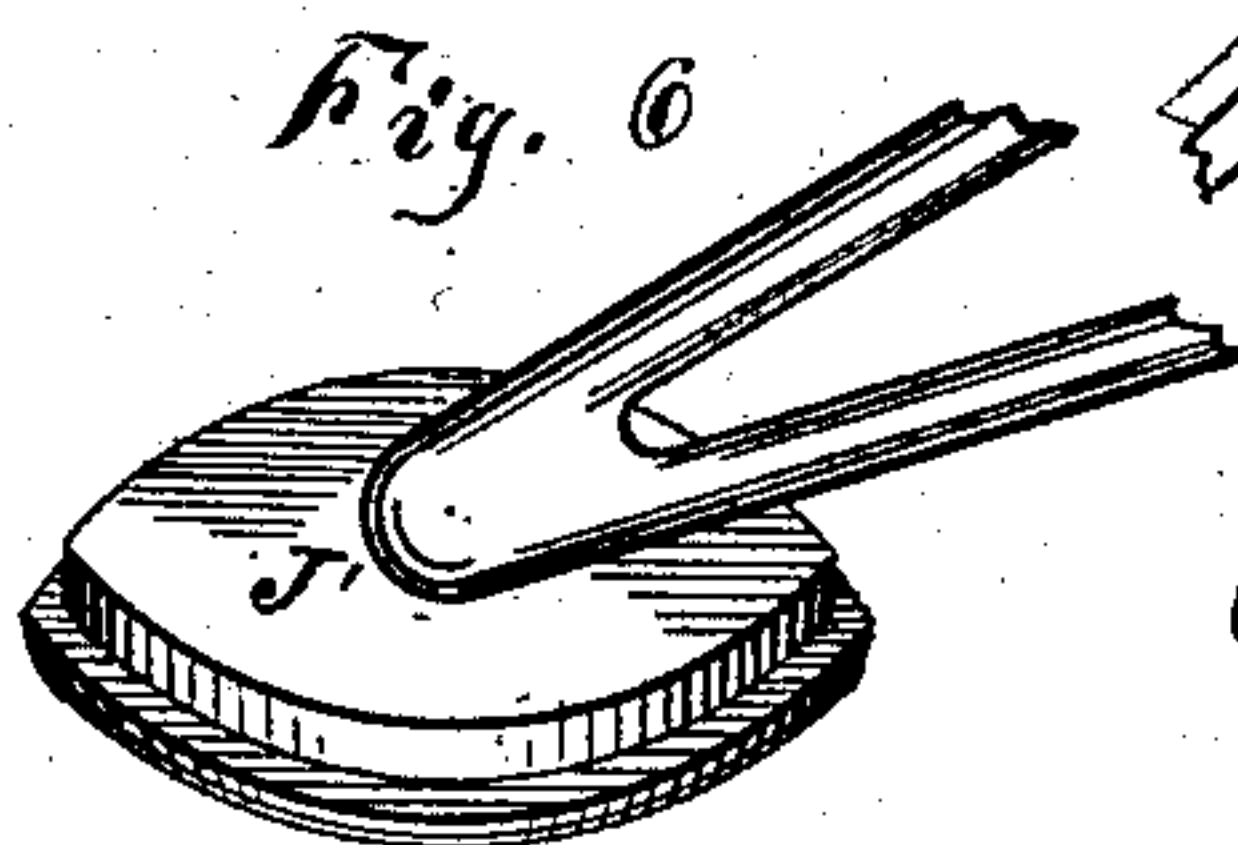
