

(No Model.)

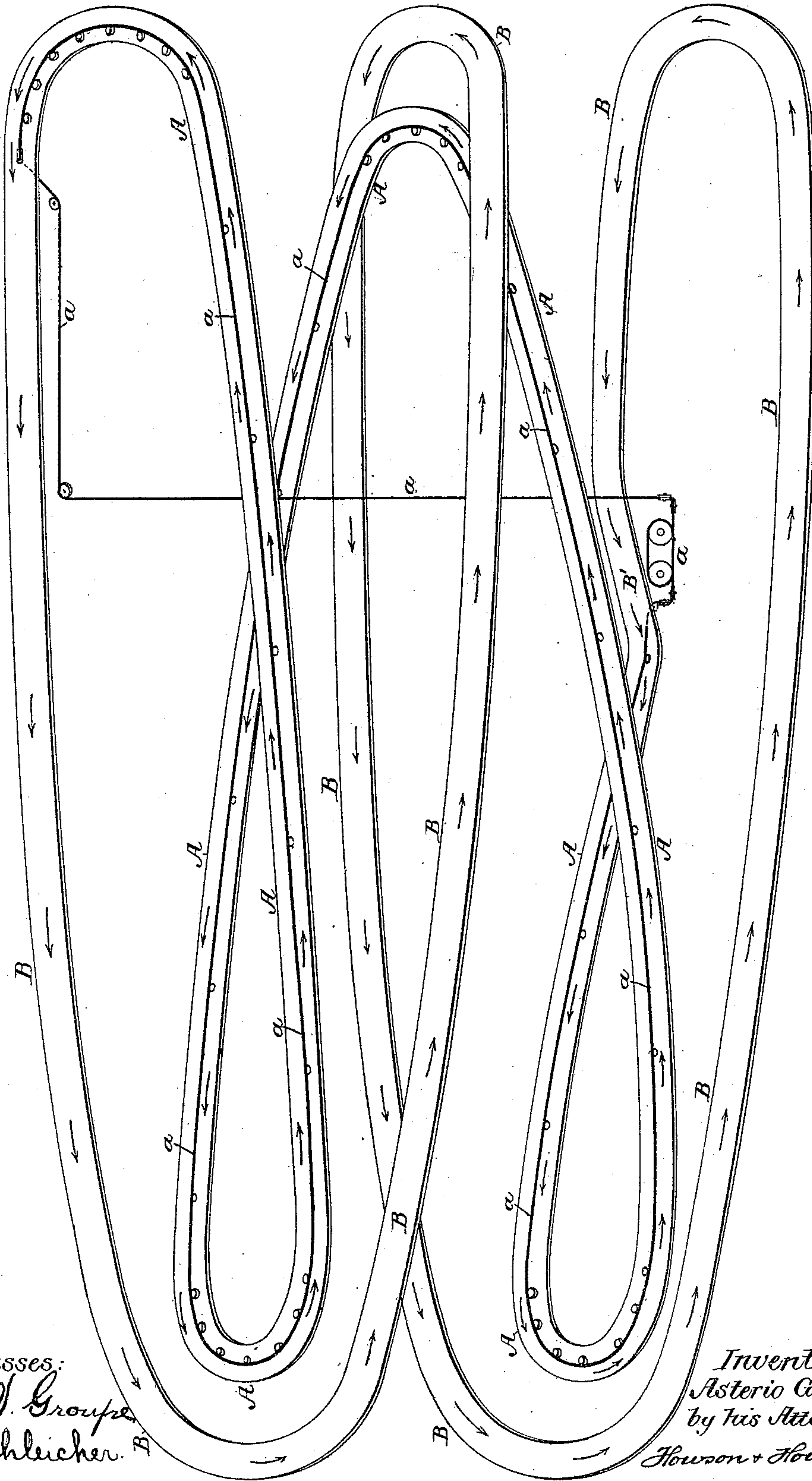
5 Sheets—Sheet 1.

A. GUERRA.
ARTIFICIAL TOBOGGAN SLIDE.

No. 438,414.

Patented Oct. 14, 1890.

FIG. 1.



Witnesses:

A. H. Grouper
A. Schleicher.

Inventor:

Asterio Guerra
by his Attorneys
Howson & Howson.

