

A. G. CUMMINGS.  
Deflection-Stand for Switch-Operating Rods.  
No. 218,496. Patented Aug. 12, 1879.

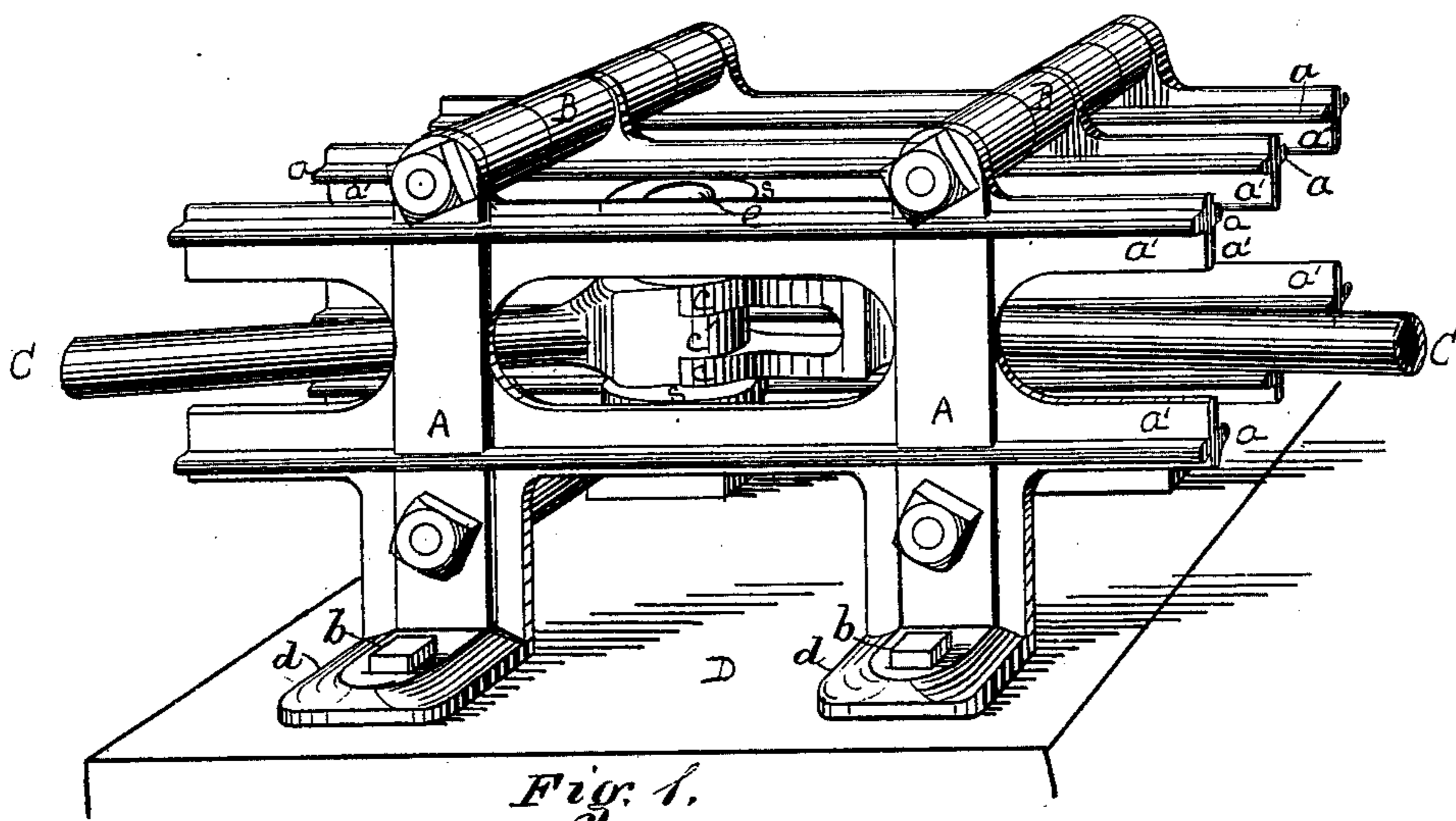


Fig. 1.