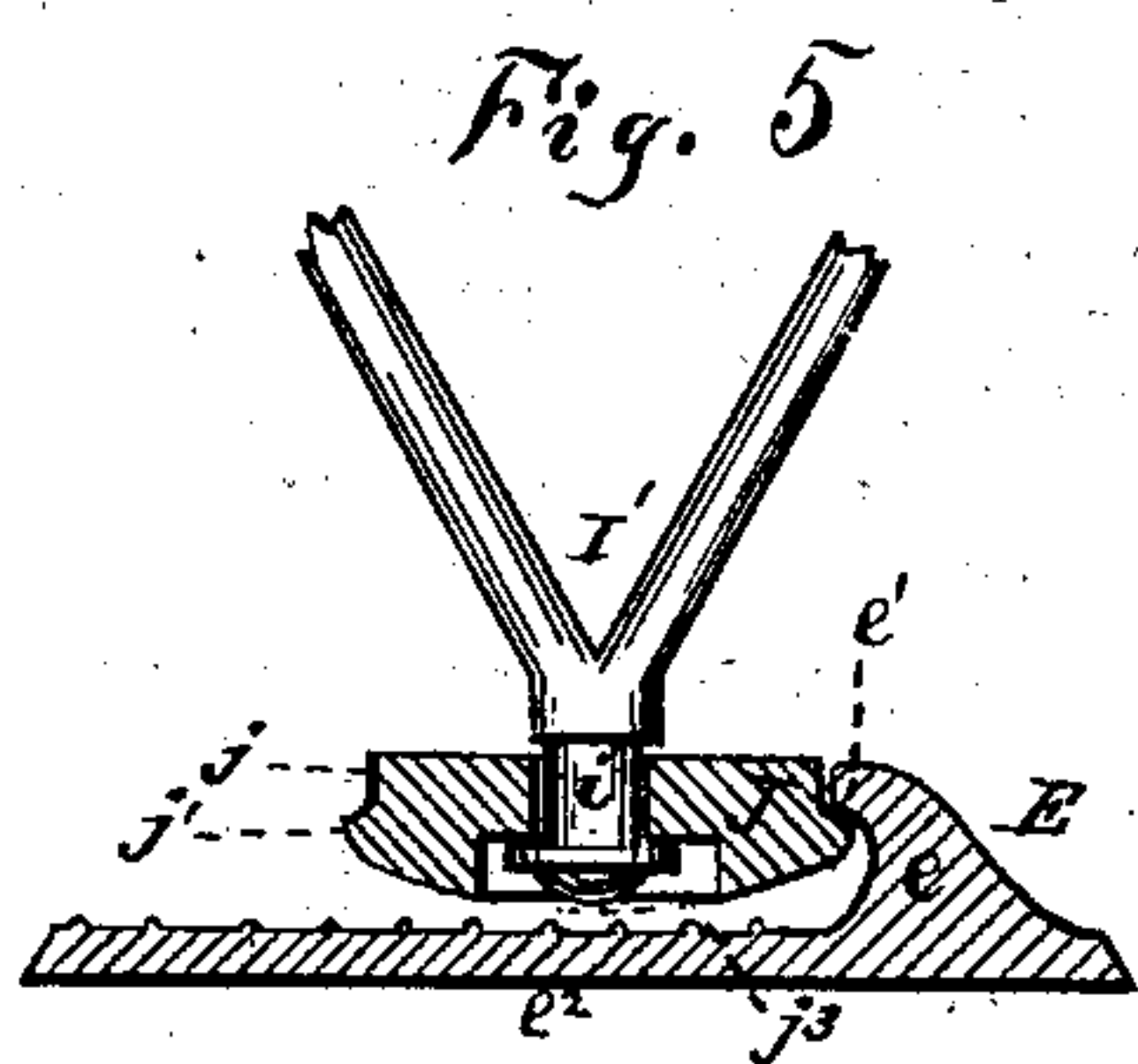
