(No Model.) 2 Sheets—Sheet 1.

F. M. BRINCKERHOFF.

SHIFTING APPARATUS FOR RAILROAD SIGNALS.

No. 558,770. Patented Apr. 21, 1896.

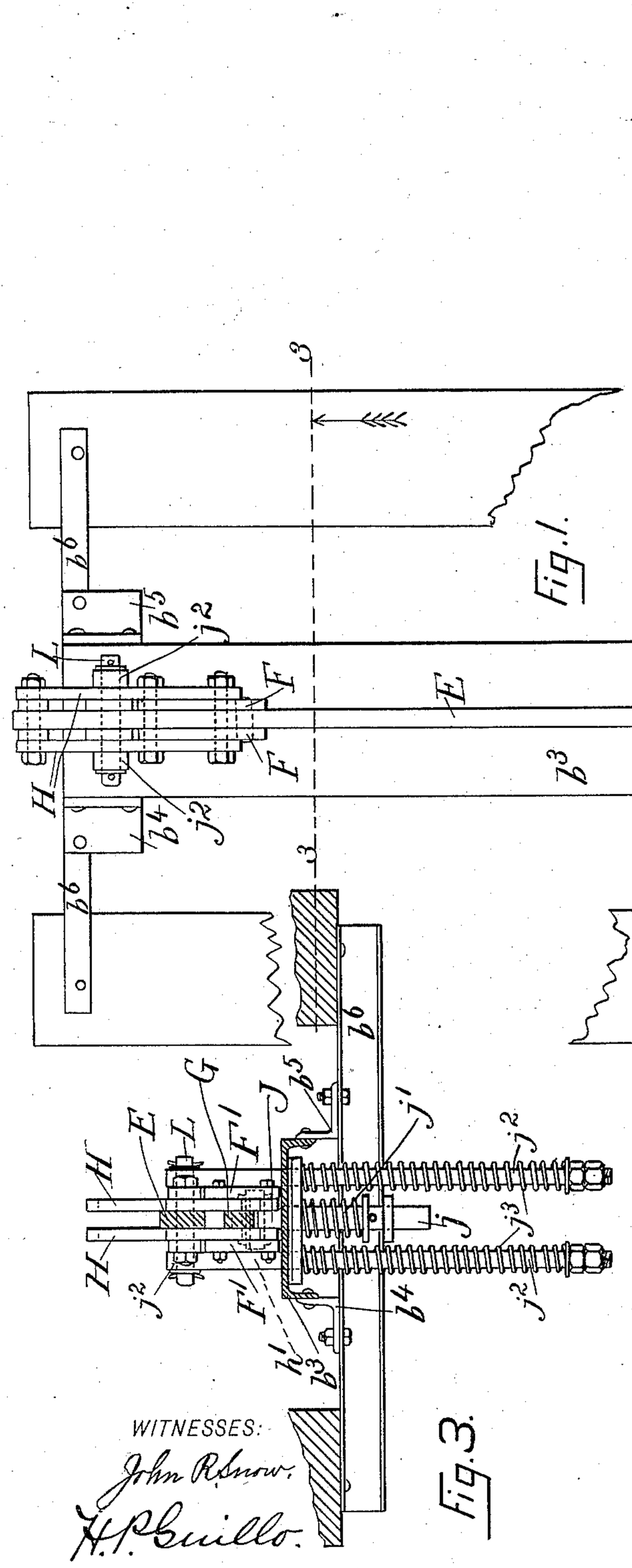

Fig. 1.

