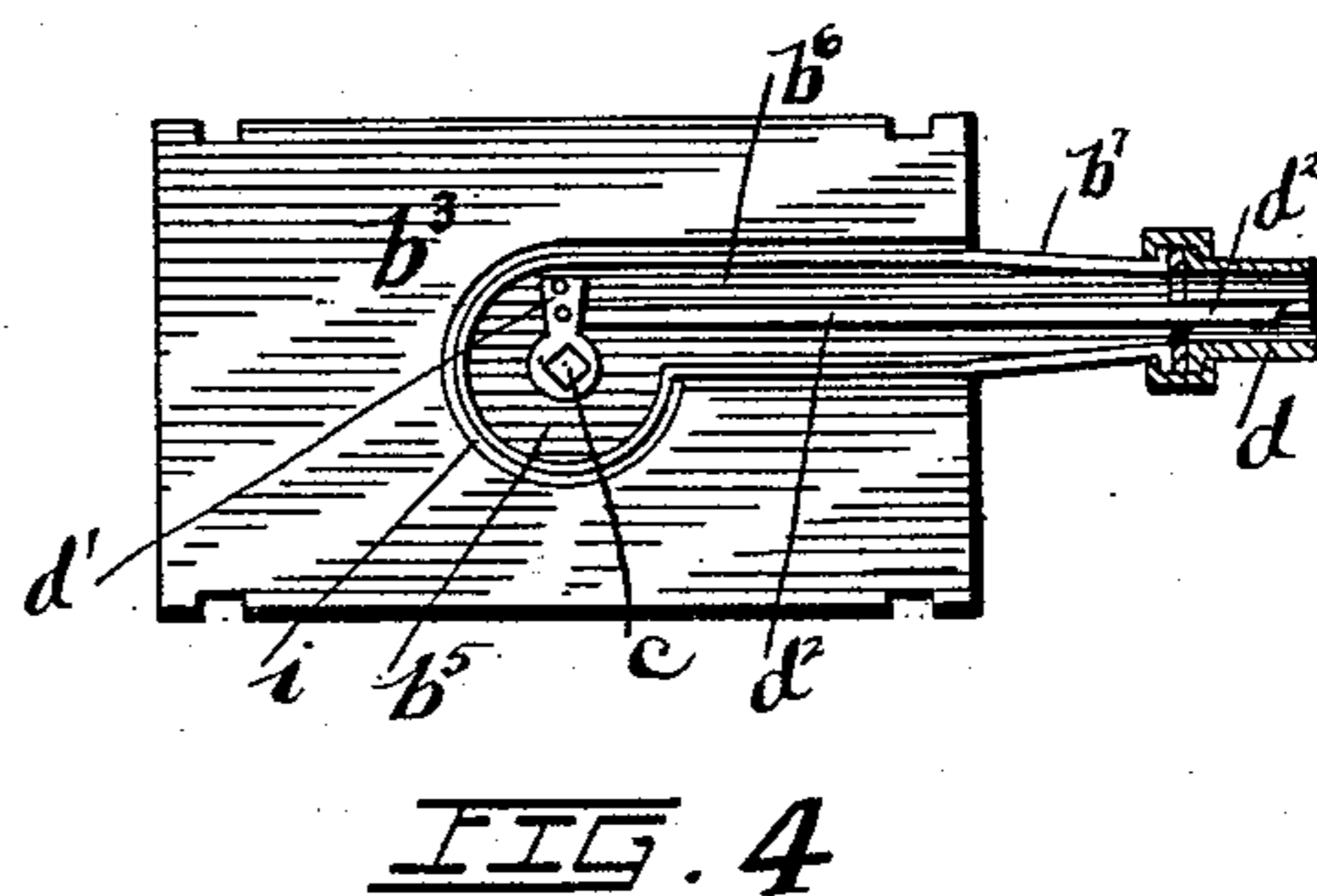
