

No. 763,806.

PATENTED JUNE 28, 1904.

E. SMITH.  
TRACK SWITCH.

APPLICATION FILED NOV. 13, 1903.

NO MODEL.

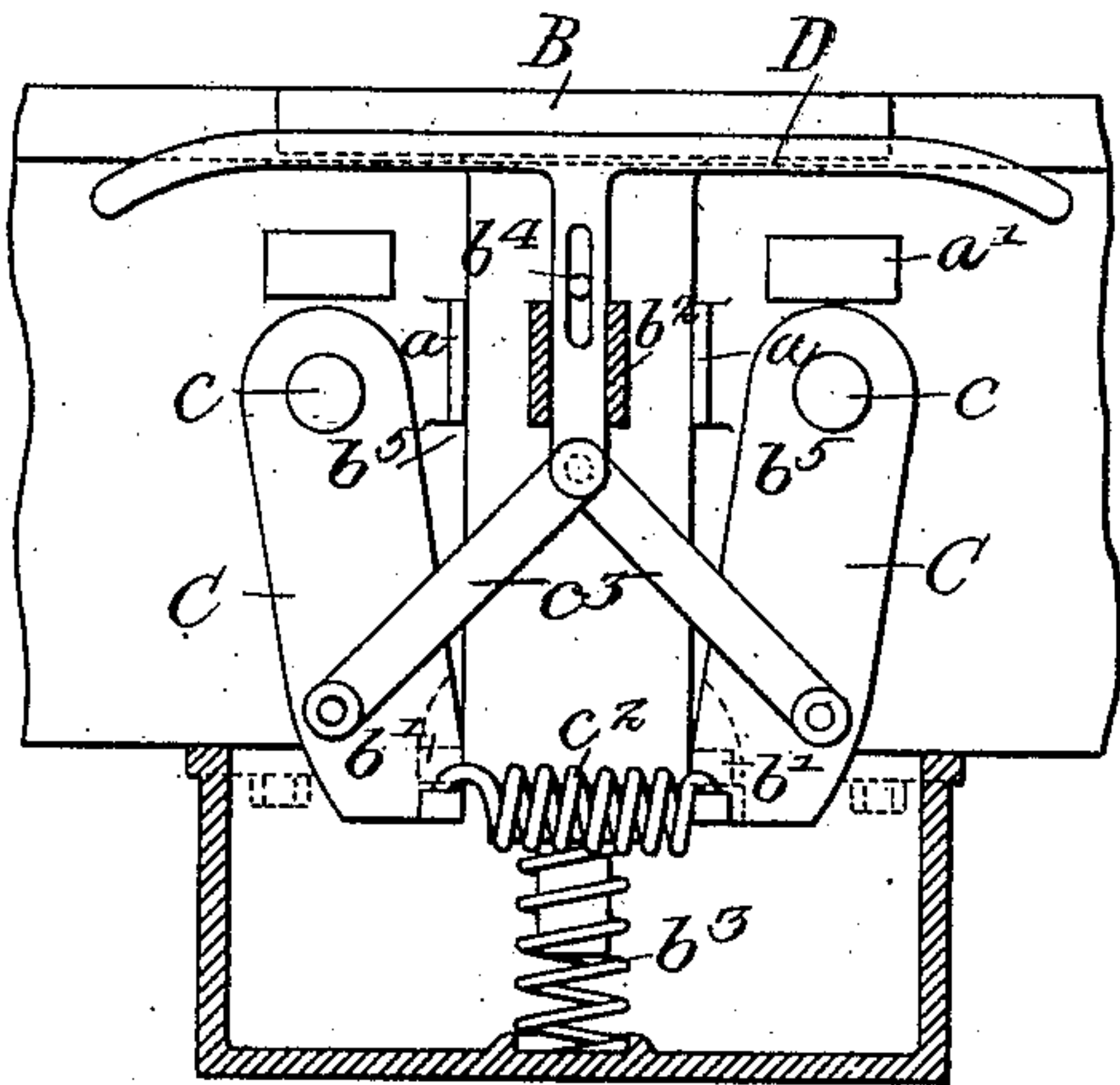


Fig. 3.

