

2 Sheets—Sheet 1

No. 465,238.

Patented Dec. 15, 1891



Witnesses:
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(No Model.)

2 Sheets—Sheet 2.

H. BROOMELL.
TOY GRAVITY RAILWAY.

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FIG. 6.

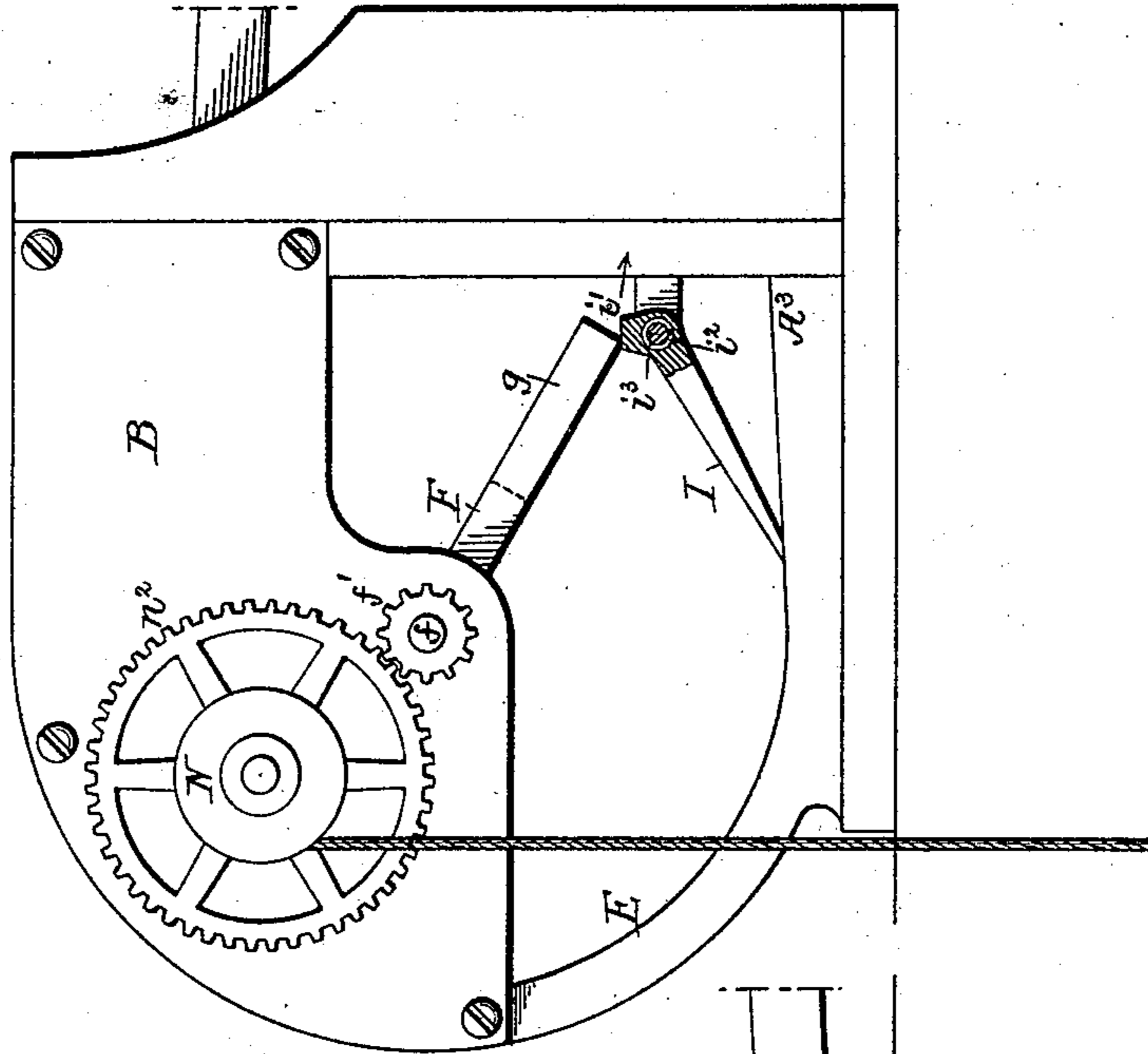


FIG. 3.

