

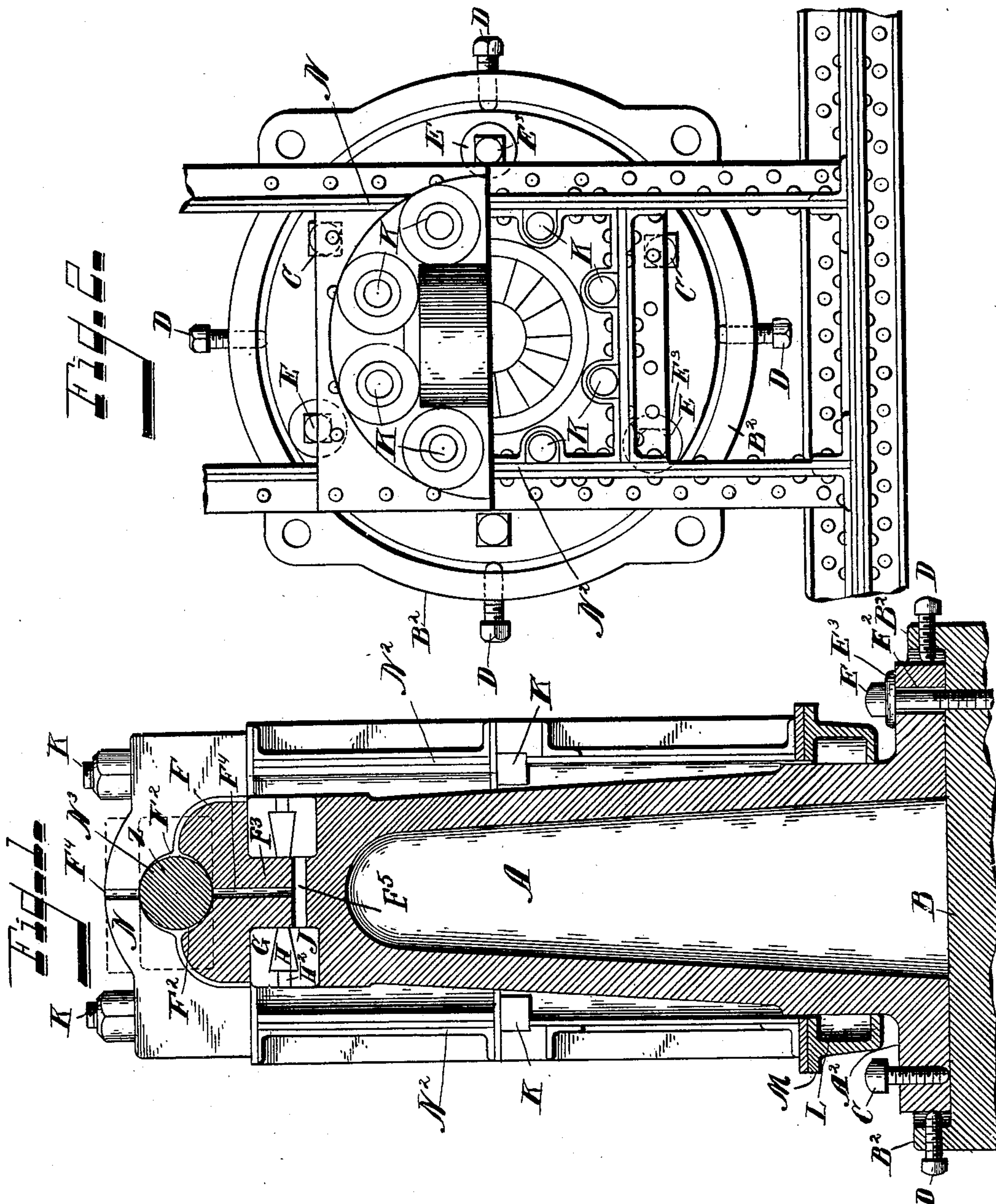
(No Model.)

2 Sheets—Sheet 1.

C. A. GREENLEAF.  
TURN TABLE.

No. 599,934.

Patented Mar. 1, 1898.



Witnesses.