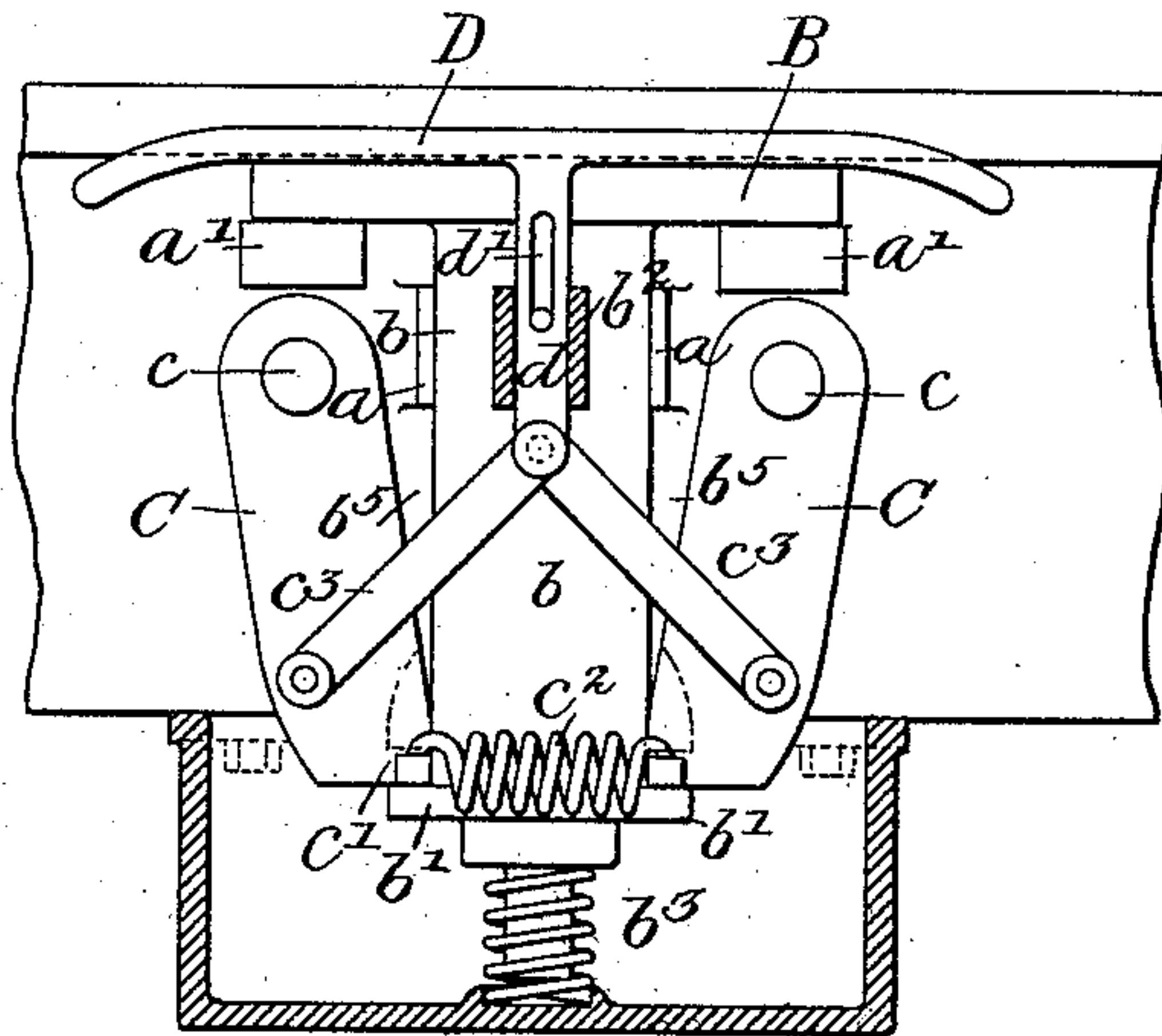


Fig. 2.