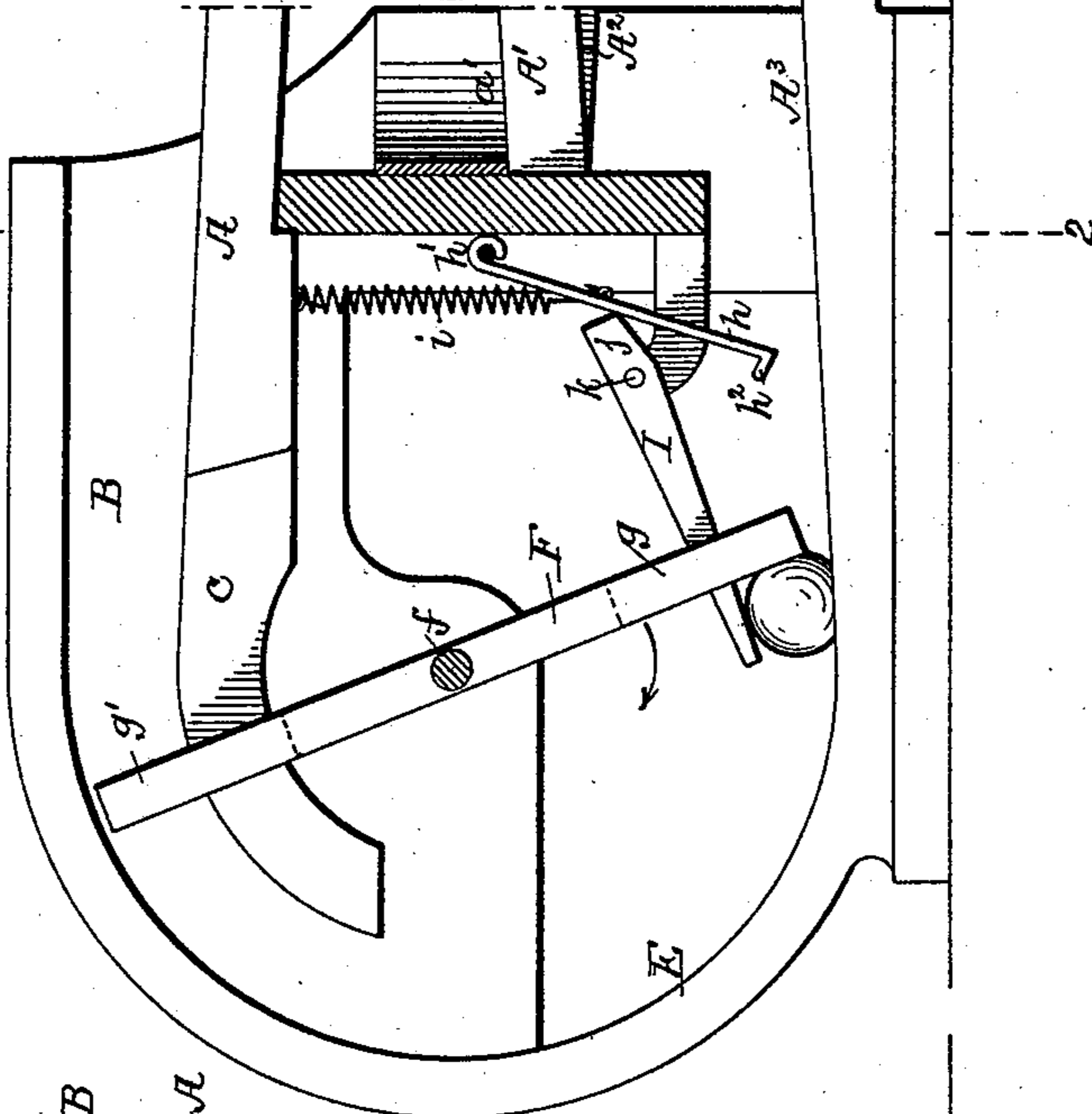
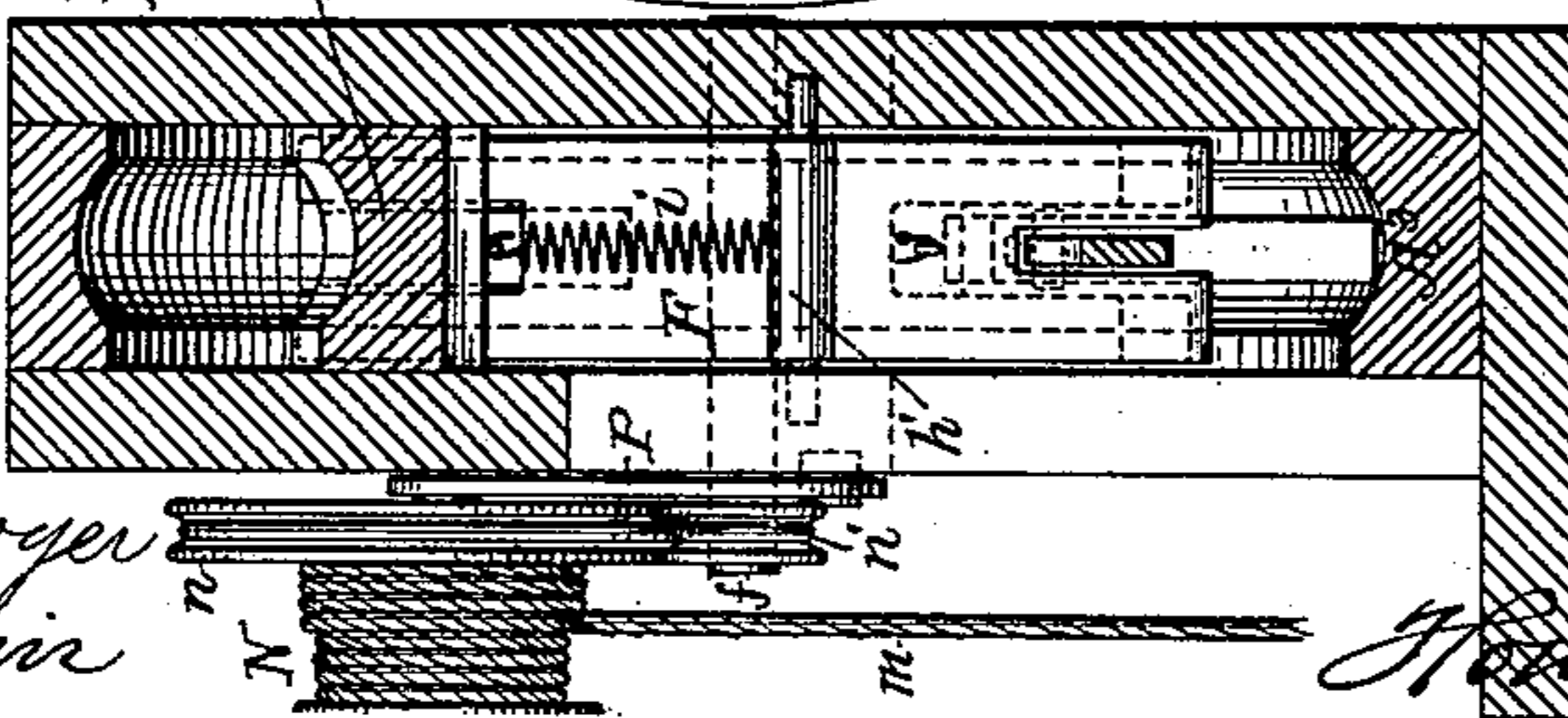


