(No Model.)

3 Sheets—Sheet 1.

R. STRETCH.

SWITCH STAND.

No. 315,570. Patented Apr. 14, 1885.

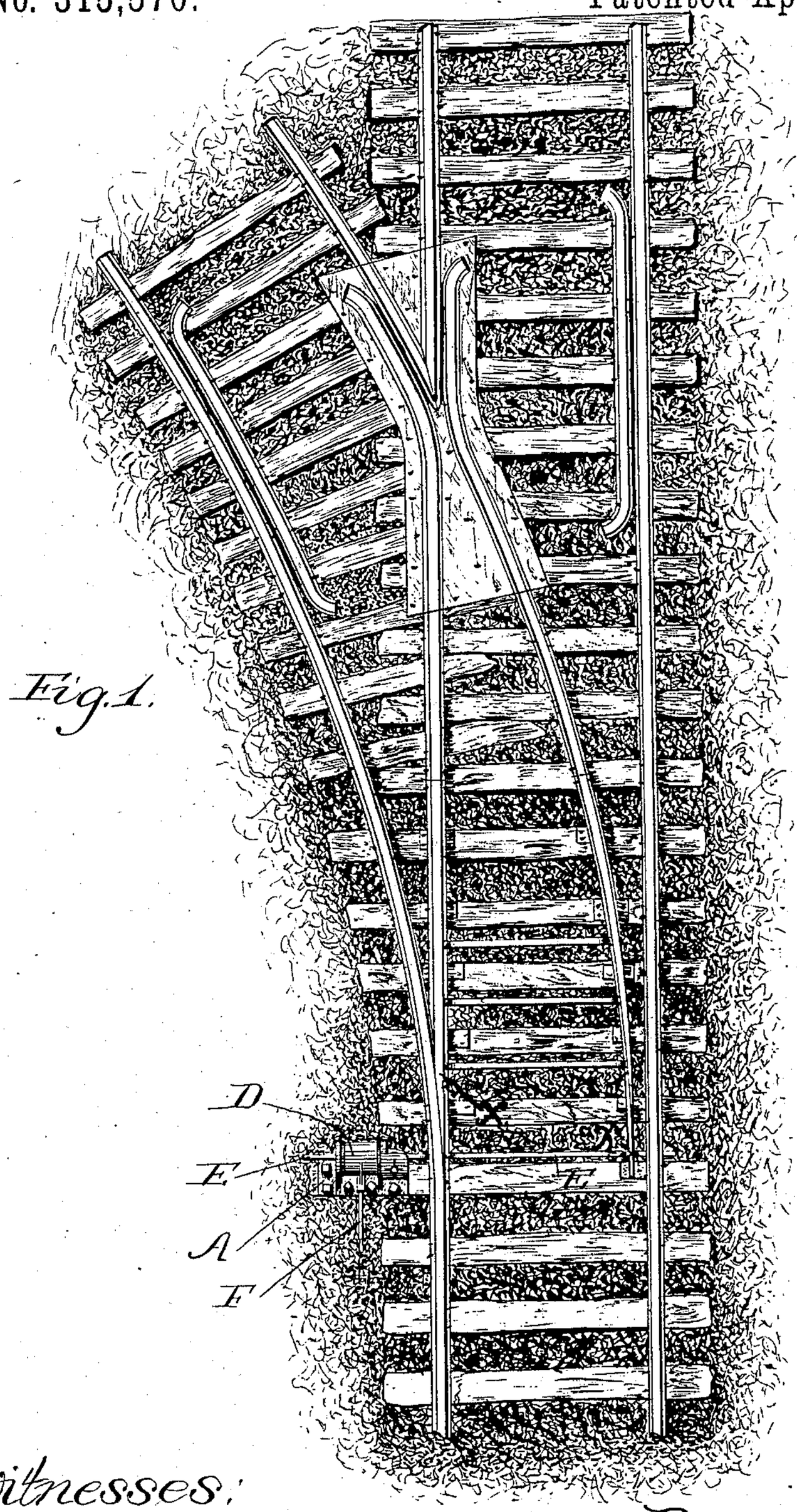

Fig. 1.

