

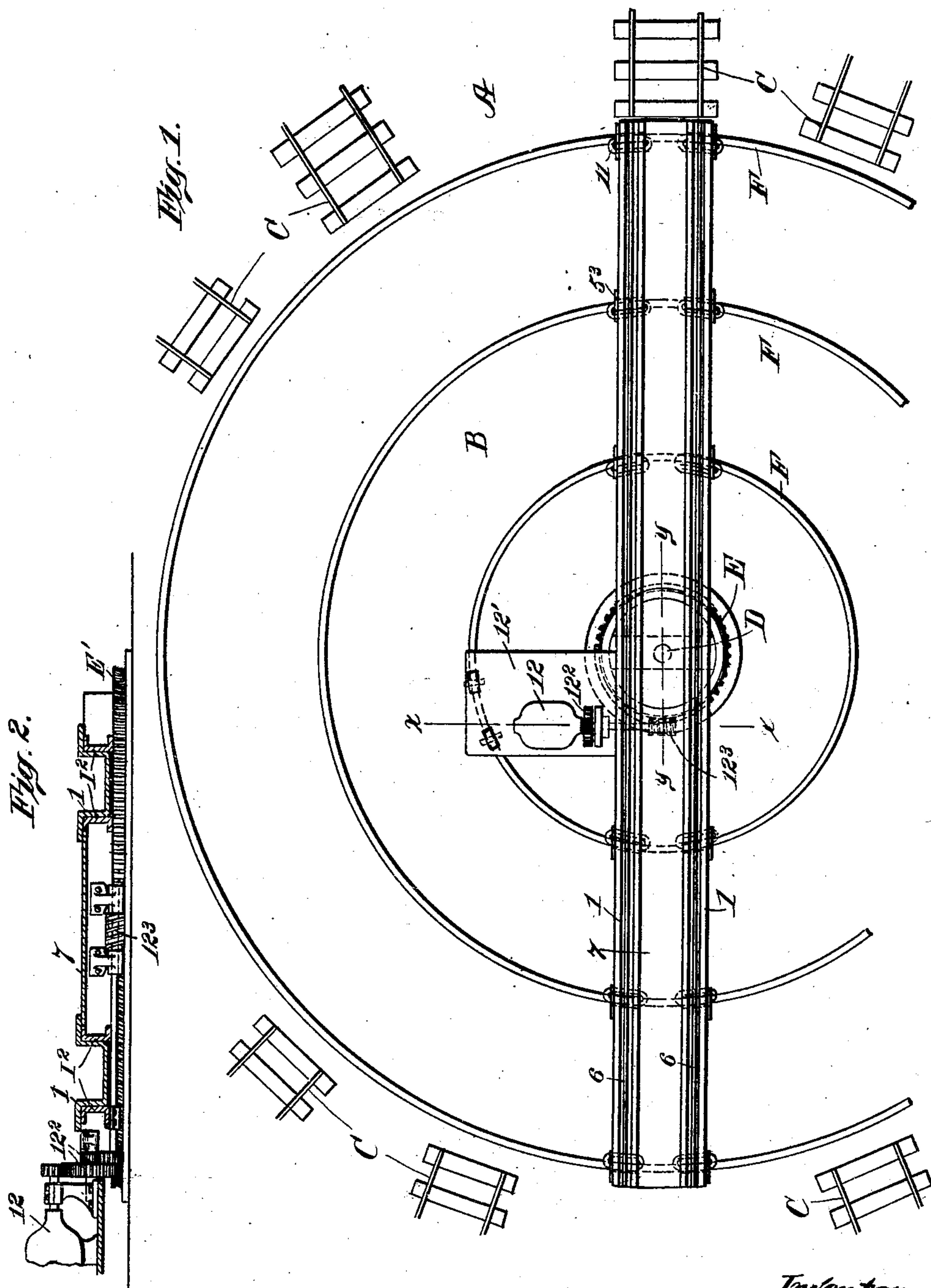
No. 889,372.

PATENTED JUNE 2, 1908.

C. G. HAWLEY.
NORMAL SURFACE TURN TABLE.

APPLICATION FILED OCT. 1, 1906.

4 SHEETS—SHEET 1.



Witnesses:
W. S. Austin
A. W. Nelson

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4 SHEETS—SHEET 2.

Fig. 3.