FIG. 5.



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UNITED STATES PATENT OFFICE.

HENRY BROOMELL, OF PHILADELPHIA, PENNSYLVANIA.

TOY GRAVITY-RAILWAY.

SPECIFICATION forming part of Letters Patent No. 465,238, dated December 15, 1891.

Application filed August 25, 1891. Serial No. 403,696. (No model.)

To all whom it may concern:

Be it known that I, HENRY BROOMELL, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Toy Gravity-Railways, of which the following is a specification.

The object of my invention is to construct a toy railway or inclined plane on which marbles travel from the high track to the low track and which are automatically raised from the low track to the high track by mechanism which I will describe hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of my improved gravity-railway. Fig. 2 is a plan view. Fig. 3 is a longitudinal sectional view of the head portion, showing the lifter for the balls or marbles. Fig. 4 is a perspective view illustrating details of my invention. Fig. 5 is a section on the line 1 2, Fig. 3. Fig. 6 is a view of a modification of the lifting mechanism.

A, A', A², and A³ are a series of inclined tracks grooved, as shown, for the passage of a ball or marble from the highest track A to the lowest track A³. The tracks A A' are so formed at their inner section *a* that the balls will readily pass from the track A to the track A', as shown in Fig. 2. The tracks A' A² are connected together at *a'*, and the tracks A² A³ are connected together at *a''* in the same manner as the tracks A A'. The tracks are supported at one end by a head B and at the opposite end by a post D. The track A³ extends to and is on a line with the base of the semicircular track E within the head B, and the track A in the present instance terminates within the head in the form of an extension or tongue *c*, which is curved, as shown in Figs. 3 and 4.

