

(No Model.)

A. E. McDONALD.
Switch Signal.

No. 239,333.

Patented March 29, 1881.

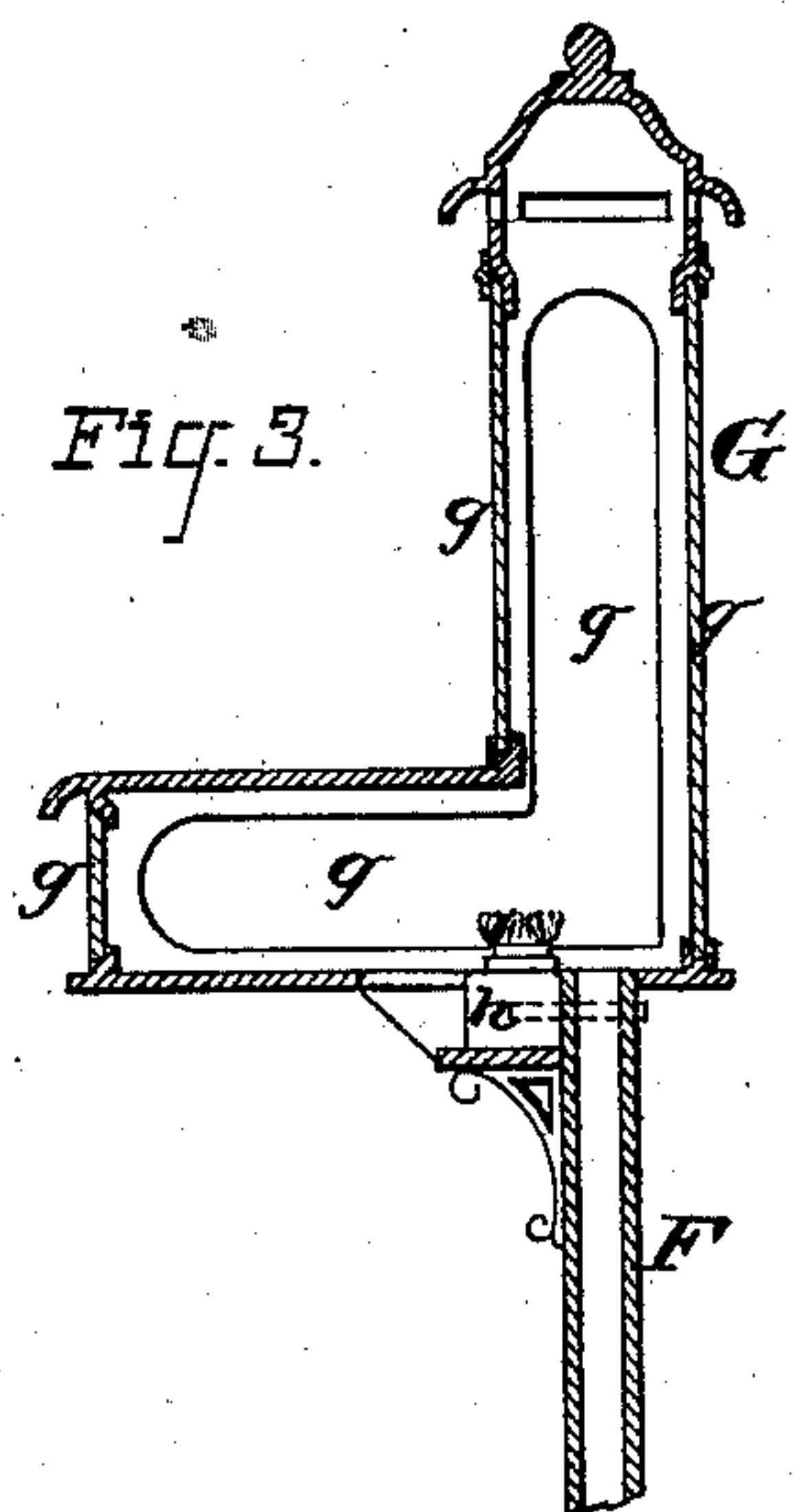