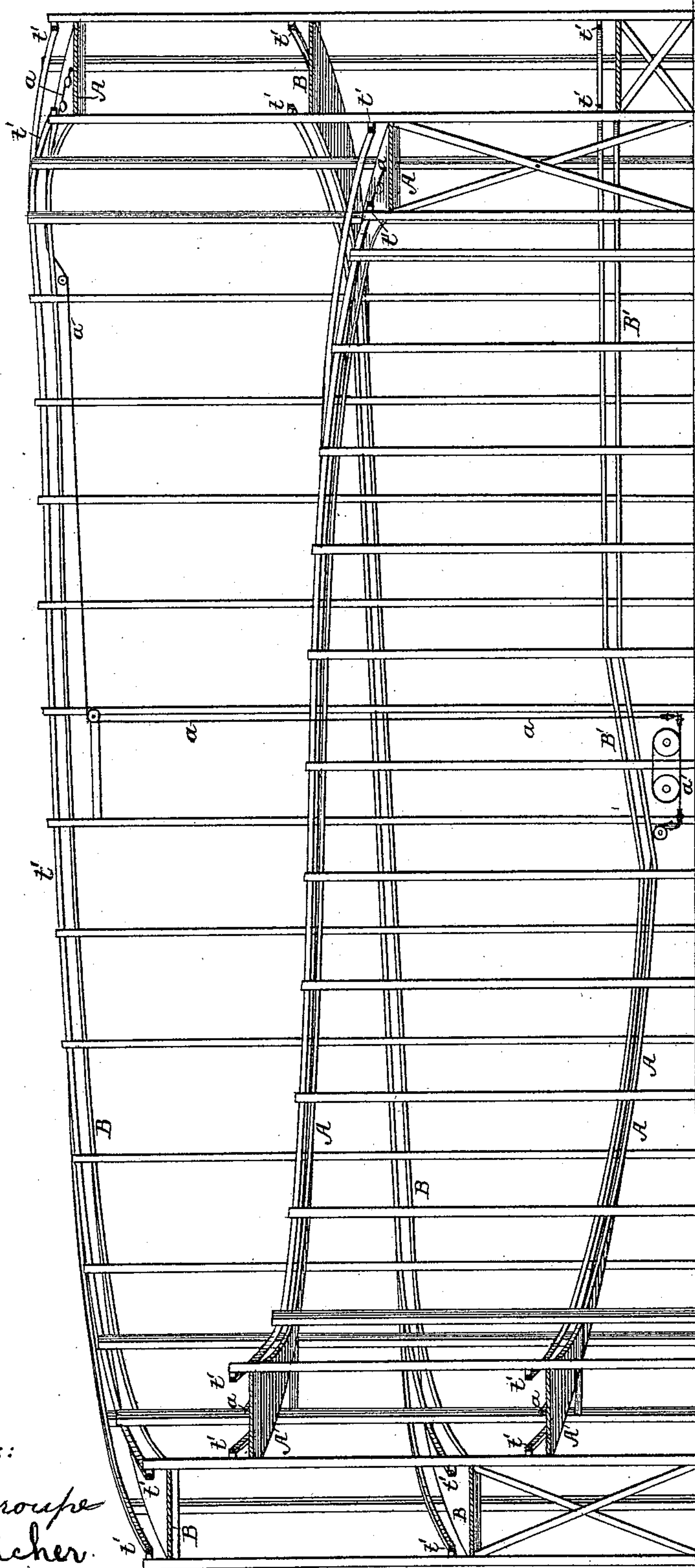
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Witnesses:

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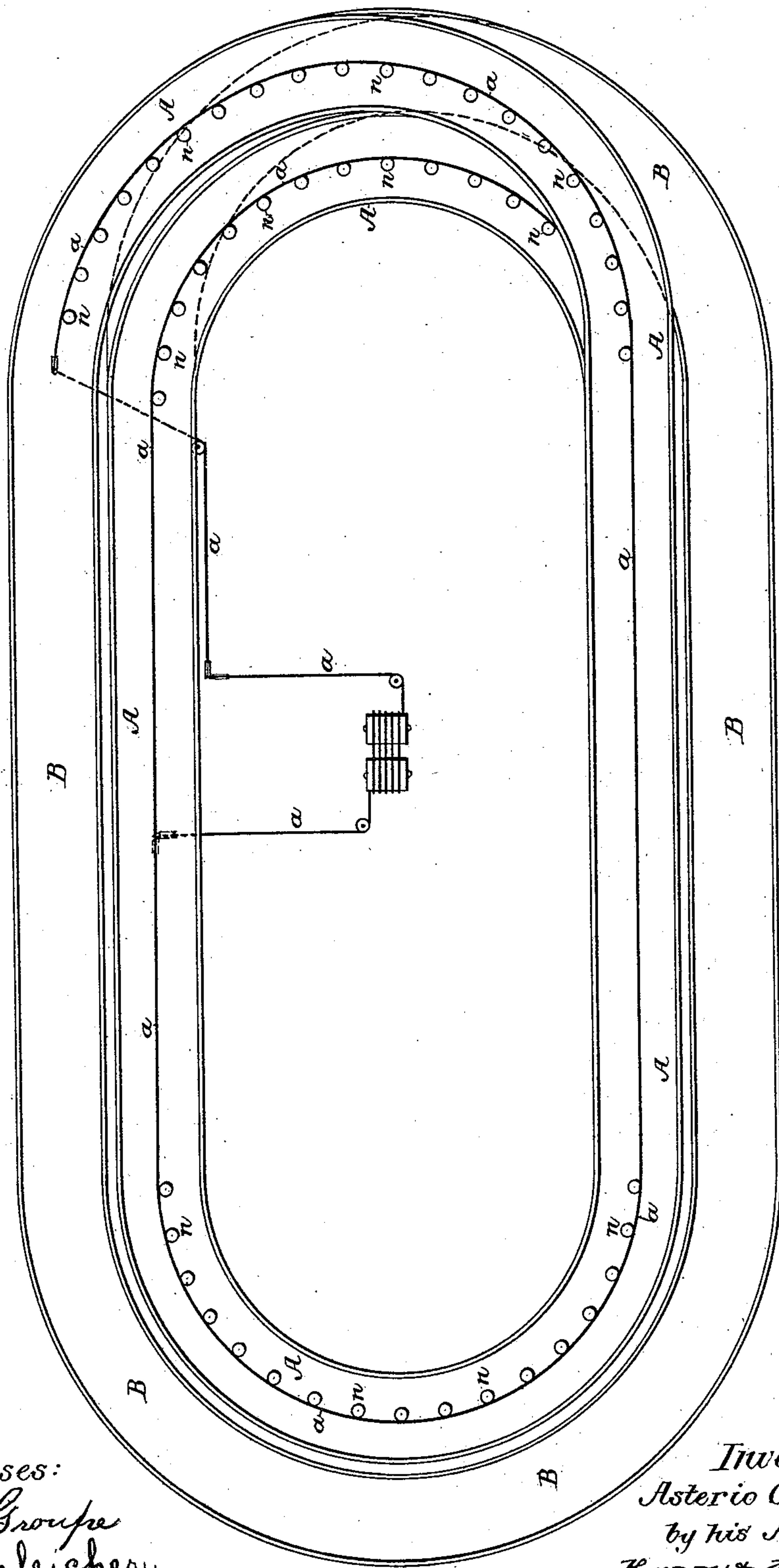
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FIG. 3.