*Charles Spiegel,*  
*H. Smith,*

Inventor.

*Clements A. Greenleaf,*  
*per Wm. Hubbell Fisher,*  
Attorney.

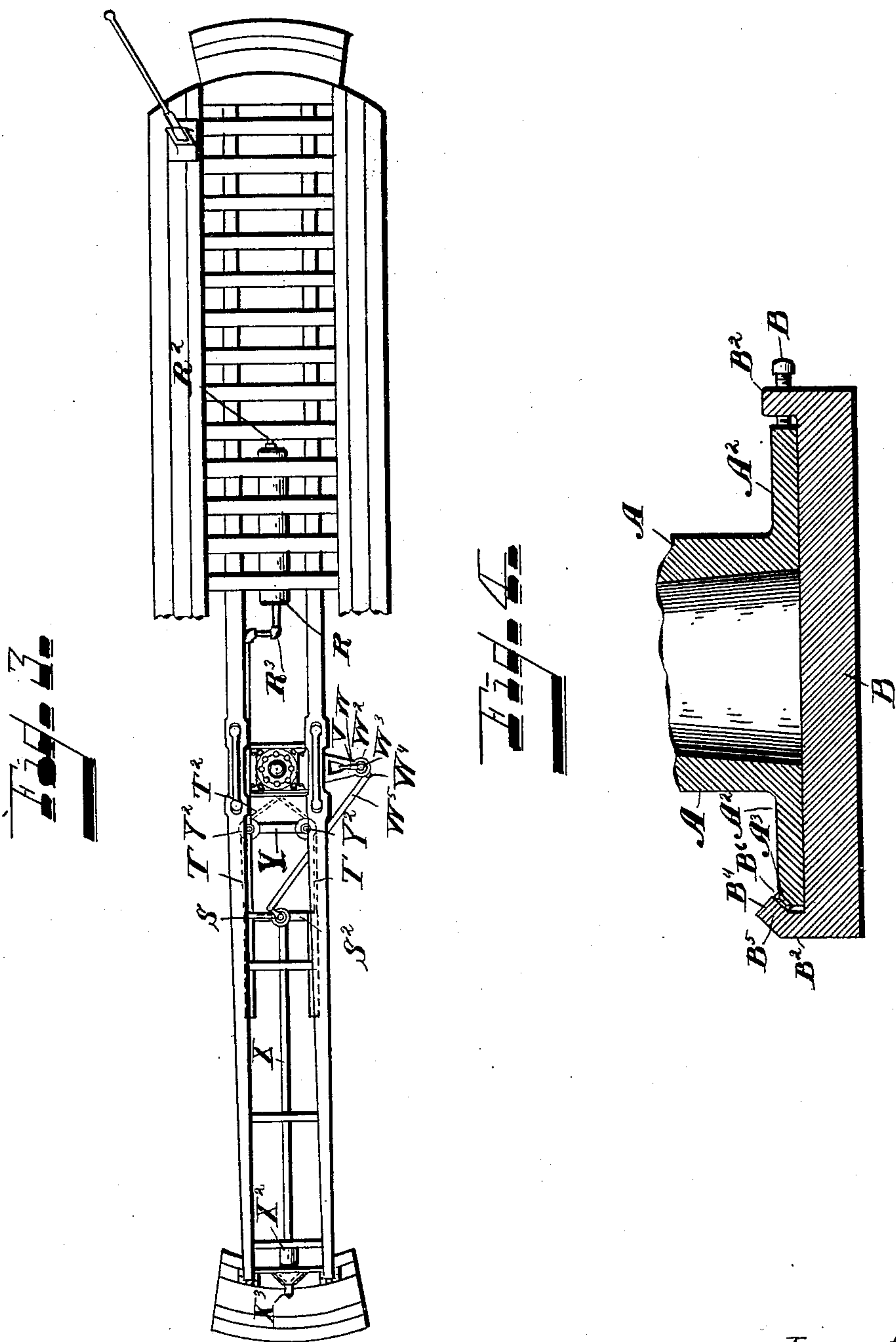
(No Model.)