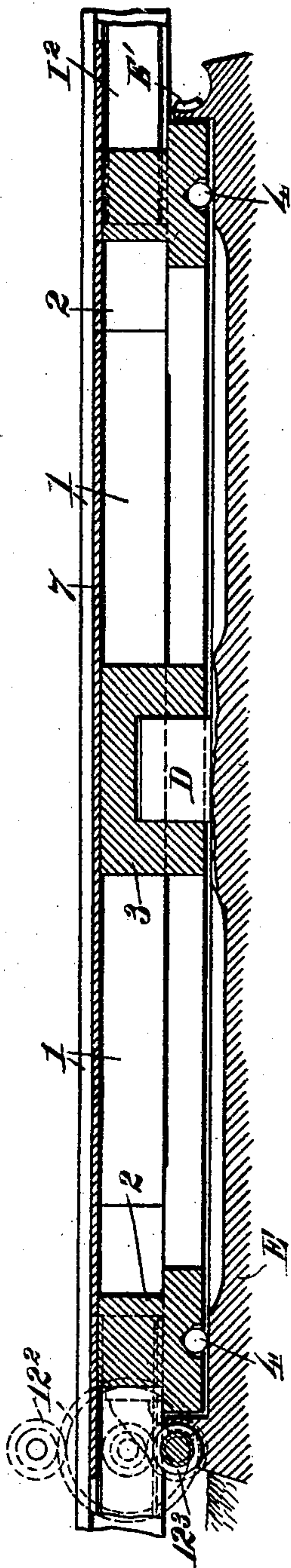
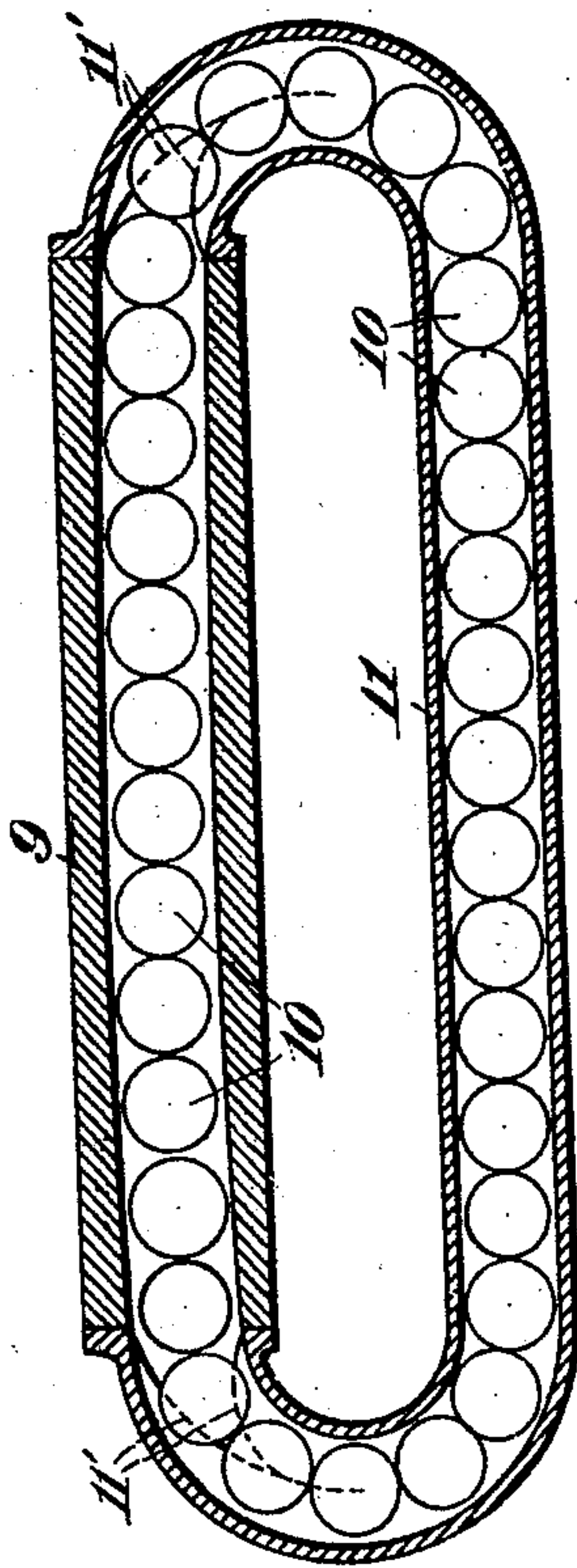


Fig. 6.



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4 SHEETS—SHEET 3.

