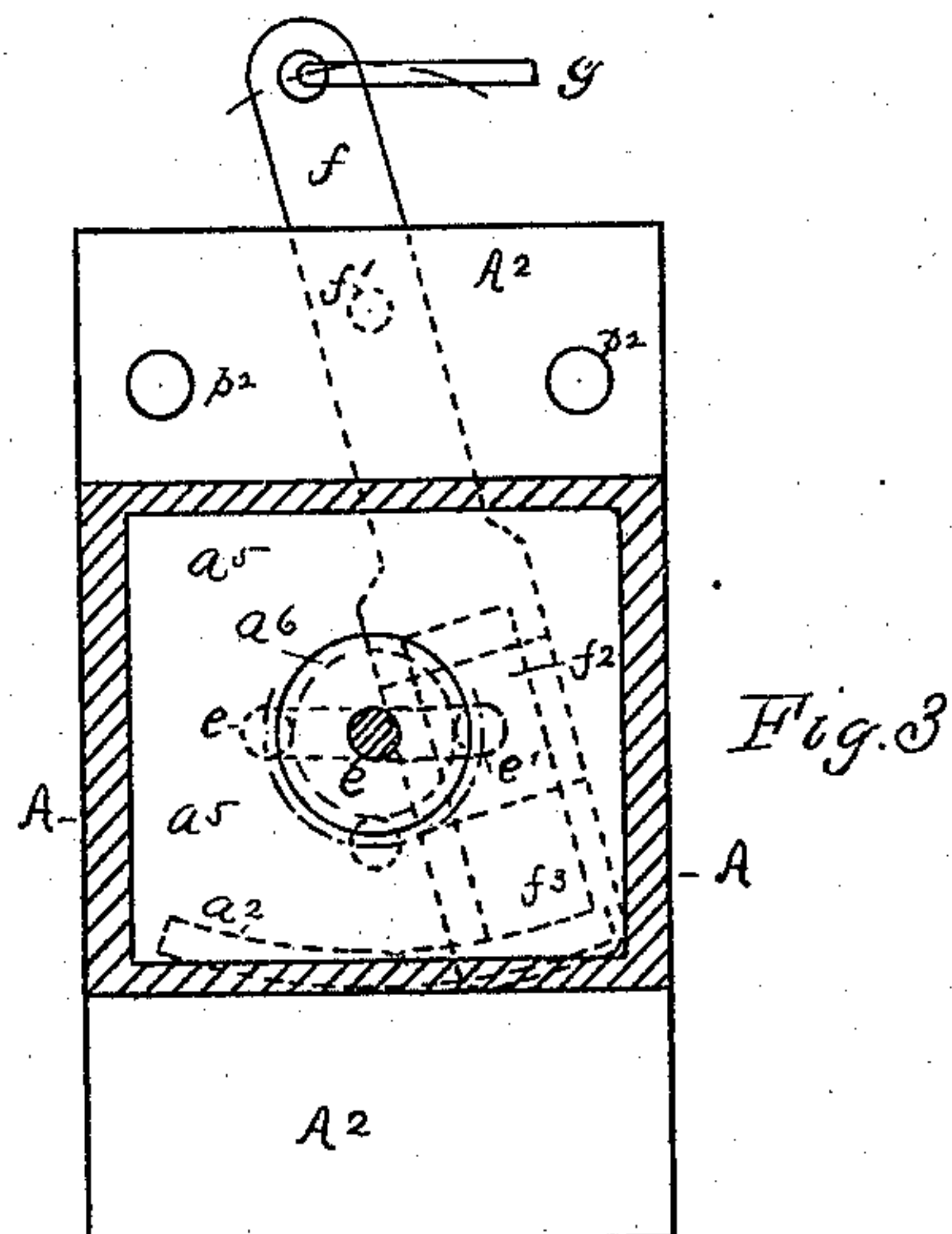
