

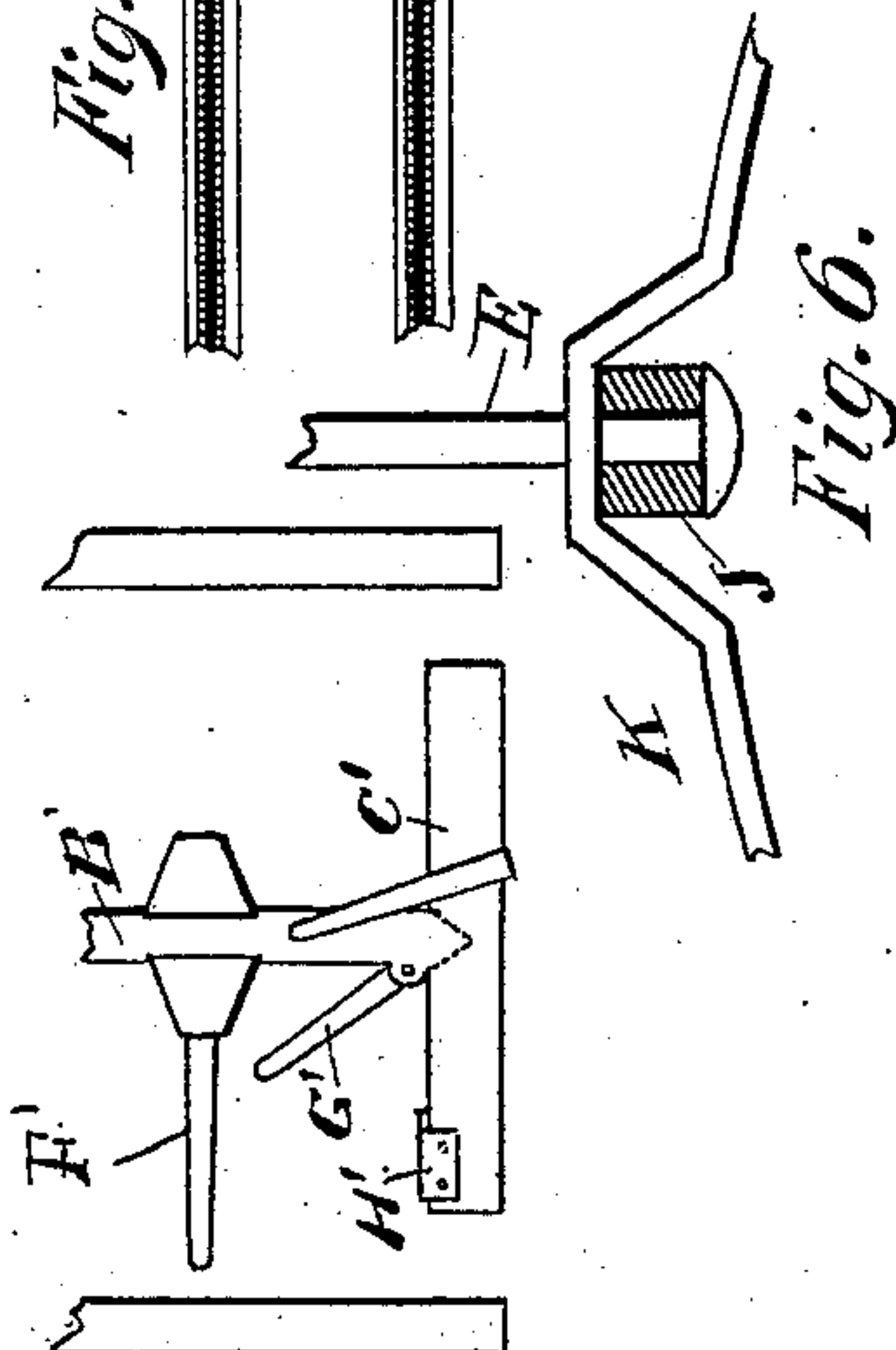
