

(No Model.)

2 Sheets—Sheet 1.

T. L. JOHNSON.

CABLE RAILWAY CONSTRUCTION.

No. 333,953.

Patented Jan. 5, 1886.

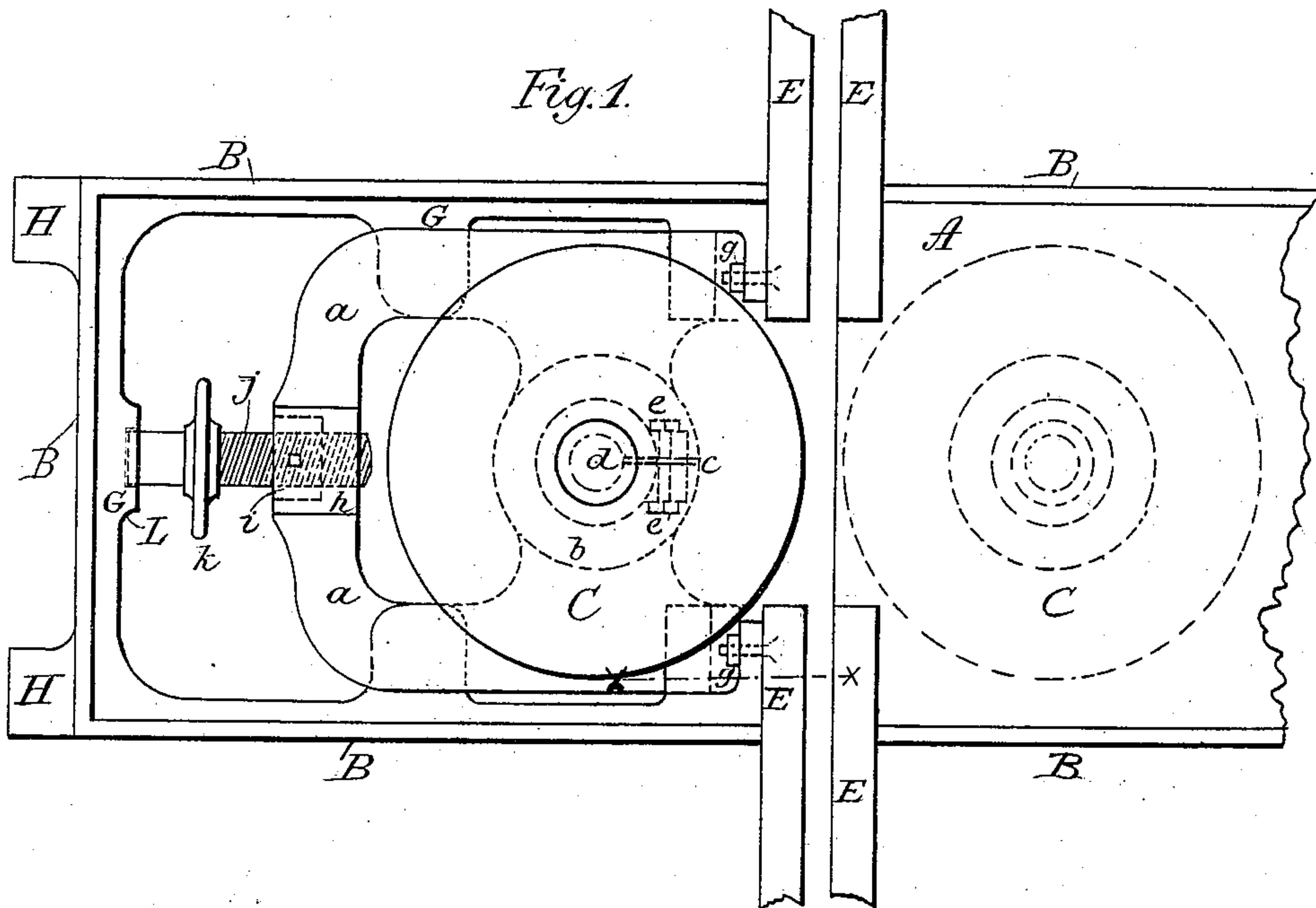
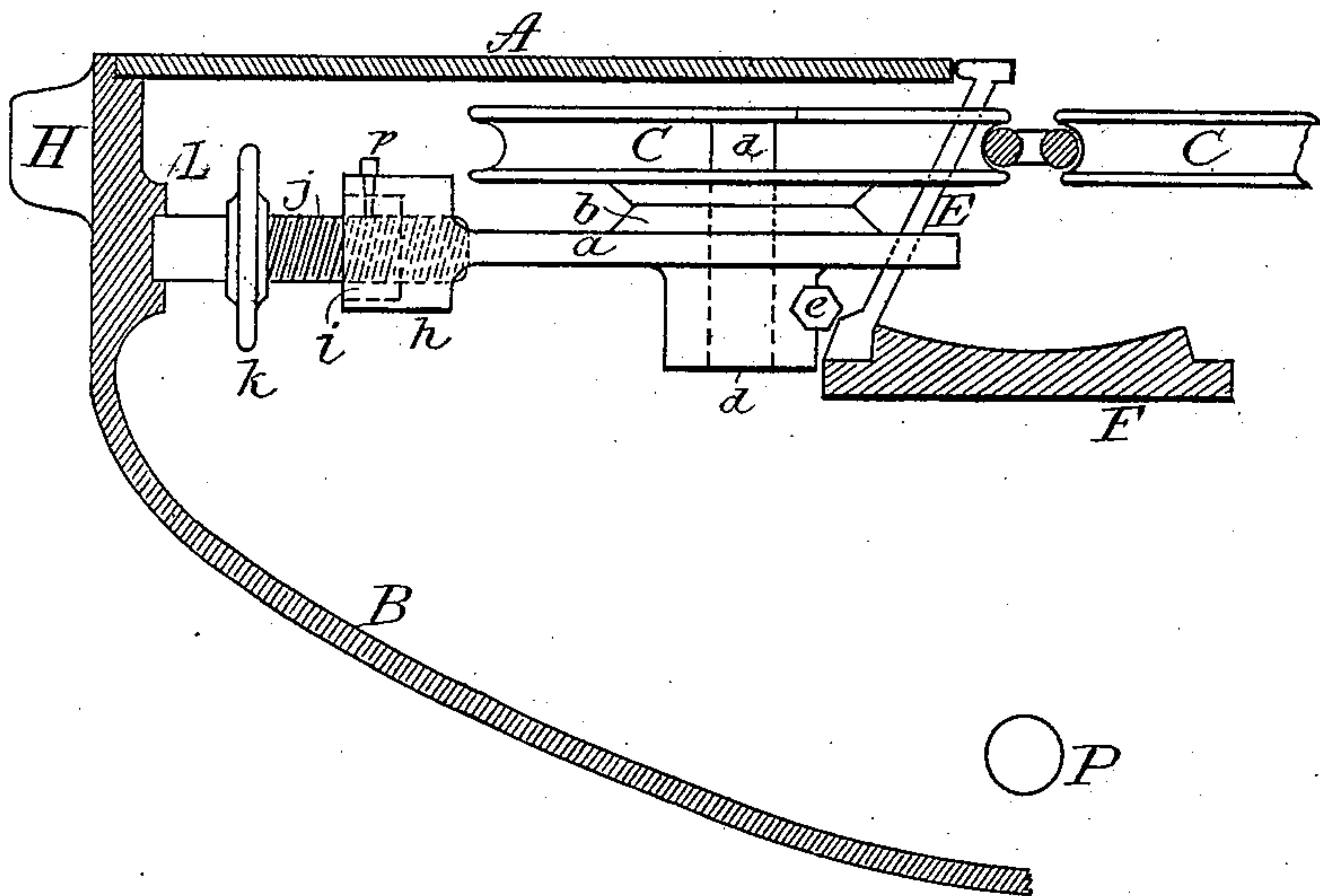