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(No Model.)

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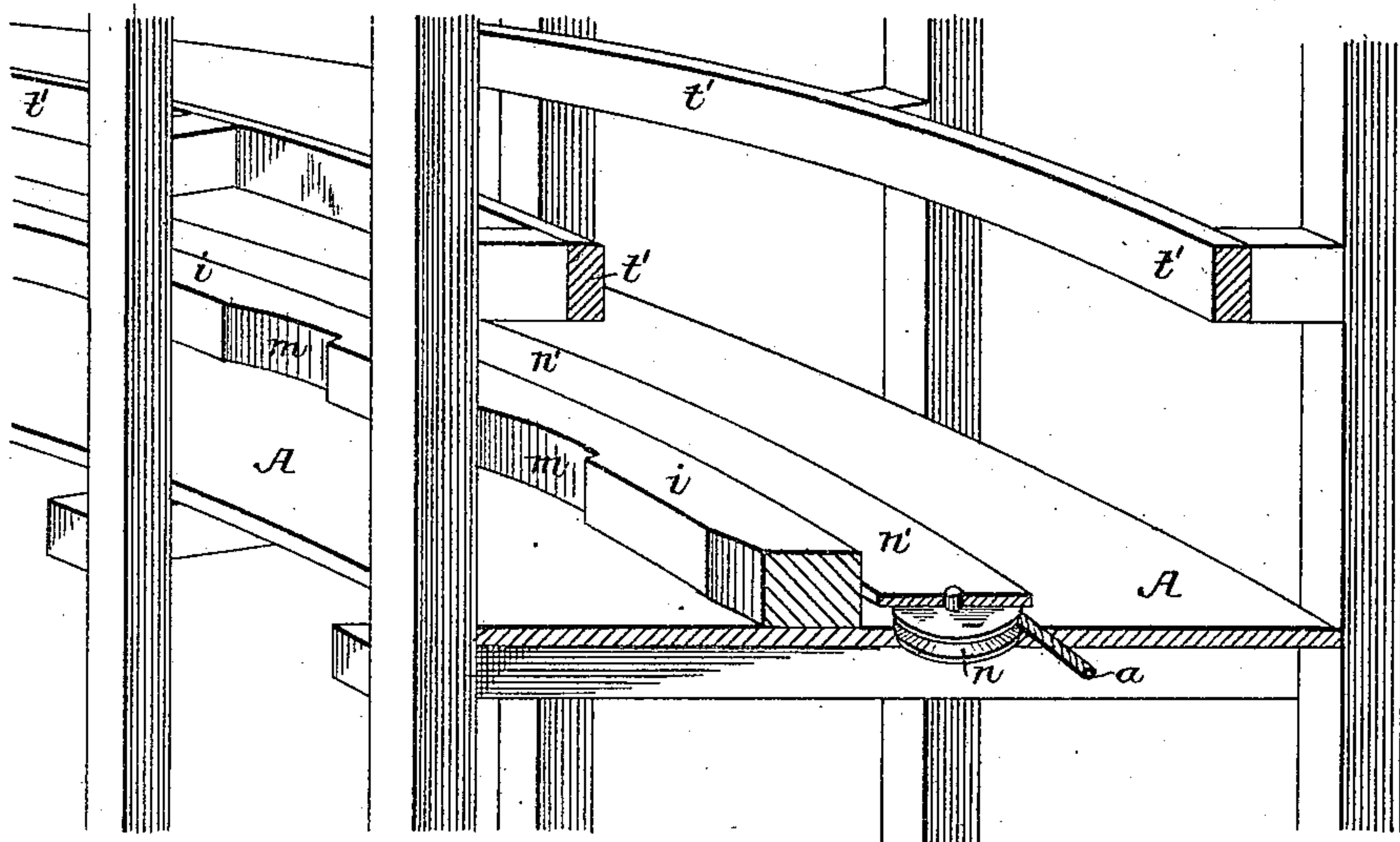