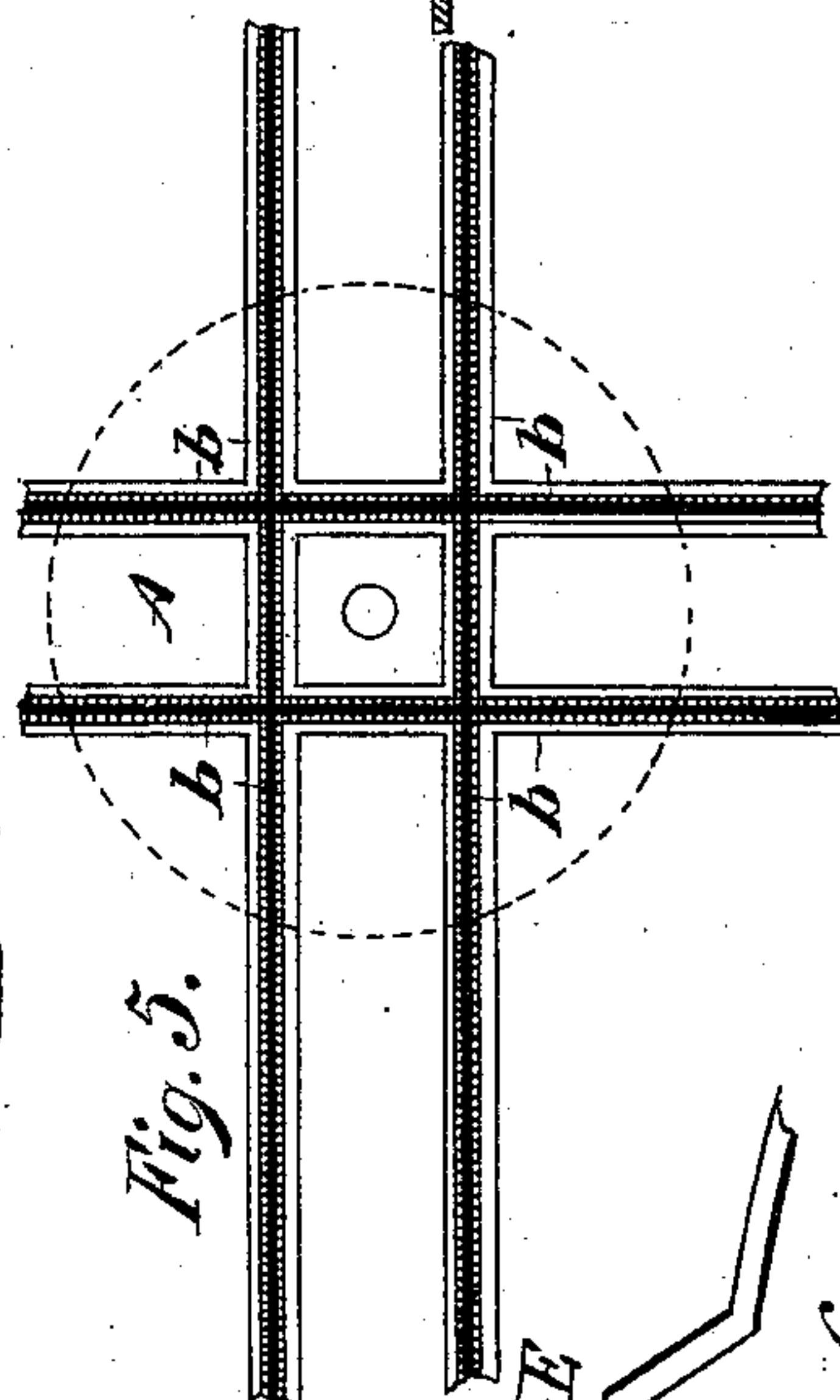
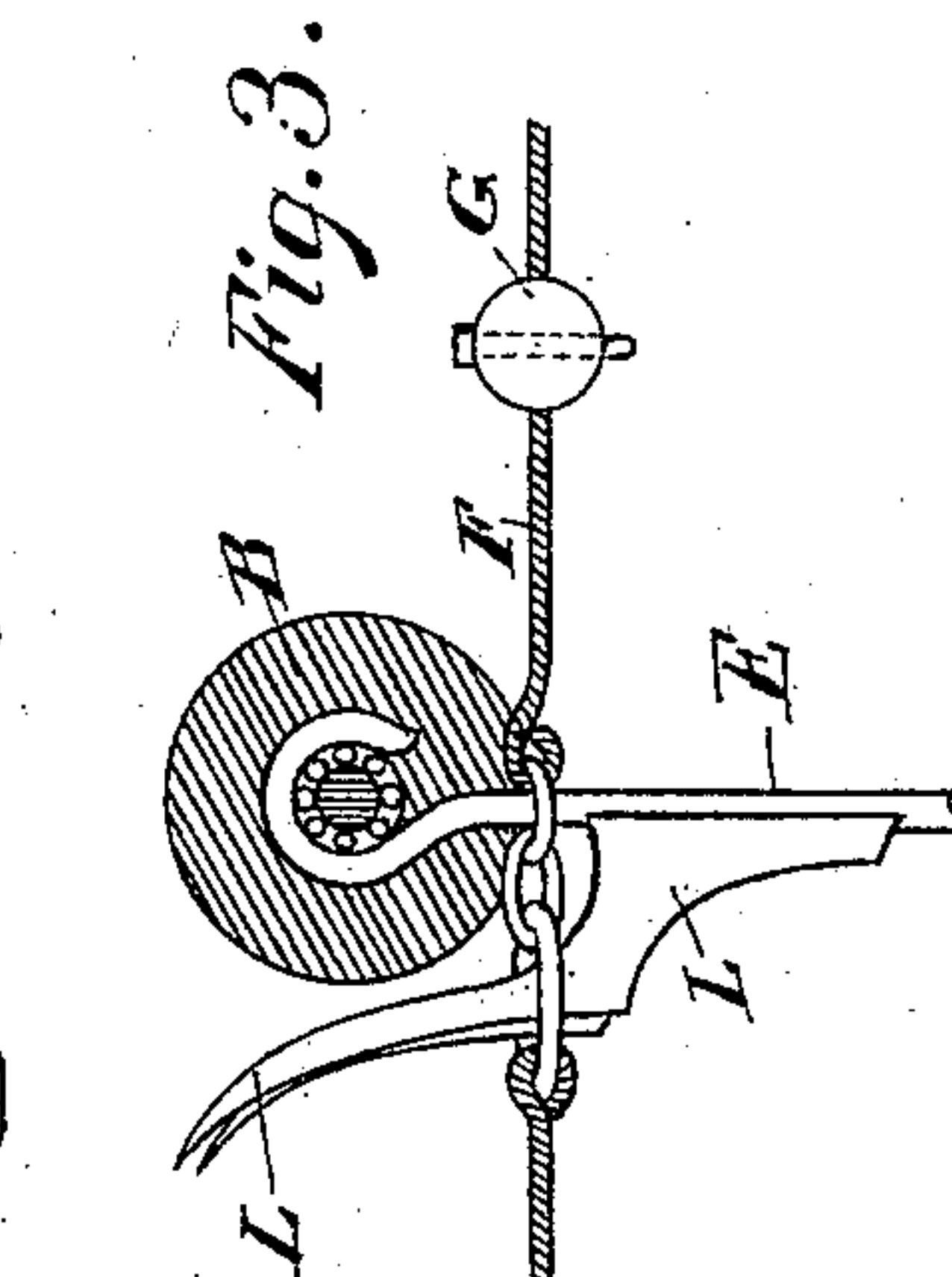