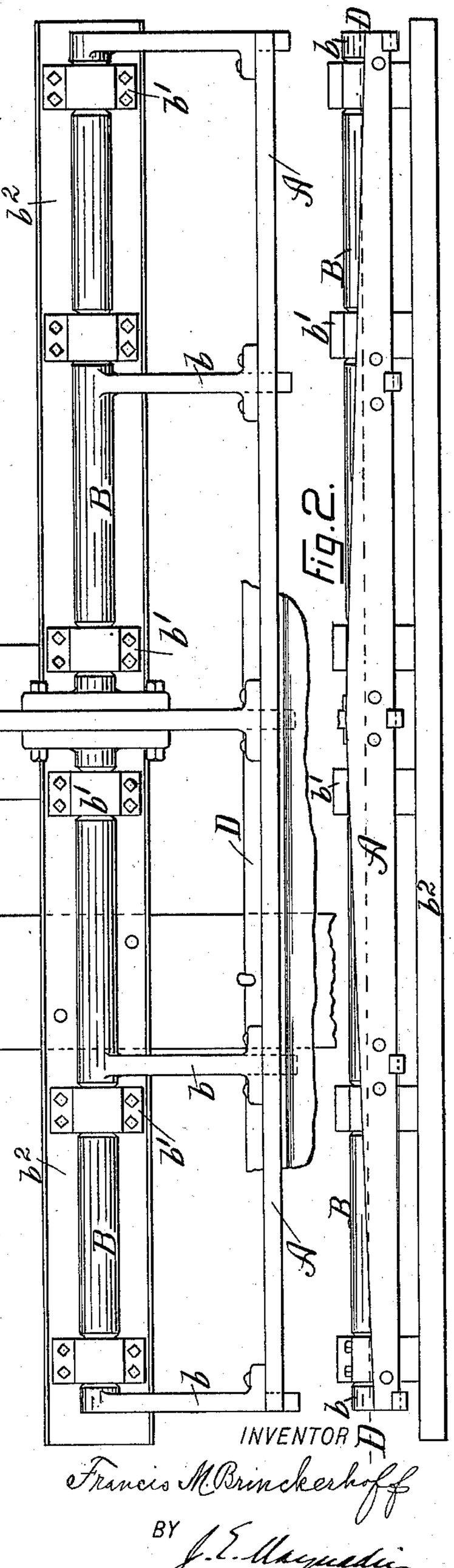

Fig. 2.

Fig. 3.

WITNESSES:

John R. Snow.

H. P. Guillo.

INVENTOR

Francis M. Brinckerhoff

BY J. E. Maynadier

ATTORNEY.

(No Model.) 2 Sheets—Sheet 2.

F. M. BRINCKERHOFF.

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Fig. 4.