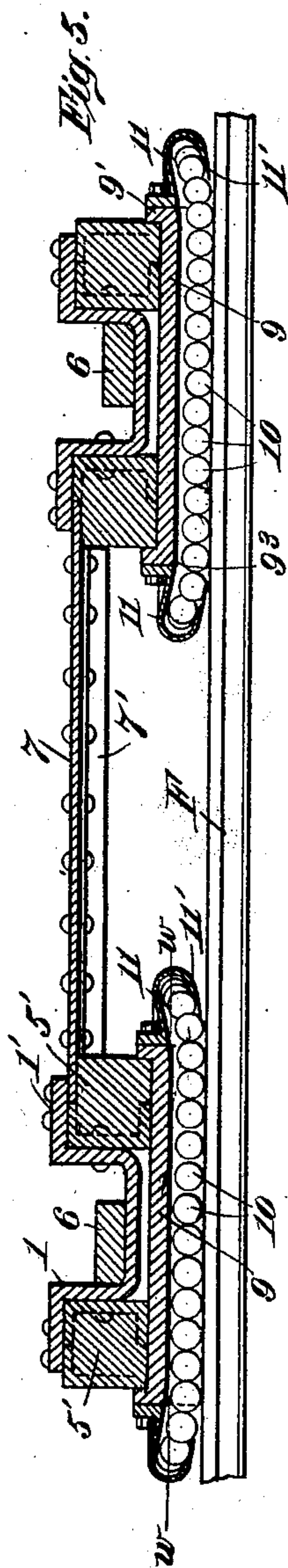
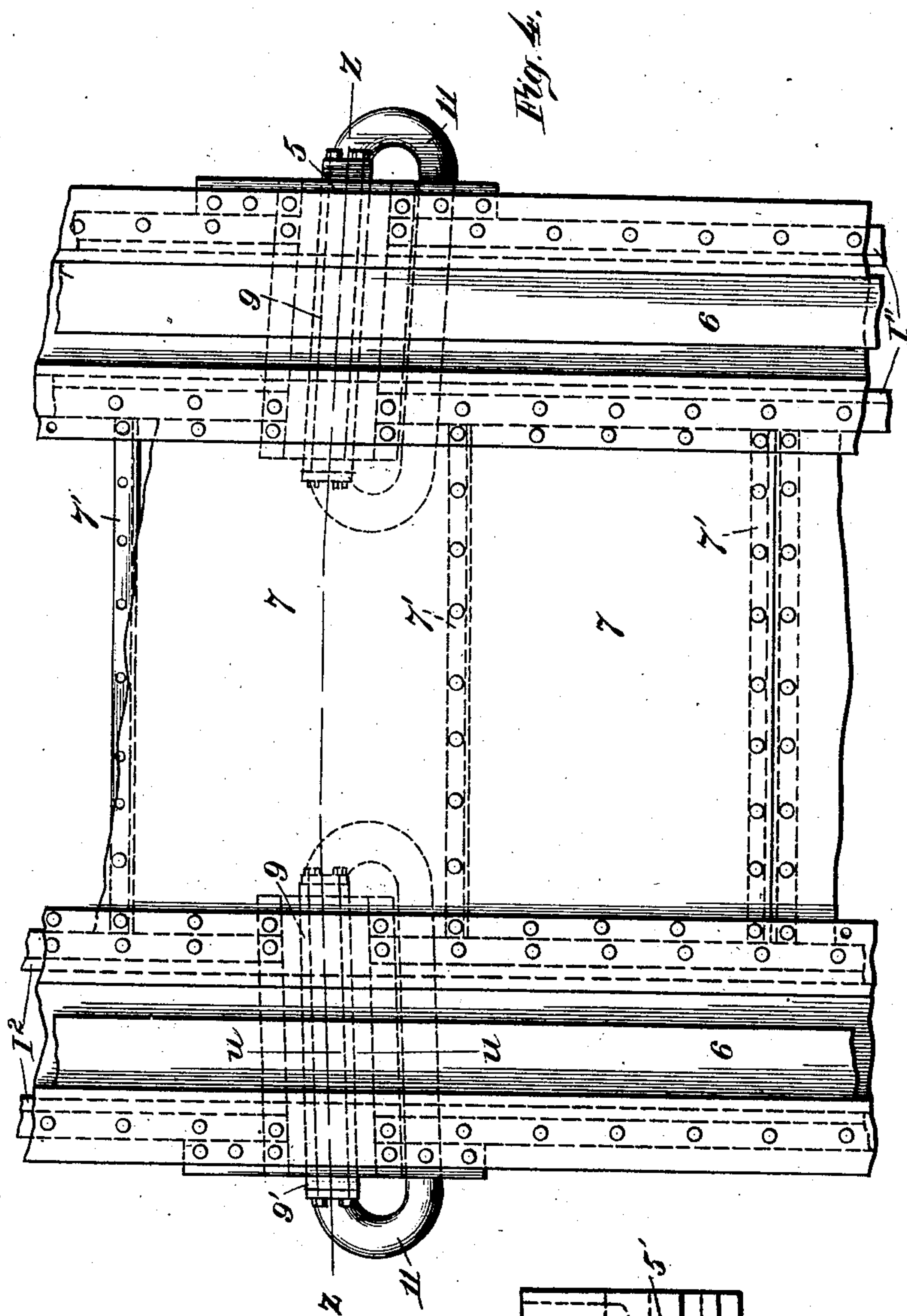
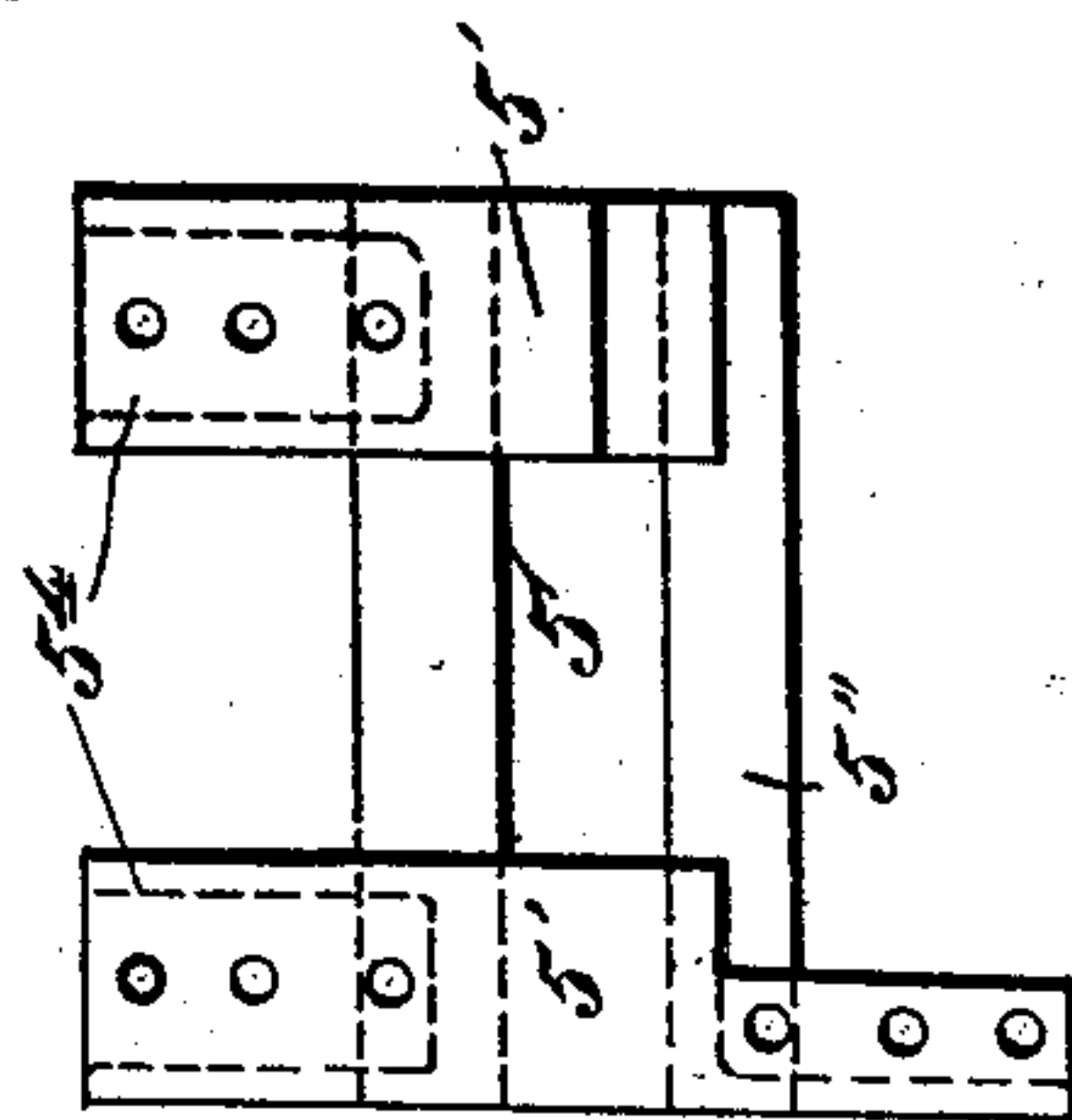