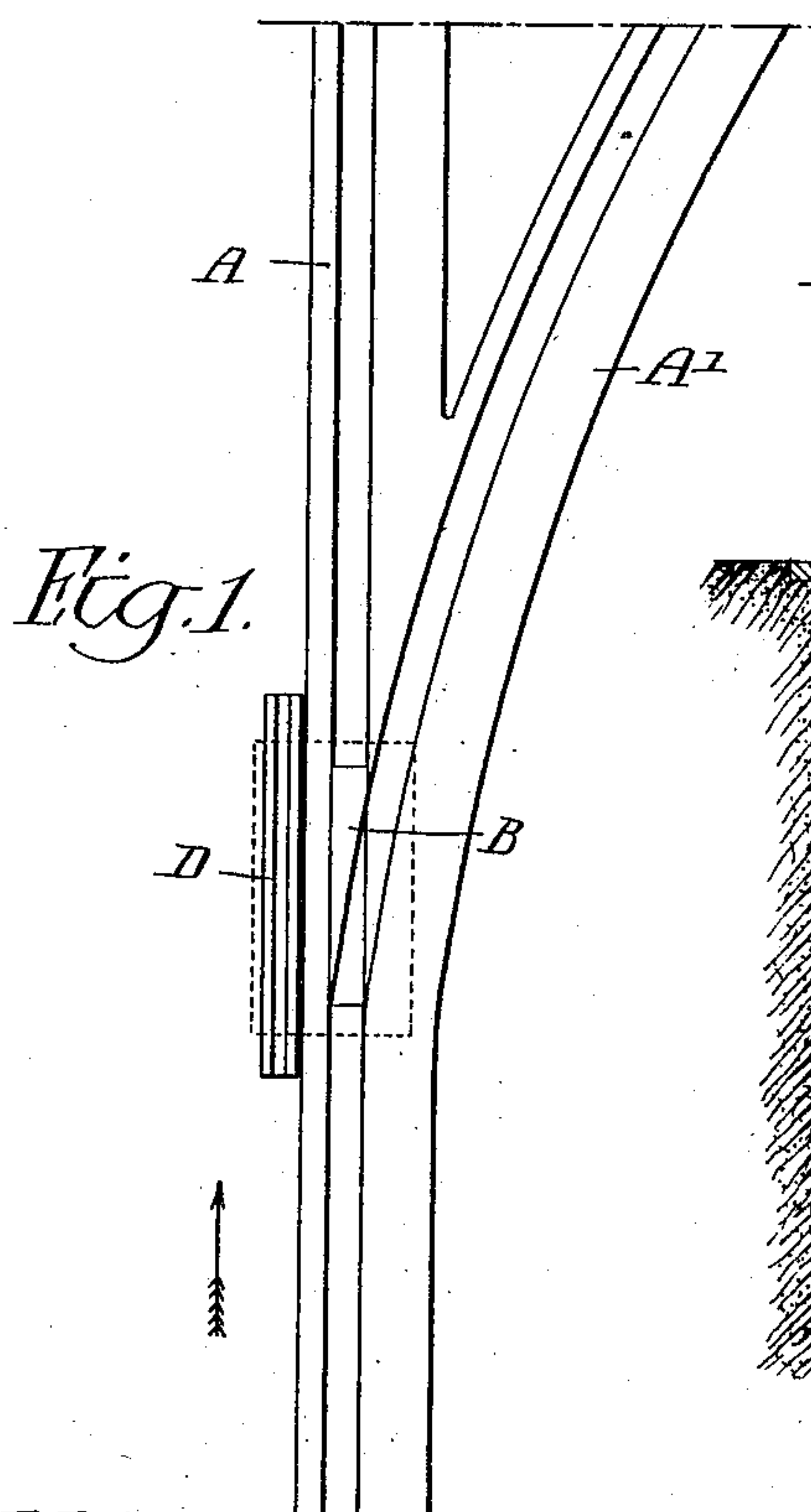


Fig. 1.

