

W. O. HARDAGE.  
SWITCH STAND.

APPLICATION FILED JAN. 12, 1909.

928,124.

Patented July 13, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

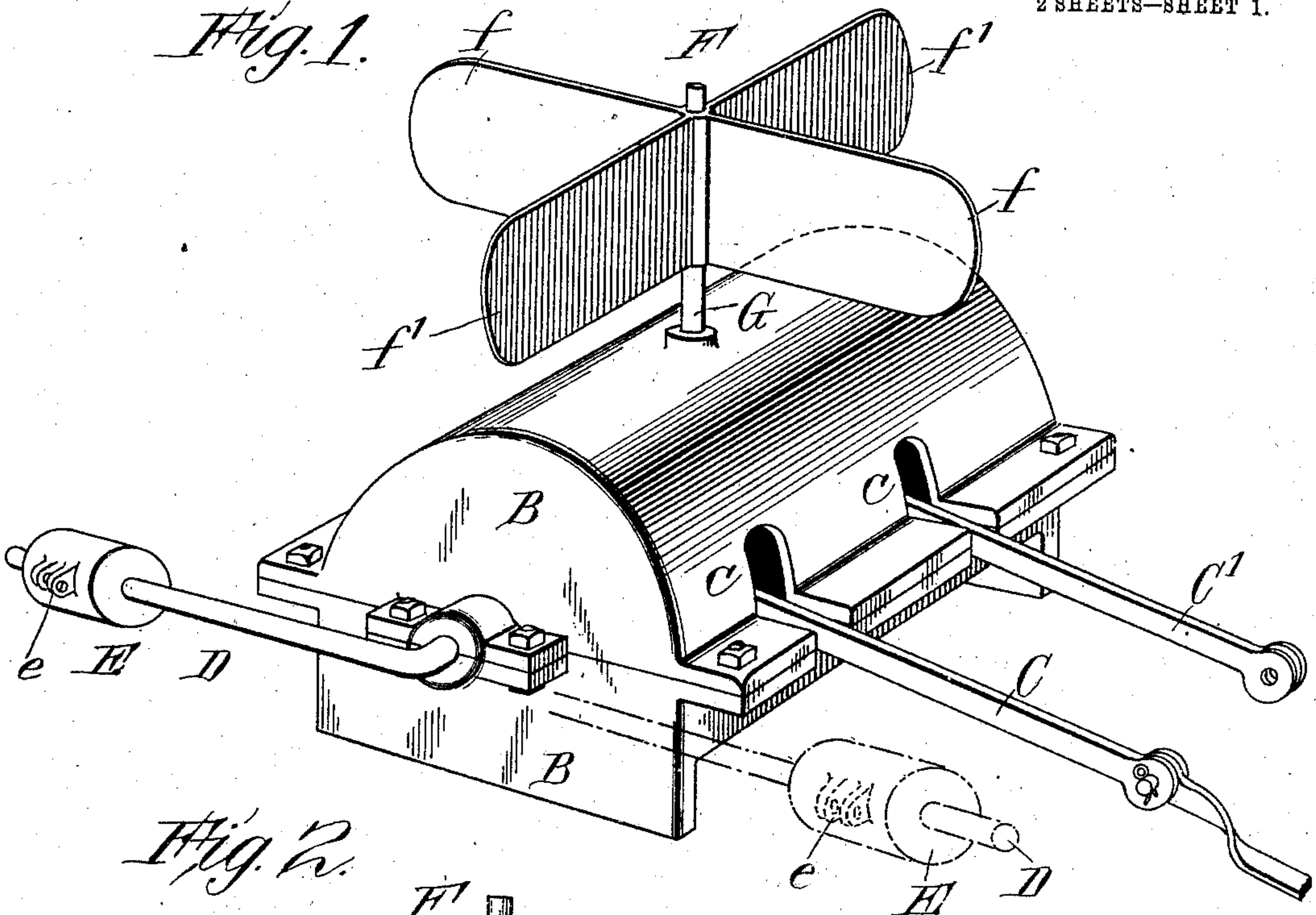
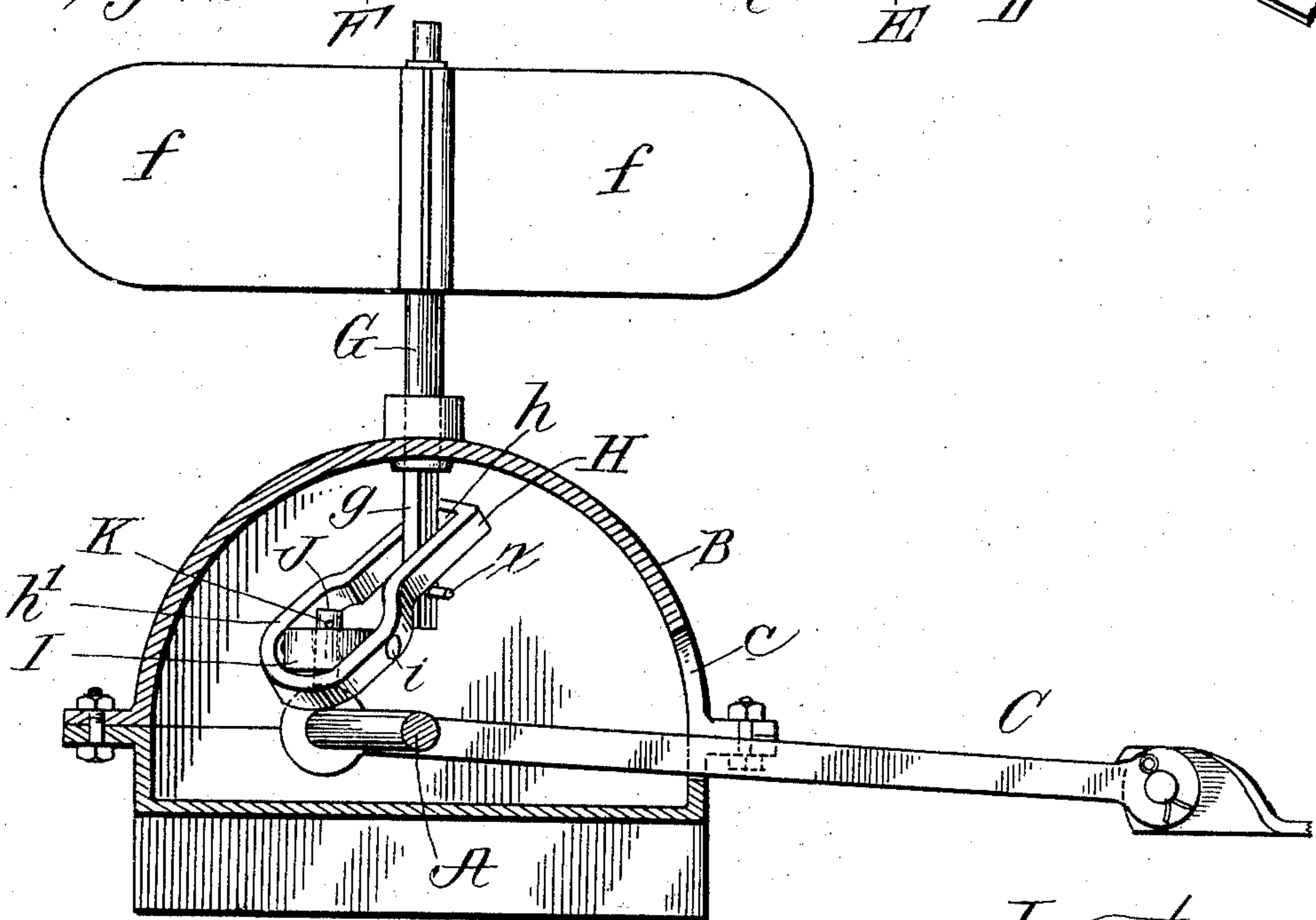