Fig. 10.



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4 SHEETS—SHEET 4.

Fig. 11.

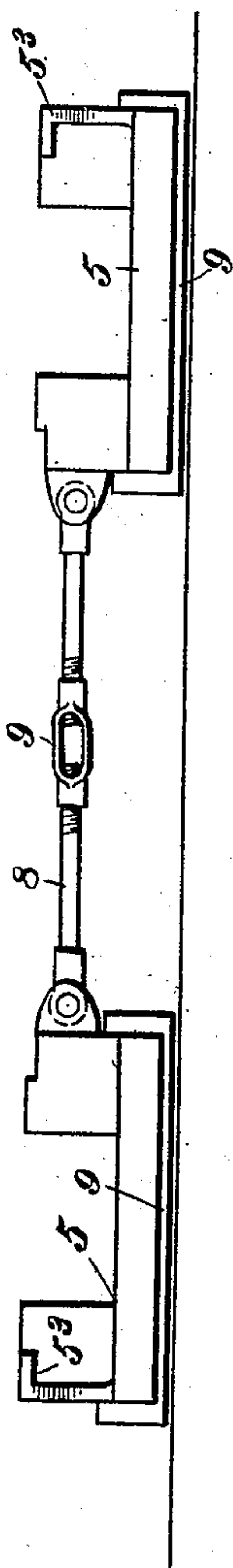


Fig. 8.