FIG. 4.

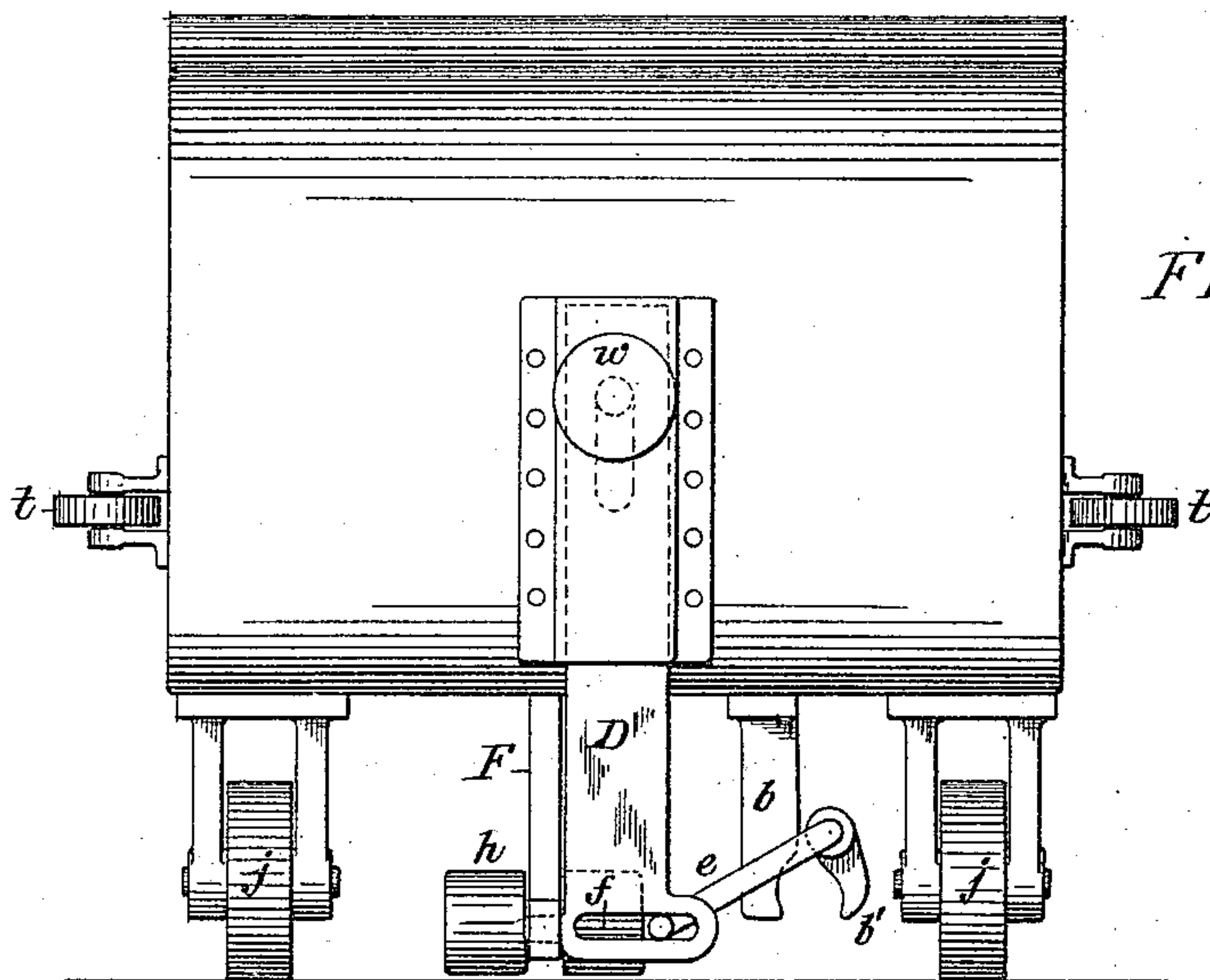


FIG. 6.