Fig. 2.



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(No Model.)

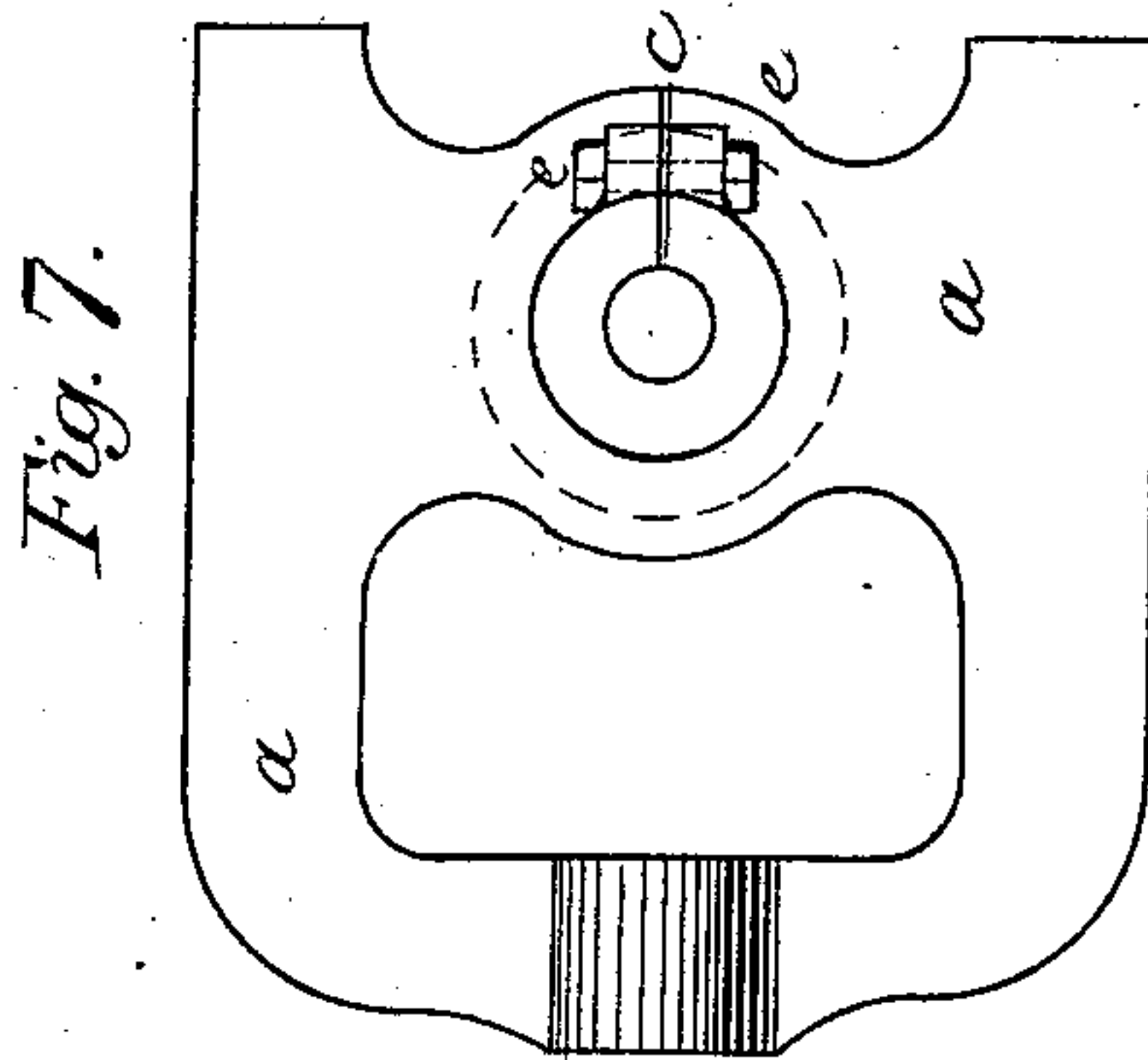
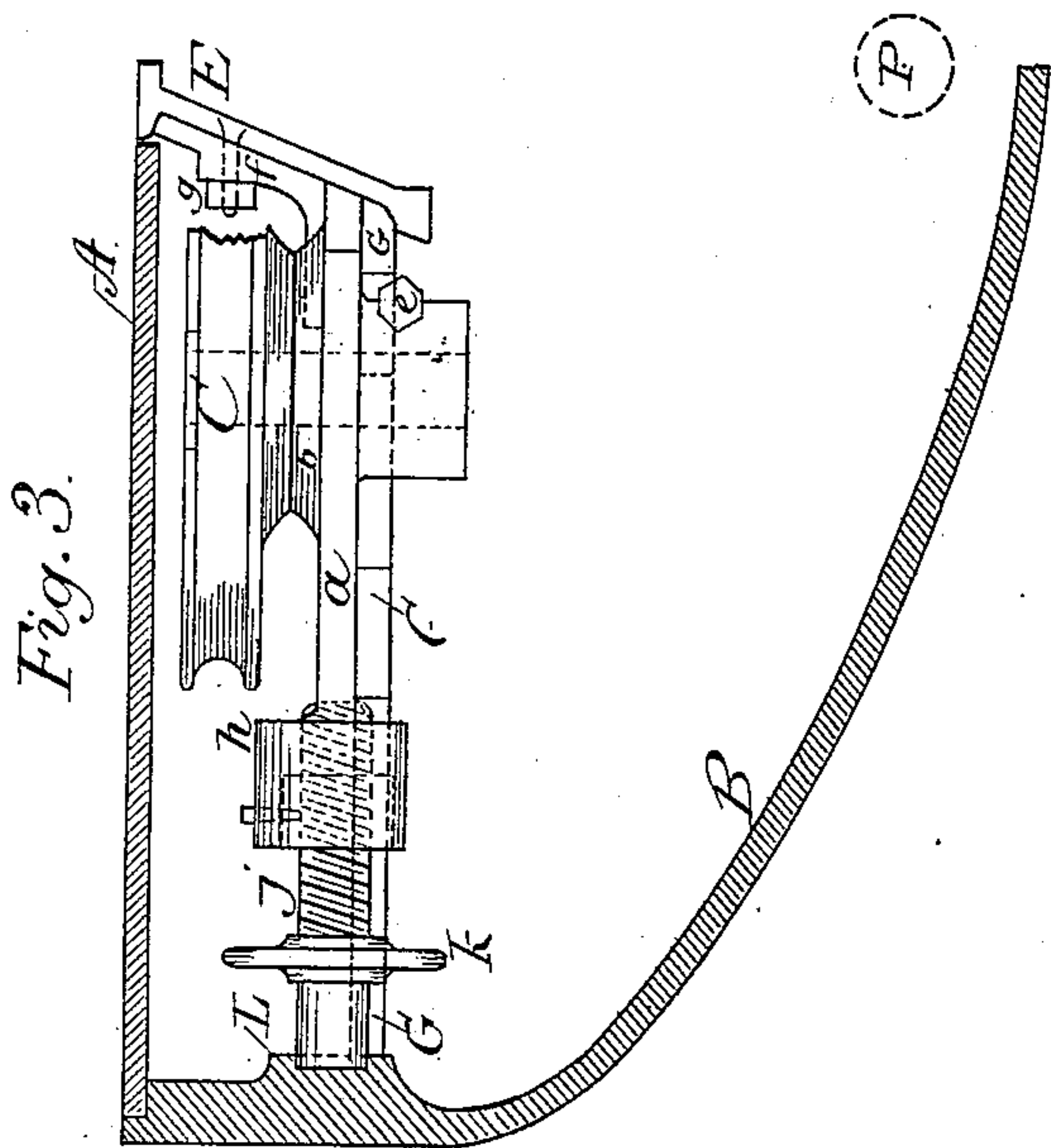
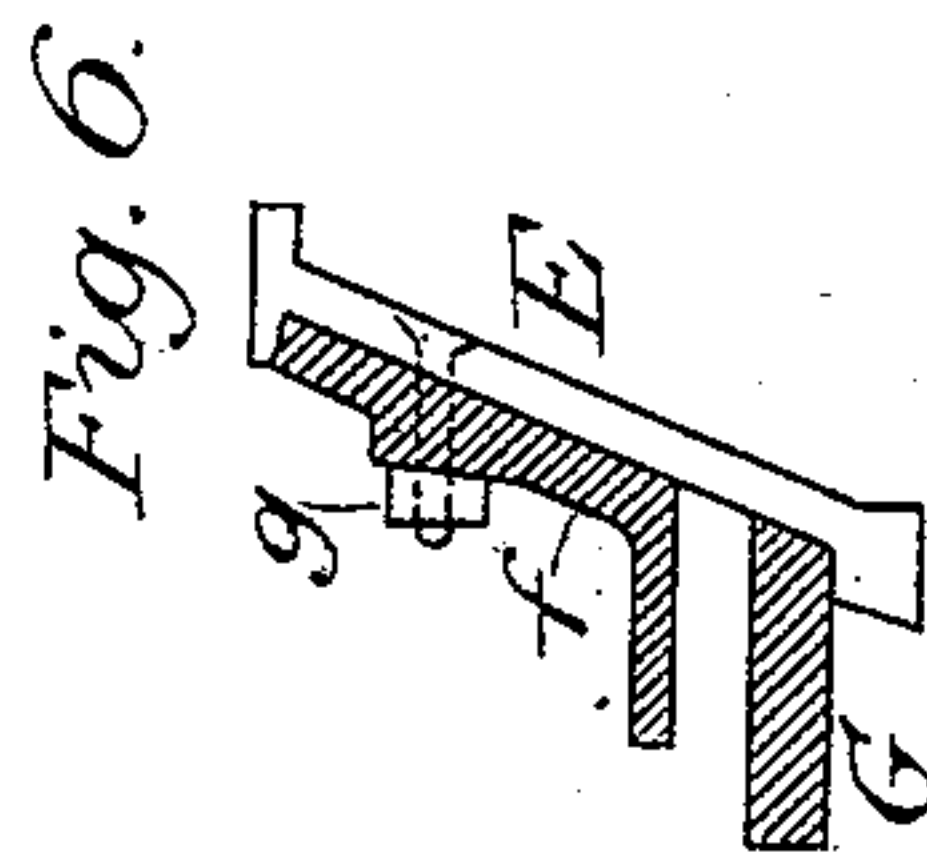