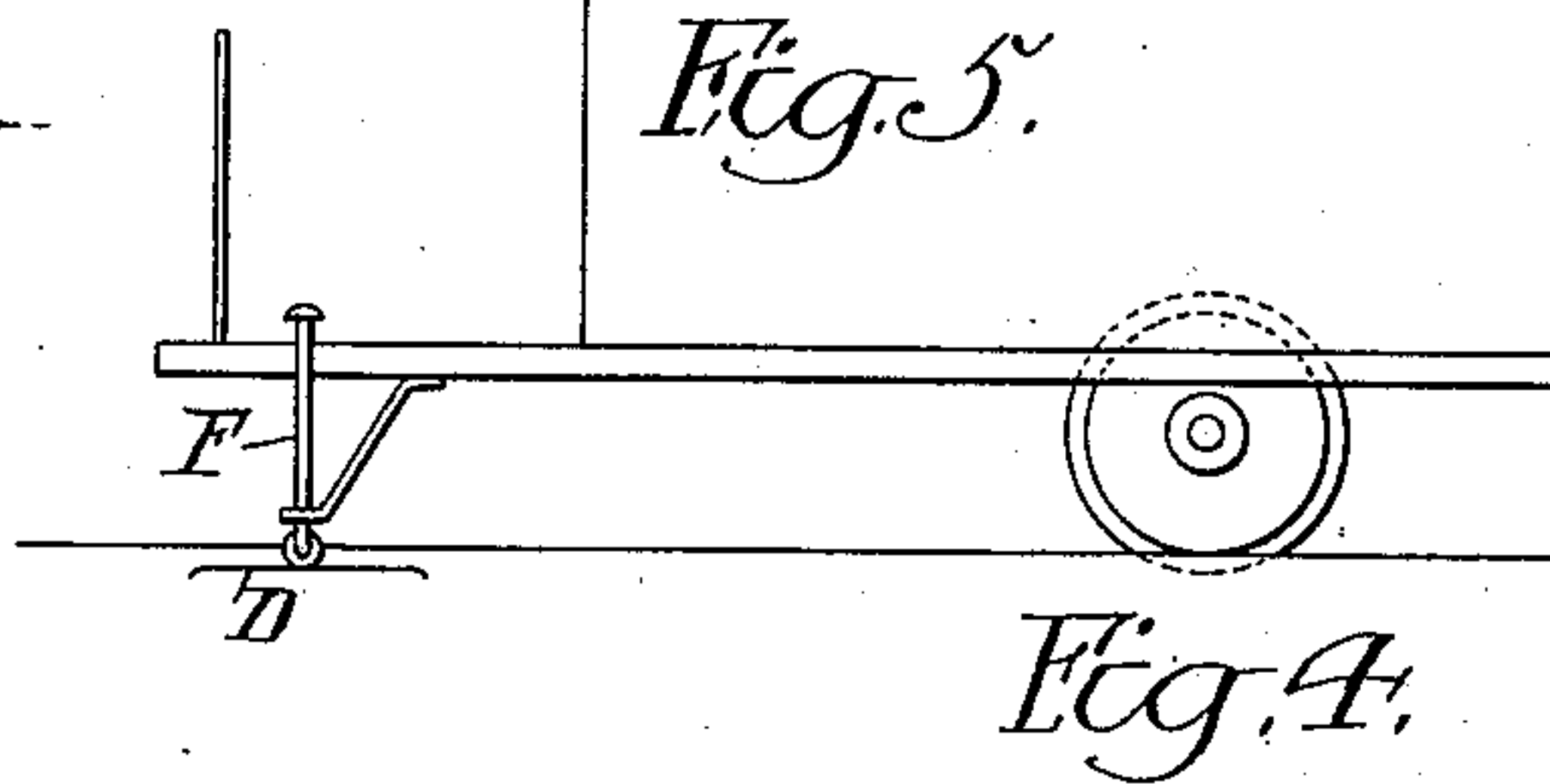
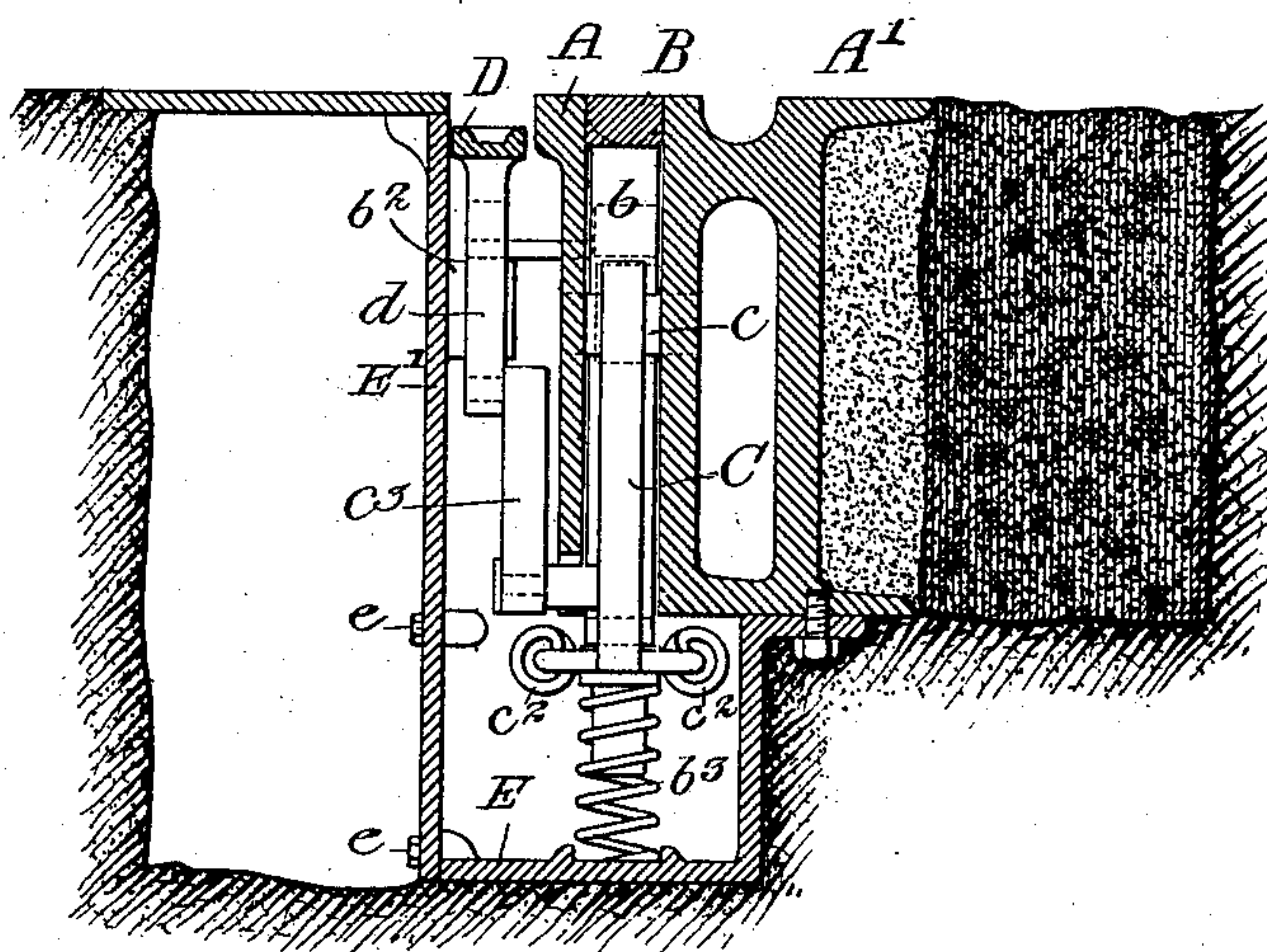