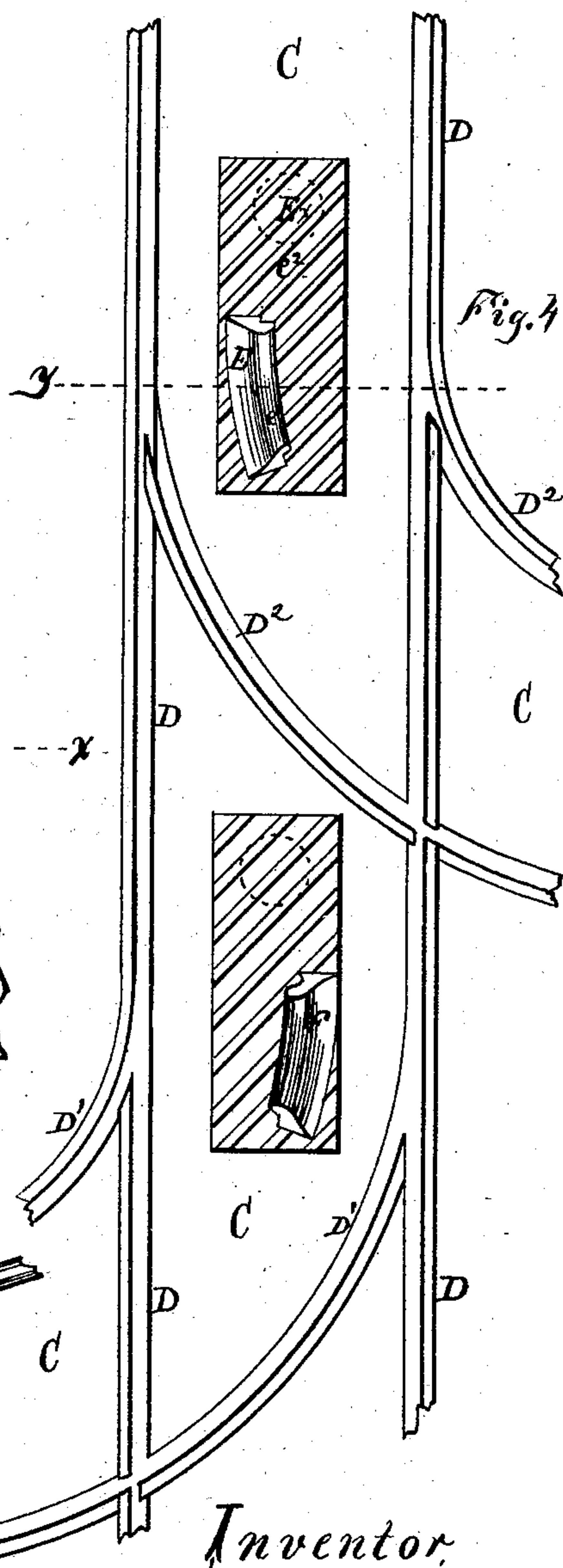
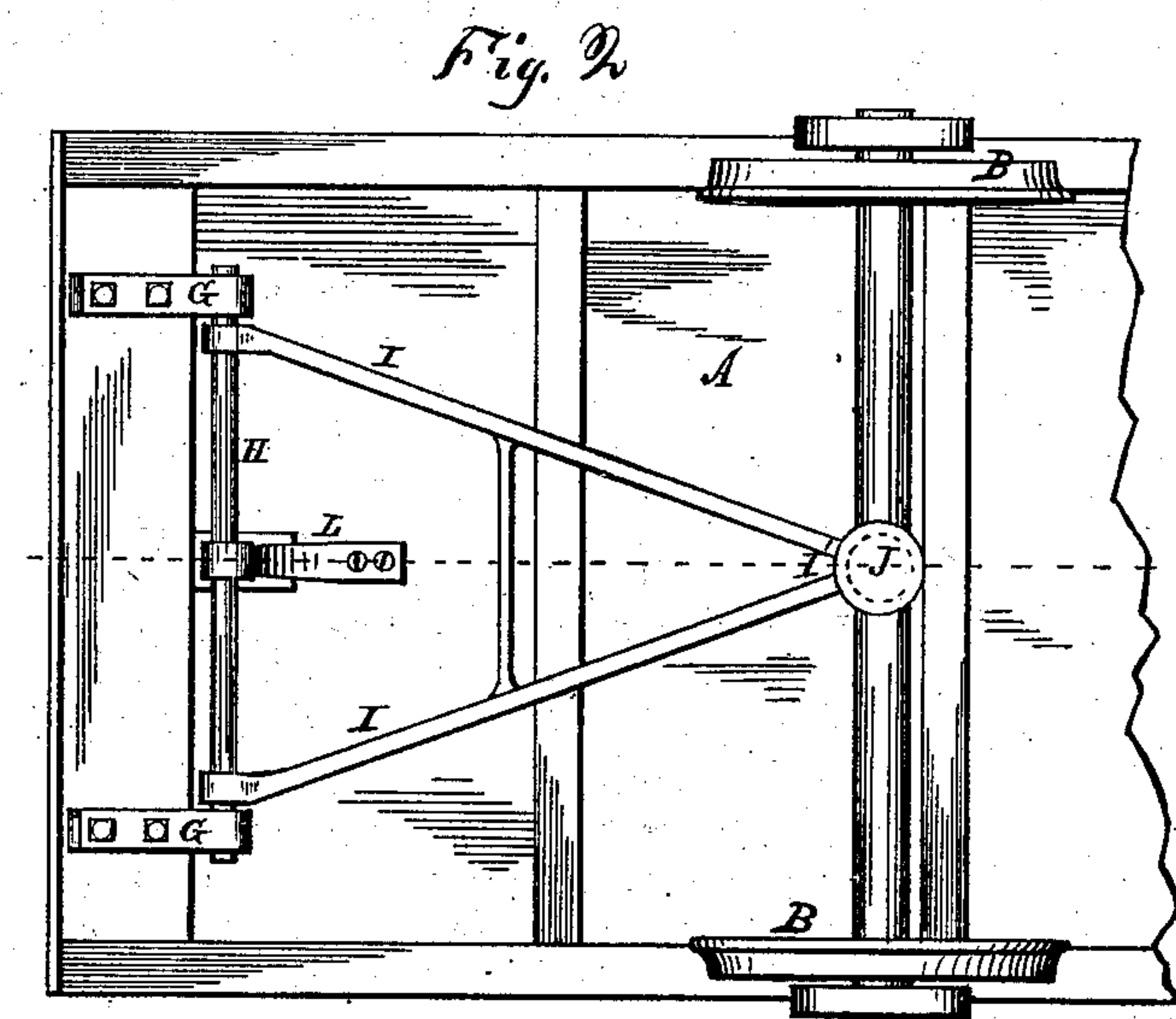