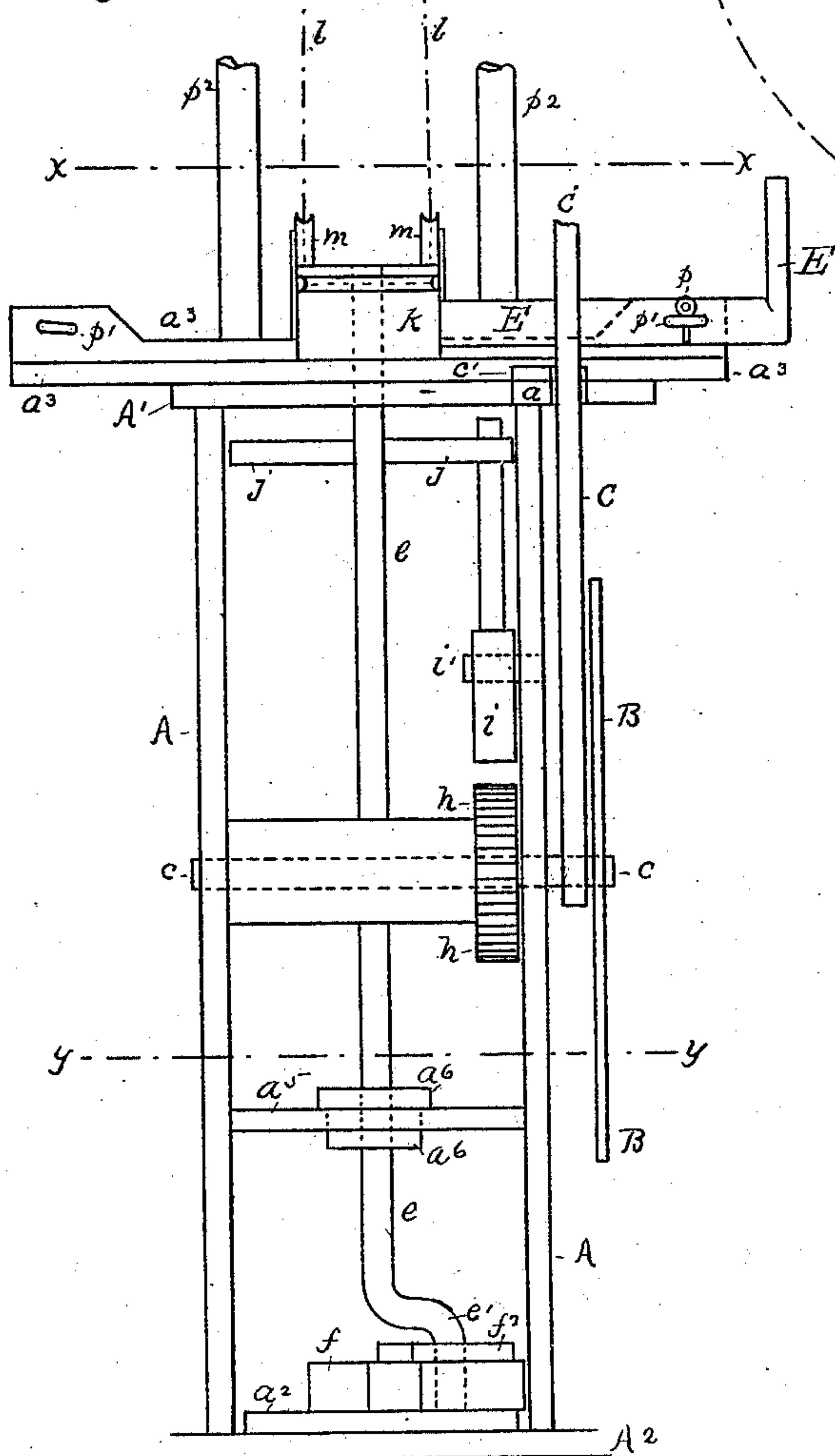