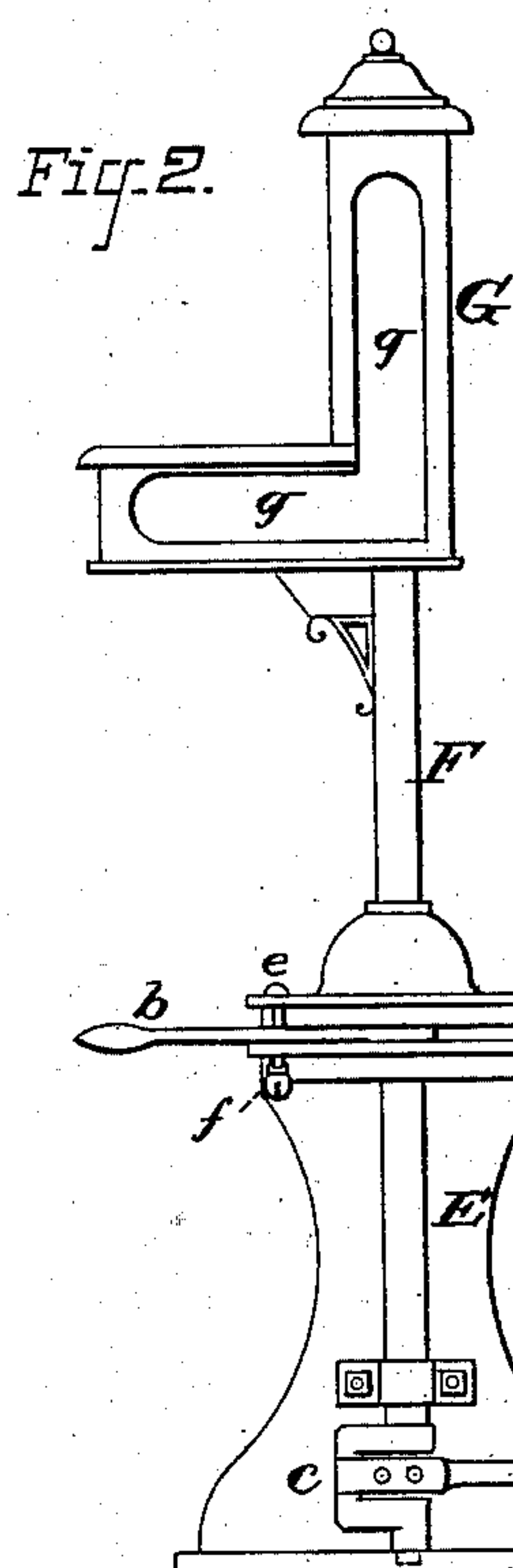
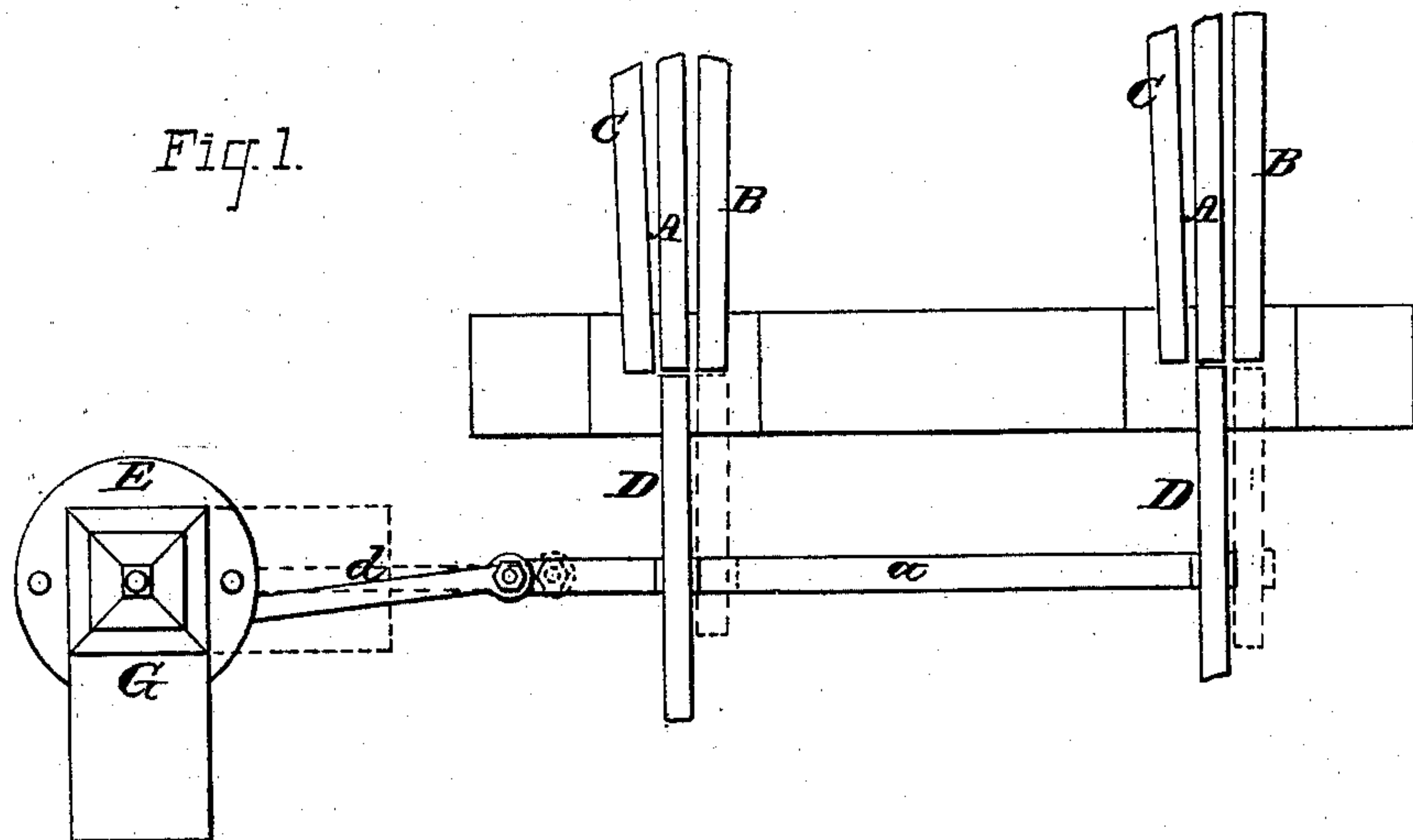
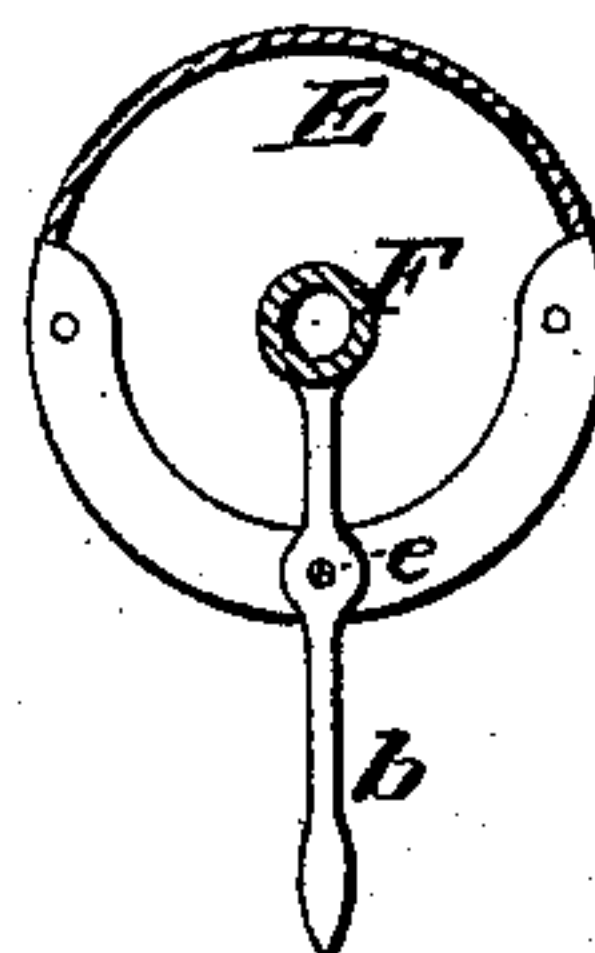


