(No Model.) 4 Sheets—Sheet 1.

C. L. STROBEL.

TURN TABLE.

No. 528,402. Patented Oct. 30, 1894.

Fig. 1.

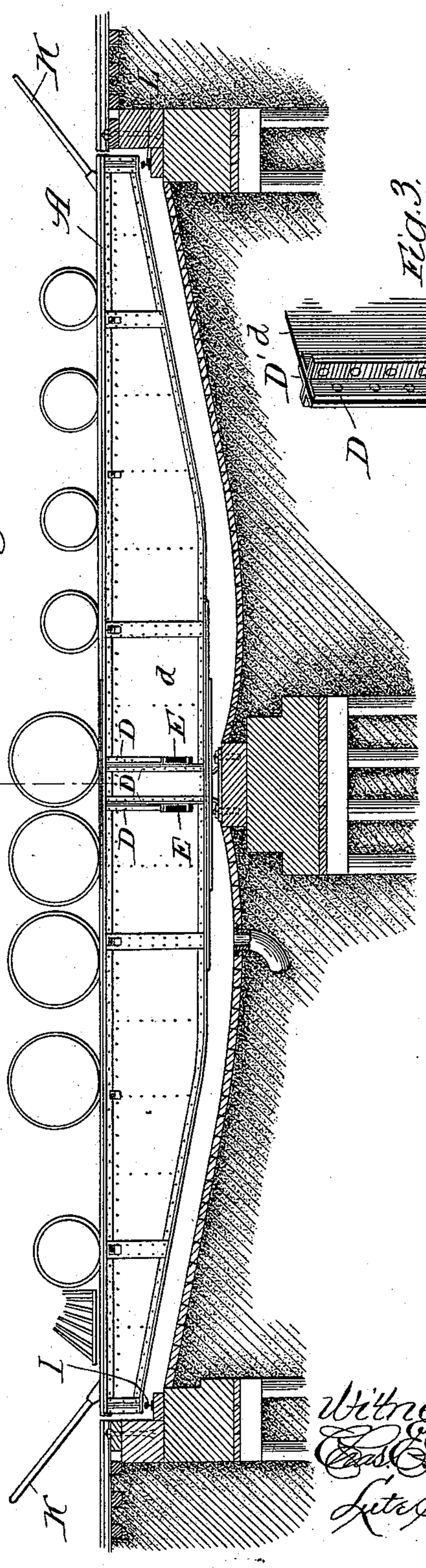


Fig. 3.

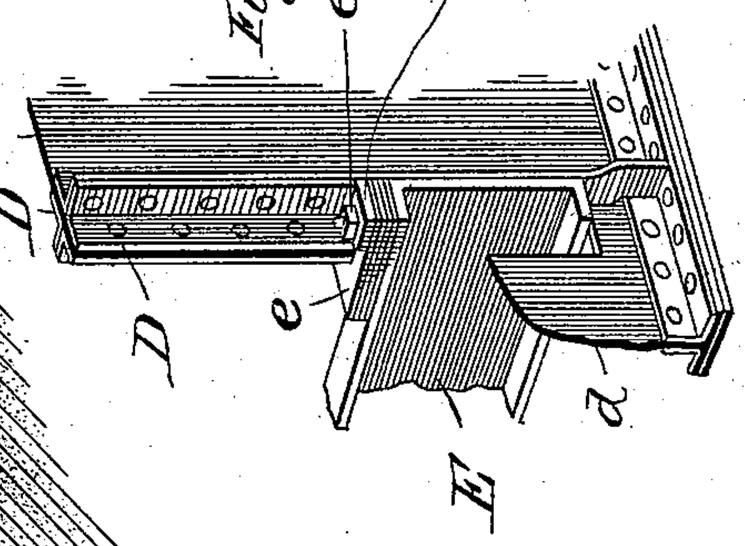
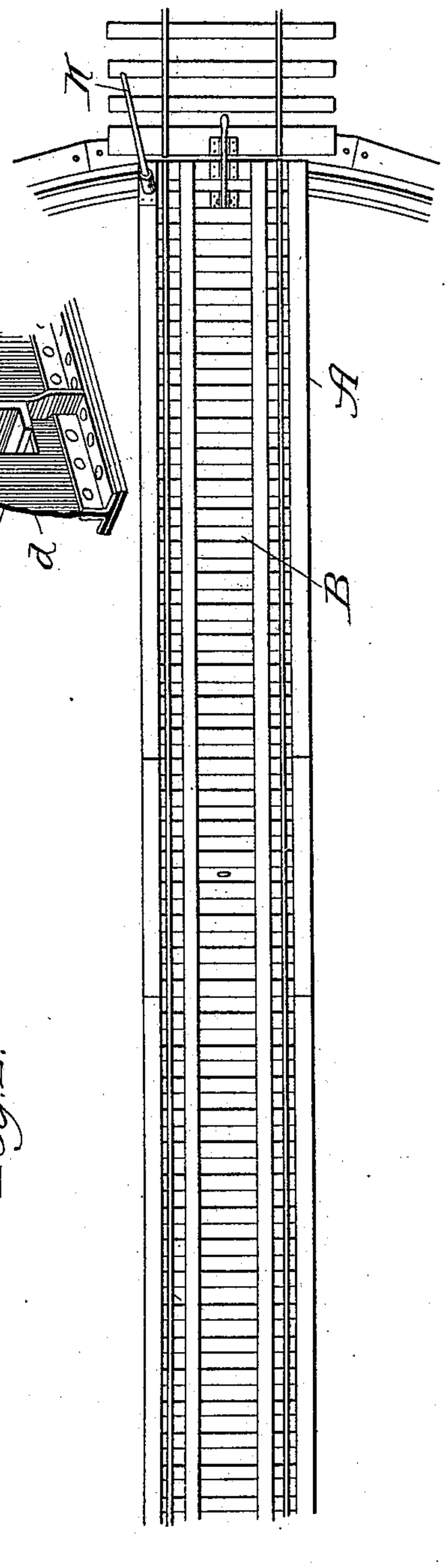