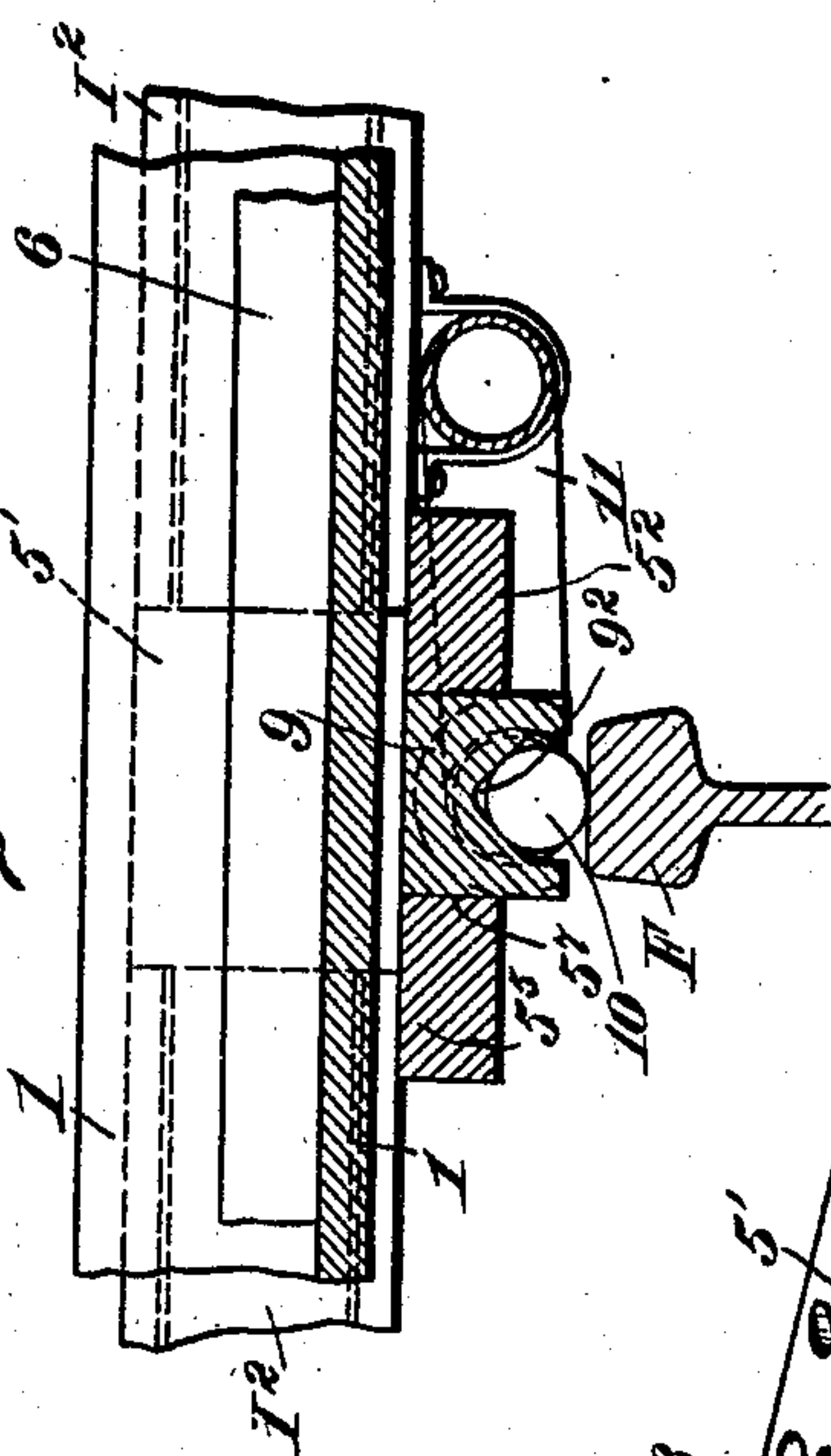


Fig. 7.

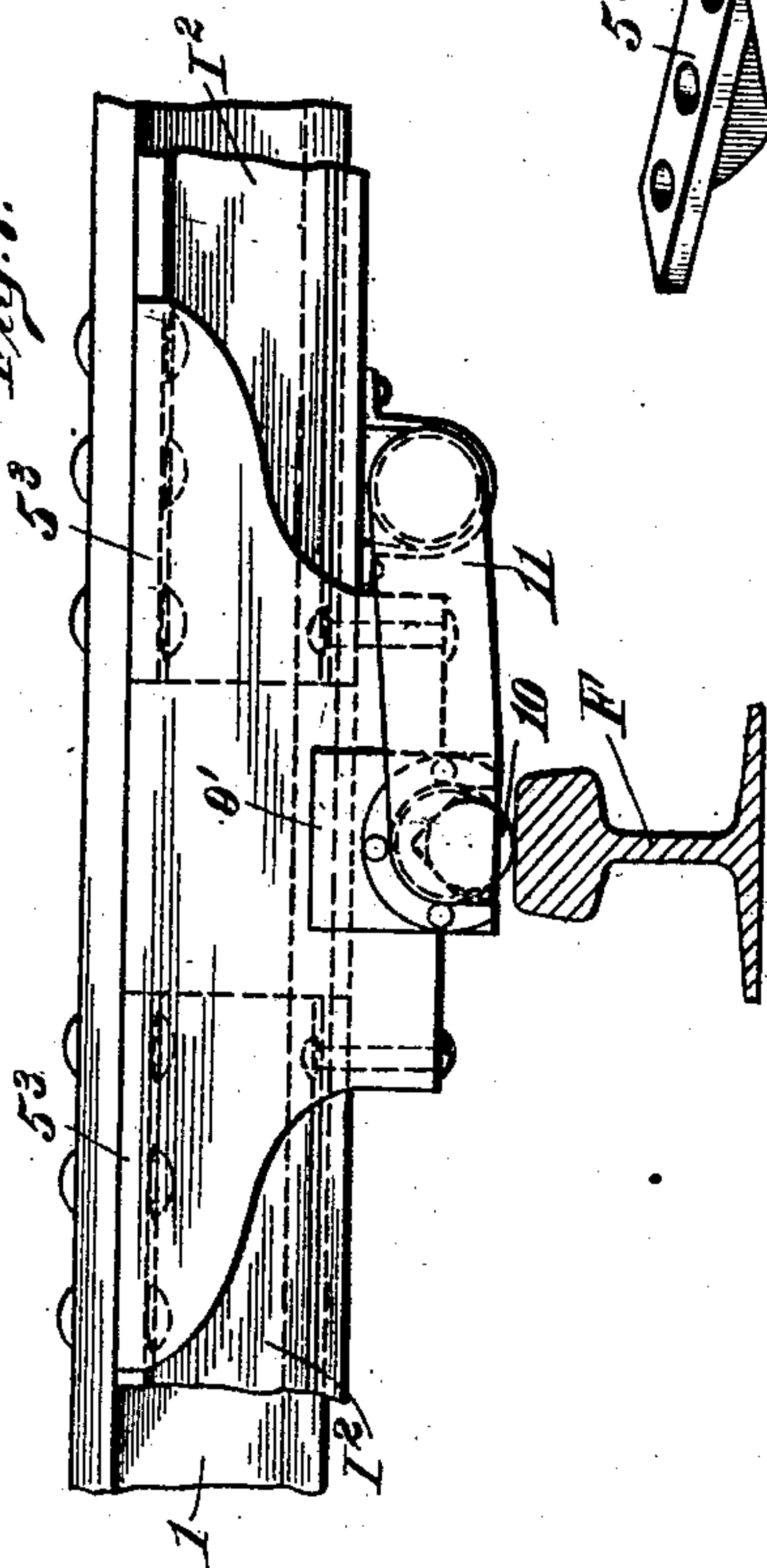
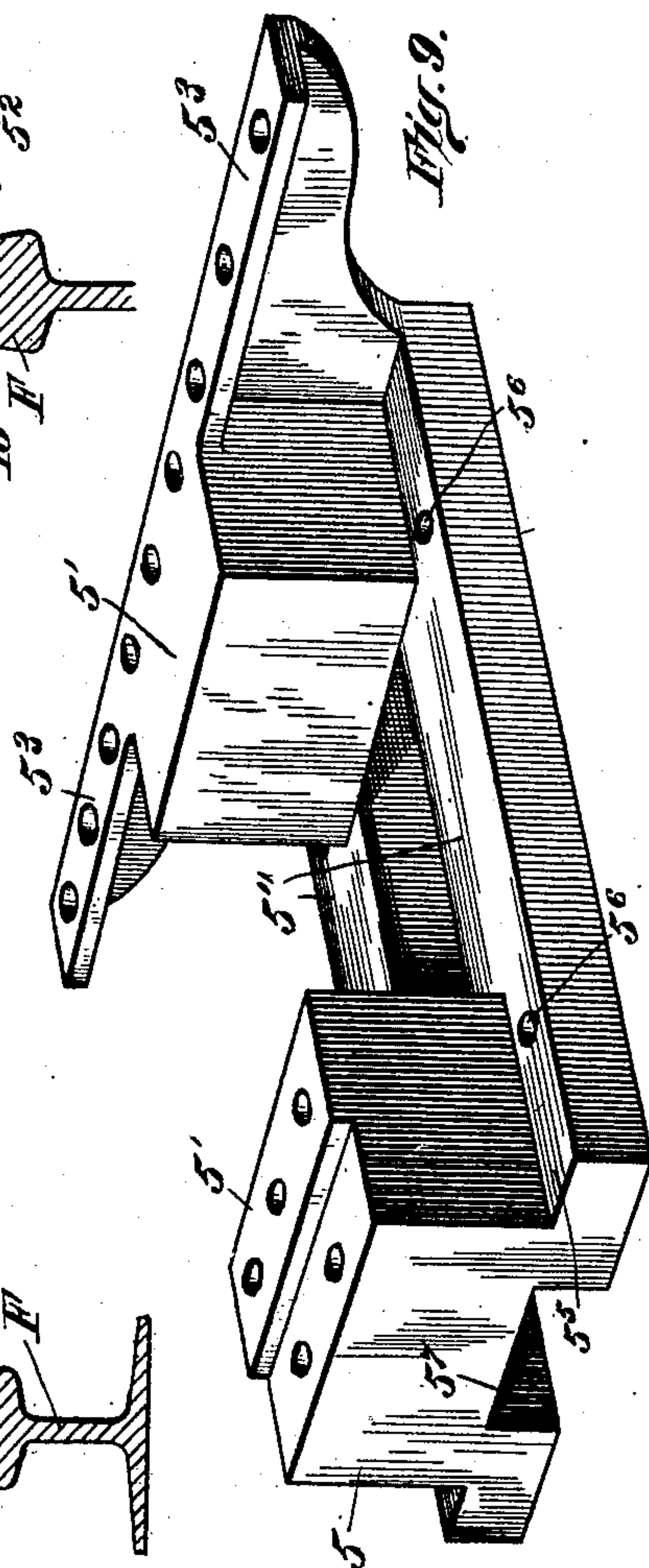