Fig. 4.



ATTEST:

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UNITED STATES PATENT OFFICE.

ALEXANDER E. McDONALD, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN RAILROAD SWITCH PLATE COMPANY, (LIMITED,) OF SAME PLACE.

SWITCH-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 239,333, dated March 29, 1881.

Application filed July 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER E. McDONALD, a citizen of the United States, residing in the city, county, and State of New York, have invented certain Improvements in Railway-Signals, of which the following is a specification.

This invention relates to visible or semaphore signals as distinguished from sound-signals, and is especially applicable to railway-switches, being adapted to warn the engineer as to the condition of the switch and indicate whether it is open or closed.

It is a well-known fact that many persons are color-blind, and utterly unable to distinguish some colors from others, mistaking red for green, or vice versa, and engineers on railways are not exempt from this optical defect. At the same time, however, such persons may be, and generally are, in full possession of their optical faculties in other respects, and can readily distinguish different forms of illumination. It is desirable, therefore, that signal-lights at switches, for example, shall be distinguishable through some other characteristic than that of color alone; and to this end my invention consists in a signal that will indicate to the engineer on an approaching locomotive in what condition the switch may be, whether open or closed, with respect to the track he is on, by its form or shape.

It also consists in the peculiar form, construction, and arrangement of such a signal, whereby it may accomplish its proper function, and may be set or actuated automatically by the shifting of the switch-rails, all as will be more particularly hereinafter set forth.

In the drawings I have shown my invention in its preferred form as applied to a switch wherein the switch-rails may be brought into coincidence with two side tracks, one at the right and one at the left of the main track.

Figure 1 is a plan of the switch and signal, and Fig. 2 is a front elevation of the same. Fig. 3 is an enlarged sectional view of the preferred form of signal-box. Fig. 4 is a detached view, arranged to illustrate a method of locking the switch-lever in place.

Let A A represent the rails of the main

track, B B those of the siding, for example, 50 and C C those of a branch.