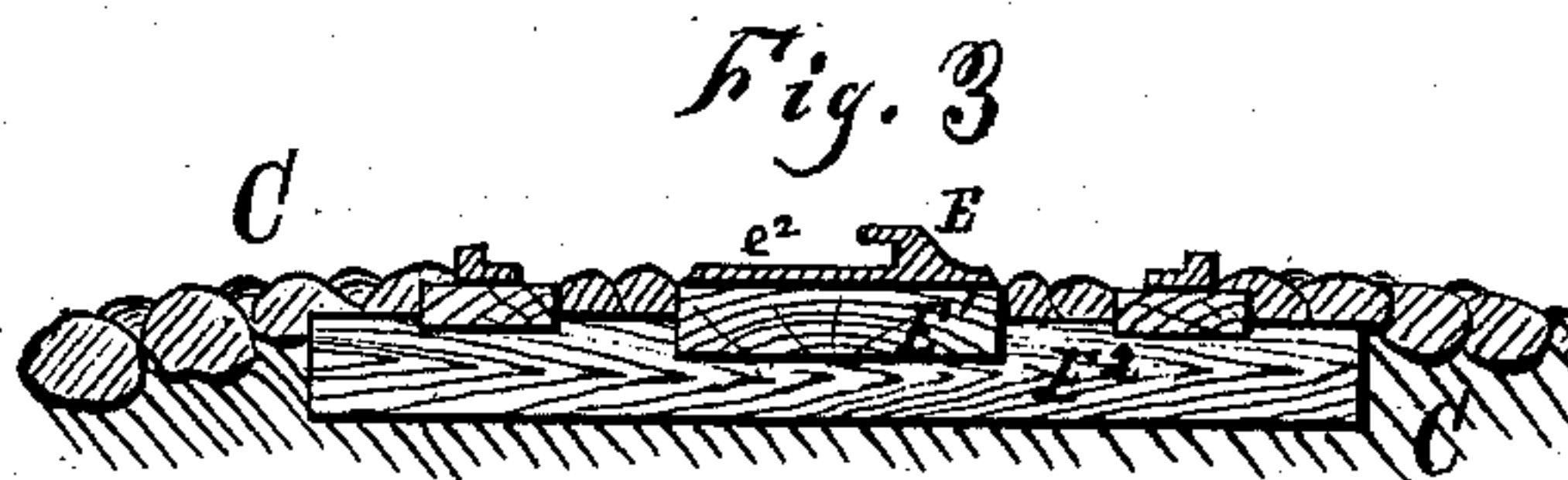
