented Apr. 23, 1889.



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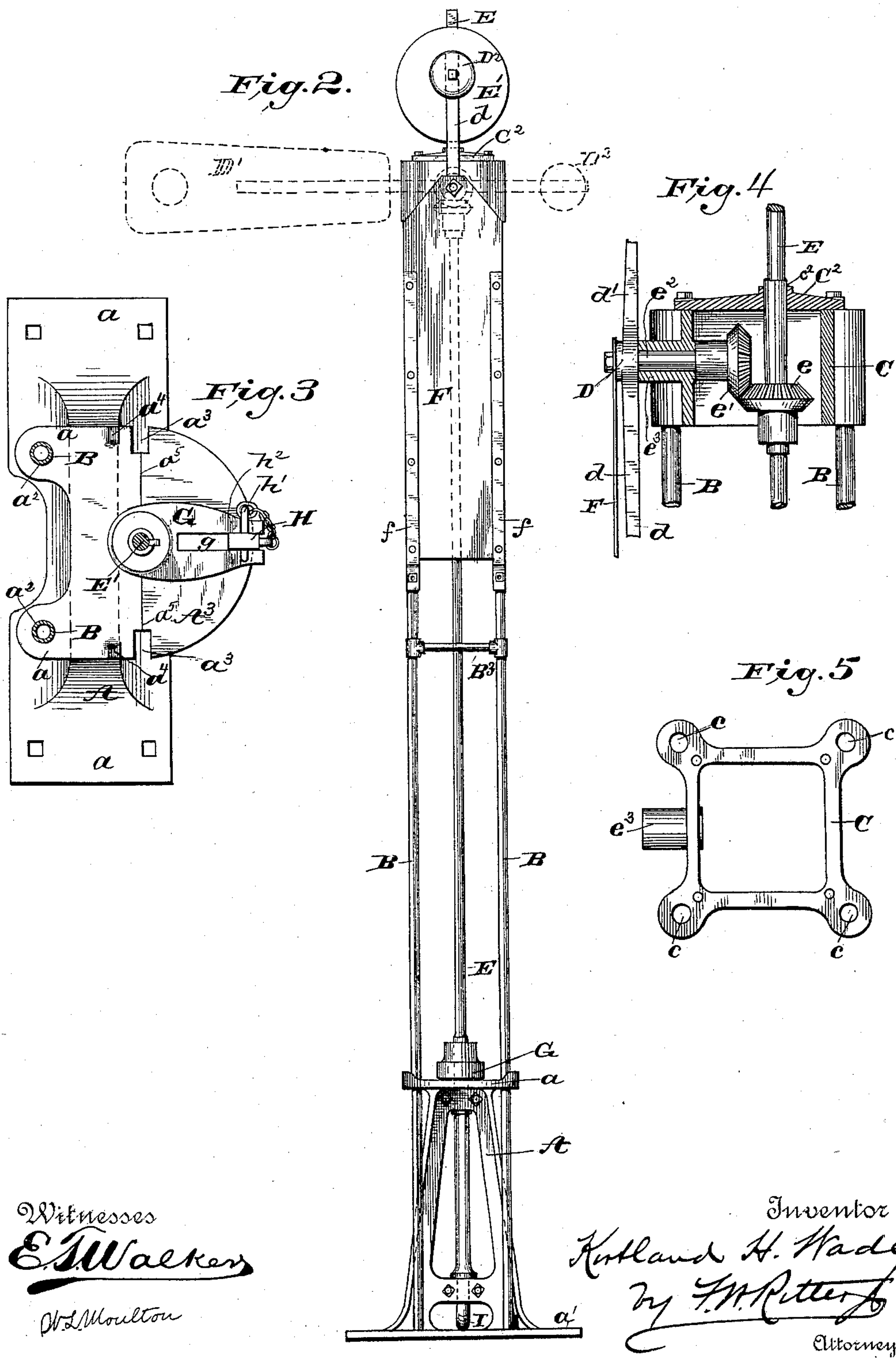
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# UNITED STATES PATENT OFFICE.

KIRTLAND H. WADE, OF CHICAGO, ILLINOIS.

## SWITCH-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 401,869, dated April 23, 1889.

Application filed May 10, 1888. Serial No. 273,417. (No model.)

### *To all whom it may concern:*

Be it known that I, KIRTLAND H. WADE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Semaphore Switch-Stands; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the class of semaphore switch-stands in which the crank-shaft for operating the switch is so connected with the semaphore-arm and target that in shifting the switch to close the main line against traffic the target will be turned from the view of the engineer and the semaphore-arm thrown into view. Its object is to furnish a semaphore switch-stand which will be simple in construction and applicable to either right or left hand switches, and also one in which the signal-signs will be changed simultaneously with the switch to indicate the position of the switch.