Fig. 4.



Witnesses:  
Augustus R. Pappas  
Titus H. Fox.

Inventor:  
Ernest Smith,  
by his Attorneys,  
Hamm & Hamm



# UNITED STATES PATENT OFFICE.

ERNEST SMITH, OF PHILADELPHIA, PENNSYLVANIA.

## TRACK-SWITCH.

SPECIFICATION forming part of Letters Patent No. 763,806, dated June 28, 1904.

Application filed November 13, 1903. Serial No. 181,081. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST SMITH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improve-  
5 ments in Track-Switches, of which the following is a specification.

My invention relates to certain improvements in switches operated from a moving car for causing the same to be directed upon either  
10 one of two sets of tracks or rails, the object of the invention being to provide a relatively simple structure whereby a switch point or section shall be moved vertically, so as to either be interposed in the path of the flanges  
15 of the car-wheels, so as to direct them into a curve or branch track, or depressed, so as to permit the car-wheels, and consequently the car, to continue in a straight line.

A further object of the invention is to provide a switch having a vertically-movable element whose action is controlled by mechanism operated by a suitable projection or relatively fixed device carried by the car.

These objects I attain, as hereinafter set  
25 forth, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a portion of a car-track including my improved switch. Fig. 2 is a sectional elevation of the movable element of my improved switch, showing it in its depressed position. Fig. 3 is a sectional elevation of the movable element of the switch, showing it in its elevated position. Fig. 4 is a sectional elevation of the switch, taken on the line 4 4, Fig. 1; and Fig. 5 is a diagrammatic view illustrating a possible construction of the device carried by the car for operating my improved switch.