Fig. 9.



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UNITED STATES PATENT OFFICE.

CHARLES GILBERT HAWLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO FRÉDERICK A. GALE,
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NORMAL-SURFACE TURN-TABLE.

No. 889,372.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed October 1, 1906. Serial No. 336,854.

To all whom it may concern:

Be it known that I, CHARLES GILBERT HAWLEY, a resident of Chicago, county of Cook, and State of Illinois, have invented a certain new, useful, and Improved Normal-Surface Turn-Table, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in railroad turn-tables and the object of my invention is to provide a turn table of such construction that the usual pit may be dispensed with.

The particular object of the invention is to provide a railroad turn table which shall be supported by and adapted to turn upon a surface which is either level with or substantially level with the surface of the surrounding railroad yard.

Other objects of the invention are to simplify the construction of railroad turn tables to lessen the cost thereof, to provide a turn-table which may be operated without requiring the table to be first balanced and which may be rotated by the expenditure of comparatively little force.

Other objects of the invention will appear hereinafter.

In carrying out my invention, I do not dig a pit in which to place and operate the transfer table but utilize the normal surface of the railroad yard and employ a turn-table of such height as to adapt it to register or connect with the ends of the tracks which center at the turn table.

Further particulars and features of my invention include the transfer table foundation or surface and the laying of certain supports or rails therein and also include the construction of the low turn table proper.

In the accompanying drawings, which form a part of this specification, I have illustrated a preferred embodiment and manner of carrying out invention, but it will be understood that the invention is not restricted to the specific constructions shown in the drawings and hereinafter described in detail.

In the drawings, Figure 1 is a plan view of a turn-table embodying my invention; Fig. 2 is an enlarged vertical section on the line X—X of Fig. 1; Fig. 3 is a still further enlarged vertical section on the line Y—Y of Fig. 1; Fig. 4 is a plan view of a portion of

the table, showing the bearers or members, which support the longitudinal members of the table; Fig. 5 is a transverse vertical section on the line Z—Z of Fig. 4; Fig. 6 is an enlarged horizontal section, substantially on the line W—W of Fig. 5, showing one of the ball races; Fig. 7 is an enlarged end view of one of the bearers; Fig. 8 is an enlarged sectional view on the line U—U of Fig. 4; Fig. 9 is a perspective view of one of the bearers with the ball race portion removed; Fig. 10 illustrates the form of the four bearers at the ends of the table; and Fig. 11 is a view similar to Fig. 5, but showing a different manner of connecting a pair of bearers or supporting members.

The term "normal surface" as herein employed is intended to designate the surface of the railroad yard, on which are laid the several tracks which center at the turn table; while the term "transfer table surface" designates that portion of the normal yard surface which is included within the swing of the turn table.