Fig. 2.



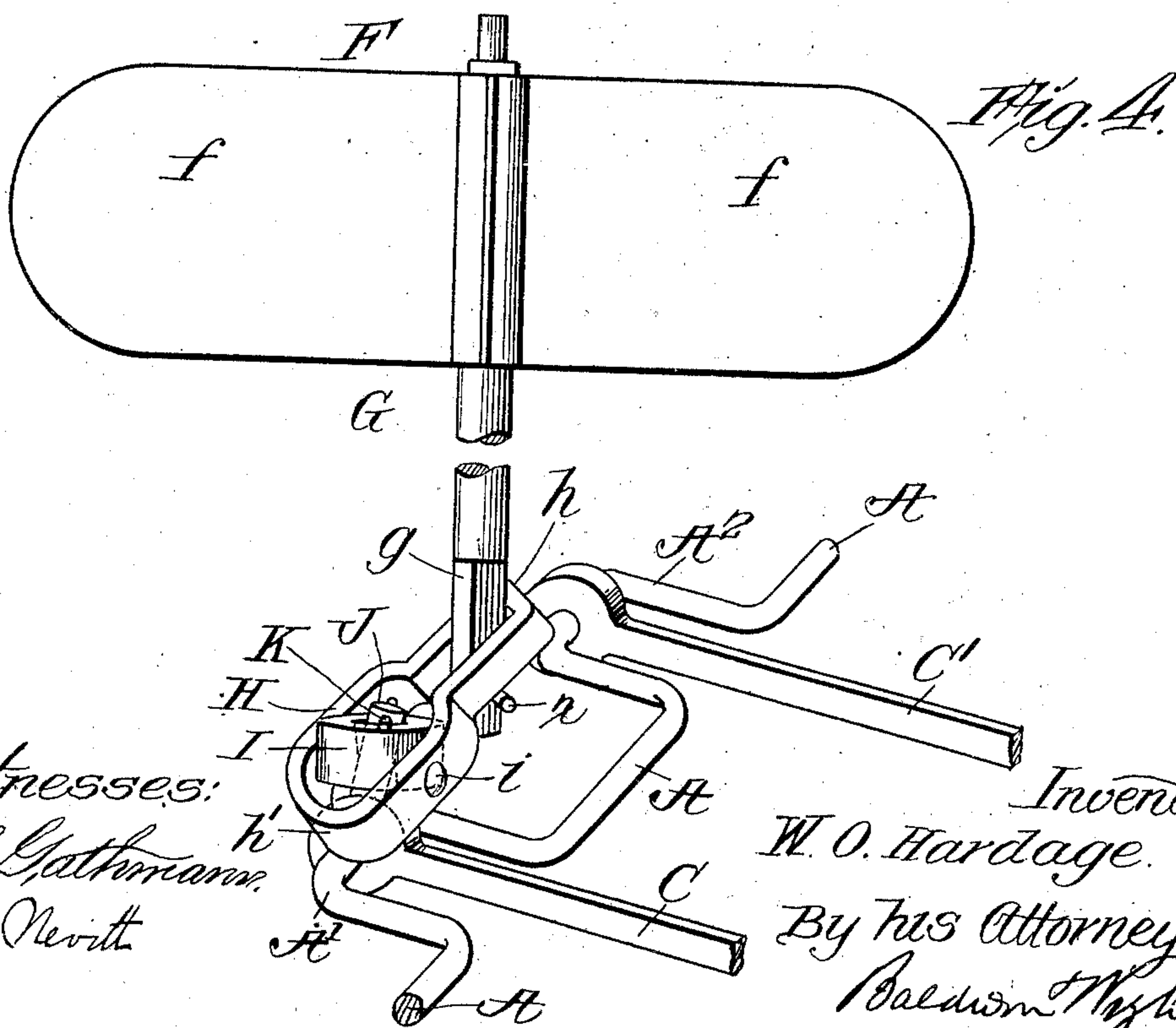
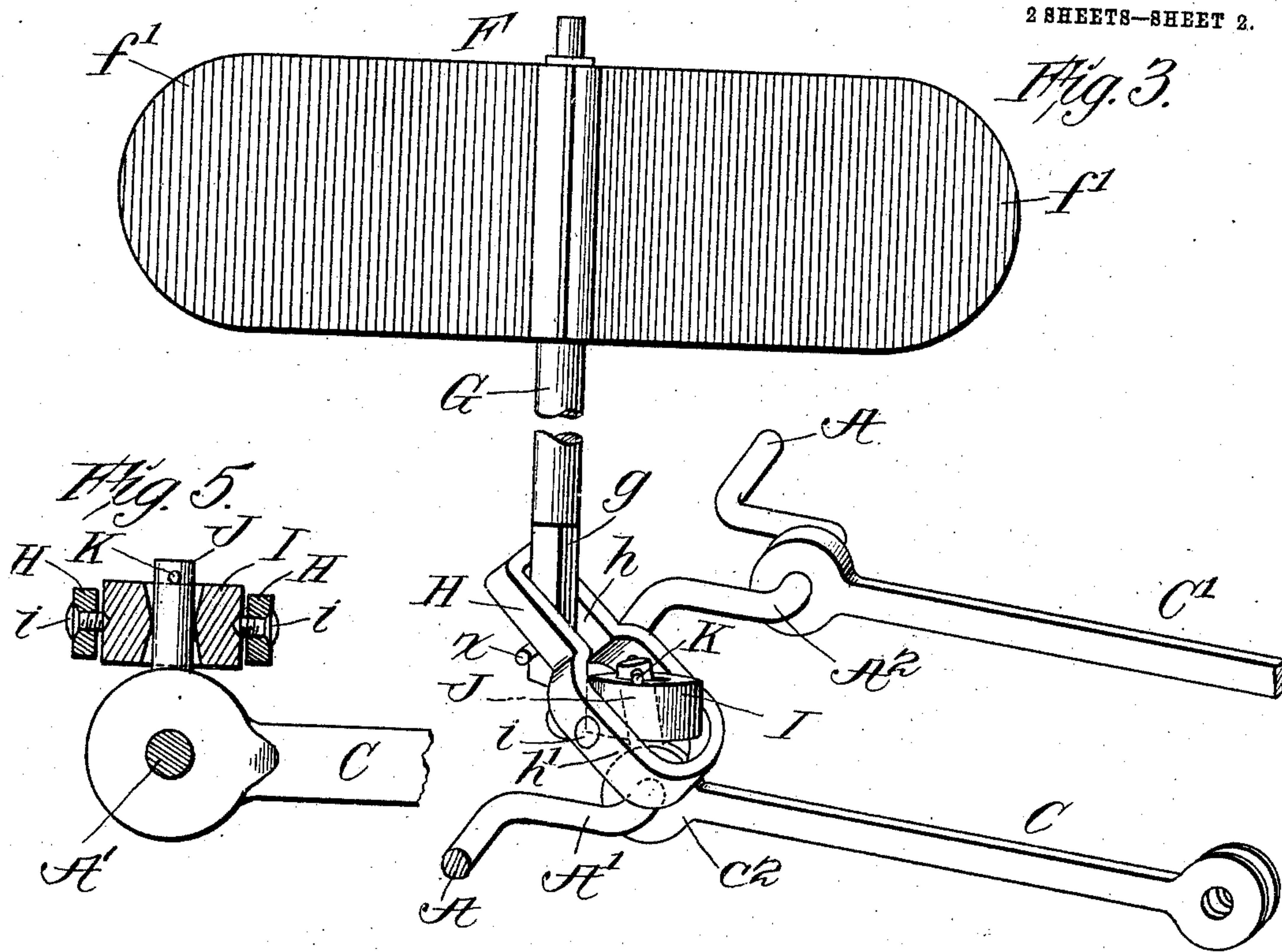
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By his Attorneys:  
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# UNITED STATES PATENT OFFICE.