In the above drawings, A is one of the rails  
40 of a relatively straight car-track of the girder type, and A' is the rail of a similar track branching from said first track. As is customary in rails of the type shown, there is a groove formed in the head of the rail for the  
45 reception of the wheel-flange, and at the point of the intersection of the grooves formed in the two rails A and A', I place a vertically-movable piece B, preferably made of hard steel and provided with means whereby it is  
50 supported or locked in either of two positions,

in one case being retained at a height with its top at the same level as the head of the rail and interposed in the groove of the straight rail-section A. In the other case it is held in a depressed position, with its top at a level  
55 slightly above that of the bottom of the groove in the rail. It will be seen that this movable element is preferably wedge-shaped in form and is carried by a downwardly-projecting relatively heavy piece b, which is provided at  
60 or adjacent to its lower end with laterally-projecting lugs b'. Arms C, pivotally held to the rail structure by pins c, are placed on each side of the supporting-section b, their lower ends being preferably hollowed and provided with  
65 a cross-piece c' for engagement with the lugs b'.

The pivots c are so arranged as to permit the lower ends of the arms C to swing toward and from the vertically-movable portion b and are normally pulled toward each other by  
70 means of springs c<sup>2</sup>, connecting said ends.

D is a vertically-movable operating-section having a projecting lug d, which is pinned to a pair of links c<sup>3</sup> at their point of junction, said links being also pivotally connected to the arms  
75 C, respectively. The movement of this operating-section D is guided by projections b<sup>2</sup> on the section b, which in turn is guided by means of lugs a on the rail structure. The said operating-section extends parallel with  
80 and inside of the main rail A and is preferably made, as shown, with a longitudinally-extending groove in its upper surface and downwardly-curved ends.

A casing E is employed to inclose the various parts of the device above described, and there is a spring b<sup>3</sup> resting upon the bottom of said casing and engaging the lower end of the supporting-section b, so as to tend to normally raise the same.  
90

The downwardly-projecting part d of the operating-section D is slotted, as indicated at d', for the reception of a pin b<sup>4</sup>, which is fastened to the section b, and said slot is of such dimensions that after the said section D has  
95 been moved for a predetermined distance downwardly from the position shown in Fig. 3 it will engage said pin and carry down the section b and the switch-section B.

With the switch-section in the position shown 100



in Figs. 1, 3, and 4 a car coming in the direction of the arrow, Fig. 1, will be forced to follow the branch rail A', since its wheel-flanges will strike the said section B and be deflected in the well-known way. If, however, it is desired that the car shall follow the straight rail, the motorman by the depression of a movable bar F or other suitable device carried by the front portion of the car, as in Fig. 5, causes the operating-section D to be moved downwardly, which downward motion causes the arms C to be swung outwardly upon their pivots, so that when said section D has moved far enough to allow the lugs b' on the pieces b to clear the cross-pieces c' on the ends of the arms C the end of the slot d' engages the pin b<sup>4</sup> and carries down said piece b, and with it the switch-section B. When the car-operated device again permits the operating-section D to move upward, it will be understood that the relatively heavy springs c<sup>2</sup> draw together the arms C and cause them to interpose their cross-bars c' in the way of the lugs b' before the relatively weak and therefore slow-acting spring b<sup>3</sup> can raise the piece b to its original position. These latter parts are then held in the depressed position, (shown in Fig. 2,) with the tongue or switch-section B at the bottom of the rail-groove, so that the wheels of the car are free to pass over said tongue, the car being caused to continue in the line of the straight track by reason of its momentum.

Any desired means may be employed for supporting the tongue while it is in its depressed position; but I prefer to provide relatively heavy lugs a', formed integral with the rail structure and so placed as to provide a support for the end portions of the tongue-section as long as this is in its lower position. If now it be desired to replace the tongue in its elevated position, so as to cause the car to follow the branch track, the operating-section D is again pressed downwardly, as above described. Such action through the links c<sup>3</sup> causes the arms C to swing outwardly and release the lugs b' in engagement with the cross-bars c' thereof, so that the spring d<sup>3</sup> is free to raise the section b, with its switch-section B, to a level with the top surface of the rail. The extent of this motion is limited by lugs b<sup>5</sup>, which engage the lower edge of the guides a when the switch-section has reached the proper elevation.