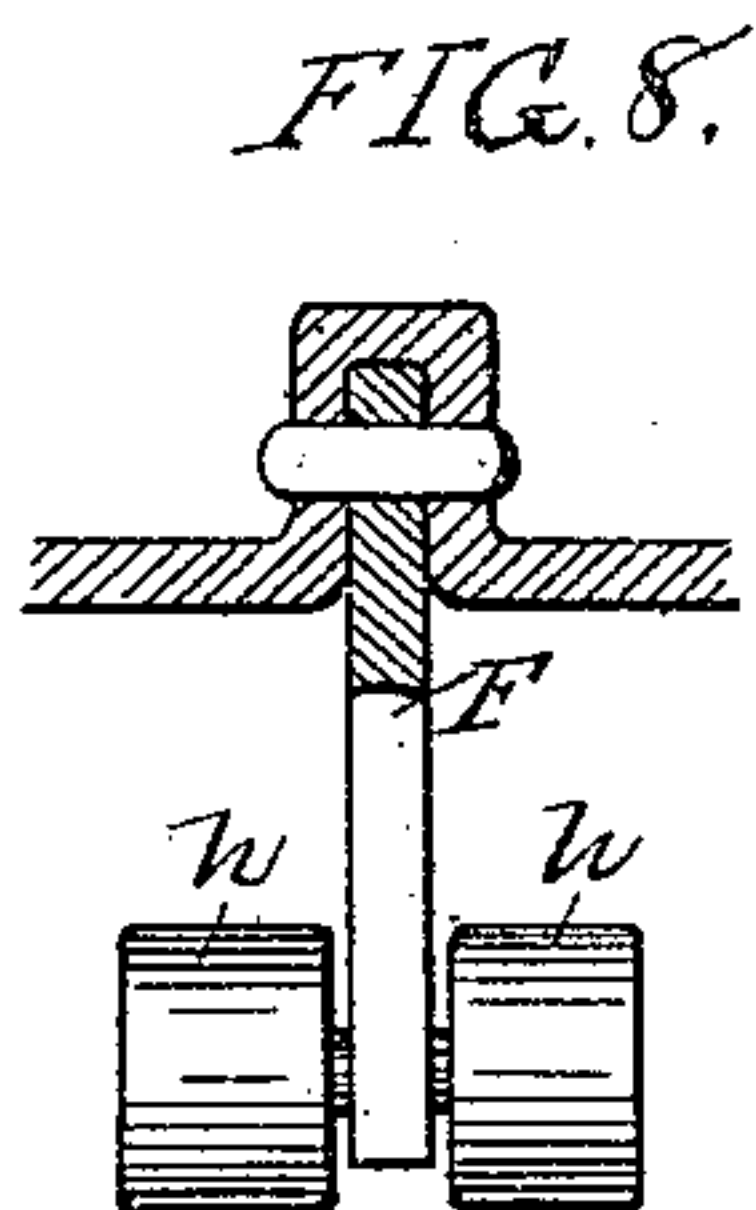


FIG. 8.