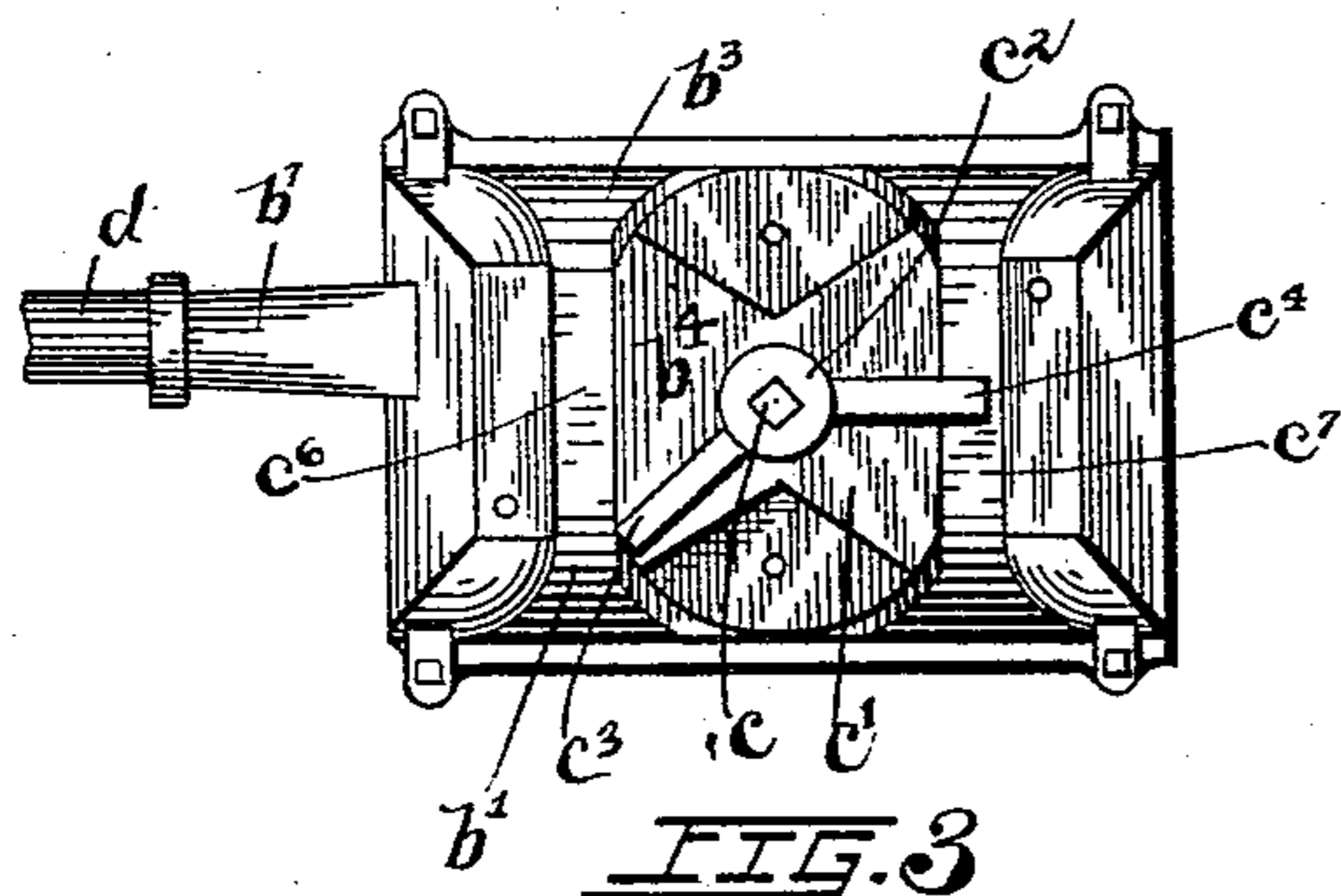
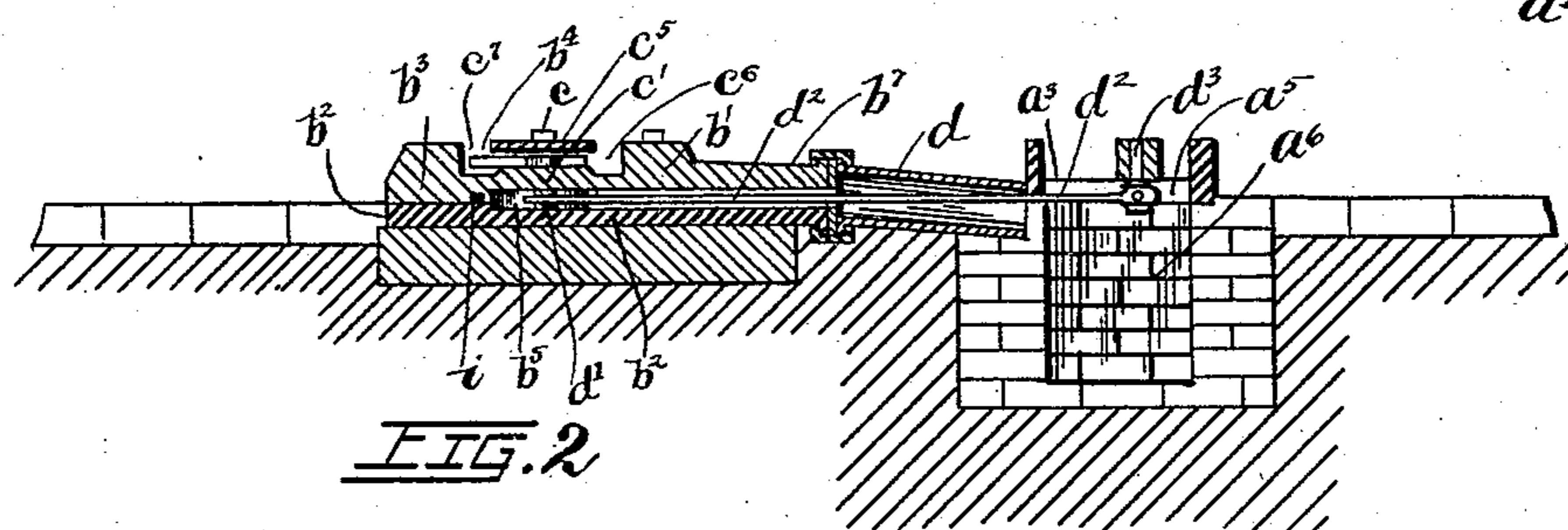