Fig. 2.



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(No Model.) 4 Sheets—Sheet 2

C. L. STROBEL.

TURN TABLE.

No. 528,402. Patented Oct. 30, 1894.

Fig. 4.

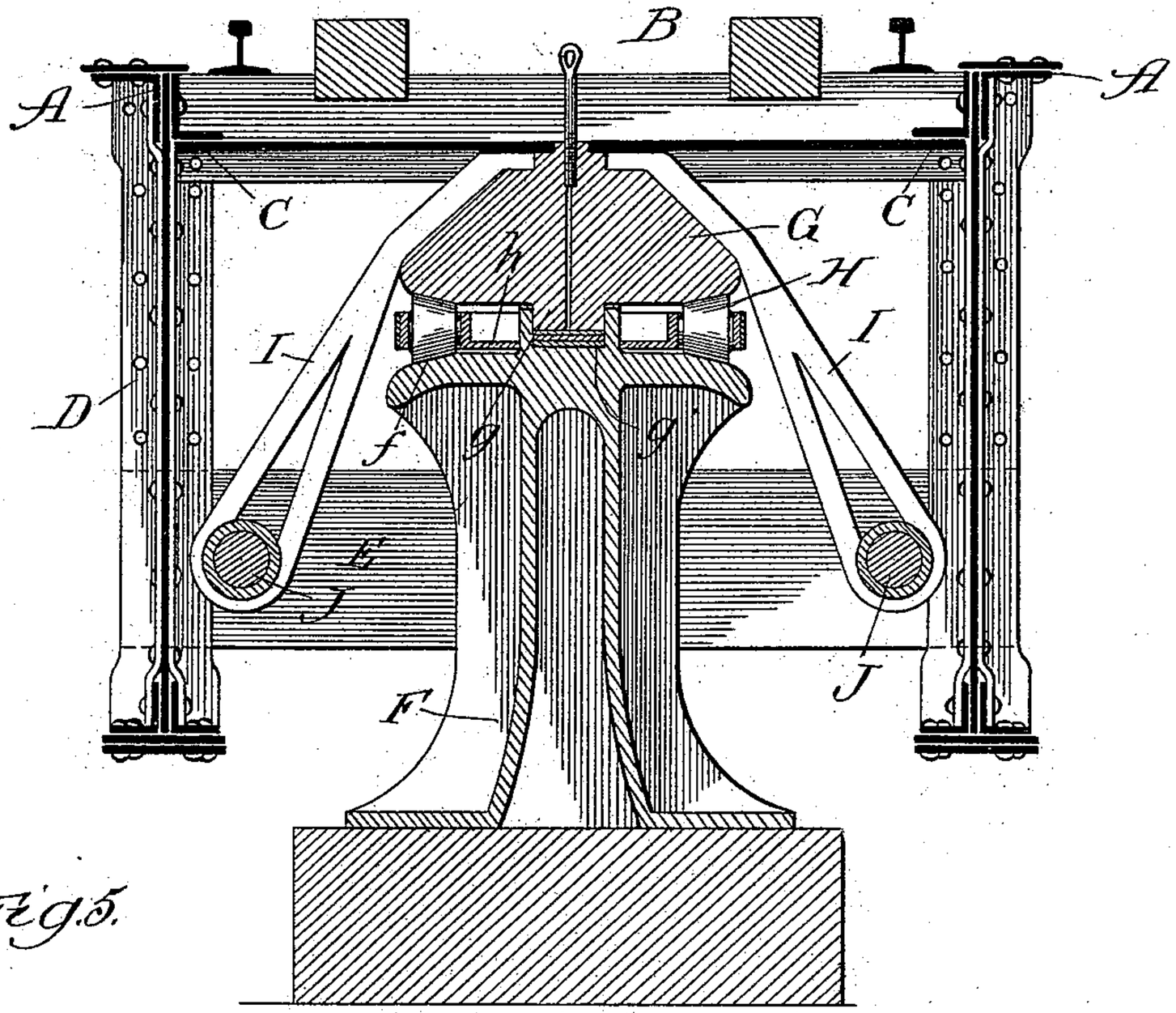