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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

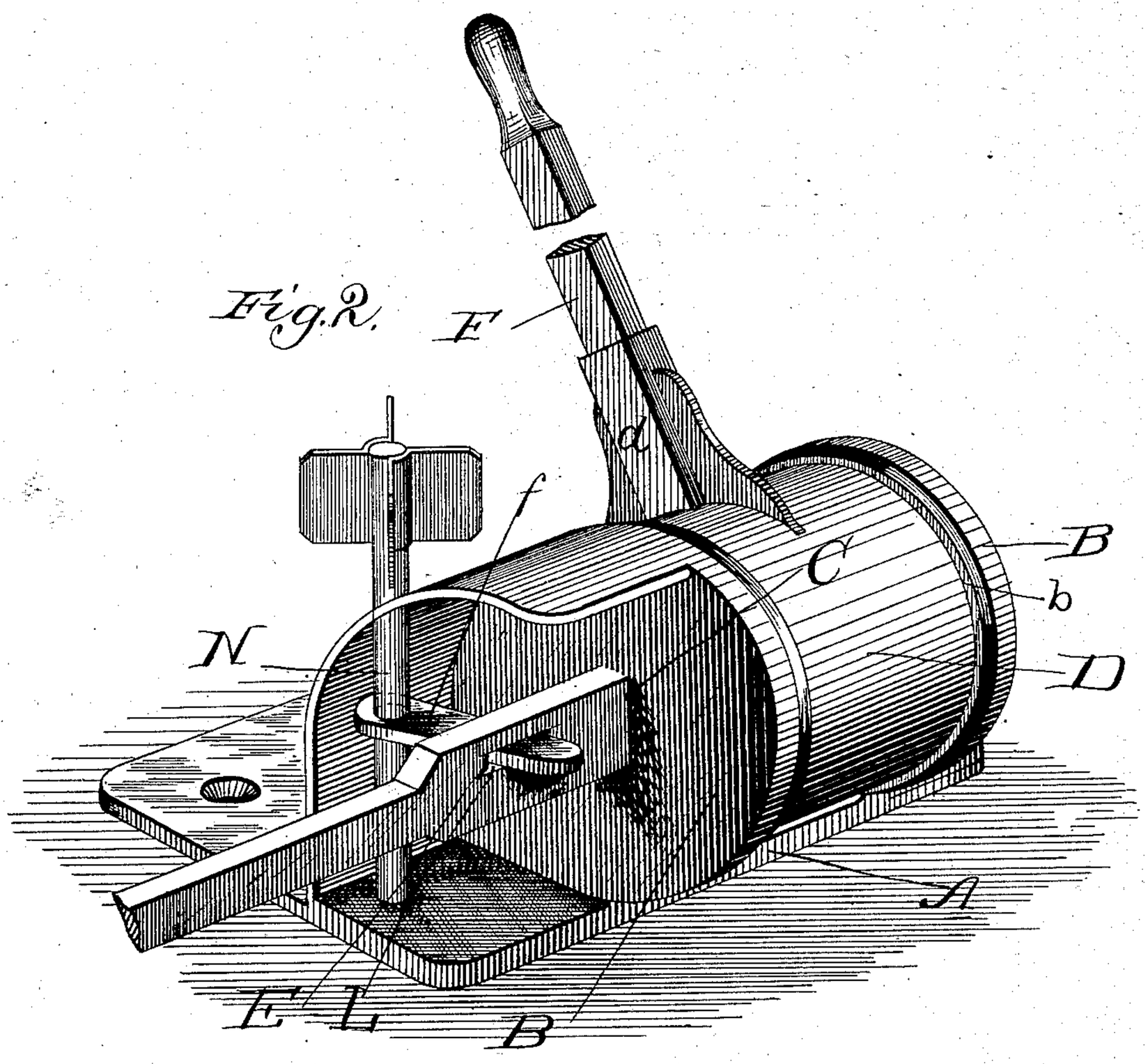
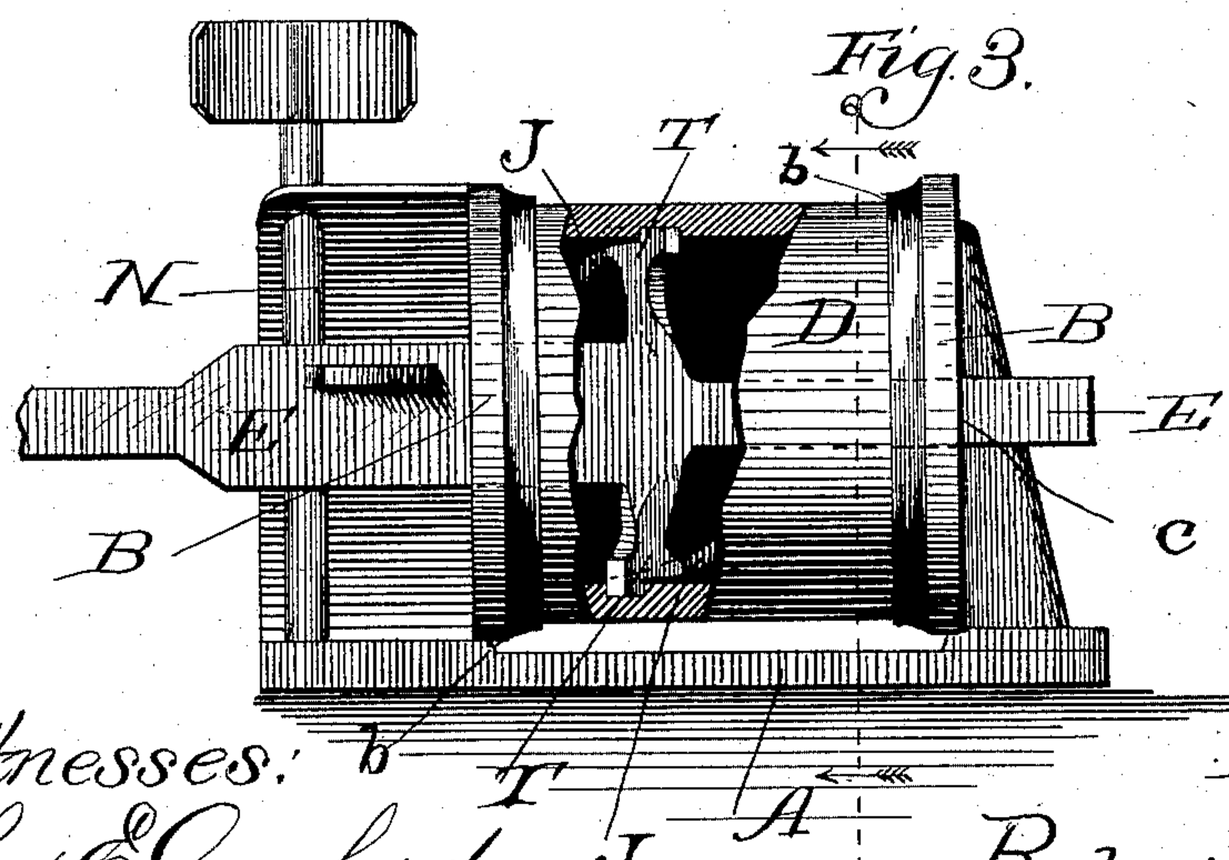