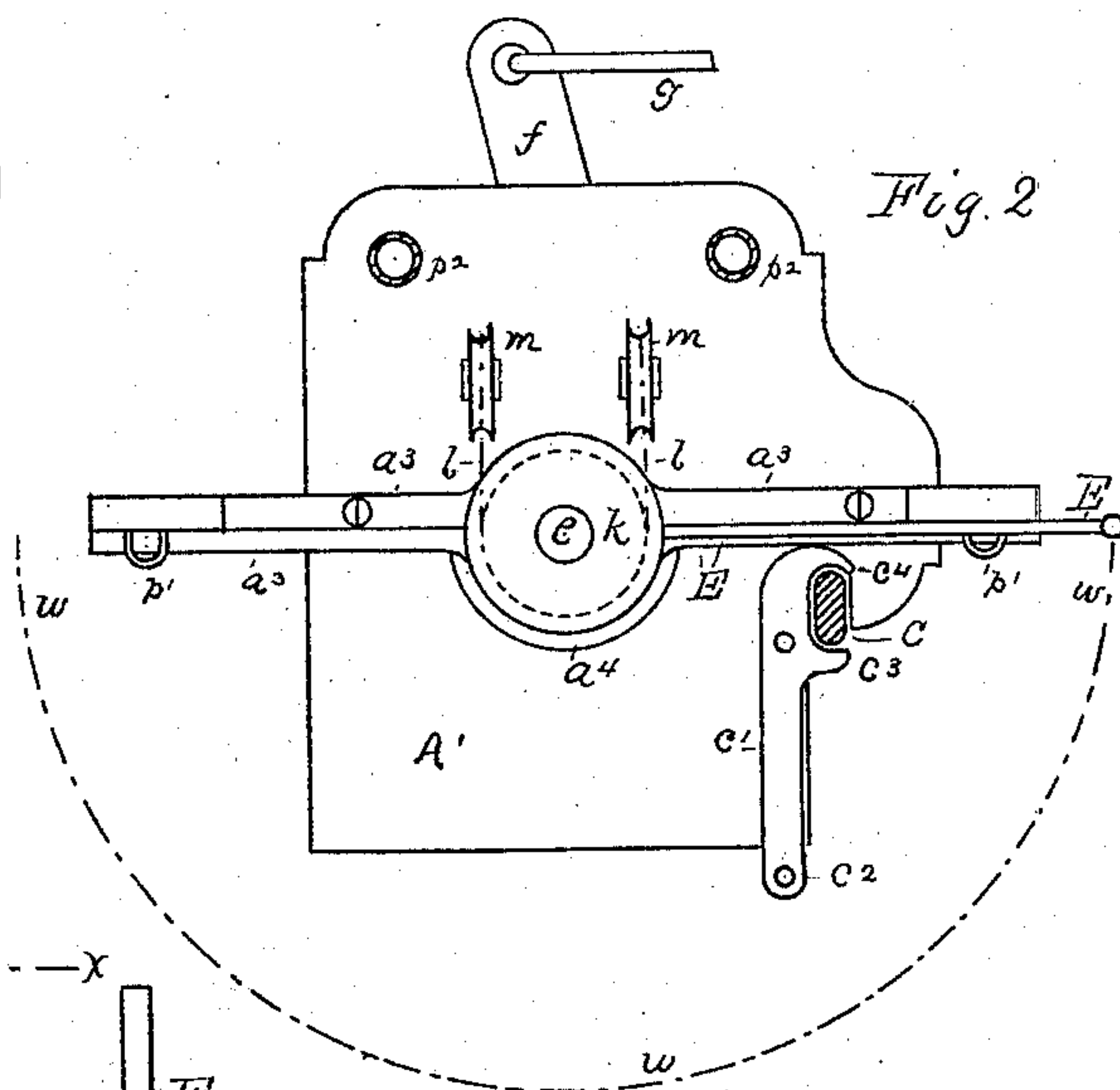