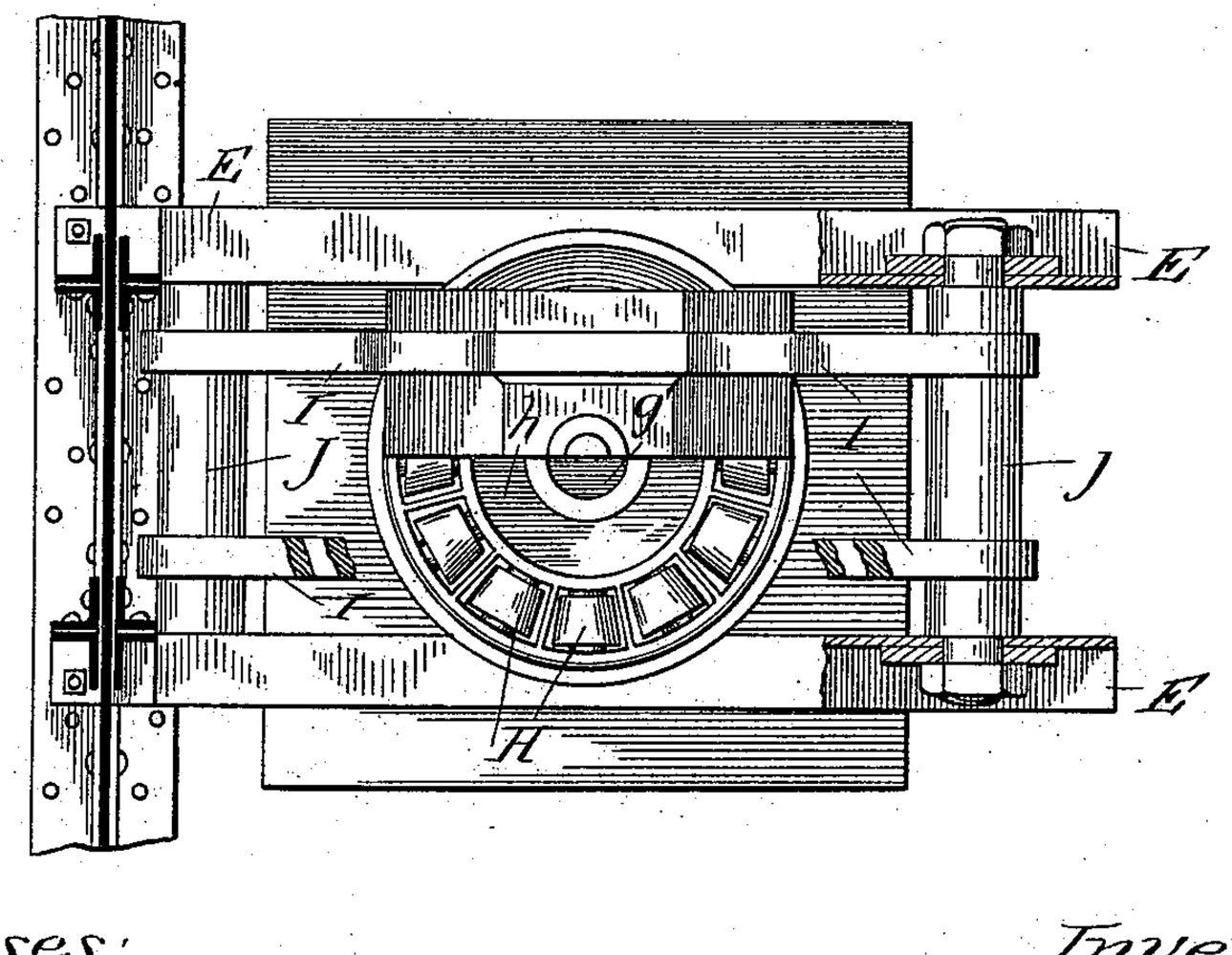


Fig. 5.



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(No Model.) 4 Sheets—Sheet 3.

C. L. STROBEL.

TURN TABLE.

No. 528,402. Patented Oct. 30, 1894.