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 4.

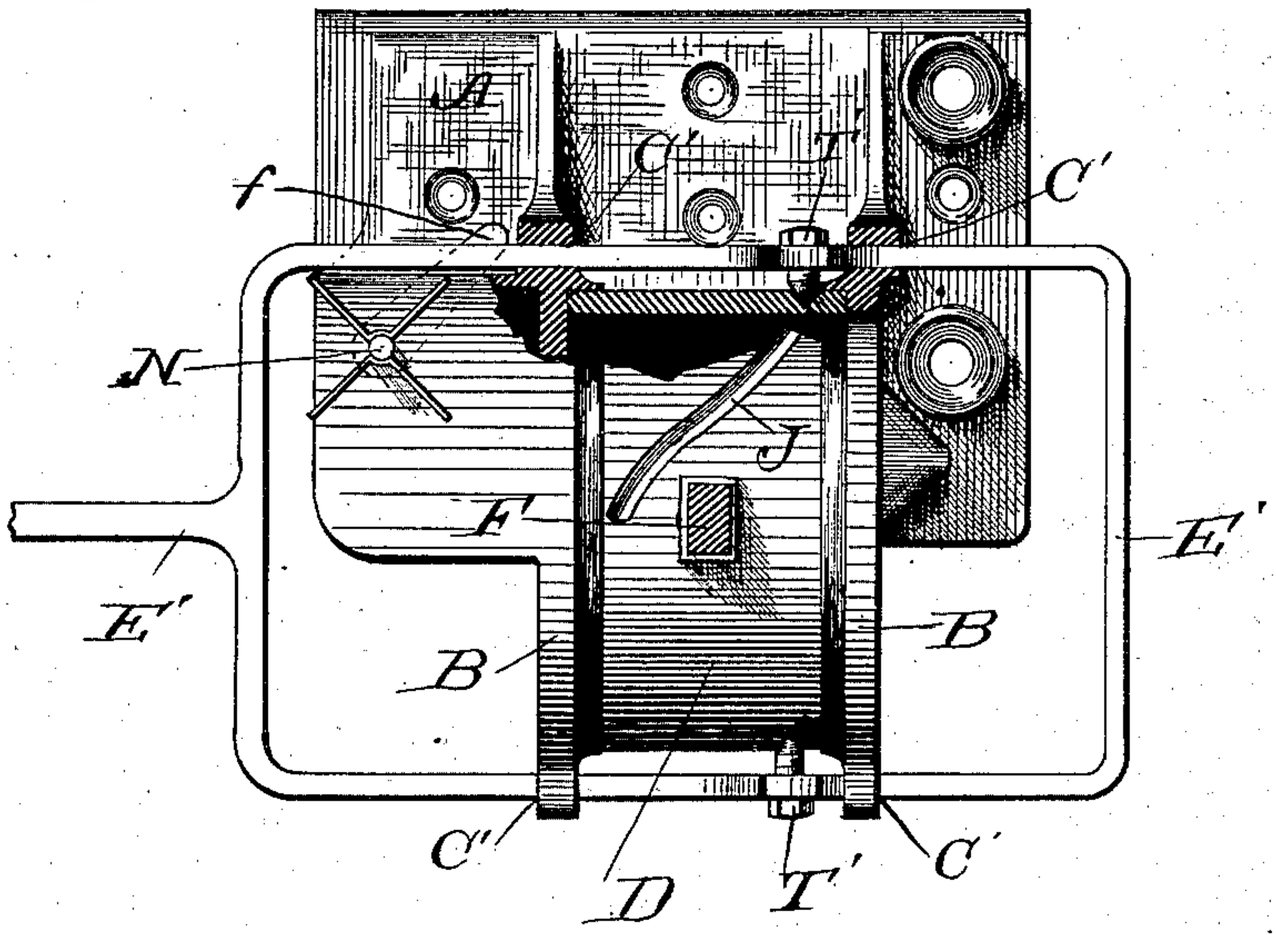


Fig. 5.