It consists of certain novel features of construction and combinations of parts, which will be more fully set forth in the ensuing specification and distinctly pointed out in the claims at the close thereof.

In the accompanying drawings, Figure 1 represents a side elevation of a semaphore switch-stand embodying my improvements. Fig. 2 is an elevation of the same looking in the direction of the track. Fig. 3 is a horizontal section taken on the line  $xx$  of Fig. 1. Fig. 4 is a vertical section of the upper part of the stand, showing the gear-wheels for operating the semaphore-arm. Fig. 5 is a plan of the upper portion of the stand with the top plate removed. Fig. 6 shows a portion of the ladder. Fig. 7 is a detail view of the upper portion of the stand, showing the night-signals in elevation.

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

The semaphore and switch-stand embodies a stout base, A, and a skeleton column rising therefrom, consisting of vertical and inclined uprights B B'. The base rests upon a broad foot-piece,  $a'$ , and terminates at top in a flanged cap,  $a$ , openings  $a^2$   $a^2$  being formed in said cap and foot-piece for the reception

of the lower ends of the vertical uprights B, the lower ends of the inclined uprights B' being seated, preferably, in sockets formed in a separate foot or anchor, B<sup>2</sup>. Supported at the top of the column is a housing, C, approximately square in horizontal cross-section, and provided at the corners with sockets  $c$   $c$ , in which the upper ends of said uprights are seated. These uprights are braced together at suitable intervals by tie-rods B<sup>3</sup>, as shown.

Mounted to turn in bearings secured to or forming part of the base and housing is a vertical shaft, E, provided at its lower end with a crank, I, and wrist-pin  $i$ , and near its top, within the housing, with a fixed bevel-gear,  $e$ , meshing with a similar gear,  $e'$ , keyed to a horizontal shaft,  $e^2$ , mounted to turn in a long sleeve or bearing,  $e^3$ , formed in or secured to one of the sides of the housing C. Secured to the vertical uprights B, below the housing C, is a U-shaped screen or shield, F, the outer leg,  $f$ , of which is extended upward and connected to the outer end of the horizontal shaft  $e^2$ , as shown in Figs. 1, 2, and 4.

The top of the housing C is covered by a plate, C<sup>2</sup>, provided centrally with a bearing,  $c^2$ , within which the upwardly-extending end of the shaft E is journaled, said shaft being provided at points just above the bearings A' and A<sup>2</sup> of the base with fixed collars designed to rest upon said bearings to support the weight of the shaft.

A semicircular notched plate, A<sup>3</sup>, is bolted tightly against the straight edge  $a^5$  of the cap  $a$  of the base, the radial center of which is coincident with the axis of the shaft E, the notches  $a^3$  thereof being disposed at quarter-circles, as shown.

Keyed to the shaft E at a point just above the cap  $a$  of the base is an arm, G, of a length to slightly overhang the outer edge of plate A<sup>3</sup>, the outer end of this arm being provided with a slot,  $g$ , within which is pivoted a lever, H, weighted at its outer end and provided at its inner end with a keyway,  $h$ , for the reception of a locking-key,  $h'$ . The relation of the notches  $a^3$  in plate A<sup>3</sup> and the pivot of lever H is such that when the latter engages one or the other of the notches it will assume a vertical position, as shown in Fig. 1, and the key  $h'$ , when inserted in the keyway  $h$ , will abut against vertical shoulders formed



by bosses  $h^2$  on the opposite sides of slot  $g$  in plate  $G$ , thus precluding the possibility of disengaging the lever from the notch until the key  $h'$  is withdrawn.

5 Keyed to the horizontal shaft  $e^2$ , between the housing and the outer leg of the screen  $F$ , is a hub,  $D$ , from opposite sides of which project arms  $d d'$ , the one  $d$  carrying a vane or semaphore-arm,  $D'$ , and the other carrying  
10 an adjustable counter-balance,  $D^2$ . These arms normally occupy a vertical position, with the vane or semaphore-arm  $D'$  suspended between the legs of the screen  $F$ , and thereby concealed from view, and the counter-weight  
15  $D^2$  opposite the target  $E'$ , which is rigidly secured to the upper end of shaft  $E$ .

The uprights  $B B'$  of the column and their braces are preferably formed of tubing, their ends being threaded to engage threaded sockets in the base, housing, and anchor; and to afford easy access to the housing I prefer to use for the uprights  $B'$  short lengths of tubing connected by  $T$ -couplings, additional short lengths of tubing  $b^2$  being fitted to the stems  
20 of oppositely-arranged couplings, thus forming a ladder, as shown in Fig. 6. Secured to the vertical shaft  $E$ , just above the top plate,  $C^2$ , of the housing, is a target,  $E'$ , of ordinary construction. The shaft projects slightly  
25 above the top of the target, and is squared at its upper end to fit snugly within a correspondingly-shaped socket carried at the base of an ordinary switch signal-lamp,  $L$ . This lamp, as is usual, is four-sided, showing white  
30 lights at opposite sides and red lights at right angles thereto, as is indicated in the drawings.