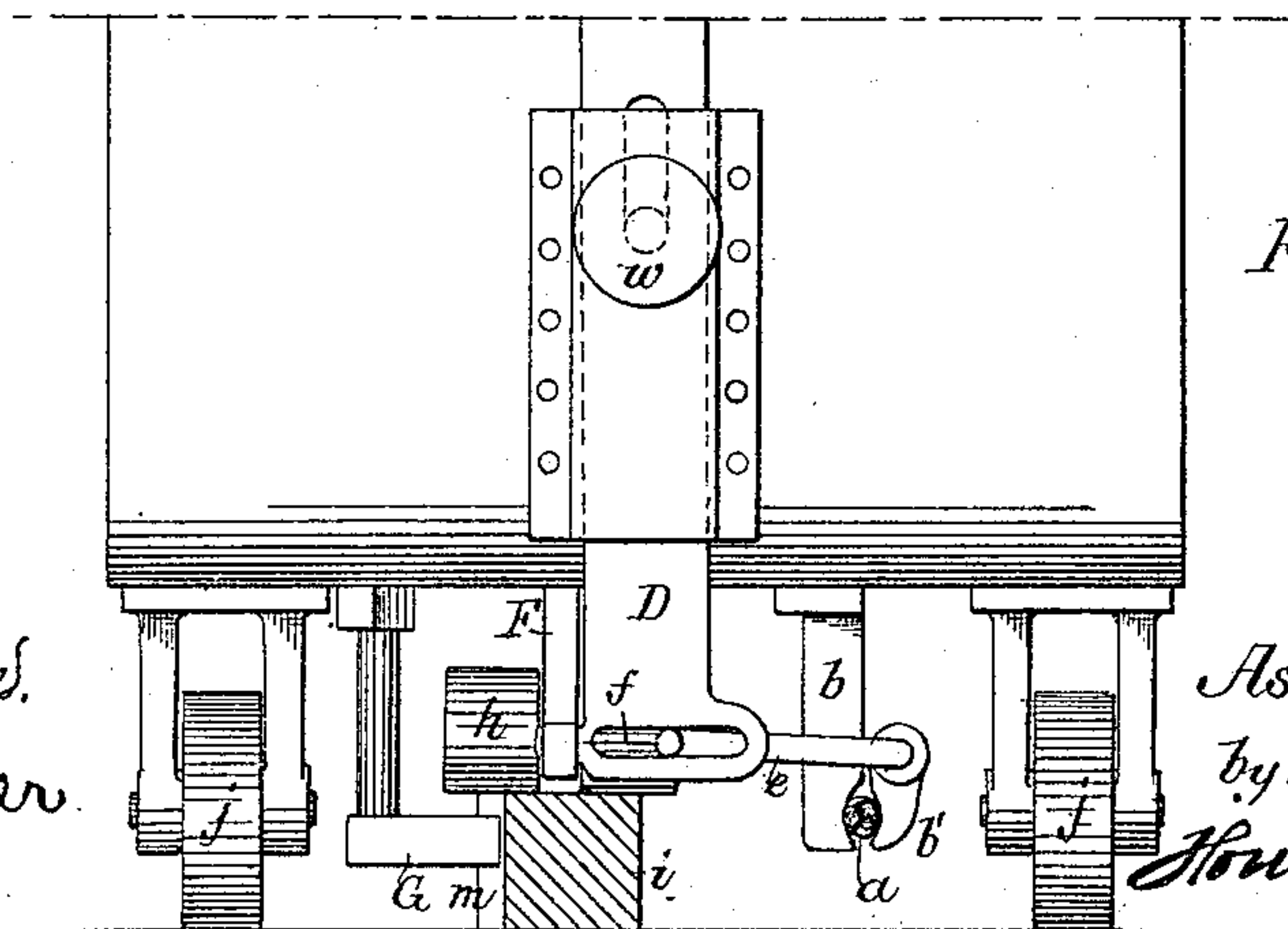


FIG. 7.

Witnesses:
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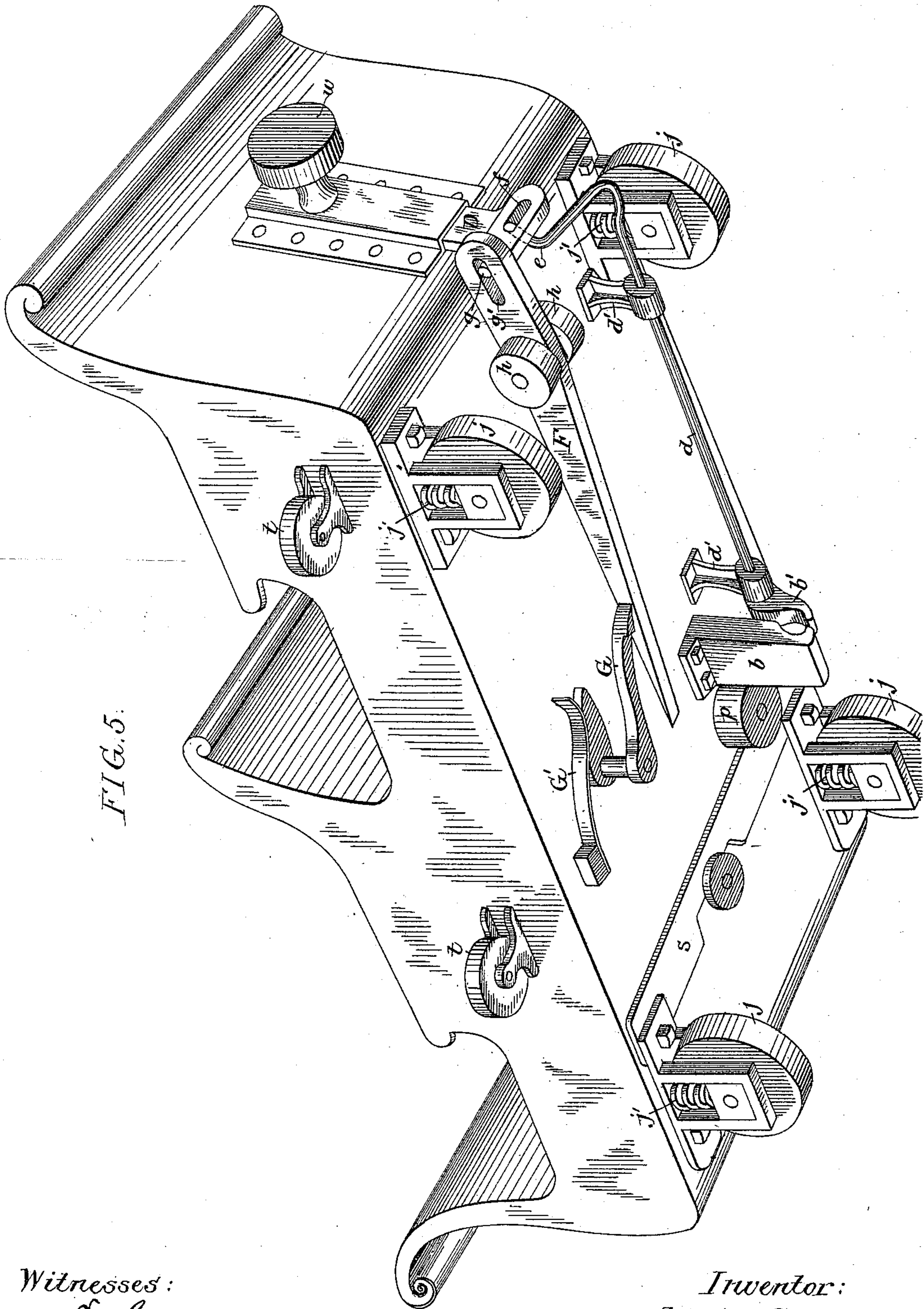
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UNITED STATES PATENT OFFICE.