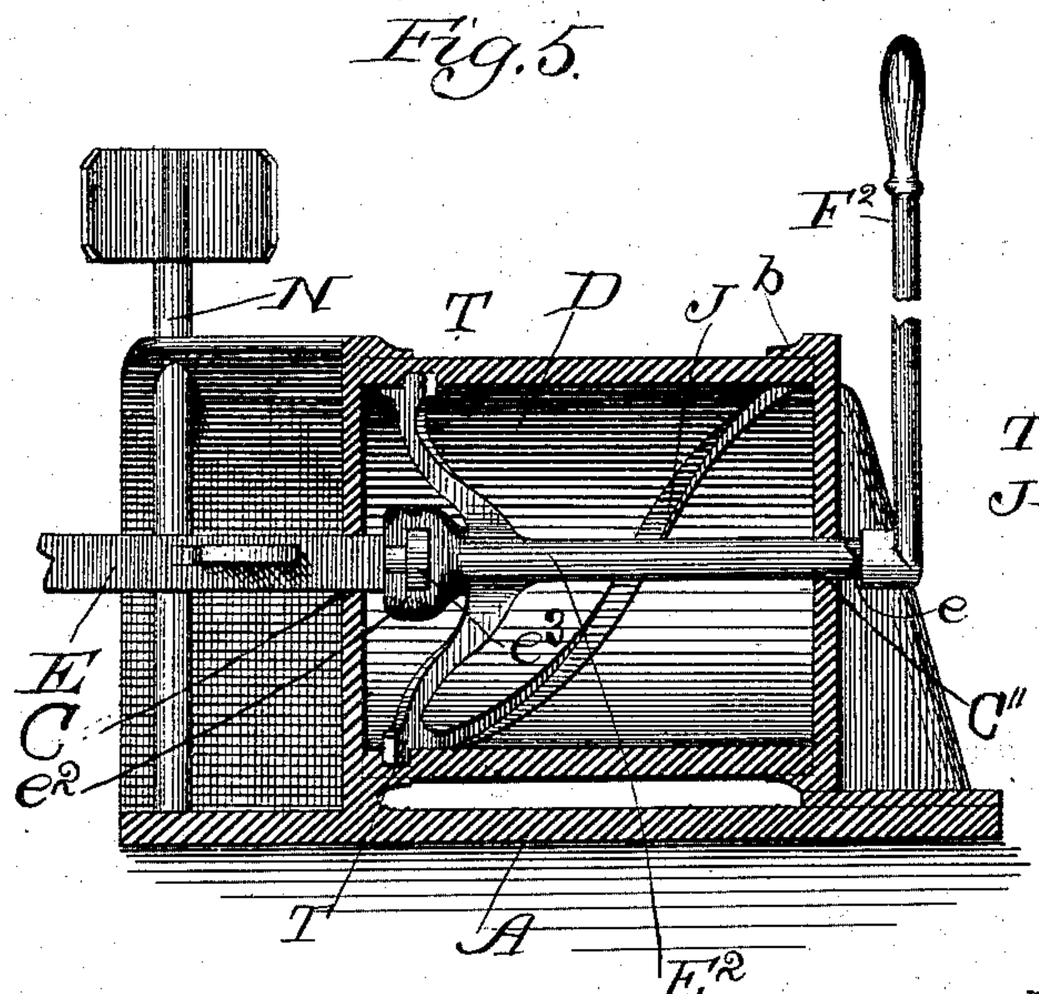


Fig. 6.