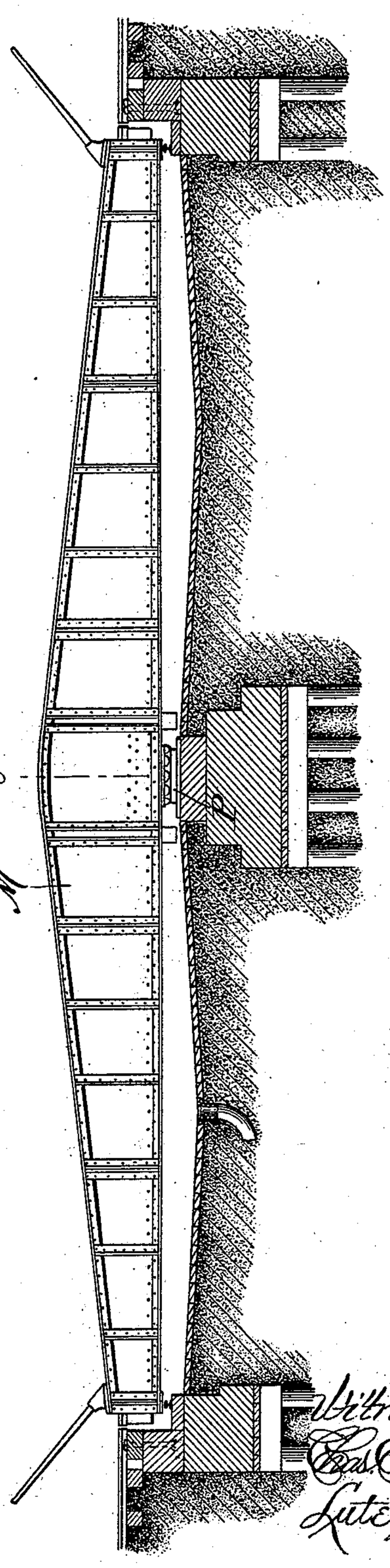

Fig. 6.

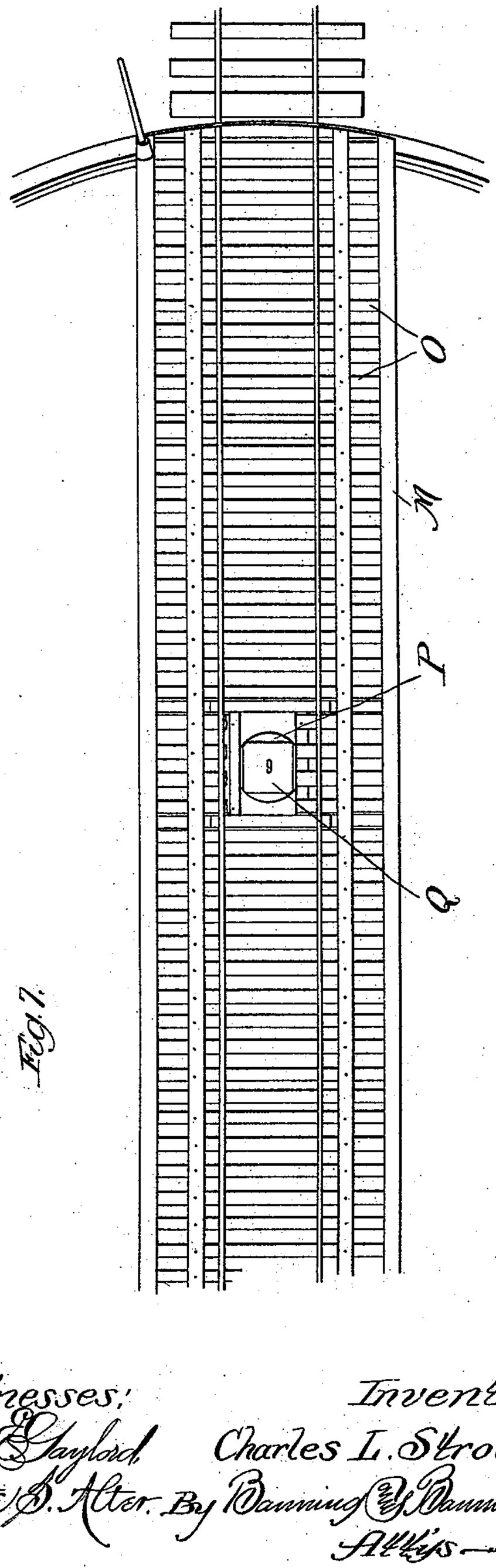

Fig. 7.

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(No Model.) 4 Sheets—Sheet 4.

C. L. STROBEL.

TURN TABLE.

No. 528,402. Patented Oct. 30, 1894.

Fig. 8.