Reference to the drawings will disclose the fact that the normal surface A and the turn table surface B are in the same, or substantially the same, plane. If desired, the turn table surface may be slightly depressed; for example, it may be from four to six inches lower than the surrounding normal surface.

My invention is not restricted to surfaces which are in the same plane but for reasons of drainage and the like, I prefer that the plane of the normal surface shall be retained throughout, particularly as all benefits attaching to the depression of the turn-table surface may be readily secured by slightly elevating the ends of the incoming and outgoing tracks C adjacent to the said surface.

D, represents the turn table center post; E, a special central casting and F, F, F, represent circular rails laid in the surface, B. The post, D, is preferably integral with or united to the ring-like member, E, and both are secured upon a suitable, preferably concrete, annular foundation. As shown in Fig. 7, the curved rails, F, are preferably of standard cross-section and these are embedded in the tops of circular walls (not shown), also preferably of concrete. In ordinary practice, the greatest diameter is from fifty to eighty feet. Such, likewise, is the length of the turn-table.

The essential elements of my novel turn

table are two suitably connected, parallel stringers or members, 1—1, and a plurality of transversely positioned members which support said stringers and which run upon the circular rails. The general construction and the relation of the parts are shown in Fig. 1, but these will be best understood by reference to the detail figures of the drawing. The central member of the turn table comprises a ring, 2, corresponding to the member, E, and containing a hub, 3, which fits the post, D. The stringers, 1—1 rest upon the ring, 2, and a plurality of balls, 4—4, arranged between the ring, 2, and the circular member, E, facilitate the turning of the former. (See Fig. 3). The other supporting members or bearers comprise short blocks or bars, 5, fitted to the stringers, 1, and resting upon the circular rails, F F F, ball bearings being interposed to lessen the friction. The stringers, 1—1 which I prefer to use are shallow channels having wide top flanges, 1'. The blocks, 5, are provided with recesses or notches to accommodate the stringers and the stringers are supported by the engagement of their top flanges with the end portions, 5', of said blocks. The bottoms of the channels are preferably elevated sufficiently to avoid their resting upon the lower portions, 5'' of the blocks, 5. The stringers or channels, 1, contain certain low rails, 6—6, in height corresponding to the flanges of the drivers of the locomotive. The stringers and their supporting blocks, 5, are rigidly connected, preferably by rivets, as shown, and to prevent the possible tilting of the blocks beneath the stringers, I provide them with wide-spreading flanged end lugs, 5³, as best shown in Figs. 7 and 9. The blocks employed at the end of the table are preferably provided with pairs of riveting lugs, 5⁴—5⁴, as shown in Fig. 10, to support the extreme ends of the stringers. The center ring, 2, is preferably notched to correspond to the block, 5, and the stringers are firmly bolted or riveted upon said ring, the latter through its hub, 3, and post, D, being relied upon to prevent endwise motion of the turn table.

As shown in Figs. 4, 5, 7 and 8, I prefer to reinforce the flanged stringers, 1, by riveting short supplementary beams, 1², to the horizontal and vertical portions of the stringers. These beams, 1², extend from block to block, and their ends preferably rest upon side flanges, 5⁵, formed on said blocks. If desired, the lower flanges of the beam, 1², may be riveted to the flanges, 5⁵, as indicated by rivet holes, 5⁶, in Fig. 9, and also shown in dotted lines in Fig. 7.

As a means of connecting the stringers to hold them parallel and at the same time make the turn-table flexible, I employ a horizontal floor plate or girder, 7 having its edges riveted to the inner flanges of the stringers, 1. The plate, 7, may be reinforced by trans-

verse angle bars, 7', without detracting from the flexibility of the turn table. If desired, I may substitute for or supplement the plate by tie-rods, 8, arranged between the blocks of each pair, as shown in Fig. 11. In such cases I prefer to make the tie rods in two sections each, joining the sections by turn-buckles, 9, for ready adjustment.

A distinct purpose of my invention is to so construct the turn table that the stringers shall be yieldingly or flexibly connected, thereby lessening the strains upon the transverse elements or members of the table. The short supporting blocks, in length slightly exceeding the width of the stringers are admirably adapted for use with small carrying wheels (not shown) the latter being arranged to run upon the circular tracks, F, and I may construct the supporting members in this manner without departing from the spirit or scope of my invention. But I have devised better means for supporting the blocks and reducing the friction between the same and the rails, and preferring the same to the wheels mentioned, have illustrated such anti-friction devices in detail.

The parts, 9—9, shown in Figs. 5, 7, 8 and 11, are suitably tempered steel bars. These are fitted in straight grooves, 5⁷, provided in the bottoms of the blocks 5, and have upturned ends, 9' which engage the ends of the respective blocks. The bars or shoes, 9', require no other fastening. Each bar, 9, contains a ball-race or groove, 9², which is curved to correspond to the rail, F, above which it is placed.