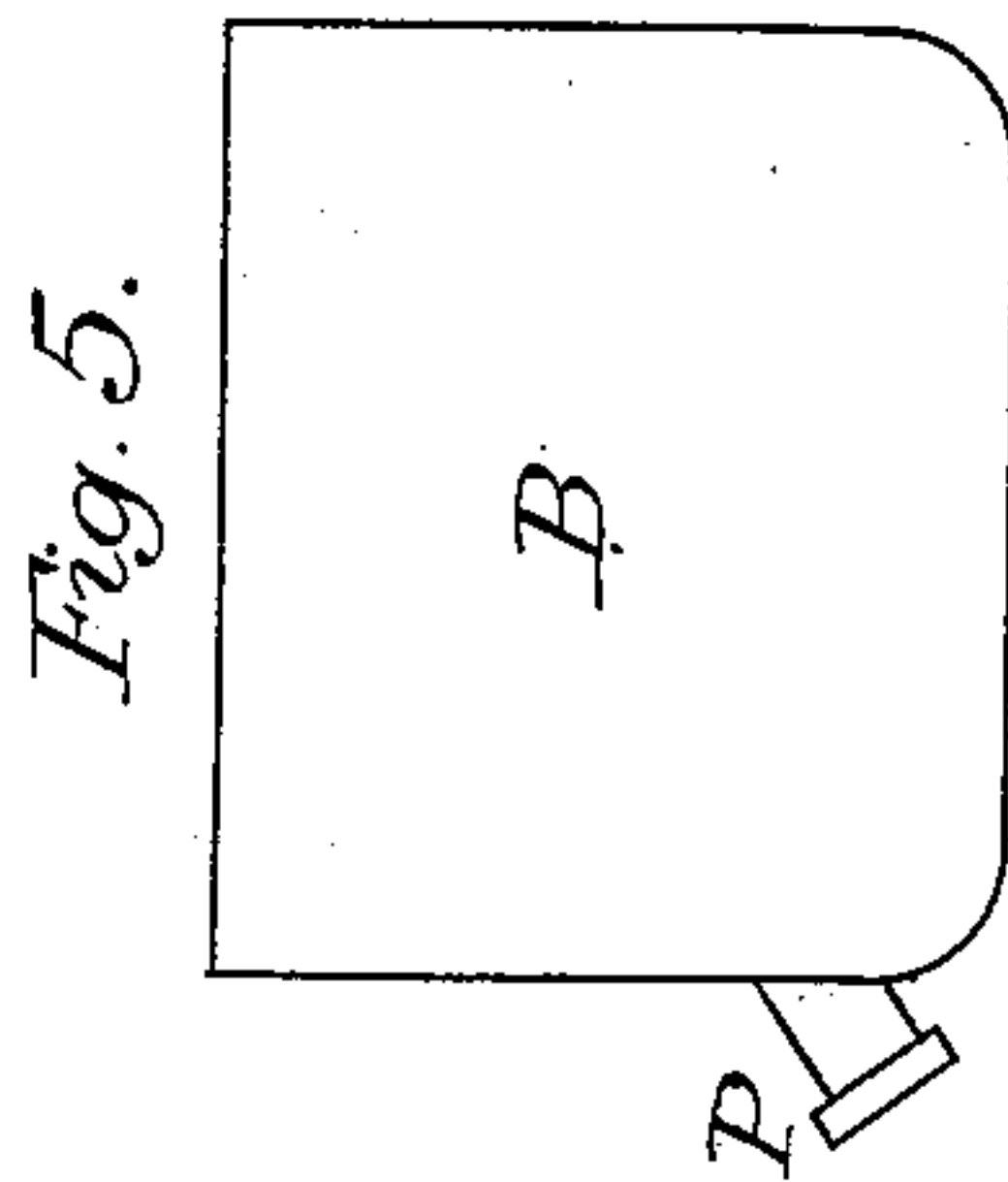
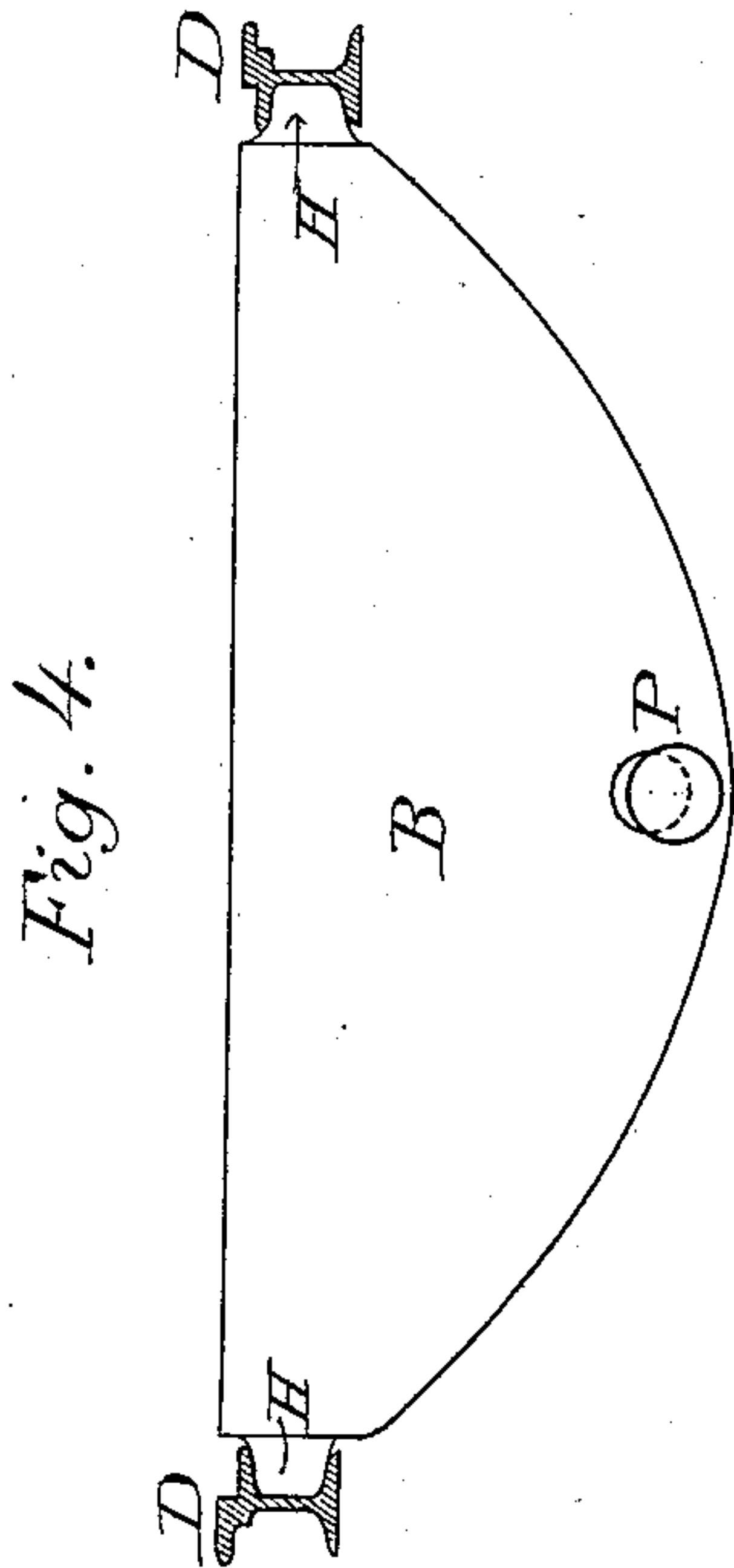
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UNITED STATES PATENT OFFICE.