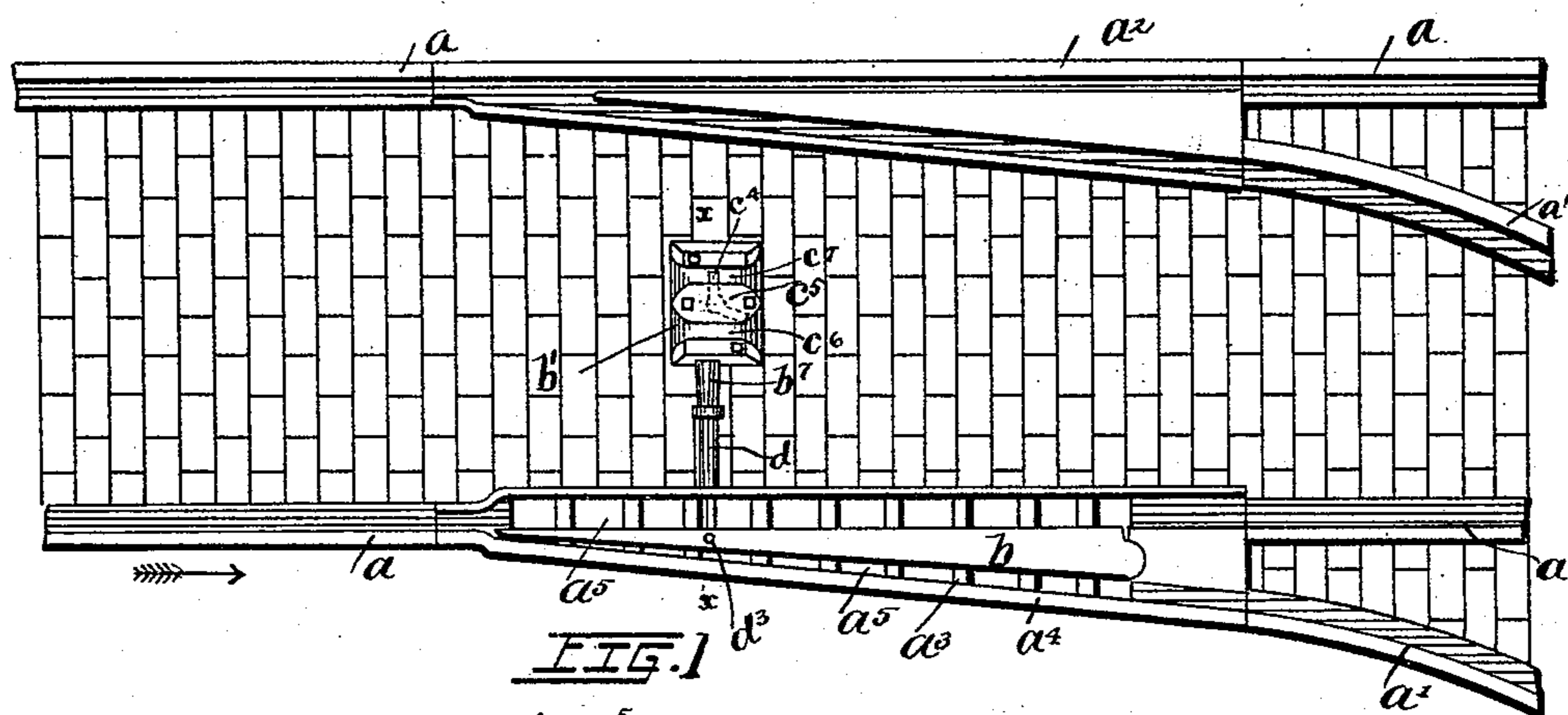