A distinct advantage of the construction shown lies in the fact that no other parts of the turn table are required to conform to the circular rails, the blocks, 5, with the exception of the added lugs, 5⁴, on the end pairs, being of the same form and dimensions throughout the table. Each shoe or ball-race, 9, rests upon a series of balls or rollers, 10, which serve to so far reduce the friction between the table and the supporting rails that the table may be turned with little effort even when heavily loaded. To minimize the number of balls required to support the turn table, I provide each bearer or block with a return ball-race, 11. This preferably comprises each a cast or wrought metal bent tube, slightly larger than the balls and having its inturned ends joined to the ends of the bar or shoe, 9, as shown in Figs. 5, 7 and 8, the return race or tube being slightly elevated with relation to the race, 9, and are suitably suspended from the underside of the table. An essential feature of this portion of my invention resides in the enlargement of the internal diameter of the tube, 11, at its ends, and in the cutting away of the lower portions of said ends to form converging edges 11', which lie close to the rail, F, and served to gently lift the balls therefrom and lower the

same thereto at the exit and entrance ends of the shoe, 9. (See Figs. 5 and 6). I also prefer to provide the shoes, 9, with upwardly turned or curved ends, 9³, to facilitate the entrance and discharge of the balls. Obviously the balls which always moved in the same direction as the table enter the forward ends of the shoes and are discharged into the return tube at rear ends of the shoes. The ends of the return races are identical, hence the table may be moved in either direction without changing the operation of the balls.

The turn table may be rotated manually, particularly in the case of the smaller table, but I prefer to equip all large tables with one or more motors for this purpose. Such a motor, 12, is shown in Figs. 1 and 2; it rests upon a small platform, 12', attached to the table and exerts its force through a train of gears, 12², a worm, 12³ and a worm gear E', the latter provided upon the fixed member or ring, E. The arrangement shown is desirable because of the relatively small size of the fixed gear. However, a larger gear or circular rack may be substituted and the motor or motors arranged at the ends of the table or at intermediate points without departing from my invention. Suitable controlling means (not shown) are provided in connection with the motor and suitable electrical connections being supplied the table may be readily turned into register with either of the tracks, C to receive or free a locomotive or car.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. The improvements herein described comprising a plurality of circular tracks and a plurality of radial railroad tracks, in combination with a centrally pivoted turn table comprising parallel rail-supporting members, means flexibly connecting the same, and a plurality of rolling contact supports interposed between said stringers and said circular rails, substantially as described.

2. The improvements herein described comprising a plurality of circular rails concentrically arranged, in combination with a centrally pivoted turn table comprising suitably joined parallel rail-supporting members pairs of blocks which support respective members and a set of balls for each block between the same and the circular tracks, substantially as described.

3. The improvements herein described comprising a plurality of concentric rails and a center post, in combination with a turn table held by said post and composed of parallel rail-supporting stringers, means flexibly connecting said stringers, blocks whereon said stringers are secured, said blocks being positioned above respective rails, and balls interposed between said blocks and rails, substantially as described.

4. The improvements herein described comprising a plurality of concentric rails and a center post, in combination with a turn table held by said post and composed of parallel rail-supporting stringers, means flexibly connecting said stringers, blocks whereon said stringers are secured said blocks being positioned above respective rails, balls or rollers interposed between each block and its rail and a return race upon each said block, substantially as described.

5. The improvements herein described comprising a plurality of concentric rails and a center post, in combination with a turn table held by said post and composed of parallel rail-supporting stringers, means connecting said stringers, blocks whereon said stringers are secured, said blocks being positioned above respective rails, balls or rollers interposed between each block and its rail, and a return race upon each said block, substantially as described.

6. The improvements herein described comprising a plurality of concentric rails, in combination with a centrally pivoted table, rails thereon, transversely arranged pairs of shoes provided beneath the rails on said table and corresponding to respective circular rails, said shoes containing ball races, a return race for each shoe and balls arranged in said races, substantially as described.

7. The improvements herein described comprising a plurality of concentric rails and a center post or bearing, in combination with parallel stringers, a member joining said stringers and having a part fitted to said post or bearing, means connecting said stringers at the ends and intermediate points, blocks whereon the stringers rest and positioned above respective circular rails, shoes detachably connected with respective blocks and provided with curved ball-races, return races upon said shoes and balls provided in said races, substantially as described.

8. The improvements herein described comprising a plurality of concentric rails and a turn table center in combination with a turn table having a center bearing or pivot and comprising two rail-supporting stringers, means joining said stringers, short blocks or bearers attached to respective stringers, and a set of roller supports for each said block, substantially as described.

9. A turn-table structure comprising parallel rail-supporting stringers, in combination with means joining said stringers at the middle and having a center bearing, means flexibly linking together the end portions of said stringers, and independent rolling contact devices supporting respective stringers, substantially as described.

10. In a turn table, a rail-supporting stringer, in combination with a transversely arranged block or bearer secured thereto and having a groove in its bottom and a ball-race

shoe arranged in said groove, substantially as described.

11. In a turn table, a rail-supporting member, in combination with a transversely arranged bearer having a ball race in its bottom and a return race tube or member having inturned ends attached to the ends of said bearer and upwardly inclined, substantially as and for the purpose specified.

12. A normal surface turn table comprising a plurality of concentric rails, in combination with a toothed center ring, a turn table proper having rolling contact supports resting upon said rails, a motor upon said table proper, and gearing connecting the same with said toothed ring, substantially as described.

13. In a turn table structure, parallel flanged channel beams, in combination with rails provided thereon, notched supporting

blocks engaging only the flanges of said beams, rolling members for supporting said blocks, means connecting said beams, and a center bearing therefor, substantially as described.

14. A turn table structure comprising flexibly connected parallel flanged channel beams, in combination with rails carried by said beams, bearers or blocks riveted to the under sides of the beam flanges and spaced along said beams, and suitable rolling supports for said blocks, substantially as described.

In testimony whereof, I have hereunto set my hand, this 30th day of August, 1906, in the presence of two subscribing witnesses.

CHARLES GILBERT HAWLEY.

Witnesses:

JOHN R. LEFEVRE,
F. G. KNIGHT.