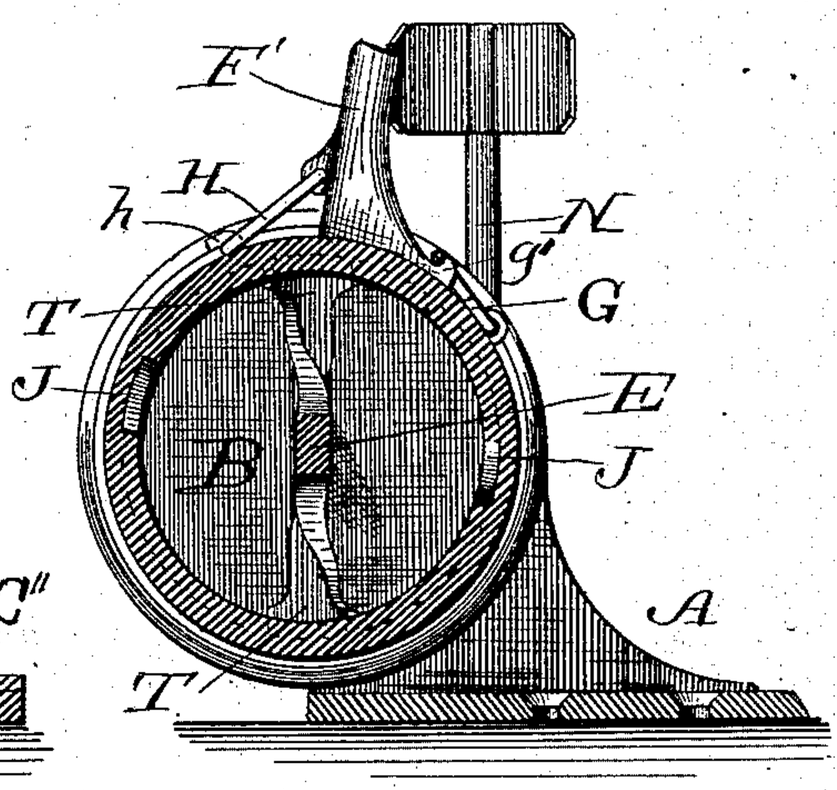


Fig. 8.

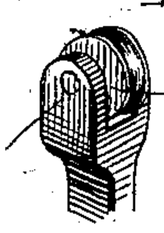
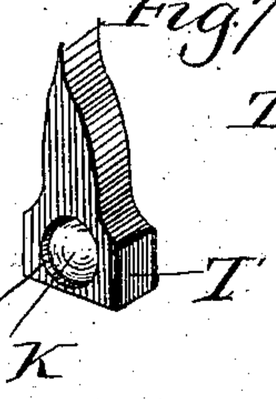


Fig. 7



Witnesses:
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T. L. Brown.

Inventor:
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UNITED STATES PATENT OFFICE.

ROBERT STRETCH, OF TECUMSEH, MICHIGAN.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 315,570, dated April 14, 1885.

Application filed April 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, ROBERT STRETCH, a citizen of the United States, residing at Tecumseh, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Railroad-Switch Stands, of which the following is a specification.

My invention relates to railroad-switch stands to be used in throwing the rails forming the switch in a railroad-track; the stand, together with all the mechanism connected therewith, being designated herein as a "railroad-switch stand."

The object of my invention is to secure a switch-stand in which, first, the working parts may be so protected or housed and of such character that the action of snow, ice, or water, and the use and consequent wear of the different parts will not interfere with or in any way affect the working thereof; second, the mechanism by which the switch-rail is thrown is easily and perfectly controlled, certain in its action, and affords means whereby great power may be exerted through the lever by which the switch is operated when required—as, for instance, when a "split switch," so-called, is used, in order to force the split rails of the switch against the main or unbroken rail or rails and permanently hold them there; third, the switch-rails, when placed in any desired position, will not become displaced or changed by the jolting or jarring of a train passing over said switch, or by any power or pressure applied in any way other than to the lever by which the switch is operated, thus avoiding the necessity of locking the lever to the switch-stand to prevent the accidental displacement of the switch, and affording means, when said lever is made detachable, of dispensing entirely with any lock to prevent thoughtless or accidental meddling therewith; and, fourth, means are provided for moving the switch-rails, compact in form, and having a lever moving, when the switch is thrown, in a vertical plane parallel to the rails forming the track.

I have illustrated my invention by the drawings accompanying this specification and forming a part hereof, in which—

Figure 1 is a plan of switch-rails and track with the switch-stand attached. Fig. 2 is a perspective of my improved switch-stand. Fig. 3 is an elevation with a portion of the drum taken away, showing interior. Fig. 4 illustrates one way of constructing a switch containing a portion of the elements of my invention. Fig. 5 is a cross-section illustrating another manner of constructing my improved switch-stand. Fig. 6 is a cross-section of Fig. 3 on line 6 6, looking in the direction of the arrow in Fig. 3. Figs. 7 and 8 are detail drawings of the manner in which the ends of arms T may be protected from wear. A round metal ball, K, is inserted in hole *g*, (shown in Fig. 7,) having a diameter larger than the thickness of the arm T, and loosely fitting grooves J J in the inner surface of cylinder D.

Like letters refer to like parts throughout the several views.