ASTERIO GUERRA, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO FRED-
ERIC J. EULER AND JOHN DONNELLY, BOTH OF SAME PLACE.

ARTIFICIAL TOBOGGAN-SLIDE.

SPECIFICATION forming part of Letters Patent No. 438,414, dated October 14, 1890.

Application filed October 21, 1889. Serial No. 327,655. (No model.)

To all whom it may concern:

Be it known that I, ASTERIO GUERRA, a sub-
ject of the Emperor of Italy, and a resident
of Philadelphia, Pennsylvania, have invented
5 certain Improvements in Artificial Toboggan-
Slides, of which the following is a specifica-
tion.

One object of my invention is to so con-
struct a gravity-railway or artificial tobog-
gan-slide as to provide within limited space
for a more extended travel of the car than is
usual in devices of this class, a further ob-
ject being to provide simple means for auto-
matically gripping the car to and releasing
15 it from the hoisting-rope and for preventing
the descent of the car in case of the break-
ing of the hoisting-rope or the release of the
car therefrom while the said car is being ele-
vated to the highest point on the slide pre-
paratory to being permitted to descend by
gravity. These objects I attain in the man-
ner hereinafter set forth, reference being had
to the accompanying drawings, in which—

Figure 1 is a perspective diagram repre-
25 senting the character of the track of my im-
proved toboggan-slide, the supports for the
track and all other minor details being omit-
ted. Fig. 2 is a longitudinal section of the
track, showing the supports for the same.
30 Fig. 3 is a plan view of the track. Fig. 4 is
a sectional perspective view, on an enlarged
scale, of a portion of the track. Fig. 5 is a
perspective view of the car, looking at the
same from the under side; and Figs. 6 and 7
35 are end views of the car, Fig. 8 being a trans-
verse section of part of the same.

The track of my improved toboggan-slide
is in the form of a double elongated spiral
A B, the spiral A constituting the ascending
40 or lift track and being mainly within the
limits of the spiral B, which constitutes the
descending or gravity track, so that a car
starting on the lowest point on the inner spi-
ral A is drawn upward along the same until
45 it reaches the top, where said inner spiral
joins the outer spiral B, the car being then
released and permitted to descend by gravity
until it reaches the bottom of said outer spi-
ral, which joins the lowest point of the inner
50 spiral, so that the car can be again elevated,

the track being preferably continuous, as
shown, although the outer or descending spi-
ral may in some cases terminate some dis-
tance from the commencement of the internal
spiral, the cars being moved to the starting- 55
point by hand.

By the use of the two spirals an extended
travel of the car is provided for during the
elevation of the same, as well as during its de-
scend. Hence I am enabled within given lim- 60
its to provide almost twice as much track as
in other devices of this sort with which I am
familiar and in which the car is drawn up a
straight or steep inclined plane from the low-
est to the highest point of the track, the de- 65
scending portion only being spiral and of con-
siderable extent. Moreover, the grade of the
ascending spiral track of my improved tobog-
gan-slide is so slight that the ascending car
is not tilted to an objectionable angle. Hence 70
there is less liability to accident than in those
slides in which the car is drawn up a steep
inclined plane in order to gain the highest
point of the track.

The drawing of the car up the ascending 75
spiral track is effected by means of an endless
rope *a*, driven by suitable power-actuated
drums and running upon pulleys mounted
upon the track A, the cable passing from the
under side to the upper side of said track A 80
at the lowest point in the same, where it joins
a dip B', forming the finishing end of the
outer or descending track B, so that as the
car passes from this dip B' onto the ascending
track A the cable will automatically enter the 85
jaws of the grip projecting on the under side
of the car. When the cable reaches the high-
est point at the junction of the spirals A and
B, said cable again passes to the under side
of the track and over return-pulleys to the 90
driving-drum, as will be readily understood
on reference to Figs. 1, 2 and 3, the grip of
the car being automatically released from the
cable at this point by mechanism hereinafter
described, so that the car is at liberty to de- 95
scend the outer spiral B until it again reaches
the starting-point.