2 Sheets—Sheet 2.

C. A. GREENLEAF.  
TURN TABLE.

No. 599,934.

Patented Mar. 1, 1898.



Witnesses  
Charles H. Spiegel,  
H. Smith.

Inventor  
Clements A. Greenleaf,  
per Wm. Hubbell Fisher,  
Attorney



# UNITED STATES PATENT OFFICE.

CLEMENTS A. GREENLEAF, OF INDIANAPOLIS, INDIANA.

## TURN-TABLE.

SPECIFICATION forming part of Letters Patent No. 599,934, dated March 1, 1898.

Application filed March 22, 1897. Serial No. 628,589. (No model.)

*To all whom it may concern:*

Be it known that I, CLEMENTS A. GREENLEAF, a citizen of the United States, and a resident of the city of Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Turn-Tables for Rail and other Roads, of which the following is a specification.

One prominent feature of my invention relates to a novel and advantageous construction for adjusting the pedestal or center-post for a turn-table. It is obvious that the turn-table must have a perfect adjustment to be satisfactory in the operation of turning heavy loads. It is hardly possible to erect the masonry for a turn-table in wet places to exact dimensions, and besides this obstacle in perfectly adjusting the turn-table foundation in the first construction a second obstacle to continued perfect adjustment of the turn-table arises from the fact that the piling or masonry often settles or moves after it is in place. My improved construction for adjustment overcomes these disadvantages and difficulties.

Another feature of my invention relates to novel mechanism for turning the turn-table.

Still another feature of my invention relates to novel means for locking the turn-table when it has reached the desired point in its rotation and where it is to receive its load or to discharge the one theretofore located upon it.

These and other features of my invention will be hereinafter more fully set forth.

The various advantages resulting from the use of these several features, conjointly or otherwise, will be fully specified in the following description.

In the accompanying drawings, making part of this specification, and in which similar letters of reference indicate corresponding parts, Figure 1, Sheet 1, shows a vertical central longitudinal section of a turn-table center embodying certain features of my invention. Attention is called to the fact that a vertical central transverse section would only change this drawing, as shown by the dotted lines, showing the length of the cylindrical roll and the projection that it would make on the outside of the cap. Fig. 2, Sheet 1, is a

top view of the turn-table center and the immediate connections thereof and a portion of the adjacent frame connected to the center and upheld by the latter. That half portion of the turn-table which is nearest the spectator has the upper portion removed down so far as the horizontal conical rolls to further illustrate the construction of the turn-table center and its connections. Fig. 3 is a plan of a turn-table, a part thereof (the right-hand end portion) being covered by the upper platform, which carries the track, the remainder of the table being divested of the platform to the better disclose the constructions sought to be presented. Fig. 4 is a vertical section of parts of the base of the turn-table center, showing a modification of a detail of the means for holding the central post to the sole or foundation-plate.

I will now proceed to describe my invention in detail.

A indicates the center-post or pedestal, provided at its foot on various sides with horizontal projections  $A^2$ , preferably continuous, and thus forming an annular portion or ring  $A^2$ . The foundation-plate B rests upon a suitable foundation of masonry or of piling, &c., and the plate is securely bolted thereto. If the masonry, piling, &c.—to wit, this lower foundation—moves, the foundation-plate B moves with it. Upon this foundation-plate B rests the center-post A. The correlative portions of this post A and of the foundation-plate B are as follows: The foundation-plate carries at or near its periphery a vertically-projecting rim or flange  $B^2$ . The basal flange  $A^2$  of the center-post A is in diameter smaller than this projecting rim  $B^2$ . The flange  $A^2$  of the center-post A is within and inclosed by the rim  $B^2$ , but being of smaller diameter than the latter there is room left (in making the adjustments) to move the center-post to the exact center of the turn-table pit or round-house. There is no particular extent of this adjusting space or room that should be left between the rim  $B^2$  and the flange  $A^2$ , but the space should be enough to overcome any variation that might occur by settlement or otherwise in the masonry or piling foundations.