TOM L. JOHNSON, OF CLEVELAND, OHIO.

CABLE-RAILWAY CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 333,953, dated January 5, 1886.

Application filed August 17, 1885. Serial No. 174,551. (No model.)

To all whom it may concern:

Be it known that I, TOM L. JOHNSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Cable-Railway Construction, which improvement or invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to provide a system of horizontal twin carrying-pulleys for double traction-cables, which pulleys shall be located within receptacles forming not only chambers for said pulleys, but drainage pits or basins for the cable way or conduit, and receptacles also for catching and retaining for removal the dirt entering through or between the slot-rails forming the walls of the cable-way.

It is also a further object to so mount said pulleys that they may be readily withdrawn through openings in their pits, for purposes of inspection or repair.

The invention consists of the parts and combinations of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 shows in plan two horizontal carrying-pulleys, one on each side of a section of the slot-cable-way. Fig. 2 is a vertical transverse section through the center of Fig. 1. Fig. 3 is a vertical transverse half-section showing the sliding bed-plate for said pulley set upon internal flanges of the casing. Fig. 4 shows, upon a smaller scale, the method of tying the pulley-chambers to the main rails of the track. Fig. 5 shows, also upon a smaller scale, an end view of said chambers or pits. Fig. 6 shows a transverse vertical section of part of the guideway for the pulleys' bed-plate, taken through the line *xx*, Fig. 1. Fig. 7 shows, detached, a bottom view, in plan, of the sliding bed-plate of the carrying-pulleys.

In said figures the respective parts are designated by letters as follows:

A A designate the covers of the double chamber or catch-basin, and B B its walls or contour; C C, the carrying-pulleys within said basin; D D, the main rails of one car-track, and E E the slot-rails forming the side walls of the cable way or conduit and resting in or upon a bottom, F. Said rails do not abut where said basins intervene, but are separated

by a space of about eighteen inches to two feet, as seen in Fig. 1. The slot proper between the rails is preserved by the ends of the covers A A, which fit into the space between the ends of the rails flush with the lines of top and side surfaces of the rails.

Around the interior walls of the basin B are lateral and end flanges, G, preferably cast therewith, and terminating at each slot-rail in angle cap-pieces *f*, which, together with the lower parts of the inner ends of the flanges, are cast to the desired angle or inclination of the slot-rails, so that the ends of the slot-rails and the cap-pieces *f* are tied together by stud-bolts *g*, as seen in Figs. 1, 3, and 6. The opposite and outer ends of said basins are secured to the main-track rails through the intervention of lugs or chocks H.

The pulleys C are all mounted and operated alike. A description of one of said pulleys on one side of the cable will therefore be sufficient for all. The pulley C in the several half-views shown is mounted upon a bed-plate, *a*, and bears upon a boss, *b*, thereon. Said plate has said boss extended also below into a hub, which is split on one side, as shown at *c*, Fig. 1. A pin, *d*, serves as a vertical journal for said pulley, and said pin is held fast in the eye of the boss *b* by the clamping action of the bolt *e*, passing through lugs at the side of the slot *c* on the hub below the boss *b*. The bed-plate *a* rests upon the internal flanges, G, and when the pulley C is in place the inner end of said bed-plate rests under the angle cap-pieces *f*. The outer end of the bed-plate *a* is formed into a boss, *h*, in which is secured in a recess by a pin, *p*, a screw-threaded nut, *i*, and passing in through said nut is a screw-threaded thrust-bolt, *j*, provided with a disk-handle, *k*. The opposite end of said bolt is seated in a recess bored out of the boss *h*, cast with the end flange, G, of the casing B.