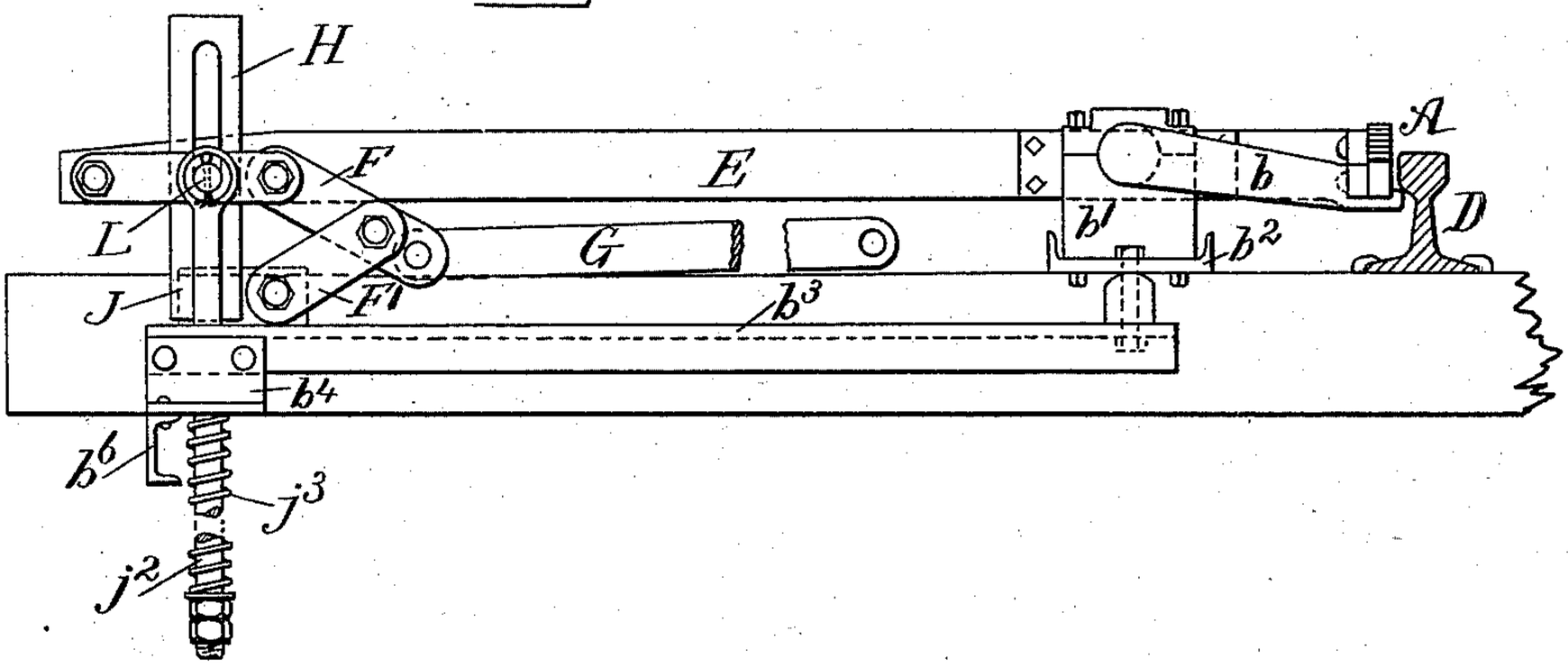
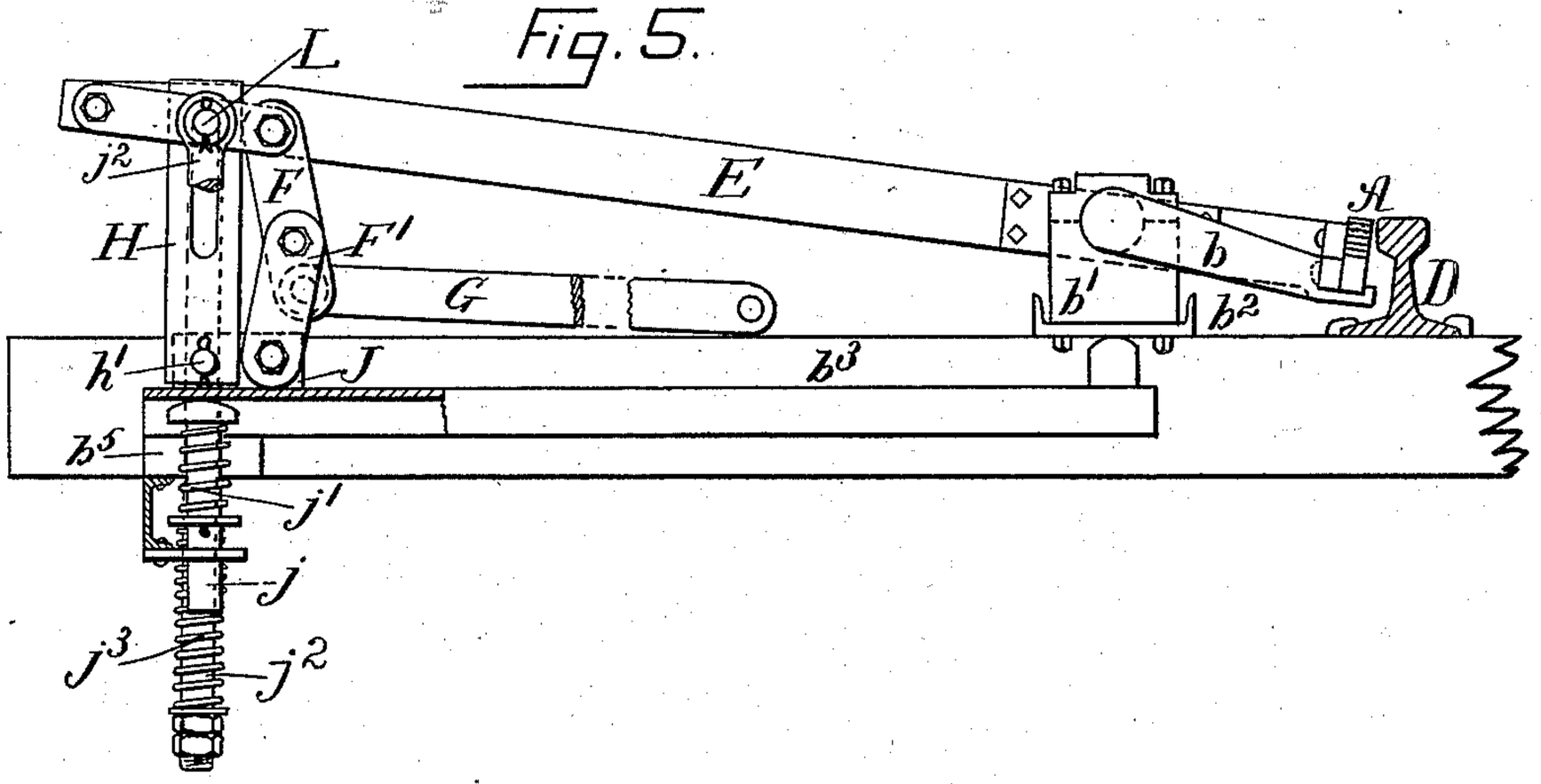


Fig. 5.



WITNESSES:

John R. Snow.

H. P. Cuello.

INVENTOR

Francis M. Brinckerhoff

BY

J. E. Maynadier

ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANCIS M. BRINCKERHOFF, OF MATTEAWAN, NEW YORK, ASSIGNOR TO THE ROWELL-POTTER SAFETY STOP COMPANY, OF PORTLAND, MAINE.

SHIFTING APPARATUS FOR RAILROAD-SIGNALS.

SPECIFICATION forming part of Letters Patent No. 558,770, dated April 21, 1896.

Application filed June 27, 1895. Serial No. 554,196. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS M. BRINCKERHOFF, of Matteawan, Dutchess county, State of New York, have invented a new and useful Shifting Apparatus for Railroad-Signals and Like Uses, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of my apparatus. Fig. 2 is an edge view of the rock-shaft and the tread-piece carried by the arms of the rock-shaft. Fig. 3 is a sectional elevation on line 3 3 of Fig. 1. Figs. 4 and 5 are two elevations showing both positions of the apparatus.