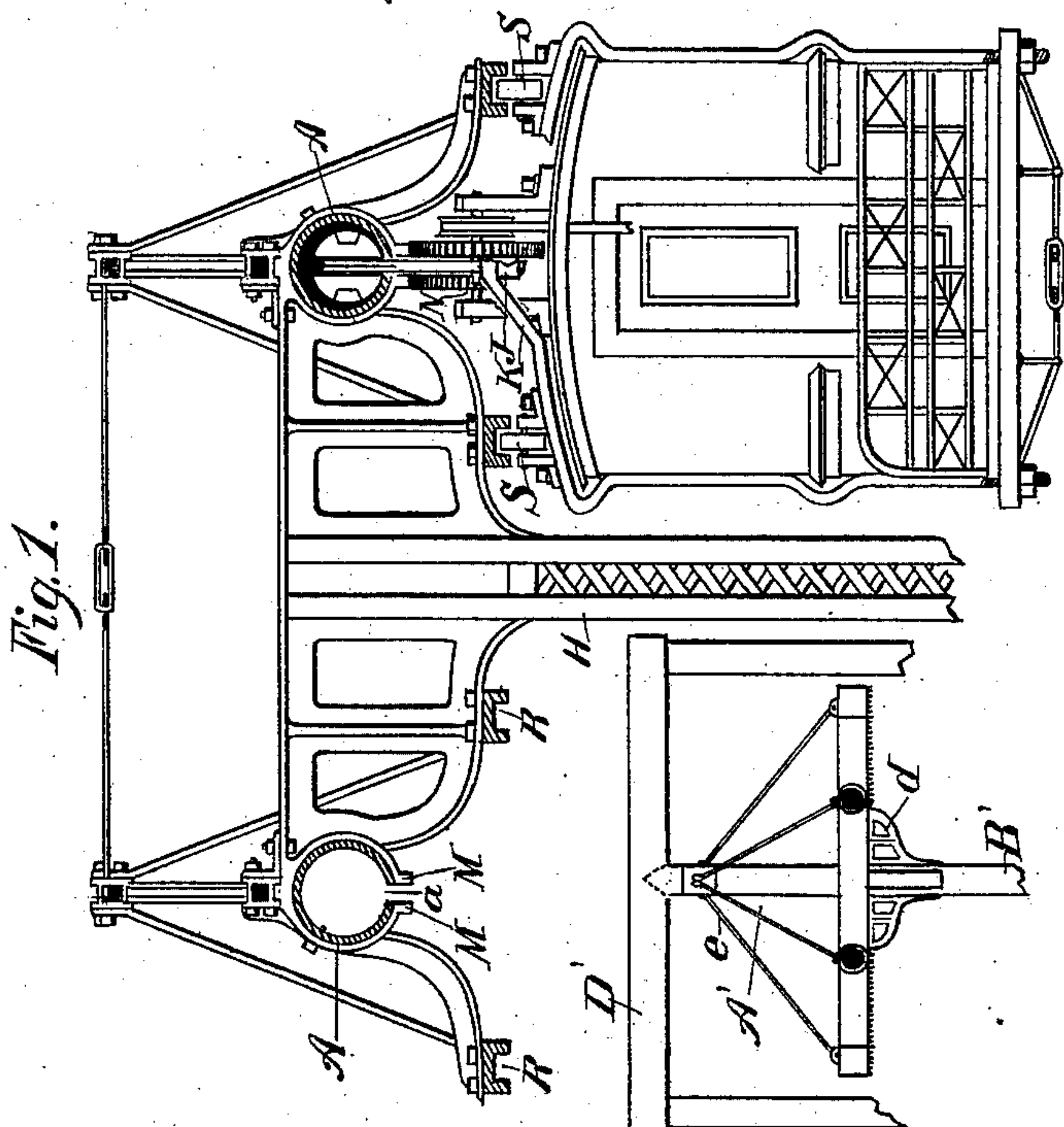