(No Model.)

R. C. DAVIS & D. A. RIPLEY.  
TRAMWAY SWITCH.

No. 486,769.

Patented Nov. 22, 1892.



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# UNITED STATES PATENT OFFICE.

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OF ONE-THIRD TO BEN C. GRAHAM, OF SAME PLACE.

## TRAMWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 486,769, dated November 22, 1892.

Application filed January 2, 1892. Serial No. 416,893. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT C. DAVIS and DAVID A. RIPLEY, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Railway-Switch-Operating Mechanism, of which the following is a specification.

Our invention relates to railway-switch-operating mechanism, and has particular relation to the improvement of means for throwing the switch-tongues for street-cars.

The objects of our invention are to provide an improved switch-operating mechanism of this class by means of which the motorman or other car-operator may impart such motion to the switch-tongue of a railway as to direct the car upon a branch track or continue the same upon a main track; to so construct said device as to render the operation thereof positive and safe and prevent the clogging by dirt or otherwise of the operating parts; to so construct said device as to prevent the injurious effects of water, and to otherwise produce a simple and inexpensive form of switch-operating mechanism by means of which cars may be readily directed upon the desired track. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of a portion of a railway track at the switch-point, showing our device in connection therewith. Fig. 2 is an enlarged sectional view on line  $x x$  of Fig. 1. Fig. 3 is a detail plan view of the switch-box or stand with the cap-plate removed. Fig. 4 is a view of the under side of the top plate of said box or stand.

Similar letters refer to similar parts throughout the several views.

$a$  represents the main-track rails of a street-railway, and  $a'$  the branch-track rails, which lead therefrom in the usual manner.

$a^2$  and  $a^3$  represent, respectively, the switch-plates, which are of the usual triangular form, and through which the main-track rails and branch-track rails are connected in the usual manner. The switch-plate  $a^3$  is provided as is usual with an outer tread  $a^4$ , which connects with the treads of the main and branch track rails. The floor or bottom of this switch-

plate  $a^3$  is, however, provided with slotted openings  $a^5$ , which communicate with a suitable pit or excavation  $a^6$ , formed beneath said switch-plate.

$b$  represents the usual switch-tongue, which is pivotally supported upon the switch-plate  $a^3$  and which is of the usual triangular form. As is common in railway-switches, this switch-tongue is adapted, when the main track is continuous through the switch, to form a tread for the car-wheels, and is also adapted, when its point is thrown inward, to close the main trackway and direct the car-wheels on the branch track. Between the track-rails at a point opposite the switch-tongue we cause to be firmly seated in the earth the base of our improved switch-box or stand, (indicated at  $b'$ .) This box or stand, as shown in the drawings, consists of a base-plate  $b^2$  and a top plate thereon (indicated at  $b^3$ .) As shown in the drawings, this topplate is provided with a depressed central portion, (indicated at  $b^4$ .) which forms a channel across the plate in the direction of the track length. The underside of the plate  $b^3$  is provided with a central circular depression  $b^5$ , from which leads outward in the direction of the switch-tongues a channel or depression  $b^6$ . This channel or neck  $b^6$  communicates with a short tubular extension  $b^7$  of the plate  $b^3$ , which projects in the direction of said channel. Within the central portion of the plate  $b^3$  is pivoted or journaled a pivot-bolt or short shaft  $c$ , the projecting ends of which are squared, as shown. The upper end of this bolt  $c$  projects through the center of a boss or slightly-elevated portion  $c'$ , formed in the center of the channel  $b^4$ , and carries on its upper squared end the central portion of a trigger  $c^2$ . This trigger  $c^2$  has projecting from its central portion two arms  $c^3 c^4$ , said arms forming in connection with the center of the trigger an obtuse angle. The ends of the raised portion  $c'$  are connected with a cap-plate  $c^5$ , which is of such form as to bridge the central portion of the trigger. The raised central portion of the box-plate  $b^3$  thus formed, being slightly separated from the raised end portion of said plate, results, as shown, in the formation of ways  $c^6 c^7$  on opposite sides of said plate center.