The automatic shifting of signals by the passage of a train is highly desirable if the shifting apparatus be practically adapted for the purpose, and such an apparatus is also capable of use in all cases where power for any purpose is to be obtained by the passage of a train over the apparatus.

The main objection to apparatus of this kind heretofore known is that the shocks are too severe, for even at ordinary speeds the tread-piece is acted upon very suddenly, and with high speeds the action is so sudden as to produce very heavy strains, for which the apparatuses are practically unsuited.

The main feature of my invention is a double cushioning device connected to the free end of lever E, which breaks the shock of the sudden upward movement of lever E caused by the passage of a train. The fashioning of the arms b so that their outer ends project under the head of the rail and prevent the tread-piece A from being held too high is also a feature of my invention.

In the drawings, A is the tread-piece; B, the rock-shaft; b, its arms supporting tread-piece A; b', its boxes, and b^2 a bed-piece supporting all the boxes b', the bed-piece b^2 being itself suitably fixed at the side of the rail D. (Shown in section in Figs. 4 and 5, broken away in Fig. 1, and indicated by the dotted line D D in Fig. 2, that dotted line representing the tread-surface of the rail.) The arms b of rock-shaft B catch under the head of rail D when the tread-piece A is in position for action, as clearly shown in Fig. 4.

Bed-piece b^2 is secured to bed-piece b^3, which extends under lever E. (See Figs. 1, 4, and 5.) The slotted bars H are pinned by pin h' to block J, which is held upon bed-piece b^3 by the tang j and spring j', and the toggle F is also pinned to block J, the block J, its tang j, and spring j' serving, through slotted bars H H, as a spring-stop for lever E, for the pin L, which passes through the slots in the bars H H′, is fast to lever E, so that the motion of lever E in one direction is resisted by pin L as soon as it reaches the upper end of the slots in bars H H, for pin L then lifts bars H H and block J against the force of spring j' and prevents the centers of the toggles F F′ getting in line, which would happen if lever E moved too far from block J.

Pin L is cushioned by the eyebolts j^2 and springs j^3. This double cushioning of lever E and of the tie made up of bars H H and block J, which prevents the toggles F F′ from straightening, is important for smoothness of action of the apparatus, and has the effect to greatly reduce shocks and makes the apparatus extremely durable.

The lever E, fast to rock-shaft B, serves to transmit the movement of rock-shaft B, and the indirect action of lever E through toggle-levers F F′ to move link G endwise is a feature of my invention.

The link G serves to connect the apparatus with the weight to be moved or the resistance to be overcome—as, for example, a counter-weight which when held up allows a signal or a safety-stop to shift, say, from "safety" to "danger," but which when not held up shifts the signal or safety-stop from "danger" to "safety;" or it may be a part to be moved whose movement acts positively to do the desired work. In practice a catch is used by which the weight or other part moved by rod G on the passage of a train is caught and held, thereby holding the parts of the apparatus in the position shown in Fig. 5 until the catch is released, when the parts take the position shown in Fig. 4.

The compound lever connection between tread-piece A and connecting-rod G, consisting of the lever E and toggles F and F′, is

important, as it enables rod G to move endwise, which is a matter of such practical importance as to be a marked improvement.

In practice the bed-piece b^2 rests upon and is attached to sleepers, as indicated in Figs. 1, 4, and 5, and the bed-piece b^3 is supported at one end by bed-piece b^2 and at its other end by the angle-arms b^4 b^5, which are fast to the channel-iron b^6, which is fast to the under side of the sleepers, as indicated in Figs. 4 and 5.

What I claim as my invention is—

1. In an automatic shifting apparatus operated by the passage of a train, tread-piece A; rock-shaft B parallel with the tread-piece; a plurality of arms b connecting the tread-piece and the rock-shaft and formed at their outer ends to catch under the head of rail D and prevent the tread-piece from getting out of proper relation with the rail; supporting-bed for the rock-shaft and lever E fast to the rock-shaft for utilizing the power transmitted through the tread-piece to the rock-shaft, substantially as set forth.

2. In an automatic shifting apparatus operated by the passage of a train the combination of tread-piece A; rock-shaft B connected to the tread-piece; lever E fast to the rock-shaft; toggle-levers F F′ connected to the free end of lever E and the double cushioning apparatus made up of bolts j j^2 and springs j' j^3; together with means for supporting the various parts in their proper relations, all organized and operating to reduce jar, prevent the toggle-levers from being drawn straight and to give an endwise movement to bar G.

FRANCIS M. BRINCKERHOFF.

Witnesses:
BENTON C. ROWELL,
HARRY E. HARTICH.