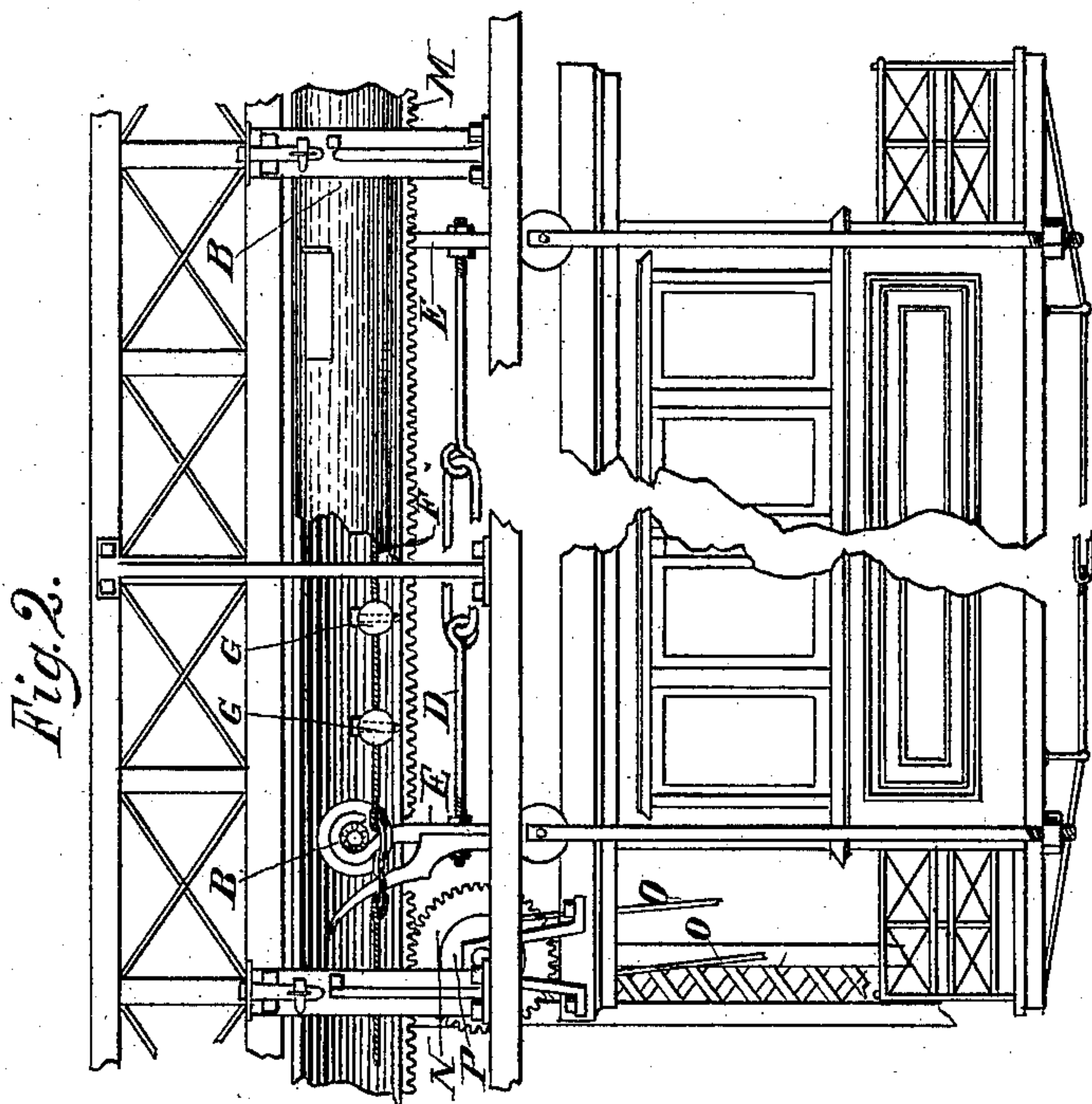
(No Model.)