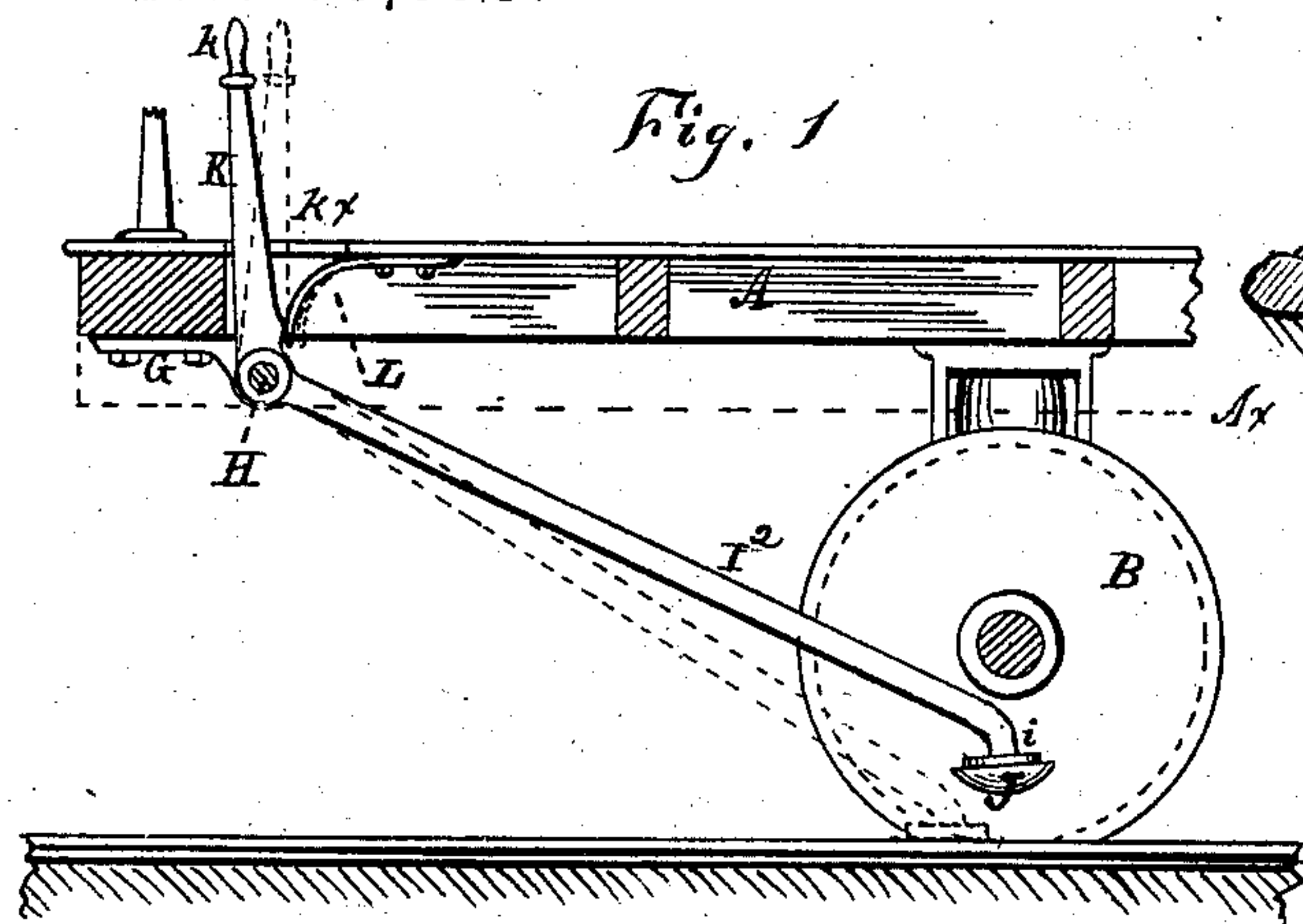