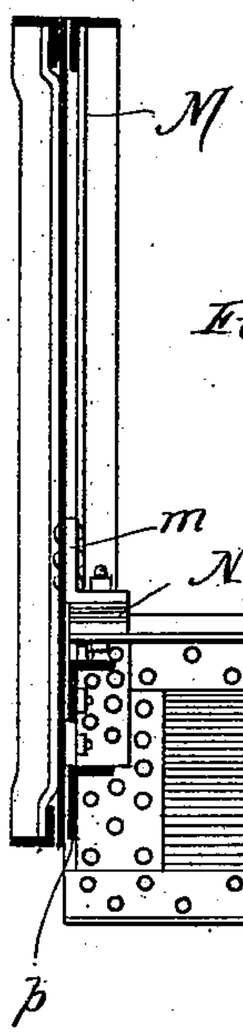
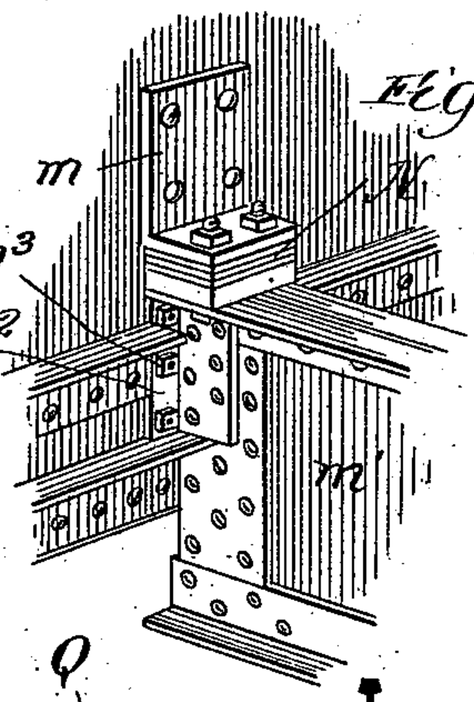


Fig. 9.



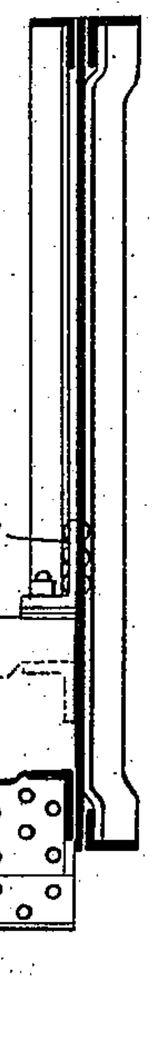


Fig. 10.