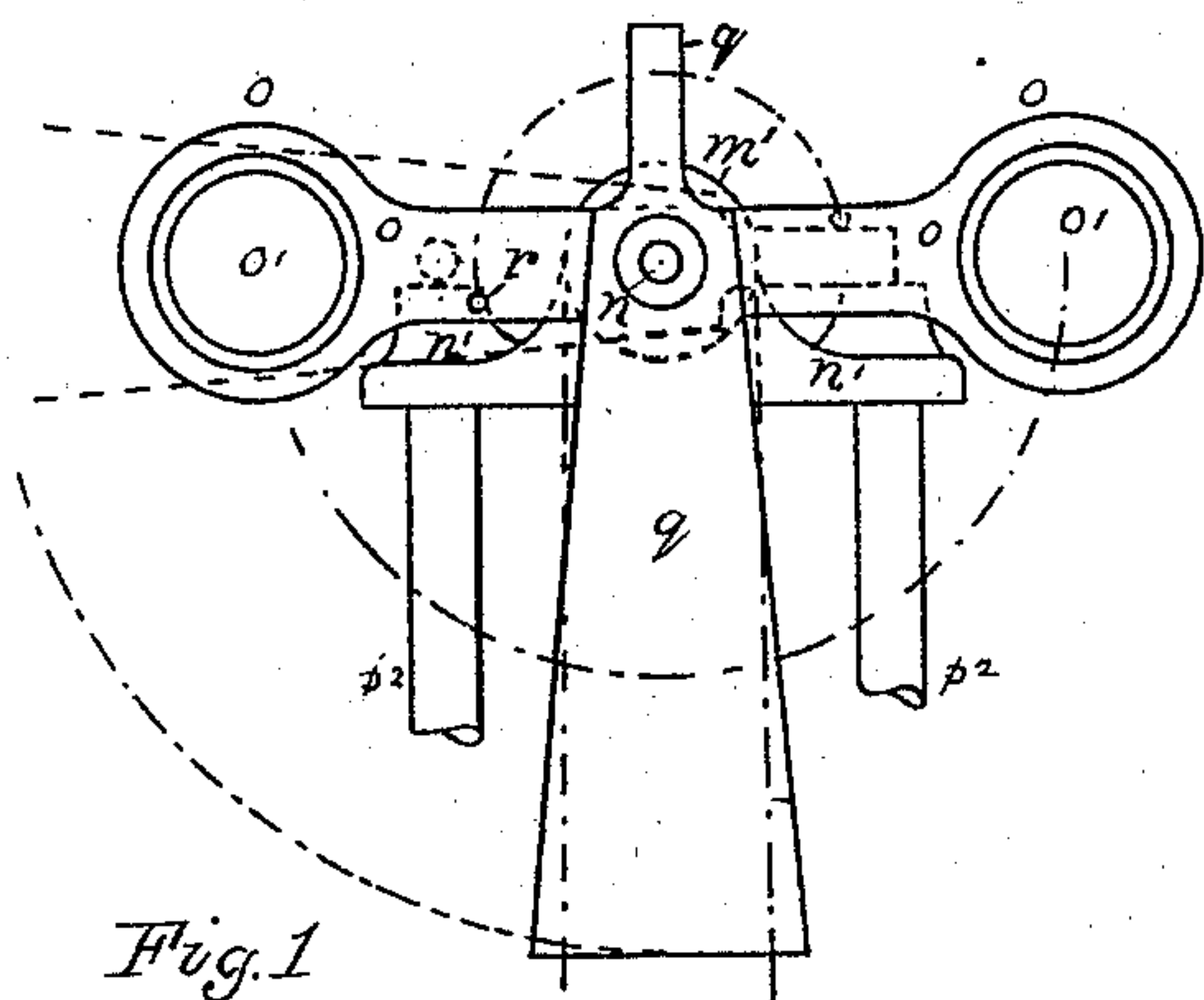