When the turn-table is to be erected, the foundation-plate B is placed on the subfoun-



dation and anchored thereto. The center-  
 post A is placed on the plate B, the flange A<sup>2</sup>  
 of the post coming within the rim B<sup>2</sup> of the  
 plate B. The center-post is then adjusted to  
 5 a perpendicular by means of the jack-screws  
 C C C, which latter are screwed into the  
 flange A<sup>2</sup>, and as needed to elevate their re-  
 spective adjacent portions of the flange A<sup>2</sup>  
 and center-post are screwed through the  
 10 flange A<sup>2</sup> and impinge upon the foundation-  
 plate B, lifting the center-post at the point of  
 impingement and in the vicinity thereof.  
 The center-post is then adjusted in a hori-  
 zontal direction, if necessary, so that the cen-  
 15 ter of it (the center-post) shall be coincident  
 with the center of the turn-table pit or round-  
 house by means of the horizontal adjusting-  
 screws D D D D. Three of such screws  
 would be sufficient, but I have shown four  
 20 for convenience. These screws are screwed  
 through the rim B<sup>2</sup>, and their inner ends im-  
 pinge against the center-post, usually against  
 the vertical outer surface of the flange A<sup>2</sup>.  
 By screwing one or another of these screws  
 25 D the center-post A is moved to the correct  
 position, so that it and the turn-table pit shall  
 be axially coincident. When these perfect  
 vertical and axial adjustments of the turn-  
 table center-post A are obtained, the hold-  
 30 down-bolts E E E are securely tightened,  
 thereby securing the center-post A to the  
 foundation-plate B and in proper position  
 thereon. These bolts E pass through holes  
 35 E<sup>2</sup> in the flange A<sup>2</sup> and are screwed into the  
 foundation-plate B, as shown. The holes E<sup>2</sup>  
 are of larger diameter than the bolts and af-  
 ford the post A opportunity to be moved hori-  
 zontally, as aforementioned. Washers E<sup>3</sup>, of  
 40 a diameter larger than the holes E<sup>2</sup>, embrace  
 their respective bolts and assist the head of  
 the bolt in properly engaging with the upper  
 surface of the flange A<sup>2</sup> as its screw E is  
 tightened. After the screws E are tightened  
 45 melted sulfur or other suitable substance  
 is filled into the space between the founda-  
 tion-plate B and the flange A<sup>2</sup> of the center-  
 post, making the adjustable center-post se-  
 cure and ready for the erection of the turn-  
 table thereon.  
 50 The aforescribed improvements for en-  
 abling the center-post to be thus adjusted  
 confer the important advantage of enabling  
 a perfect adjustment of the center-post at the  
 time of the erection of the turn-table, and the  
 55 further important advantage of being easily  
 adjusted at any time without interfering with  
 the use of the turn-table. This latter adjust-  
 ment is often required, as the foundation  
 often settles or moves from continued rain or  
 60 from accident or other causes.

F indicates a piece that makes the lower  
 half of the differential cylindrical joint. This  
 piece F is provided with a concave recess F<sup>2</sup>  
 in its upper part, substantially as shown, and  
 65 it also has a circular dowel or cylindrical pro-  
 jection F<sup>3</sup> on its lower side that fits the hole  
 in upper housing G and extends down through

said housing G and past the conical rolls H  
 and for a short distance into lower housing J  
 and reaches to within a short distance of the 70  
 top of the center-post A. This piece F has  
 also a large vertical oil-hole F<sup>4</sup> through its  
 center. The advantage of the said projection  
 F<sup>3</sup> in being thus extended down and continued  
 for a short distance into lower housing J is 75  
 that such construction prevents any shock  
 that the turn-table may receive from the load  
 passing on or off the same from being com-  
 municated to the conical rolls H, for said con-  
 80 ical rolls run loose in the housings of this well-  
 known antifriction-bearing. The space F<sup>5</sup>  
 between the bottom of the part F<sup>3</sup> of the piece  
 F and the top of the post A is of about the  
 same height as the annular space H<sup>2</sup> between  
 the lower housing J and the upper housing G 85  
 and outside of the rolls H, so that as the con-  
 ical rolls H wear, as they will do in time, the  
 projection F<sup>3</sup> will not come into contact with  
 the projection A<sup>3</sup> from the top of post A be-  
 fore the housings G and J will come in con- 90  
 tact with each other.