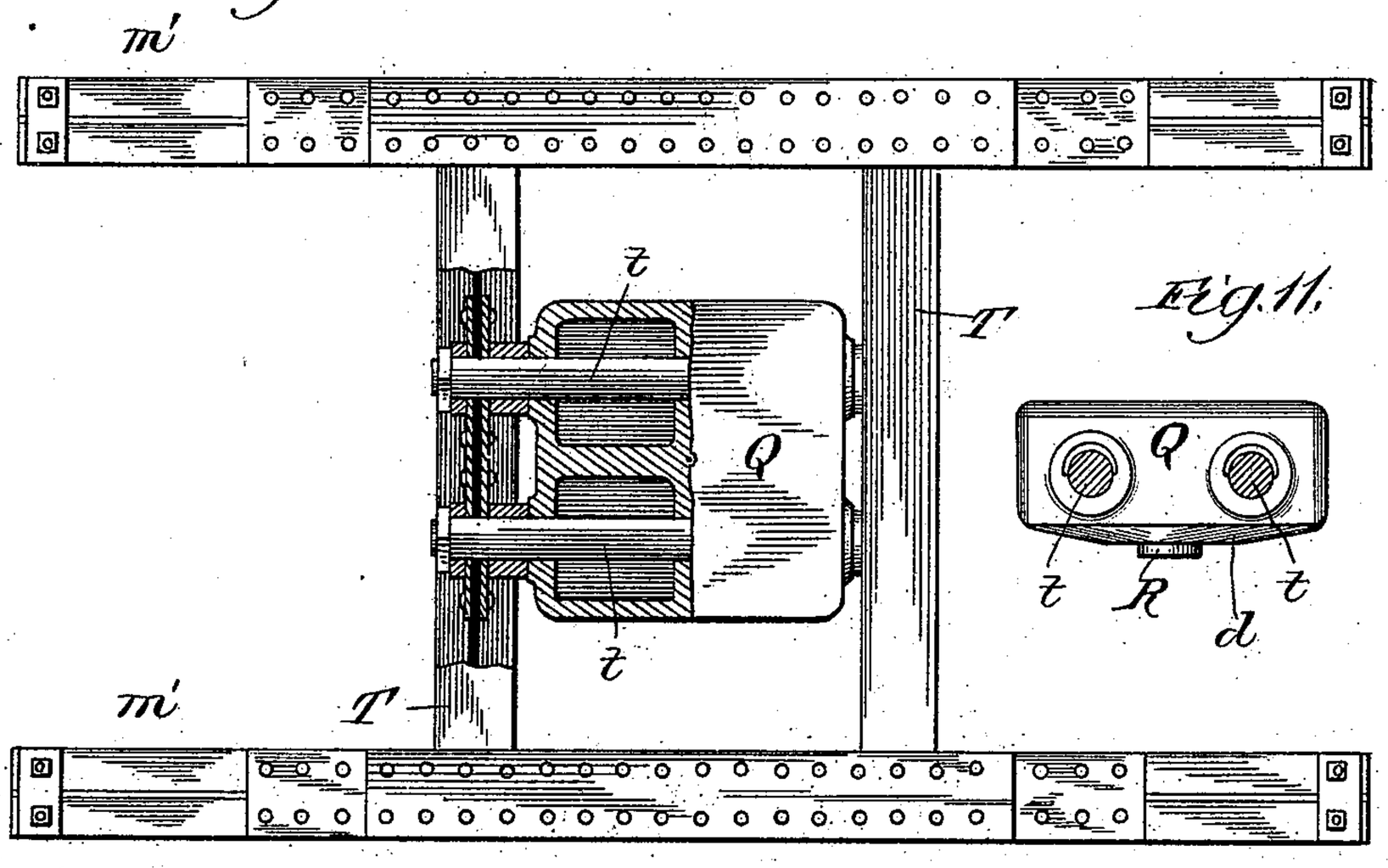


Fig. 11.

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Att'ys

UNITED STATES PATENT OFFICE.

CHARLES L. STROBEL, OF CHICAGO, ILLINOIS.

TURN-TABLE.

SPECIFICATION forming part of Letters Patent No. 528,402, dated October 30, 1894.

Application filed December 19, 1893. Serial No. 494,094. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. STROBEL, of Chicago, Cook county, Illinois, have invented a new and useful Improvement in Turn-Tables, of which the following is a specification.

The object of my invention is to provide a simple, economical and efficient turn table; and the invention consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a deck turn table embodying my improvements; Fig. 2, a plan view of a portion of the same; Fig. 3, a perspective view of the adjusting mechanism used in connection with the deck turn table; Fig. 4, a transverse vertical section, taken on line 4 of Fig. 1; Fig. 5, a sectional plan view showing rotating and supporting mechanism; Fig. 6, a side elevation of a through turn table embodying my improvements; Fig. 7, a plan view of a portion of the through turn table shown in Fig. 6; Fig. 8, a transverse vertical section taken on line 8 of Fig. 6; Fig. 9, a perspective view of the adjusting mechanism used in connection with the through turn table; Fig. 10, a plan view of the supporting cap and connecting mechanism of the through turn table; and Fig. 11, a side elevation of the supporting cap.

Turn tables as heretofore constructed have been made entirely of the pin center type, or of the cone roller center type. The pin center type has insufficient steadiness, owing to its being supported at one point only; and the cone roller type has insufficient steadiness in a longitudinal direction and requires such accuracy of construction as to be very difficult of attainment, for unless the cones are made of exactly the same diameter some of them will be overloaded. In both these forms it is necessary to use trailing wheels to prevent tipping of the table. If the engine or car is not perfectly centered, more or less extra weight comes upon the trailing wheels at one end of the turn table, and as the trailing wheels work with a large leverage and upon an imperfect track, their frictional resistance, if called upon to carry any load, is very great. Hence considerable power is required to operate the table. The use of trailing wheels also necessitates a considerable depth of pit at the outer circumference, which of course increases the expense in excavating and masonry, as well as the expense of keeping the pit clear of snow in winter. The object of my invention is to overcome these objections.

My improvements are applicable to both "deck" and "through" turn tables, but for convenience I will first describe a deck turn table embodying them. In doing this, however, I will omit description of old, well-known parts applicable to turn tables generally.

In constructing my improved turn table, I employ the usual main girders, A, and instead of placing the cross ties, B, on the top of the girders and securing them by means of reinforcing plates—which requires considerable notching—I place the cross ties on shelf angles, C, secured to the sides of the girders. In this way, I support the cross ties at a uniform height, and enable whatever notching therein that is necessary to be done uniformly and before the ties are put into position. The main girders and cross ties are secured and held in position by means of bolts, bracing, &c., and other parts usually employed in such constructions.