Pivoted at *f* is a carrier F, having two arms *g g'*, which carry the ball or marble from the lower rail A³ to the upper rail A, the ball or marble traveling up over the semicircular track E, from which it is transferred to the tongue *c* of the rail A. The weight M is so geared to the carrier F that it will turn said carrier in the direction of the arrow when released. A catch *h*, pivoted at *h'*, has a lip *h''*, which engages the end of either arm of the carrier F. A spring *i* tends to keep the lip in engagement with the carrier.

I is a trigger, the long arm of which extends down into the path of the ball or marble as it passes from the rail A³ to the semicircular rail E. The trigger is pivoted at *k* to a bracket or other convenient support, and the short arm *j* of this trigger rests against the catch *h*, so that as the long arm of the lever I is raised by the moving ball or marble as it comes from the rail A³ it moves the catch *h* away from the arm of the carrier F, releasing said carrier, so that it will turn in the direction of its arrow, Fig. 3, by the movement of the weight, each arm *g g'* being forked, so as to pass the lever I and the tongue *c*. The arm *g*, Fig. 3, will engage with the ball or marble that has tripped the trigger, carrying it up the inclined rail and depositing it upon the tongue of the rail A, and the force given to the carrier will throw the ball or marble out onto the rail A, and, owing to the inclination of the rail, the ball will travel down said rail to the second rail, and so down until it again trips the trigger, when it will be carried up again by the lifter to the rail A, thus continuing indefinitely until the weight reaches the floor or until the cord is unwound from the drum.

The cord-drum N, on which is wound the weight-cord *m*, is mounted on a stud *p*, carried by an arm P, pivoted at *p'* to a post on the side frame of the head B. On the drum N is a belt-wheel *n*, over which passes a belt *n'* to a smaller belt-pulley F' on the shaft *f* of the carrier F.

The drum N is hung slightly over the center line *x* of the pivot-post *p'*, so that the weight M will tend to move the arm P in the direction of the arrow, consequently keeping tension upon the belt *n'*. A pin *q* limits the movement of the arm in the opposite direction.

In place of the arrangement above described, I may mount the rope-drum N on a fixed stud, as shown in Fig. 6, and secure to the drum a gear-wheel *n''*, which meshes with a gear-wheel *f'* on the shaft *f*; but the device previously described I prefer, as it is somewhat cheaper to construct.

In using the gears I may also use a spring instead of a weight as the propelling force.

The trigger may be made as shown in Fig. 6, the short arm of the same acting as a piv-

oted stop i' , which has a spring i^2 , coiled upon a shaft i^3 , so that as the ball or marble pushes the long arm of the lever I up the stop i' is pushed back in the direction of the arrow, releasing the lifter F, the spring returning the stop to its normal position; or the return of the stop may be effected by the falling of the long arm of the lever I by gravity to its normal position.

10 I claim as my invention—

1. The combination, in a toy gravity-railway, of the inclined rails with a pivoted lifter, means for revolving said lifter, with a trigger for the lifter acted upon by the ball or marble to be lifted, substantially as specified.

2. The combination of the inclined rails, the semicircular rail connecting with the lower rail, a pivoted lifter, a catch for said lifter, means for moving said lifter when released from the catch, with a trigger acted upon by the ball or marble to be lifted, said ball or marble being carried up the semicircular track by the lifter, substantially as described.

3. The combination, in a toy gravity-railway, of the inclined rails, a tongue on the upper rail for receiving the ball, a forked lifter, pivot therefor, means for revolving said lifter, with a trigger for the lifter acted upon by the ball as it passes from the lower rail, substantially as described.

4. The combination of the inclined rails, the semicircular rail E, connecting with the

lower inclined rail, a lifter having forked arms, a spring-stop engaging with the arms of the lifter, a trigger, the long arm of which extends into the path of the ball and the short arm bearing against said stop, so that on the raising of the long arm of the lever by the ball the short arm of the lever will move the stop and release the lifter, with mechanism for revolving said lifter, substantially as described.

5. The combination of the inclined rails, the lifter, the stop and trigger for releasing the lifter from the stop, a drum and cord on said drum, a weight suspended from said cord, said drum being geared to the lifter, substantially as described.

6. The combination of the inclined rails, the lifter for the ball, a stop, a trigger therefor operating substantially as described, and a pivoted arm carrying a drum upon which is wound the cord, a weight suspended from said cord, a belt-pulley on said drum, and a pulley on the shaft of the lifter, and a belt connecting the two pulleys, the whole acting substantially as and for the purpose described.

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

HENRY BROOMELL.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.