D D are the switch-rails, coupled together by the tie-bar *a*, in the usual way, and adapted to be brought into coincidence with the fixed rails A, B, or C at the will or pleasure of the switchman. 55

E is the switch-stand, and F is a vertical shaft mounted therein, and arranged to be rotated by means of a switch-lever, *b*. The shaft F is provided with a crank, *c*, which is coupled to the tie-rod *a* by means of a connecting-rod, *d*. Rotation of the shaft F a quarter of the way shifts the switch-rails from the main-track rails to either of the side-track rails in a well-known way. The lever *b* may be locked in either of its three positions by means of a bolt, *e*, which passes down through the lever and the two plates of the stand F, a padlock, *f*, being locked in an eye in its lower end. This method of locking is the ordinary one, and will require no further description. 60 65 70

On the top of the shaft F is mounted a signal box or case, G, which is of an L shape, the sides all around being glazed with ground, frosted, or translucent glass *g g*. This box is so set that when the switch-rails coincide with the main line the horizontal portion of the same will stand parallel with the road, and the engineer will see, when approaching from either direction, only a narrow vertical or I-shaped illuminated pane; but if the switch-rails be set to coincide, say, with the siding B, as indicated by the dotted lines in Fig. 1, the signal-box will be turned one-quarter way around, so as to expose its side, the horizontal part pointing toward the said siding, and the engineer will then see a light of an L shape, the position of the L indicating to him at once in what position the switch stands. If the switch-rails be shifted to coincide with the branch C, the side of the signal-box will also be exposed; but the horizontal branch of the L will be turned the other way. Thus it will be seen that the form, and not the color, of the light indicates the position of the switch. 75 80 85 90 95

The signal-box may be illuminated in any good way; but I prefer, for ordinary purposes,

a lamp, *h*, arranged to set upon a shelf or bracket, as shown, and projecting upward slightly into the box. This lamp may be provided with spring-clips to engage the shaft *F* and hold the lamp steady while the switch is being shifted.

While I do not contemplate it as a part of my present invention, the signal-box may be supplied with movable or shifting colored glasses or panes, arranged inside of the frosted glass, and adapted to be shifted independently by a rod running up through the hollow shaft *F*. Such colored glasses would be auxiliary to the signal proper, and the functions of the latter would not be at all altered by their employment.

I might employ other forms than that shown for the signal, but the one described is simple and effective.

The object in employing ground, frosted, or translucent glass is that it diffuses the light better than clear glass. Colored glass might be used, however, if it be understood that the color has no significance.

I make no special claim to the particular construction of the signal-box, nor to the manner of mounting it on the shaft, as these may vary almost indefinitely; nor is it absolutely necessary that the signal be shifted by the same operation that shifts the switch, as it might be shifted independently. The automatic shifting is, however, preferable from its unerring certainty.

Any form of switch may also be employed. It will be obvious that the shape and position of the signal-box will perform its function in daylight also, as it can be readily seen and distinguished by the eye.

I am fully aware that railway-signals have been employed in which a figure in outline has been fixed on one end of a pivoted lever and a similar figure on glass on the opposite end of said lever, the latter being adapted to move in front of a signal-light, whereby the engineer may be warned either by day or by night; but I am not aware that a night and day signal, combined and arranged to show the condition of the switch by the contour or shape of the signal-box has ever been employed.

I am also aware that day-signals not capable of artificial illumination have been employed wherein the status of the switch is indicated by the contour of the signal as presented to the engineer; but I am not aware that such have ever been so constructed as to serve equally well and present substantially the same appearance both by day and by night. In this respect my signal has advantages over all others with which I am acquainted, and it is very simple, compact, and convenient.

Having thus described my invention, I claim—

1. A signal for railways, consisting of a box with transparent or translucent sides and arranged to be turned on an axis, said box being adapted to be illuminated at night, and having different contours or shapes when viewed from directions at right angles to each other, substantially as set forth.

2. A signal for railway-switches, consisting of an L-shaped box arranged to be illuminated from within, as set forth, mounted on a vertical axis, and arranged to be turned edgewise or sidewise to an approaching train, whereby the position of the switch-rails may be indicated, either by day or by night, by the contour of the box or its illuminated surface, substantially as set forth.

3. A signal for railway-switches, consisting of an illuminated L-shaped signal-box mounted on a vertical shaft or axis, and arranged to be turned edgewise or sidewise to an approaching train by the shifting of the switch-rails, substantially as and for the purposes set forth.

4. The combination of the L-shaped signal-box *G*, provided with transparent or translucent panes *g g* all around, and a lamp or illuminating apparatus, with the upright shaft *F* and the switch-shifting mechanism, all arranged substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALEXANDER E. McDONALD.

Witnesses:

HENRY CONNETT,
E. B. BOLTON.