The load to be carried by the turn table is transmitted from the cross ties, B, to the main girders, A, by means of the shelf angles, C. From the main girders it is transmitted to the transverse channel bars, E, by means of the adjustment plates, *e*, and the reinforcing angles, D. These reinforcing angles are on both sides of the web-sheet, *d*, riveted to it, and forming a part of the main girder. Two of these angles, preferably those designated D′, extend down the entire depth of the main girder. The other two angle bars and the web-sheet take a bearing upon the adjustment plates mentioned. The channel bars, the adjustment plates and the main girders are held in position by means of the bolt, *e*′, and the small plate, e^2. The two channel bars, E, are in turn supported by pins, J, suspended by suspender bars, I, from the cap casting G, which forms part of the rotating mechanism hereinafter described.

If the ends of the girders are not at a uniform elevation, which would make it neces-

sary to provide an excessive amount of clearance between the girders and the circular rail L, or, if for any reason the structure has become warped or out of position, then this uniformity in the elevation may be secured by placing more or less of the adjustment plates, *e*, on the channel bar, and under the angle bars, D.

I provide for supporting and rotating the turn table preferably in the following manner: Resting upon suitable masonry is a center stand, F, which has its upper portion turned at *f*, to form a suitable bearing for cone rollers, and its center portion provided with a flanged recess, forming what I call a "pin center" or frictional bearing. A polygonal supporting cap, G, fits over the center stand and mechanism thereon, and forms a support for the turn table proper. This polygonal cap has a pin bearing, *g*, and interposed between this pin bearing and the center stand is a series of hardened metallic disks, *g'*, which to some extent take the weight of the cap and turn table, acting as a frictional bearing therefor. Interposed between the outer circumference of the cap and the center stand is a set of cone-shaped rollers, H, which are connected together and held in their relative positions by means of a spider, *h*.

If desired, metallic balls running in grooves may be used instead of the cone rollers; and, whether balls or rollers be used, the pin center may be omitted if desired, the weight then coming entirely upon the metallic balls or cone rollers.

Two suspender bars, I extend over and rest upon the upper portion of the polygonal cap, and their lower eye-shaped ends engage with pins, J, connected to the channel irons at each side, thus supporting the main structure. These suspender bars are preferably located about fifteen inches apart, and form the entire supporting mechanism between the main structure and its rotatable bearing. Their construction and location are such as to present two bearings off-center longitudinally, so that as an engine or car is moved onto or off from the table the suspender bar nearest the end on which the weight comes acts as the bearing point for the time being. The shape of the cap casting is such as to prevent the suspender bar from sliding whenever a greater load has to be carried at one end of such bar than at the other. To permit of necessary play, the eyes of the suspending bars may be slightly elongated or made larger in diameter than the pins with which they engage; or if the fitting bar be tight the suspender bar itself may be allowed to rise or move upward.

The turn table is provided with the usual handles, K, by which it may be rotated. A circular track, L, is preferably supported upon the masonry forming the walls of the pit, this track being of sufficient diameter to come substantially under the ends of the table in any and every position in which it may be turned. In this respect, the construction is such that while the central bearing operates as a support and rotating mechanism, the circular track is in position to limit the tipping of the table in a longitudinal direction whenever an engine or car is moved onto or off the table. Instead of using the circular track, block castings may be placed on the foundation in position to come under the table at the points where it is desired to take on or off an engine or car.

In applying my improvements to a through turn table, I secure to the main girders, M, angle plates, *m*, which are bolted to and supported on cross girders, *m'*, to which the main girders of the table are secured. To secure uniformity of elevation of the main girders at their ends, I prefer to interpose plates or blocks, N, between the angle irons and the cross girders, and bolt the angle irons and cross girders together. In this construction the cross ties may rest upon the inner lower flange of the main girders, or otherwise as desired.

To support and rotate the through table, I employ a center stand, P, resting upon suitable masonry, which is provided with a friction roller bearing, and cap casting substantially the same as described in connection with the deck turn table. The cap casting, Q, covers the center stand and the intermediate mechanism between it and the cap. The cap is provided with a pin or friction bearing, R, having small hardened steel disks, *r*, between it and the center stand, and with a cone roller bearing, S, substantially the same as that described in connection with the deck turn table. I-beams, T, connect and support the cross girders *m'*, which I-beams are provided with pins, *t*, running transversely through the cap casting, the whole being constructed in such manner that the entire weight of the turn table is supported on the cap casting by the cross girders, I-beams and pins. The holes through the cap casting are slightly elongated in a vertical direction, or may be slightly larger in diameter than the pins, to permit the tipping of the turn table, without raising the opposite end of the cap casting. The circular track or block castings are also used to limit the tipping of this table.