2 Sheets—Sheet 1.

COMBINED SWITCH STAND AND SEMAPHORE.

Patented Aug. 23, 1887.



WITNESSES:.

WITNESSES:
Lora Vaughn
W.D. Webb

INVENTOR

George W. Nolen.
BY P. H. Gunkel

ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE W. NOLEN, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF
TO RICHARD S. BENNETT, OF SAME PLACE.

COMBINED SWITCH-STAND AND SEMAPHORE.

SPECIFICATION forming part of Letters Patent No. 368,604, dated August 23, 1887.

Application filed March 8, 1887. Serial No. 230,092. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. NOLEN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in a Combined Switch-Stand and Semaphore, of which the following is a specification.

My invention relates to the class of railway switch-stands in which there is combined a signaling apparatus and devices for operating the same.

The invention consists in the devices and combinations, hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of the switch-stand and semaphore, the front of the stand being removed; Fig. 2, a horizontal section on the line *xx* of Fig. 1, showing a top view of the switch-stand; Fig. 3, a horizontal sectional view on the line *yy* of Fig. 1, showing the lower portion of the stand; Fig. 4, a side elevation of the stand and semaphore; and Fig. 5, a detail of the ratchet and pawl, which will be hereinafter fully described.

A in the several views represents the iron casing of the switch-stand, forming a tight box. A' is the top of the box, and A² the base to which the box is secured.

B is an arm fastened to a shaft, *c*, which extends laterally through the box A, and to the arm are attached wires *b*, (shown by broken lines in Fig. 4,) for operating the usual signals (not shown) along the main track beyond the switch-stand. The wires may be connected with any of the well-known devices for operating such signals. To the shaft *c* is also fastened outside of the stand a lever, C, for turning the shaft and operating the arm and the signals it controls. The lever is locked when in normal position by a pivoted catch, *c'*, provided on the stand-top A', and in the outer end of the catch is a hole, *c''*, coincident with a hole in a lip, *a*, projecting from the top A', and these holes are adapted to receive the bow of a padlock when it is desired to lock the stand and signal devices. Projections *c'''* *c''''* at the side of the catch are engaged by the lever C, when it is being turned out or in, and swing

the catch to permit the lever to pass out when the padlock is removed, and to lock the lever when returned and the padlock replaced.

At the front of the box is an arc-shaped ratchet, *d*, (shown in Fig. 4 only,) and on the lever C is a pivoted pawl, *d'*, which is caused to engage the ratchet when the lever is turned downward by a spring, *d''*, which is placed around a rod, *d'''*, pivoted to the pawl and extending through a hole in an arm, *d''''*, on the lever C. While the lever is being turned downward the pawl slides over the teeth of the ratchet until the desired point of depression of the lever is reached and the pawl is permitted to engage the ratchet and hold the lever in place.

E is a crank-arm at the top of the switch-stand for turning the vertical rod *e* to operate the switch. It will be obvious that when the lever C is in the position shown in the drawings the arm E cannot be operated, and that it will be free only after the lever C has been unlocked and moved forward, and the signals connected with the arm B have been thus set to indicate the position of the switch, and thus the danger of operating a switch without first setting the proper signal will be prevented.

To operate the bar *f*, which is pivoted at *f'*, and connected to the pitman *g* for operating the switch, the lower end of the vertical rod *e* is provided with a crank, *e'*, fitted in a box, *f''*, which is guided and slides in a slot, *f'''*, in the bar *f*. The inner end of the bar *f* rests upon and is guided by a curved way, *a''*, on the base A². The turning of the crank-arm E a half-circle, as indicated by the dotted line *w*, Fig. 2, gives the rod *e* a corresponding half-turn and moves the bar *f* a proper distance to set the switch. To hold the arm E to its place, a pin, *p*, is inserted in a staple, *p'*, which projects from a cross-piece, *a'''*, fastened on the top A' of the box, and extends through a slot in the arm E.