A is the base-plate. B B are circular heads, of cast-iron or other metal, having shoulder or flange *b* lapping over or partially covering cylinder D. C C are square or rectangular holes in heads B. C″ is a round hole in head B in the form of construction illustrated in Fig. 5. C′ C′, Fig. 4, are slots in heads B. D is a cylinder, of cast-iron or other suitable material, revolving freely in heads B, and having socket *d* or its equivalent cast thereon, to receive lever F, and also having spiral groove or threads cast on the inner or outer surface thereof, as preferred. D′, Fig. 5, is a cylinder similar to cylinder D, having like grooves or threads, J, on the inside thereof, but stationary in heads B B. E is a square or rectangular bar or rod, of wrought-iron or other suitable material. Bar E is connected or attached to switch-rails X X. E′ is a modification of rod or bar E. E^2 is that portion of bar E contained in stationary drum D′, and has joint e^2 e^3, so that it may be revolved or turned therein. *e* is a square end of E^2. Lever F^2 may be placed thereon. F is the lever by which the drum D′ is turned and the switch thereby operated. *f* is the lever of the signal-shaft here illustrated. F′ is a detachable lever. F^2 is another form of a detachable lever. G is a link attached to drum D. *g* is a hole in arm T. *g′* is a projection or hook on lever F′. H is a link on lever F. *h* is a projection or hook on drum D. K is a ball, of steel or other suitable material, placed in hole *g* in arm T. The groove J in cylinder D is made of such width when

ball K is used that ball K will slide freely therein. Ball K thus receives the wear which arm T would otherwise be subjected to when the switch is thrown. J J are two grooves on the inner surface of drum D, in each of which grooves one end of arm T fits movably close. A rib or thread may be used instead of groove J, in which case a grooved construction or the grooved roller *d'* (shown in Fig. 8) would replace the rib or other projecting part of arm T, and groove J may be placed on the outside of the drum, as on drum D, Fig. 4. T T are projecting T-headed arms, rigidly attached to bar E and also to bar E^2. T' is a bolt or point attached to bar E' and fitting into groove J. N is a form of signal-shaft illustrated as used in connection with my improved switch-stand, having arm *f* engaging with slot L in bar E or E'. Arms T T may form a segment of a screw-thread or spiral rib fitting closely into grooves J J, on the inside of the cylinder D. When preferred, hole *g* may be cast or bored in each of the arms T T, and round ball K, of steel or other suitable material placed therein, fitting into grooves J J. When two ribs are used instead of grooves J J, roller *d'*, having a groove formed as shown in Fig. 8, is used. When the form of bar E', Fig. 4, is used, groove J, or an equivalent rib, is cast on the outside of the cylinder. Lever F may be fastened firmly in socket *d* of cylinder D, or, if preferred, the lever may be detachable from said socket or its equivalent.

In Fig. 6 I have shown a link, G, and projection, *h*, attached to drum D, and link H and projoction *g'* on lever F'. When the form last described, Fig. 6, is used, the drum D can be turned only by lever F' with connecting-links, and no lock is ordinarily necessary. Bar E slides freely in slots or holes C C in circular heads B. Bar E' slides freely in slots or holes C' C' in circular heads B. Heads B B may be bolted to base-plate A, or one of said heads may be cast on or with base-plate A. Cylinder D revolves freely in circular heads B B. Cylinder D' does not revolve in circular heads B B.

It is evident that grooves J J may be placed on the outside of cylinder D, and arms T' T' of bar E' be made to engage therein in the manner shown in Fig. 4, which would be the equivalent of the form described and claimed herein; but if such form of construction is adopted the working parts of the switch are exposed to snow, ice, and other obstructions, and the switch would thus be liable to get out of order or become broken, and for these and other obvious reasons I prefer to construct my improved switch in the manner illustrated in Figs. 2, 3, 5, and 6.

In order that the various forms of construction and the principle governing the same which have been given may be more completely and the better understood, I will now give an exact description of each of them.