A. G. BIERBACH.

DEVICE FOR SUPPORTING AND OPERATING STREET CARS.

No. 359,662.

Patented Mar. 22, 1887.



Witnesses
 Charly König
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Fig. 4.

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ALBERT G. BIERBACH, OF MILWAUKEE, WISCONSIN.

DEVICE FOR SUPPORTING AND OPERATING STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 359,662, dated March 22, 1887.

Application filed August 9, 1886. Serial No. 210,491. (No model.)

To all whom it may concern:

Be it known that I, ALBERT G. BIERBACH, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Devices for Supporting and Operating Street-Cars; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures or reference marked thereon, which form a part of this specification.

My invention relates to improvements in devices for supporting and operating that class of street-cars which are suspended from a tubular tramway above the street; and it pertains more especially, first, to the bearings by which the car is prevented from swinging; second, to the peculiar arrangement of the toothed bar located upon the respective sides of the slot of the supporting-tramway, and the driving mechanism operating therein; third, to the arrangement of the elastic cushions from which the car is suspended; fourth, to the plow or knife by which ice or other obstructions are removed from the slot of the supporting tube or tramway; fifth, to the connecting cable or chain within the supporting-tube, by which the upper ends of the hangers are connected together, and by which the car may, if desired, be drawn; sixth, to the turntable or frame.

The construction of my invention is further explained by reference to the accompany drawings, in which—

Figure 1 represents one of the supporting-columns for the tramway, a cross-section of the ways, and an end view of a car suspended from one of the ways. Fig. 2 represents a side view of the parts shown in Fig. 1. Fig. 3 is a detail. Fig. 4 is a side view, and Fig. 5 is a bottom view, of a turn-table, or frame by which cars may be both turned around and switched from one track to another. Fig. 6 shows details of the means of securing the hanger to the car.

Like parts are represented by the same reference-letters throughout the several views.

The slotted tubular tramway A and the truck operating therein, consisting of rollers B B, hangers E E, and connecting-bar D, are

substantially the same as shown in patents in fire-escapes, Nos. 278, 310, 287, 410, and 329, 256, now owned by myself.