(No Model.)

T. B. ESTEP.
STREET CAR SWITCHING SYSTEM.

No. 259,675.

Patented June 20, 1882.



Attest:
L. G. Miller
Dan Mersfelder Jr.

Inventor:
T. B. Estep
per D. Van Rannel
att'y.

UNITED STATES PATENT OFFICE.

THOMAS B. ESTEP, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO
HIRAM M. STEPHENSON, OF COVINGTON, KENTUCKY.

STREET-CAR-SWITCHING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 259,675, dated June 20, 1882.

Application filed October 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. ESTEP, of Cincinnati, county of Hamilton, and State of Ohio, have invented a new and useful Improvement in Street-Car-Switching Systems; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which—
10 Figure 1 is a partial vertical longitudinal section of a street-car. Fig. 2 is a partial under view of the same. Fig. 3 is a section of the road-bed, taken in line *y* of Fig. 4. Fig. 4 is a plan of the road-bed, tracks, and guide-rails. Fig. 5 is an enlarged vertical section of the central guide-rail and roller of drop-lever, and Fig. 6 is a perspective of a permanent shoe attached to the drop-lever.

Similar letters of reference indicate like parts.

20 The nature of my invention relates to a system for switching street-cars, whereby the car can be moved to the right or the left on any diverging track at the will of the operator without the use of any movable switch.

25 This invention relates to switches automatically operated by passing cars; and it consists in the construction and combination of parts hereinafter set forth and claimed.

30 The car has attached to its platform, or on other suitable parts, a drop-lever properly braced and pivoted near the car-bed. The loose end of said lever terminates below in a roller which revolves in a horizontal plane. The lever extends above the platform some distance, where it ends in a suitable handle. A spring or weight is made use of to keep the roller, when free to act, in an elevated position. The drop-lever being lowered its roller comes in contact with the central guide-rail, forcing the
40 car to the side predetermined by the curve of the guide-rail.

In construction my invention is as follows:

A is the front platform of a street-car resting on wheels. (Seen at B B.)

45 C C is the main road-bed, on which is laid in the usual way a straight track, D, one diverging therefrom to the right, (marked D¹), and another diverging to the left. (Marked D².) The point where one track leaves the other is in this case not provided with any movable switch, but has the higher bearing-face of the

straight rail cut through, so the flanges of the wheel may leave the straight rail and enter on the one diverging.

E is the central guide-rail, securely bolted to 55 timber E', which is interlocked with those bearing the rails by special cross-ties E², all being embedded in the usual way. The guide-rail has the upper portion, *e*, curved in such manner as to coincide with the curve of diverging track D². The projecting flange *e'* is concentric with *e*, as shown. 60

The bed-plate *e'* and guide-rail E are both cast in one piece, the upper surface of the plate being suitably roughened to prevent horses 65 from slipping, the plate having been made of sufficient size to give it permanency and allow the drop-roller to slide on the plate before coming in contact with the guide-rail.

The guide-rail seen at F is constructed like 70 the one above described, excepting that it is reversed in its curve and laid to run the car on tracks marked D¹.

The guide-rails have their two extremities well tapered, as shown in Fig. 4, in order that 75 they may present less of an obstruction to passing vehicles.

The actuating mechanism, which is all attached to the front end of the car, is constructed substantially as follows: Two journal- 80 bearings, G G, are strongly bolted to any permanent part of the car, well forward. The shaft H oscillates freely in said journal-bearings, and is preferably made of square iron, having the journals turned round, the shoulders thus 85 formed bearing against G G preventing a lateral motion.