$d$  represents a conduit or tube one end of which is connected by a suitable water-tight connection with the outer end of the tubular plate extension  $b^7$ . This tube or conduit  $d$  extends, as shown, to the base of the switch-plate  $a^3$ .

Upon the squared lower end of the pivot-bolt  $c$  is fixed one end of a short arm  $d'$ , with the projecting portion of which latter is pivotally or jointedly connected a switch-tongue-operating rod  $d^2$ , which, extending through the plate-channel  $b^6$ , its extension  $b^7$ , and tube  $d$ , passes beneath the switch-plate  $a^3$  and has its end portion connected with the lower end of a pin  $d^3$ , which extends upwardly and is rigidly connected with the switch-tongue  $b$ .

In the construction of our switch-operating mechanism it will be seen that those operating parts which might ordinarily be affected by the action of water are so incased as to prevent the water reaching the same. In order to insure the accomplishment of this object, we preferably provide the plate  $b^3$  about the depression  $b^5$  and channel  $b^6$  with a groove in which is seated a suitable packing-strip  $l$ , which, as shown in Fig. 2 of the drawings, forms a water-tight connection between the upper and lower plates of the switch-box. It will also be seen that in forming the floor of the switch-plate  $a^3$  of open-work and providing a suitable pit  $a^6$  beneath the same the dirt, pebbles, or water which ordinarily collects upon the switch-plate and tends to interfere with the operation of the tongue will find an outlet through said switch-plate opening and will drop into the pit beneath. In this manner the switch-plate will be prevented from becoming clogged or frozen and will not necessitate the watching and cleaning which is required where the plate-floor is solid.

In operating our device the cars are each provided with a suitable bar or lever adapted to be dropped or projected into a position to enter the way  $c^7$  of the switch-box and in passing therethrough to come into contact with the projecting end of the trigger-arm  $c^4$ , and thereby sufficiently rotate said trigger

and its pivot-bolt as to result in the inward movement of the operating-rod  $d^2$  and consequent inward movement of the switch-tongue  $b$ , thus closing the main-track line and opening the way to the branch track. The contact of the said bar with the trigger-arm  $c^4$  will result in causing the remaining arm  $c^3$  of said trigger to project within the boxway  $c^6$ . In the case the next car following the one mentioned desires to continue on the main track it is evident that the operator may, by dropping the bar or lever into the way  $c^6$ , cause the lever to contact with the arm  $c^3$  of the trigger, and through said contact throw the switch-tongue  $b$  back to the position shown in Fig. 1.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

In a switch-operating mechanism, the combination, with the main and branch track rails, switch-plates, and a pivoted tongue on one of said switch-plates, of a switch-box  $b'$ , partially embedded in the earth at a point opposite said switch-tongue, said switch-box consisting of an upper and lower plate  $b^3$   $b^2$ , a channel  $b^4$  in the upper side of said plate  $b^3$ , and a depression  $b^5$  and channel  $b^6$  leading from the under side of said plate, said plates being firmly clamped together, a bolt  $c$ , pivoted through the channel portion of said upper plate, a trigger  $c^2$ , carried on the upper end of said bolt having diverging arms  $c^3$   $c^4$ , a cover-plate  $c^5$  above said arms, an arm  $d'$ , carried on the lower end of the bolt within the depression  $b^5$ , and an operating-rod  $d^2$  extending therefrom through the channel  $b^6$ , said operating-rod being connected with the switch-tongue  $b$ , substantially as and for the purpose specified.

ROBERT C. DAVIS.

DAVID A. <sup>his</sup> × RIPLEY.  
mark

In presence of—

E. E. BRAGG,  
C. C. SHEPHERD.