The hangers E E are loosely fitted to the axles of the rollers B, from which they are suspended, and they are connected at their lower ends with the respective ends of the car. The hangers thus arranged are connected with each other by the horizontal bars D beneath the tramway, and the horizontal cable or chain F within the tramway. The cable F is provided with knobs G, secured thereto at short distances apart. The diameter of the knobs G is such as to prevent them from dropping through the slot in the tramway, and they thus prevent the cable F from dropping through the slot of the tramway. The tubular tramways A are supported at suitable distances apart by the columns H and supporting-frame I, substantially as shown. An elastic cushion, J, is interposed between the supporting-bearings formed at the lower end of the hangers E E and the brackets K, which serves to prevent the jarring motion of the truck from being transmitted to the car. The brackets K are rigidly affixed to the respective ends of the car.

L is a knife or plow, which is rigidly affixed at its lower end to the hangers or other part of the truck, and serves to remove ice or other obstructions from the tramway.

M M are toothed bars, which are rigidly affixed to the lower outer surface of the tramway upon the respective sides of the slots.

N N are toothed gears, which are affixed to the car by suitable bearings, and are adapted, as they are rotated by some exterior motive power, to traverse the toothed bars M M, and thereby communicate motion to the car, either forward or backward, along the supporting-tramway.

Motion is communicated from an engine or other motor in the car to the gear-wheel N through the driving-band O and pulley P or other ordinary mechanism for communicating motion.

To prevent the car from swinging from one side to the other, bearing-ways R R are provided. The ways R R are rigidly affixed to the tramway or some part of the supporting-frame in close proximity to the car, preferably

above its top, as shown, and the car is provided with corresponding bearings or friction-rollers, S S, which are adapted to traverse said ways R as the car is propelled, when it is
 5 obvious the tendency of the car to be swung by the wind or any excess of pressure on one side or the other is prevented.

A' is a turn-table or frame, by which a car may be turned around or run from one track
 10 to another. The turn-table A' consists of the four tubular ways *b b*, *b b*, which are secured together at their junctions and supported upon the revolving standard B' by the arms *d* beneath them, and the brace-rods *e* above them,
 15 substantially as shown. The standard B' is supported on the base-block C' and is retained in the vertical position by the frame D'. The lower end of the standard B' is provided with a socket, E', for the reception of the lever F',
 20 by which it is turned.

G' is a locking-latch, which is hinged to the standard B' and is adapted to drop into a recess, H', formed in or affixed to the brace C', whereby the turn-table is locked in the re-
 25 quired position for passing cars upon it from the main line of the tramway.

It is obvious that when a car is supported upon any one of the branches *b* they can, by turning said table, be brought in a line with
 30 any one of the branch lines of the tramway.

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

1. In devices for supporting and operating
 35 street cars, the combination of the slotted tubular way A, provided with toothed bars M M, affixed to the respective sides of the slot upon the lower outer surface of the way, with the toothed gear-wheels N N, supported in journal-
 40 bearings affixed to said car, substantially as set forth.

2. The devices for preventing the swinging

motion of the suspended car, consisting of the combination of the anti-friction rollers S S, supported in journal-bearings upon the car-
 45 bearing ways R R, retained in place by the projecting arms or frame-work of the supporting-columns of the tramway, and the tubular tramway A, all substantially as set forth.

3. The combination, with the hangers E E,
 50 suspended from the truck within the slotted tramway, and the bracket K, affixed to the car, of the elastic cushions J, interposed between the opposing surfaces of said hangers and frame, substantially as and for the purpose set
 55 forth.

4. The combination, with one or both of the hangers E, suspended from the truck within the slotted way A, of the plow L, affixed at its lower end to said hangers beneath said way,
 60 and extending upward through the slot of said way and adapted to remove obstructions therefrom, substantially as set forth.

5. The combination, with the hangers E, of the cable F, located within the tubular way
 65 and provided with retaining-knobs G, substantially as set forth.

6. In a tubular tramway, the turn-table or frame, consisting in the combination of the tubular supports *b b* and *b b*, arranged at right
 70 angles to each other, rotating supporting-standard B', base-block C', supporting-frame *d*, brace-rods *e*, affixed at their diverging ends to the outer ends of said supports *b* and at the upper converging ends to the standard B', and
 75 the frame D', said standard being provided with means for being rotated and locked, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT G. BIERBACH.

Witnesses:

JAS. B. ERWIN,
 O. L. HOFFMANN.