The space F<sup>5</sup> serves to collect the grit or  
 sediment that may pass in with the oil or  
 otherwise and to prevent this grit or sedi-  
 ment from being injected in the antifriction- 95  
 roller bearing, consisting, as heretofore indi-  
 cated, of the housings G and J and conical  
 rolls H, as the oil rises from space F<sup>5</sup>, leaving  
 the sediment in bottom of space F<sup>5</sup> and the oil  
 entering into and distributing itself through 100  
 said bearing at the space H<sup>2</sup>. The cause of  
 such action of the oil is the pressure in large  
 oil-hole F<sup>4</sup> when the latter is filled with oil.

K indicates the suspender-bolts.

L indicates vertical rolls provided with 105  
housing M.

N indicates the cap, and N<sup>2</sup> the vertical ex-  
 tensions with which it is provided for the pur-  
 pose of steadying it and enabling it at the  
 same time to rotate without friction. These 110  
 extensions contain the housings M, and there-  
 fore the vertical rolls L. These extensions  
 and their rolls are not claimed herein. They  
 and their mode of operation are fully set forth  
 and claimed in the United States Letters Pat- 115  
 ent No. 563,480, dated July 7, 1896, granted  
 to me for turn-tables.

Z indicates a cylindrical roll lying in the  
 concavity F<sup>2</sup> of the piece F and entering the  
 concavity N<sup>3</sup> of the cap N and supporting the 120  
 latter. This joint thus formed has, substan-  
 tially as shown, the differential diameters the  
 same as the differential ball-and-socket joint  
 (set forth in the Letters Patent No. 563,480  
 granted me) to balance the table to a horizon- 125  
 tal plane endwise, but has no side adjustment,  
 as has the differential ball-and-socket joint in  
 said Letters Patent. It will be understood  
 that the side adjustment in the present con-  
 struction is made at the base of the center- 130  
 post with the adjusting jack-screws C C C,  
 and when adjusted it is fastened in the hori-  
 zontal position by the hold-down bolts and  
 washers, (marked E E E,) as there is no need



of any side motion to the turn-table platform in turning; but the table should always remain in a horizontal position sidewise and only tip endwise.

5 The advantage of the adjustable center-post is plain. For instance, the turn-table must have perfect adjustment to be satisfactory in turning heavy loads.

R is a reservoir to hold compressed air.

10 R<sup>2</sup> is a hose-coupling to fill said reservoir from the locomotives.

R<sup>3</sup> is a pipe conducting the compressed air from the reservoir to a hollow stop cock or valve, (marked S.)

15 S<sup>2</sup> is a connection-pipe that connects valve S to two pneumatic hoists, (marked T T.) Said hoists T T operate wire rope T<sup>2</sup> to pull in either direction. Said wire rope T<sup>2</sup> is coiled several turns around the turn-table center-post. Said center acts as the drum or fulcrum by which to turn the turn-table around in either direction or to stop the same at any desired point. The hollow stop-cock S receives the compressed air continuously through the conducting-pipe R<sup>3</sup> and is operated by the lever V into either hoist T T at will through connecting-pipe S<sup>2</sup>. The openings or port-holes in hollow stop-cock S are so arranged that either or both hoists T T can receive compressed air at the will of the operator of lever V.

W is a bracket bolted onto the side of the turn-table and supports a hollow column W<sup>2</sup>. Said column W<sup>2</sup> has on the inside suitable boxes to receive vertical shaft W<sup>3</sup>. Said shaft W<sup>3</sup> and hollow column W<sup>2</sup> are of suitable length, so that the lever V is in easy reach of the engine-runner when he is on the locomotive while on the turn-table. On the lower end of shaft W<sup>3</sup> is an arm W<sup>4</sup>, which arm is connected to the valve (hollow stop-cock) S by connection-rod W<sup>5</sup>, so that any movement of lever W<sup>2</sup> is immediately communicated to valve S.