WILLIAM O. HARDAGE, OF ATLANTA, GEORGIA.

## SWITCH-STAND.

No. 928,124.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed January 12, 1909. Serial No. 471,960.

*To all whom it may concern:*

Be it known that I, WILLIAM O. HARDAGE, a citizen of the United States, residing in Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Switch-Stands, of which the following is a specification.

The object of my invention is to provide a switch stand of improved construction and so organized that the switch rails may be easily and quickly shifted and the target suitably set to correctly indicate the condition of the switch.

My invention consists in providing a horizontally arranged crank shaft, to one end of which a weighted operating lever is attached, and which is connected with the switch-rails and with the vertically arranged rod of the target by novel devices of such construction that the turning of the crank shaft not only opens or closes the switch, but it also gives proper movement to the target.

In the accompanying drawings:—Figure 1 is a perspective view of a switch stand embodying my improvement, Fig. 2 shows a vertical transverse section thereof; Fig. 3 is a perspective view showing particularly the novel connections between the crank shaft and the target, the parts being in the position which they occupy when the switch is open; Fig. 4 is a similar view showing the position of the parts when the switch is closed; Fig. 5 is a detail view of part of the connections between the crank shaft and the target rod.

The crank shaft A is arranged horizontally, and is mounted in suitable bearings in the lower part of a casing or housing B which may be of any suitable construction, and which is adapted to be attached to the ties of the rail-way. The shaft A is shown as being provided with two cranks A', A<sup>2</sup>, arranged on the same side of the shaft and provided with connecting rods C, C' which are in turn connected in any suitable way with the switch-rail or rails. The rods C, C' extend through openings c in the housing in the manner clearly shown in Fig. 1.

An operating lever D, is either formed on one end of the crank shaft, or is attached thereto in any suitable way. At its outer end, the lever D, carries a weight E, which serves to hold the crank-shaft in either the open or closed position of the switch. If desired the weighted lever may be locked to the bed of the rail-way in any suitable way, as by locking devices applied at e.

The target F is of the usual kind having white faces *f* and red faces *f'*. The target rod G, extends vertically through the top of the housing, it is free to turn therein about its vertical axis, and it is held in any suitable way at the desired elevation and does not move either up or down. The portion *g* of the rod which extends below the top of the housing and partway through the interior thereof is squared and extends through a link H, having a relatively narrow rectangular part *h*, through which the target rod extends, and which joins a wider oval part *h'*, which is connected by screws *i*, having tapered ends, with a collar I through which extends upwardly an arm J formed on, or secured to the crank A', or to the head *c'* of the rod C, which is connected to the crank A'. A pin *x* carried by the target rod below the link H holds the latter in proper working position on the rod. A cotter pin K, extends through the upper end of the arm J, and prevents the collar from rising too high on the arm, or the arm from being drawn to too great an extent downwardly through the collar. Inasmuch as the arm J and the collar I, have a rocking movement relatively to each other as hereinafter described the bore of the collar is tapered in the manner indicated in Fig. 5, to permit this rocking movement without any binding of the parts.

In Fig. 3, the parts are shown in the position they occupy when the switch is open and at this time the weighted lever D will be in the position shown by dotted lines in Fig. 1. If now the weighted lever be turned over to the position shown by full lines in Fig. 1, the parts will move to the position shown in Fig. 4, the switch being thus closed and the target shifted. It will be observed that by this operation the cranks have moved through an arc of 180°, while the target has turned through an arc of 90°. This movement of the target rod is effected in the following manner: As the crank A' rises, it lifts the collar I, and the link H, the link turning relatively to the collar on the pivot screws *i* and the collar I rocking relatively to the arm J. At the same time the link moves sidewise on the squared part *g* of the target rod. As the link A' continues to move rearward the link H is turned about the axis of the target rod and the latter is moved about its axis correspondingly, until finally the parts have moved to the position shown in Fig. 4, and a movement through an arc of 90° has been



given to the target rod and the proper faces of the target displayed to show that the switch is closed. It will thus be seen that there is a universal joint in the link connection between the crank shaft and the target rod, which gives great ease of movement, but the parts are nevertheless so related that the movement of the crank-shaft through an arc of  $180^\circ$ , gives the desired movement through an arc of  $90^\circ$  to the target.

The mechanism is not only simple, but it is powerful and at the same time strong, durable and efficient.

I claim as my invention:—

1. A switch-stand comprising a horizontally arranged crank-shaft, a vertically arranged target rod, a link through which the target rod extends and which has a laterally sliding connection therewith and a universal joint connection between the crank-shaft and the link.

2. A switch-stand, comprising a horizontally arranged crank-shaft, a vertically arranged target rod, a link through which the target rod extends, an arm projecting laterally from the crank-shaft, and a universal joint between said arm and the link.

3. A switch-stand, comprising a horizontally arranged target rod, a link having a relatively narrow portion through which the

target rod extends, a collar having a pivotal connection with the link, and an arm projecting laterally from the crank shaft and extending into the collar.

4. A switch-stand, comprising a horizontally arranged crank-shaft, a vertically arranged target rod having a squared lower portion, a link having a relatively narrow part through which the squared portion of the target rod extends, a collar connected with the loop by horizontally arranged pivots and an arm projecting upwardly from the crank shaft and extending through the collar.

5. A switch stand, comprising a horizontally arranged crank shaft, provided with a weighted operating lever, a vertically arranged target rod, having a squared lower portion, a link having a relatively narrow portion through which the squared part of the target rod extends, a collar within the link and pivoted thereto by horizontally arranged pivots and an arm projecting upwardly from the crank shaft and extending into the collar.

In testimony whereof, I have hereunto subscribed my name.

W. O. HARDAGE.

Witnesses:

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