In operation the arm  $G$  will occupy a central position with relation to the plate  $A^3$ , the  
40 lever  $H$  being in engagement with the central notch,  $a^3$ , as shown in Figs. 1 and 3, and the main line open for traffic. While the switch-operating mechanism is in this position the semaphore  $D'$  will hang suspended between  
45 the two sides of the screen  $F$  and be thereby concealed from view, and the face of the target  $E'$  will be presented to view. To shift the switch, the locking-pin  $h'$  will be removed from the slot  $h$  of lever  $H$ , the lever turned to a  
50 horizontal position, as shown by dotted lines in Fig. 1, thus freeing it from the notch of the plate  $A^3$ , in order that the arm  $G$  may be turned to the right or left, as occasion may require, and the lever  $H$  may be locked within  
55 one of the end notches,  $a^3$ , the bosses  $a^4$  on the cap-plate  $a$  serving to prevent the movement of said arm beyond the point desired. This operation shifts the switch-rail and simultaneously, through the instrumentality of the  
60 bevel-gears hereinbefore described, turns the semaphore-arm to a horizontal position and at right angles to the tracks, the target meanwhile being turned parallel with the tracks, whereby the target will practically be concealed from view, thus indicating that the  
65 main line is no longer open for traffic.

The horizontal and vertical positions of the

semaphore-arm are indicated at night by the fixed light  $L$ , attached to top of shaft  $E$ , showing white when main line is open for trains to  
70 pass, the same as when the semaphore is concealed and the target is shown, and displaying a red light when the semaphore-arm is in a horizontal position and at right angles to the tracks, the target being turned parallel  
75 with the tracks, indicating the main line is closed and that trains cannot pass.

It will be understood, of course, that the same movement of the semaphore-arm and target takes place in shifting the arm  $G$  from  
80 the central notch,  $a^3$ , to either the right or left hand notches in said plate, the only difference being that the semaphore-arm will be thrown out to the right or left of the column, according to the direction in which said arm  
85  $G$  is turned.

It will be understood, of course, that the shifting-rails of the switch will be connected with the crank-pin  $i$  of shaft  $E$  by a suitable connecting-rod, as is usual in similar structures.  
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It will be observed that as the column herein described is of skeleton form it presents practically no surface to the wind, and is therefore less liable to damage from wind-  
95 storms than a solid column of the same horizontal area, and that the column is braced by the inclined uprights  $B'$  in a direction transverse to that of the semaphore-arm when displayed, thus offering the greatest resistance  
100 in the direction in which a storm would exert its greatest force upon the column.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—  
105

1. The combination, with a switch and a vertical crank-shaft for operating said switch, of a column having bearings in which said shaft is journaled, a housing secured to the top of said column, having vertical and horizontal bearings and a removable top, a bevel-gear and target secured to the vertical shaft, a shaft journaled in the horizontal bearing of the housing and provided at its ends with a semaphore-arm and bevel-gear, a  $U$ -shaped  
110 screen secured to the column below the housing, and a lever for rotating the vertical shaft, substantially as and for the purposes described.  
115

2. A skeleton semaphore switch-stand consisting of a base having vertical bearings, uprights secured to said base and provided at top with a housing having vertical and horizontal bearings, a vertical crank-shaft journaled in the bearings of the base and housing  
120 and provided within the housing with a bevel-gear, a shaft journaled in the horizontal bearing of the housing and provided at its ends with a bevel-gear and semaphore-arm, a  $U$ -shaped screen having one leg secured to the  
125 uprights below the housing and the upper end of its other leg supported by the outer end of the horizontal shaft, and means, substantially as set forth, for rotating the verti-  
130



cal shaft, substantially as and for the purposes described.

3. A semaphore switch-stand consisting of a base having vertical apertures, vertical  
5 tubular uprights secured at their lower ends within said apertures, a housing having apertures for the reception of the upper ends of said uprights, and inclined tubular uprights secured at their lower ends to an anchor and at  
10 their upper ends within apertures of the housing, said inclined uprights being constructed of short sections of tubing connected by T-

couplings arranged in pairs and short lengths of tubing secured at their ends within the stems of the T-couplings of a pair, substantially as and for the purposes described. 15

In testimony whereof I affix my signature, in presence of two witnesses, this 1st day of May, 1888.

KIRTLAND H. WADE.

Witnesses:

P. O'NEIL BYRNE,  
RICH O. REES.