From a point near G G extend two converging rods, I, which are permanently attached to shaft H, and meeting at I' form the drop- 90 lever I². At the point where the rods join they make a downward turn, forming a vertical stud, *i*, which is turned to receive the roller J, which is formed somewhat in the shape of a car-wheel, having a tread, *j*, and flange *j'*. 95 It may be pivoted to stud *i*, either by being riveted over a washer, *j*³, as shown in the drawings, or may be fastened by a nut or pin or other suitable means. The relation which roller J holds to central guide-rail, E, is best 100 shown in Fig. 5.

In some cases it may be found desirable to

use a permanent shoe, J' , which is formed in transverse section, similar to roller J . This shoe, with a portion of rods I , is shown in perspective in Fig. 6.

5 To the shaft H is also attached the hand-lever K , terminating in a suitable handle, k . In some cases it may be desirable to curve lever K down near the floor of the car and substitute the handle k by a pedal, so that the
10 operator may use his foot instead of his hand; or the lever K and handle k may be left as shown in the drawings, and an arm placed on K , at a right angle with it, at a point marked k^* , ending with a suitable pedal to receive the
15 foot of the operator, as above mentioned. In this way a choice of these two methods may be had by the driver whereby to operate the switching apparatus.

A spring, L , is shown having one end permanently attached to any fixed point of the car, and the other acting on any point of the drop or hand levers, at such a point that it may act to elevate roller J at all times when left
20 free to act. In some instances a counter-weight may be used instead of a spring, which acts to elevate the roller in the same manner and for the same purpose as above mentioned.

In operation my invention is as follows: When it is desired by the operator to keep on
30 the straight track D no action on his part is necessary, as the tendency of the car is to move forward in a straight line, and will therefore pass over the two diverging tracks, which are practically open switches. When it is de-
35 sired to run the car on track D^2 the operator pulls lever K toward him, depressing roller J , which comes in contact with the road-bed, or the plate e^2 , at a point seen by the dotted lines E^* . The operator continues to hold roller J
40 in this position until it has entered the guide-rail E , when he may release his hold, the flange j' on the roller and flange e' on the guide-rail preventing disengagement of the two until the wheels of the car have entered on the diverg-
45 ing track. When this has taken place the duties of roller J and rail E are at an end, as the front wheels of the car having by this time got well on the diverging track, the rear wheels will naturally follow the lead of the front ones,
50 and the car continues on its way. As soon as roller J has become disengaged from the guide-rail the spring L elevates drop-lever I^2 and

hand-lever K to where they are respectively seen in Fig. 1. Should the driver desire to move his car on track D' , he will depress roller
55 J so it will drop on or before it arrives at guide-rail F , when the car will move out on track D' , in the manner above set forth.

In the system herein described it will be observed that roller J is placed in the center of
60 the car longitudinally and the guide-rails are placed to one side or the other, according to the direction it is desired to give the car. In this way any car fitted with the drop-lever and roller (and the road is arranged as herein de-
65 scribed) can take one or the other diverging tracks, at the will of the driver.

The dotted lines A^* in Fig. 1 indicate the vertical movement of the car-bed when loaded or is jolted while in motion. This makes ap-
70 parent the advantages of pivoting the drop-lever well forward, as shown, so that any vertical movement of the car while the roller is depressed is compensated for by the fulcrum of the lever G .
75

I am aware that it is not new to provide a car with a movable bar or bars carrying a conical disk and operated by a shifting-lever and spring, nor to provide a track with a fixed guide-rail having an overhauling flange and
80 adapted to engage with a horizontal pulley or disk when the latter is lowered into proper position, and thereby to guide or switch the cars from one track to another.

Having thus described my invention, what I
85 claim as new, and desire to secure by Letters Patent, is—

1. The combination of lever K , shaft H , journaled in bearings secured to the car, spring L , converging bars I I , the stud i , attached to
90 said bars at their junction, washer j^3 , and roller J , which is held to said stud by said washer, substantially as set forth.

2. The combination of lever K , shaft H , journaled in bearings secured to the car, spring
95 L , converging bars I I , stud i , and roller J , with a fixed guide-rail adapted to engage said roller, substantially as and for the purpose set forth.

THOS. B. ESTEP.

Witnesses:

H. M. STEPHENSON,
N. ROBINSON.