45 X X are two pipes that conduct compressed air, when desired, to cylinder X<sup>2</sup>. Said cylinder X<sup>2</sup> is provided with a suitable valve—*e. g.*, "Knowles"—to receive and exhaust compressed air at either end of said cylinder X<sup>2</sup>. The locking-bolt X<sup>3</sup> has an enlarged end that forms a piston-head in cylinder X<sup>2</sup>, and said locking-bolt is operated in a reciprocating motion at the will of the engine-runner who handles lever V.

55 When the operator has the turn-table about in the position that he wants it to run off the table with the locomotive, he by a slight movement of lever V shoots the locking-bolt into place, where it remains until the table is to be moved around to receive another locomotive. The lever V is then moved so as to admit compressed air into the other end of the Knowles valve, which discharges the compressed air from one end of cylinder X<sup>2</sup> and 65 admits it into the other end and shoots the locking-bolt X<sup>3</sup> back to the place of beginning and leaves the table free to be turned

by hand. The locking-bolt X<sup>3</sup> is an additional device to the automatic locks patented by me in my said Letters Patent No. 563,480 70 and is to be used in turning by power at the same time with said automatic locks. The locking-bolt is an additional safeguard required, because the engine-runner is not in a position to see when the turn-table is in exact position to enter the automatic locks. 75

Y is a cross-beam supporting two sheaves, provided with suitable axles Y<sup>2</sup> Y<sup>2</sup> to hold wire rope T<sup>2</sup> in a pulling position to turn the turn-table around or stop the same. The 80 holes that are to be made on the inside of the turn-table-pit wall must have a vertical depth sufficient to allow the table to tip to the bearings on automatic locks described in said Letters Patent No. 563,480; but said holes may 85 fit the locking-bolt laterally. The advantage of this construction and arrangement of said device is that the engineer can take out locomotives at any hour of the night when the yardmen are not about. 90

Referring to my turn-table center, a modification of certain features of my invention consists in substituting wedges B<sup>6</sup> for the holddown-bolts E and the laterally-adjusting screws D. In such event the upper inner 95 part of the vertical rim of the foundation-plate B may have an overhanging projection B<sup>4</sup>, having a bevel side or face B<sup>5</sup>. The outer upper edge or projection of the center-post may have beveled spots or faces A<sup>3</sup>. Each 100 edge B<sup>6</sup> is inserted between such adjacent faces B<sup>5</sup> and A<sup>3</sup>.

My invention in turn-table centers is advantageously applicable to gun-turrets and gun-carriages, as well as telescopes on ship-board, for the reason that with it the load 105 always balances to a horizontal plane.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. The cylindrical roll Z and the concave 110 in the top or cap N, and the concave in the bed-piece F, these concaves receiving the cylindrical roll, but having the differential diameters, in relation to the diameter of the roll, and forming the differential joint for balancing the table to a horizontal plane in the direction of its length, in combination with the center-post A and the foundation-plate B, and the adjusting jack-screws C, and devices for holding the center-post down to 120 place to the foundation-plate, substantially as and for the purposes specified.

2. The cylindrical roll Z and the concave in the top or cap N, and the concave in the bed-piece F, these concaves receiving the cylindrical roll, but having the differential diameters, in relation to the diameter of the roll, and forming the differential joint for balancing the table to a horizontal plane in the direction of its length, in combination with 130 the center-post A and the foundation-plate B, and the adjusting jack-screws C, and the holddown-screws E, substantially as and for the purposes specified.



3. The cylindrical roll Z and the concave  
in the top or cap N, and the concave in the  
bed-piece F, these concaves receiving the cy-  
lindrical roll, but having the differential di-  
5 ameters, in relation to the diameter of the  
roll, and forming the differential joint for bal-  
ancing the table to a horizontal plane in the  
direction of its length, in combination with  
the center-post A and the foundation-plate  
10 B, and the adjusting jack-screws C, and the  
holddown-screws E, and the horizontal bolts  
D, the plate having vertical projection for  
the latter, and the center-post having lateral  
projection for the screws C and screws E, sub-  
stantially as and for the purposes specified. 15

CLEMENTS A. GREENLEAF.

Attest:

KATE L. KERCHEVAL,  
DAVID A. MYERS.