If desired, a recess may be provided in the road-bed adjacent to the side of the casing E, so as to admit of the removal of the plate which incloses the mechanism. This plate E' is held in position by means of the bolts e, which enter suitably-tapped holes in the body of the casing.

From the above it will be seen that the vertically-movable switch-section is locked from motion when in an elevated position as well as when in its depressed position and that by

the use of any suitable device carried either by the car or by its wheels the movable operating device is caused to release said switch-section, so that it may be elevated by a spring or depressed by the operating-section itself.

I claim as my invention—

1. The combination in a switch of a piece placed to engage a car-wheel, with a device for moving said piece vertically so that it shall be out of operative position, and a spring for raising it out of its inoperative position, substantially as described.

2. The combination in a switch of straight rail and a branch rail, with a vertically-movable piece adjacent to the point of junction of said rails, said piece having means whereby it may be removed from the line of the straight rail, a spring for introducing it into said line and means for controlling the action of the spring, substantially as described.

3. The combination with the rail of a switch of a vertically-movable piece, means for lowering said piece to place it out of action, means independent of said first means for raising the piece to bring it into action, with a pivotally-supported lever for locking the piece in its raised position, substantially as described.

4. The combination with the rails of a switch of a vertically-movable operating-section, a vertically-movable switch-piece for directing a wheel into one or the other branch of the switch with means connecting said operating-section with said switch-piece, substantially as described.

5. The combination with the rails of a switch, of a vertically-movable switch-piece, a pair of arms having means for supporting said piece in an elevated position and an operating-section connected to said arms, substantially as described.

6. The combination with the rails of a switch, of a vertically-movable tongue and a supporting-piece for the same, an arm having means whereby it is caused to support said tongue in an elevated position and a vertically-movable operating-section having means whereby said arm may be moved toward or from the tongue-supporting piece, substantially as described.

7. The combination with the rails of a switch of a vertically-movable piece and a spring tending to elevate the same, an arm having means to prevent upward motion of the said piece, with an operating-section connected to the arm, said operating-section being free to move said arm so as to permit the switch-piece to be elevated by the spring, substantially as described.

8. The combination with the rails of a switch of a vertically-movable switch member having a supporting-piece, a spring tending to elevate said piece, an arm having means normally preventing motion of the piece, with means for moving said arm to release said supporting-piece, substantially as described.



9. The combination with the rails of a switch of a vertically-movable piece and a pivotally-supported arm engaging the same, and a vertically-movable operating-section connected to the arm whereby the latter may be moved out of engagement with said piece, substantially as described.

10. The combination with the rails of a switch of a vertically-movable piece, arms engaging the same to retain it either in an elevated or in a depressed position, a spring tending to elevate said piece and means for moving said arms toward and from the vertically-movable piece so as to lock or prevent motion of the same, substantially as described.

11. The combination with the rails of a switch of a vertically-movable piece having means whereby it is locked with a portion in the path of a wheel-flange traveling in the line of one rail so as to deflect the same into the line of the other rail, with means for releasing said locking means, the said releasing means having a portion placed to move said piece out of operative position after the locking means has released the piece and means independent of said releasing means for moving said piece into operative position, substantially as described.

12. The combination with the rails of a switch of a vertically-movable piece having means locking it either in an elevated or in a depressed position, means for operating said locking means to release said piece, and means for moving said piece downwardly after such release, substantially as described.

13. The combination with the rails of a

switch of a vertically-movable piece placed to engage the flange of a wheel when in an elevated position, a vertically-movable operating-section having means whereby it is caused to engage and move said piece downwardly, arms normally locking said piece either in its elevated or in its depressed position, and links connecting said arms with the operating-section, substantially as described.

14. The combination with the rails of a switch of a vertically-movable piece having a spring tending to elevate it, two pivotally-supported arms fastened to said piece having a spring whereby they are held in engagement therewith, a vertically-movable operating-section, a link extending from said section to each arm, with a slot-and-pin connection between the operating-section and the movable piece, substantially as described.

15. The combination with the rails of a switch of a vertically-movable piece, a pair of arms having means whereby they are caused to engage said piece to retain it either in its elevated or in its depressed position, a spring tending to raise the piece, means for moving said arms to release said piece, means for moving the piece from its elevated to its depressed position and means for limiting the motion of said piece, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNEST SMITH.

Witnesses:

WILLIAM E. BRADLEY,  
JOS. H. KLEIN.