The construction illustrated in Figs. 2 and 3 consists of base A, having heads B B firmly secured thereto, cylinder D, having the grooves J J on the inner surface thereof, said cylinder D turning freely in heads B B, and the bar E, passing completely through heads B B and cylinder D, bar E having thereon arms T T, extending outward therefrom and engaging with grooves J J. The switch-rail is coupled to the end of bar E either directly or by means of an intervening bar. The cylinder is turned in the heads B B by lever F. The inclination of the grooves, as compared with the heads B B, is such that they form a worm or screw, and the turning of the cylinder D in the heads B B draws or "screws" the arm T or bar E to the right or left, as desired.

The construction illustrated in Fig. 4 is as follows: The cylinder D turns freely in the heads B B, (in precisely the same way as in the construction just described.) Grooves J J are on the outer surface of cylinder D, and bar E', instead of passing through cylinder D and heads B B, as in the construction last described, passes around the outside of the cylinder, having short arms T' T', which engage with the grooves J J. Cylinder D is turned in heads B B in precisely the same manner as is the cylinder turned in the construction shown in Figs. 2 and 3, and bar E' is thus drawn or "screwed" to the right or left, as desired. In this form of construction the turning of the cylinder D in heads B B is protected or housed from the weather as in the form first described; but the grooves J J and arms T' T' may be clogged by dirt or snow or ice or otherwise, and I do not, therefore, make use of this form of construction.

The construction shown in Fig. 5 is as follows: Base A, heads B B, cylinder D, having grooves J J, are identical with the same, as shown and illustrated in Figs. 2 and 3 and before described; but the cylinder D, instead of rotating or revolving in the heads B B, as in both forms before described, is held stationary therein, and instead of a square or rectangular hole, C, in head B a round hole, C'', is provided, as shown at the right. The bar E, passing through the heads B B and cylinder D, is broken or cut in two at e^2 e^3, and a joint made that will allow a rotary motion to be given to that portion of bar E lettered E^2, Fig. 5. Lever F^2 is placed upon the part *e* of bar E^2, projected through head B. The turning of bar E^2, having arms T T, engaging with groove J J thereon to the right or left, will draw or screw bar E backward or forward, as desired.

The manner of operation of my improved switch-stand is as follows: Lever F is turned or rotated, cylinder D rotating in unison therewith. Bar E, by means of T-headed arms T T, is thrown or screwed or drawn through holes C in circular heads B, bar E being prevented from rotating by said holes C C. The movement of bar E is communicated to the switch-rail.

When my improved switch-stand is em-

ployed in a two-throw switch, cylinder D makes about one-half a revolution. When employed in a three-throw switch, cylinder D makes about one-quarter of a revolution, when the next of any given switch-rail is placed in position. When a greater throw is desired, the size of the cylinder D may be increased so that any desired portion of a revolution thereof will throw the switch-rails sufficiently to place any desired switch-rails in connection with the main track. Cylinder D is in all cases of sufficient length and diameter so the grooves J J form an inclined plane, as do the threads of an ordinary screw, having such inclination, as compared with the plane in which the T-headed arms rotate in the construction shown in Fig. 5, that when cylinder D is revolved or made to rotate bar E will be pushed or drawn freely and easily in slots C C; but when bar E is pulled or pushed in either direction by the action of the rails or otherwise, there is no tendency to turn or rotate cylinder D.

Having thus described my invention, its construction, and its manner of operation, what I claim, and desire to secure by Letters Patent, is—

1. A frame forming a base-plate and having cylinder-heads cast or bolted thereon, a cylinder having a groove or thread placed therein or thereon turning freely in said heads, with a lever removably attached thereto, in combination with a bar attached to the switch-rails passing through slots or holes in said cylinder-heads, and having projecting arms engaging or meshing with the grooves on said cylinder, all constructed, operated, managed, and controlled substantially as described, and for the purposes set forth.

2. In a railroad-switch stand, the combination of the base-plate A, cylinder-heads B B, cylinder D, groove J, lever F, holes or slots C, bar or rod E, having projecting arms T T, and danger-signal H, with arm *f*, and slot L, all substantially as described, and for the purpose specified.

ROBERT STRETCH.

Witnesses:
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