The car has on the under side a fixed grip-
ping-jaw *b* and a movable gripping-jaw *b'*,
the latter being carried by a shaft *d*, hung to 100

suitable bearings d' on the under side of the car, and having at its rear end an arm e , the outer bent end of which is adapted to a slot f in a slide D, suitably guided in a casing at the rear of the car. This slide has a projection g , which enters a slot g' in the rear end of an arm F, hung to the car, as shown in Fig. 8, and having anti-friction rollers h , which are acted upon by a rib or flange i , formed upon the track A and extending throughout the length of the same.

When the car is descending the outer track B, which has no rib i , the weight of the arm F and its rollers causes the depression of the slide D, and the rock-shaft d is thereby operated so as to open the jaws of the grip, as shown in Fig. 6. As soon as the car commences to ascend the inner track A, however, and the jaws of the grip have passed over the cable, the rollers h of the arm F come under the influence of the rib i , and said arm and the slide D are thereby raised so as to operate the rock-shaft d and close the jaws of the grip upon the cable. (See Fig. 7.)

The wheels j of the car have boxes adapted to slide in guides on the under side of the car, springs j' being interposed between these boxes and the tops of the guides therefor, so that the greater the weight in the car the greater will be the depression of the same and the more extended will be the movement of the arm F and slide D and the firmer the grip of the jaws $b b'$ upon the rope. Hence the hold of the car upon the hoisting-rope will be in direct proportion to the weight of the car and its load, and any slipping of the grip on the cable or of the cable through the grip will be prevented.

In order to prevent the accidental descent of the car in case of the breaking of the hoisting-rope or other accident, the car has hung to the under side a pivoted catch G, acted upon by a spring G' , the end of this catch engaging with notches m , formed in the side of rib i , so that if the hoisting-rope should break or the car should be released from the control of the rope during its ascent the spring-catch by engagement with one of the notches in the rib will immediately arrest the descent of the car and hold it in the position to which it has been raised.

The pulleys n , which guide the cable in rounding the curves at the opposite ends of the track, have above the same a curved shield or guard n' , and in order to prevent contact of this shield or guard with the fixed jaw of the grip as the car is being drawn around the curve I hang to the bottom of the car immediately in advance of the grip an anti-friction roller p , projecting slightly inward beyond the grip, so as to come in contact with the shield and hold the fixed jaw of the grip away from the same.

The opposite sides of the car are provided with anti-friction wheels or rollers t , which serve by contact with elevated side rails t' on the track to maintain the car in its proper

lateral position both during its ascent and descent.

The bearings for the wheels at the front end of the car are pivoted and are connected by a transverse-bar s , so that these bearings are free to swing to allow the wheels to assume different angles as is required in rounding the curves of the track.

The car is preferably provided, both at front and rear, with projecting bumpers w , clothed with rubber or other elastic material, so as to prevent injury to the cars in the event of one car coming into contact with another in its descent.

Although I have described the internal spiral track as the ascending track and the outer track as the descending track, it will be evident that this arrangement may be reversed without departing from my invention—that is to say, the cars may be drawn up on the outer track and allowed to descend on the inner track, the construction shown, however, being preferred. It will also be evident that the rib i may act directly upon the weighted arm e of the rock-shaft d to effect the closing of the grip of the car, if desired, the pivoted arm and the slide being used only to insure greater certainty of action.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A gravity-railway or artificial toboggan-slide having spiral ascending and descending tracks one within the other, substantially as specified.

2. A gravity-railway or artificial toboggan-slide having a continuous track forming ascending and descending spirals one within the other, substantially as specified.

3. The combination, in a gravity-railway or artificial toboggan-slide, of the ascending and descending spiral tracks, one within the other, with a hoisting-rope extending from the bottom to the top of the ascending spiral track, substantially as specified.

4. In a gravity-railway or artificial toboggan-slide, the combination of the ascending and descending spiral tracks one within the other, said descending track terminating in an abrupt dip, where it joins the ascending track at the lowest point in the same, substantially as specified.

5. The combination of the ascending and descending tracks, the hoisting-rope, and the rib on the ascending track with a car having a grip, one of the jaws of which is carried by a rock-shaft under control of the rib of the ascending track, substantially as specified.

6. The combination of the ascending and descending tracks, the hoisting-rope, and the rib on the ascending track with the spring-supported car-body having a grip and a rock-shaft carrying the movable jaw of the grip and under control of the rib on the ascending track, substantially as specified.

7. The combination of the car, its grip, the rock-shaft carrying the movable jaw of said grip, a slide engaging with an arm on said

rock-shaft, and a weighted arm controlling said slide and hung to the under side of the car, substantially as specified.

5 8. The combination of a car having a grip with movable jaw, a rock-shaft carrying said movable jaw, and a spring-actuated catch, with the ascending and descending tracks, the hoisting-rope, and a rib on the ascending track for controlling the rock-shaft carrying
10 the movable jaw of the grip, said rib being

notched for engagement with the spring-catch on the car, substantially as specified.

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

ASTERIO GUERRA.

Witnesses:

JNO. E. PARKER,
HARRY SMITH.