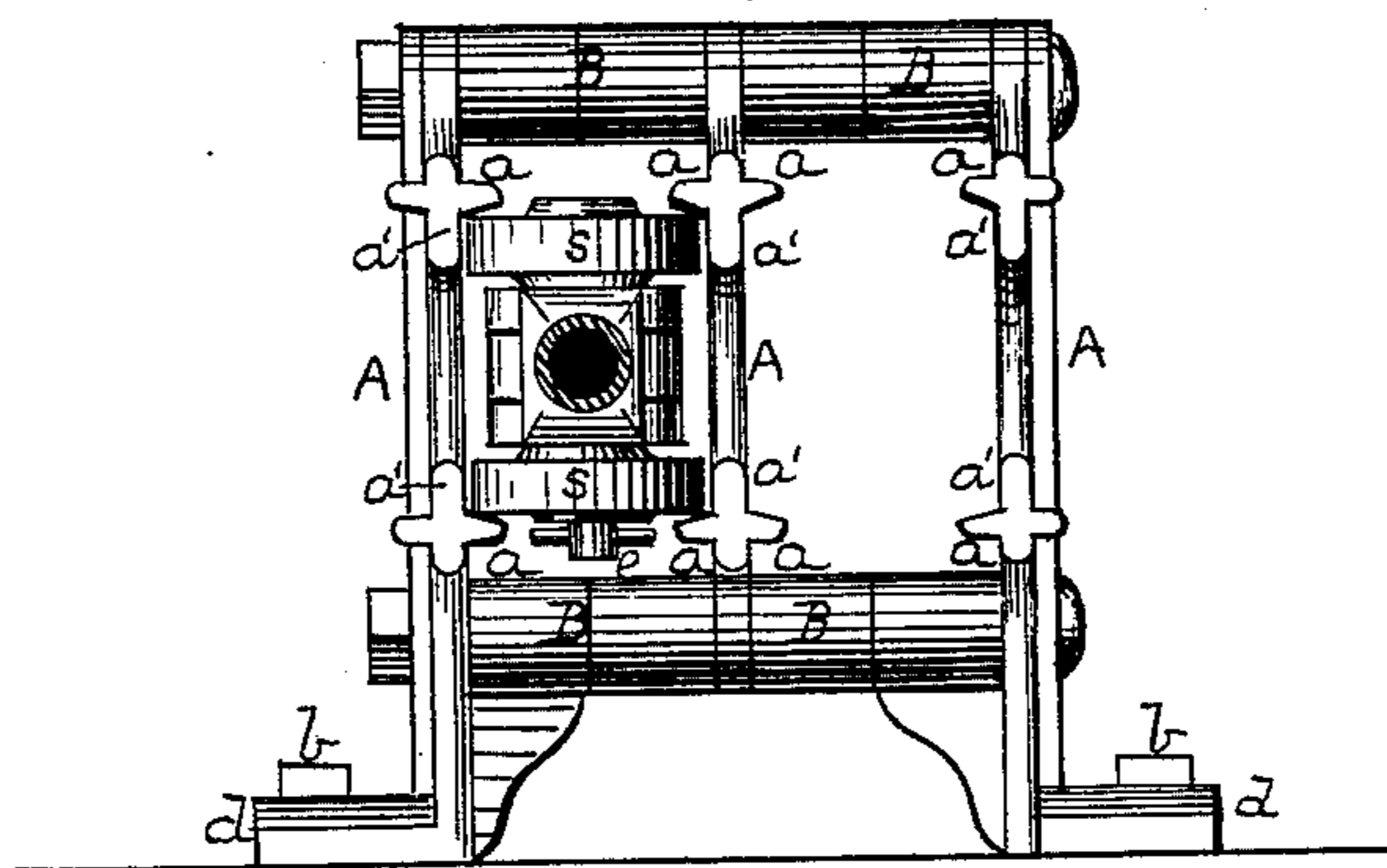


Fig. 2.

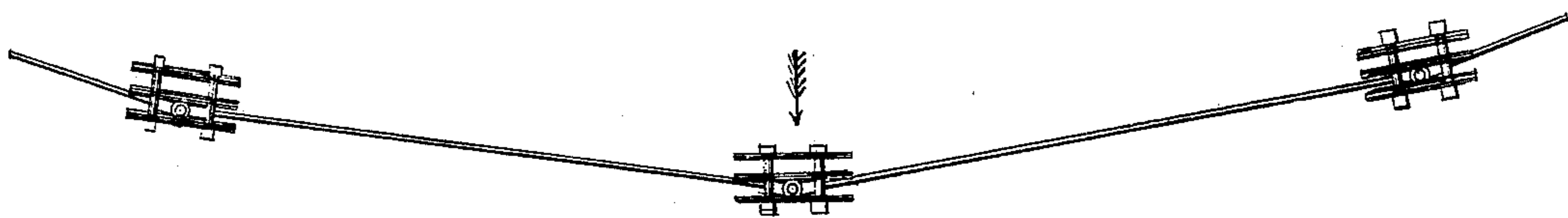


Fig. 3.

Witnesses  
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# UNITED STATES PATENT OFFICE.

ALBERT G. CUMMINGS, OF HARRISBURG, PENNSYLVANIA.

## IMPROVEMENT IN DEFLECTION-STANDS FOR SWITCH-OPERATING RODS.

Specification forming part of Letters Patent No. **218,496**, dated August 12, 1879; application filed May 7, 1879.

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

Be it known that I, ALBERT G. CUMMINGS, of Harrisburg, county of Dauphin, State of Pennsylvania, have invented or discovered a new and useful Improvement in Deflection-Stands for Switch and Signal Connections; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 shows a perspective view of my improved deflection-stand as combined with a joint. Fig. 2 is an end elevation of the same; and Fig. 3 shows, in outline, one method of using my improvement.

In operating switches and signals from a distant station, connection is usually made between the switch or signal and the operating-levers by means of metallic pipes or tubes. These connecting-tubes must frequently be laid around curves, and my invention relates to a device for supporting and guiding such tubes, so as to allow free endwise motion.