On the shaft *c* is a ratchet-wheel, *h*, with which a gravitating dog, *i*, on a pivot, *i'*, engages to hold the shaft from being turned. On the rod *e* is a pin, *j*, projecting at right angles at both sides of the rod, and which engages the portion of the dog *i* above its pivot

to hold it in or out of engagement with the ratchet *h*. When the crank-arm is in the position shown in the drawings, the pin holds the dog *i* away from engagement; but when
 5 turned to the second position the dog is permitted to gravitate and engage the ratchet and prevent the shaft *c* from being rotated. Thus, when the switch is set, the lever *C* cannot be operated to change the signals connected with
 10 the arm *B*, and it can be so operated only after the arm *E* has been turned to change the switch and the dog *i* thus released.

k is a drum attached to the upper end of the rod *e*, and *l* is a wire made fast to the
 15 drum and extending around pulleys *m* and over a drum or pulley, *m'*, fast to a shaft, *n*, mounted on a cross-piece, *n'*, above the stand and supported on posts *p*². To the shaft *w* is attached the usual signal frame, *o*, containing
 20 suitably-colored glasses *o'*, and on the shaft *n* is also hung loosely the arm *q*. A lamp, *n*², is supported by the cross-piece.

As the crank-arm *E* is turned to set the switch, the drum *k* is partially rotated and op-
 25 erates the wire *l* to rotate the pulley *m'* and give the frame *o* a half-turn. A pin, *r*, on the frame engages the upper portion of the arm *q*, and swings it up in front of the glass *o'* farthest from the track. The wire *l* is provided
 30 with springs *s* and turn-buckles *t*, to keep it at proper tension.

The vertical rod *e* is inserted into the stand through an opening in the top *A'*. The cross-piece *a*³ and a plate, *a*⁴, are then fastened on
 35 the top to cover the opening and form a box for the rod. In the interior of the stand is a plate, *a*⁵, or cross-bar, having a central opening, in which is also provided a suitable box, *a*⁶, for the rod *e*, so that the rod will be held
 40 in upright position while being turned.

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

1. In combination, in a switch-stand and

semaphore, a crank arm or lever for operating
 the switch, a signal-operating lever interlock- 45
 ing with the switch-lever, whereby the latter is locked until the former is moved to operate the signals, and a ratchet-and-dog device for
 locking said signal-lever while the switch-lever 50
 is in position to connect the main track and switch, substantially as set forth.

2. The combination, with a crank arm or lever for operating a switch, and devices, sub-
 stantially as described, connected therewith 55
 for operating a set of signals, of a locking-lever for operating another set of signals and preventing the switch-lever from being oper-
 ated until the signal-lever has been moved, and a ratchet and dog for locking the signal- 60
 lever when the switch-lever has been operated, substantially as described.

3. The combination, with the signal-oper-
 ating bar *B*, of the shaft *c*, lever *C*, catch *c'*,
 and the ratchet and pawl *d d'*, for the purpose 65
 set forth.

4. The combination, with the signal-oper-
 ating bar *B*, and lever *C*, for operating the
 bar, of the crank-arm *E* and crank-rod *e e'*,
 for operating a switch, substantially as set 70
 forth.

5. The combination, with the signal-oper-
 ating lever *C* and its shaft *c*, of the ratchet *h*,
 pawl *i*, and the switch-operating crank-rod *e*,
 provided with pins *j*, substantially as set forth. 75

6. The combination, with the crank-arm *E*
 and crank-rod *e e'*, of the pivoted bar *f*, hav-
 ing slot *f*³, and the sliding box *f*², substan-
 tially as and for the purpose set forth.

7. The combination, with the switch-oper- 80
 ating crank-rod *e*, of the drum *k*, wire *l*, pul-
 leys *m m'*, signal-frame *o*, having the pin *r*,
 and the swinging arm *q*, substantially as set
 forth.

GEORGE W. NOLEN.

Witnesses:

R. S. BENNETT,
 P. H. GUNCKEL.