The operation of the pulleys is very simple, and can now be readily understood. Said operation is as follows: The cover A being removed, the bed-plate *a* and pulley C, mounted thereon, as already described, are let down through the uncovered opening until the bed-plate rests upon the side flanges, G. The handle *k* is then turned, backing the thrust-bolt *j* out of the nut *i* until the rear end of the said bolt enters the recess-seat bored for it in

the boss *l*. As soon as said bolt bears hard upon the end of said recess, as shown at *l*, its continued turning still further backs the bolt of the nut *i*, and thus forces the bed-plate in toward the slot-rail, sliding it and the pulley until the pulley is adjusted to make its portion of the seat for the double cable *J*. Each twin pulley being thus adjusted is ready for service, the front ends of its bed-plate *a* being held under the angle cap-pieces *f*. In order to withdraw the pulley, it is only necessary to screw up the handle *k*, thus shortening the bolt *j* sufficiently to withdraw it somewhat beyond the end flange, *G*—that is, as much as the end of the bed-plate *a* is lapped by the angle cap-piece *f*. This being done, the bed-plate, and with it the pulley, may be drawn back or slid back on the side flanges, *G*, until fairly under the uncovered opening in the top of the basin *B*, when the whole bed-plate and pulley can be removed, inspected, repaired, or replaced, as may be desired. The vertical end wall, either one or both, of each catch basin or pit *B* is provided with a drain-pipe, *P*, placed above the central bottom line of union of the side bilgers or inclined walls of said basins. By this means not only does the water run off into the sewer-connections, leaving a cavity to retain the solid matter, but the curved or inclined walls are entirely unperforated and afford a smooth and unbroken surface, most readily cleaned by a scoop or shovel of all solid matter, without danger of forcing any of such matter into the sewer-connections in the act of such scooping.

I am aware that horizontal pulleys have been used for carrying cables around curves, but not for the whole line of carrying-pulleys, as the pulley system of supporting the cable. In thus using horizontal pulleys for the whole line of cable many disadvantages inherent in the vertical line-pulley are avoided or obviated, and particularly with double cables. Some of said disadvantages are the following: First, a small superficial bearing between pulley and cable; second, uneven wear of cable, due to the friction of wear coming only on the side of the cable which is in contact with or seated in the pulley-groove; third, if a double cable be used there is a constant tendency of said cable, owing to uneven wear, to tilt or turn sidewise, and thus one cable may be thrown into the central groove of the pulley, thus put-

ting a side twist in the cable and throwing its stops nearly vertical, so that they cannot be engaged by the car-driving device; fourth, greater vibration and jumping or whipping motion of the cable, because there is no flange over the top of the cable to hold it true in its line of draft. All of the above tendencies, it can be readily seen, are completely checked by the use of double horizontal pulleys, as hereinbefore described.

While it is manifest that the final adjustability of horizontal twin carrying-pulleys to the cable must be in a horizontal plane, the adjustment of the first entry of their frames into the pit or chamber can be modified in many ways without departing from the principle of this invention.

Having thus fully described my said improvements, as of my invention I claim—

1. In a cable railway, in a chamber or pit connected with the cable-conduit, the combination of twin carrying-pulleys and adjustable carrying-frames whereon said pulleys are mounted, whereby said pulleys are adjusted to carry the cable and to release the same by horizontal adjustment, and are also adapted for removal from said chamber or pit, substantially as and for the purposes set forth.

2. In a cable railway, in combination with the cable-conduit, a pulley chamber or pit forming a double catch basin or chamber having an angular or curved bilge on each side meeting in a central line at bottom, vertical end walls, and openings on top for the insertion or removal of the pulleys, whereby said basins may be readily cleaned from each side of said central line, substantially as and for the purposes set forth.

3. In a cable railway, in combination with the cable-conduit, a double catch-basin having an angular or curved bilge on each side of a central line at bottom, openings on top, and vertical end walls provided with a pipe or pipes for sewer-connection, whereby said basin can be cleaned out by means of scoops or shovels without danger of solid material being forced or falling into said connections, substantially as and for the purposes set forth.

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Witnesses:

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