It is constructed as follows: Cast-metal side plates A A, two or more in number, are bolted together at the desired distance apart, and in parallel planes, by means of distance-pieces and bolts B, passing through the upper and lower edges of the plates. An open-ended box or frame is thus made, which may be secured in the desired position by means of spikes or bolts *b*, passing through feet *d* and block or plank D, which may be the bottom of the box in which such connecting-tubes are usually laid, or other suitable foundation. Lengthwise of these side plates A are made parallel ribs or rails *a*, which, in connection with the adjacent faces *a'* of the side plates, form parallel guides or rails.

The sections of the coupling-tubes C are connected by eye-and-socket or hinge joints *c c'*, so as to allow the line of connection to be curved as desired. The guide-box A A is located at such jointed couplings, with the connecting-tube passing through it, and on the coupling-bolt *e* are journaled two friction-wheels, *s*, one above and one below the coupling-joint. These wheels are arranged to run in the guide-rails *a a'*, both above and below, and serve not only to guide and support the

line of connecting-tubes, but also to relieve the lateral friction which would otherwise be caused in communicating endwise motion through such a bent and jointed connection.

In Fig. 3 I have illustrated this application of my improvement by showing three guides supporting a jointed and curved or angular connecting-tube, and in all the figures I have shown the device with three plates, A A A, thus providing guides for two lines of connections arranged side by side. Any number may be thus employed, as desired; and, if preferred, the height of the plates A may be increased, and provision made for guiding two or more lines of connections arranged one over another. A similar arrangement may also be employed with connections along a changing grade, causing a vertical deflection of the bars or tubes. In such a case the bolt *e* may be arranged in a horizontal line, so as to cause the wheels *s* to bear against the flanges *a*. A carriage is thus obtained to support the weight of the tube and relieve vertical pressure or friction.

I do not limit my invention to the form or kind of joint *c c'* shown and described, but include the use of the described device with other kinds of jointed connections, and as a bearing in connections without joints.

The tubes may be dispensed with, and bars or rods substituted in lieu thereof, and in either case the bars or tubes, when employed without joints, would be somewhat enlarged at the point where the pin *e* would pass through them, and for a suitable distance on each side of the pin the bars would be made parallel with the guide-rails, and the bars then bent at such an angle at each end of the box as would be required, or they may be bent at an angle from the pin, on each side thereof.

While the working-faces of the rails *a* may be flat or parallel with the top and bottom faces of the rollers *s*, which work thereon, I prefer to make them with a bevel or slope, particularly the bottom ones, as shown in Fig. 2, though an equivalent oval face may be used, though less advantageously.

The object of so shaping the working-faces of the rails *a* is to lessen the friction of the rollers thereon, and also that dirt, sand, or gravel may not lodge thereon, so as to inter-

ferre with or block the rollers, or if it does lodge, that the rollers may the more readily loosen it and force it off. It is important that such apparatus be made with the least possible liability to get out of order or become damaged or choke.

Furthermore, the endwise-thrust strain on the pipe-connections C under the resolution of forces is partly expanded in the direction of the arrow, Fig. 3. This results in the friction-rollers *s s* being thrown or pressed against the outer rails *a'*.

When the strain on the connections is reversed, the tendency of the tubes or rods is to assume a straight line, causing the rollers to impinge on the rails on the opposite side, thus changing the bearing of the rollers from the outer rails *a' a'* to the inner rails *a' a'*.

The beveling of the working-faces of the rails *a*, as shown and described, acts so as to bring the rollers *s s* well up against the outer rails *a'*, and also so as to cause them to clear the inner rails *a'*, and thereby lessen the resistance. And in cases where the pipe-connections C form a much less obtuse angle than is represented in Fig. 3, I make provision for the working of the connections without interfering with the side plates A of the stand by bowing outwardly the outer side plates A A, and entirely omitting or considerably shortening up the inside plate A.

I claim herein as my invention—

1. A deflection-stand or open-ended box, A A, with top connections B, provided with guide-

rails, in combination with one or more friction-rollers, *s*, attached to a tube, bar, or rod for a switch and signal connection, substantially as and for the purpose specified.

2. A deflection-stand with top connections B, having laterally-supporting rails *a'* and bottom supports *a*, in combination with friction-rollers *s s*, arranged on a hinge-pin of the joint, substantially as set forth.

3. As a guide for the jointed connections between switch or signal and operating-levers, the deflection-stand with bolt or cast connections B, in combination with friction-rollers *s s*, arranged to rest upon and between parallel guides of the stand, for supporting the connections at the joints, substantially as set forth.

4. The carrying-rail having the flanges *a*, with bevel or sloping or oval working-faces, in combination with the roller or rollers *s*, which work thereon, substantially as set forth.

5. As an anti-friction device for guiding the connection between switches or signals and operating-levers, the combination of an open-ended box, A A, with top connections B, a support, *e*, for the connection, and anti-friction rollers running on guide-rails of the box, arranged substantially as described.

In testimony whereof I have hereunto set my hand.

ALBERT G. CUMMINGS.

Witnesses:

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R. H. WHITTLESEY.