Some of the advantages of my invention are that the table is balanced when the center of gravity of an engine or car comes over the space between the supporting pins or suspender bars, but still the support of the table is such that it can freely tilt the necessary amount as the engine or car is moved onto or off from it, without racking or straining any part. The load is chiefly carried at the center of the stand by the frictional disks, when the table is new, and the cone rollers are used chiefly for the purpose of giving lateral steadiness. As the friction plates wear, more load will be carried by the friction rollers until a limit is reached, when the

wear on the friction plates is the same as the wear on the rollers. The supporting mechanism possesses the simplicity of the pin center, but is without its attendant objections. The pit and masonry at the periphery of the pit being of comparatively small depth, the expenses of construction, keeping out of snow, &c., are reduced to a minimum. The tables are easily adjusted, each of the main girder ends being adapted to be raised or lowered severally or independent of each other. This enables them to be brought to exactly the same elevation, so that only a small amount of play is necessary between their under side and the circular rail or block castings, and reduces the tilting of the table to a minimum as an engine or car is moved on or off the same.

In speaking of "bearings off-center longitudinally" in my specification and claims, I mean the bearings or auxiliary bearings independent of the common rotating mechanism, which will permit of the mechanism tilting an ordinary or usual amount when a car is placed on or taken off the table, and still distribute the strain or stress of such tilting equally over the rotating balls and pin bearing, without the racking or destroying of such parts.

It will of course be understood that I do not intend to limit myself to minor features or details of construction. On the contrary, I intend to vary form and construction, to omit parts and use equivalents as circumstances may suggest or render expedient.

I claim—

1. In combination with a turn table, means for supporting it on bearings off-center longitudinally, substantially as described.

2. In combination with a turn table, suspender bars for supporting it on bearings off-center longitudinally, substantially as described.

3. In combination with a turn table supported on bearings off-center longitudinally, means for rotating the turn table, substantially as described.

4. In combination with a turn table, means for supporting it on two bearings off-center longitudinally, a center stand, and anti-friction bearings interposed between the turn table and the center stand upon which the table rotates, substantially as described.

5. In combination with a turn table having main girders for carrying the track structure, a center supporting stand, cross bars and girders supported upon the center stand, and means for adjusting the relation between the cross bars and the table, substantially as described.

6. In combination with a turn table, a center supporting stand, a center supporting cap supporting the table on bearings off-center longitudinally, and pin and roller bearings interposed between the supporting cap and center stand on which the table rotates, substantially as described.

7. In combination with a turn table, a center supporting stand, a center supporting cap, and suspender bars passing over the supporting cap for supporting and holding the weight of the table on bearings off-center longitudinally, substantially as described.

8. In combination with a turn table, a center supporting stand, a center supporting cap, suspender bars passing over and contacting the supporting cap for supporting the weight of the table on bearings off-center longitudinally, and anti-friction bearings interposed between the supporting cap and the center stand on which the table rotates, substantially as described.

9. In combination with a turn table, main girders for carrying the track structure, a center supporting stand, cross-bars for supporting the table on two bearings off-center longitudinally, and means for adjusting the girder ends severally and independently located between the main girder and the cross bars, substantially as described.

10. In combination with a turn table, means for supporting it on bearings off-center longitudinally, and means for limiting the tilting of the table, substantially as described.

11. In combination with a turn table, a center supporting stand, a center supporting cap for supporting the table on bearings off-center longitudinally, means for supporting the table upon a cap on bearings off-center longitudinally, anti-friction bearings interposed between the supporting cap and the center stand upon which the table rotates, and means for limiting the tilting of the table, substantially as described.

12. In combination with a turn table, a center supporting stand, a cap for such stand, means interposed between the cap and the table to support the table on bearings off-center longitudinally so that slight vertical play is left in one of the tilting points, while the other is actively operating, substantially as described.

13. In combination with a turn table, a center supporting stand, a center supporting cap, anti-friction bearings interposed between the supporting cap and the center stand upon which the table rotates, suspender bars passing over and supported by the supporting cap, and pins connected with the frame of the turn table and engaging with the suspender bars, whereby the table is supported at points off-center longitudinally, substantially as described.

14. In combination with a turn table, a center supporting stand, a center supporting cap, anti-friction bearings interposed between the supporting cap and center stand, suspender bars passing over and supported by the supporting cap at off-center points, pins secured to channel bars adapted to support both sides of the table frame and supported by suspender bars, main girders forming the sides and carrying the track mechanism, supported by the channel irons, and adjusting mechanism interposed between the girders and the

channel bars for adjusting the elevation of the girder ends, substantially as described.

15. In combination with a turn table, main girders for carrying the track structure, a center supporting stand, a rotatable cap thereon, mechanism contacting the cap on bearings off-center longitudinally and supporting cross-beams, cross beams supported on the cap at off-center points and adapted to carry the entire weight of the table proper, and means interposed between the cross beams and the table proper, whereby the girder ends may be adjusted severally and independently, substantially as described.

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