

UNITED STATES PATENT OFFICE.

CHARLES H. FISHER, OF ALBANY, NEW YORK.

IMPROVEMENT IN TURN-TABLES FOR RAILWAYS.

Specification forming part of Letters Patent No. 119,593, dated October 3, 1871.

To all whom it may concern:

Be it known that I, CHARLES H. FISHER, of the city and county of Albany and State of New York, have invented an improved form of turn-table for turning locomotive-engines, of which the following is a specification:

The cords or principal timbers of turn-tables are subject to strains of an opposite character under the two conditions of service they perform. When the engine is entering upon or leaving the table but one-half of the cord is affected by the load, and the strains are similar to those of a beam supported at the ends and loaded in the middle, the top of the cord being in a state of compression. When the table is fully loaded and the engine is balanced upon it the strains are similar to those of a beam supported at the center and loaded at the ends, the top of the cord being in a state of tension. The first part of my invention is the combination of iron rods and wooden beams into a frame or truss in such a manner that said truss shall effectually resist the opposite strains produced in it under the two conditions of service it is subject to when used as a turn-table for turning engines. The second part of my invention relates to the application of the principle of the "toggle joint" in the construction of the truss, by means of which, without altering the height of the center, the ends of the table can be so adjusted that the entire weight of the engine, when balanced on the table, will be borne on the center, no portion of said weight being carried by the outer wheels.

Figure 1 is a side elevation of a turn-table as invented by me. Fig. 2 is a plan of the same with rails and cross-ties omitted and with portions of stringers removed, showing braces and cast-iron abutting-blocks. Fig. 3 is a vertical cross-section on the line *x x* drawn across Figs. 1 and 2. Fig. 4 is a vertical cross-section on the line *y y* drawn across Figs. 1 and 2. Fig. 5 is a plan of the lower main and diagonal braces. Fig. 6 shows details of the method of connection at the point D.

The turn-table is supported at the center by the nut *a* on the screw *b*, which turns in the step *c*, the latter being fixed to the center stone A. The ends of the table are steadied by the wheels *d d* revolving between the cross-timbers *e e* upon the circular rail B. The nut *a* supports the cross-timber *f*, upon which rests the stringers *g g*. The

stringers *g g* are arranged in pairs and properly keyed and bolted together. The vertical struts *h h* are mortised into the stringers *g g* at the top, and at the bottom rest upon cast-iron abutting-blocks *i i*. The end braces *k k* at the lower end also rest upon the blocks *i i*, and at the upper end are mortised into the stringers *g g*. The abutting-blocks *i i* are held in place by two pairs of tension-rods, *m m m m*, the lower ends of which pass through holes in the cylindrical portions of the blocks and are held by nuts. The rods *m m* at the end of the table pass through holes in a wrought-iron plate let into a notch in the top of the stringers and are secured by nuts. The rods *m m* at the center of the table have eyes turned in their ends, which slip over the pins *n n* of wrought-iron. These pins rest upon a cast-iron bearing-plate, *o*, which is boxed into the top surface of the stringers *g g* and are strengthened and secured by the wrought-iron links *p p*. The braces *q q q q* and the rods *r r r r* stiffen the frame laterally. The braces *s s s s* are arranged in pairs and properly bolted and fastened together. The upper ends abut against the blocks *i i* and the lower ends against the blocks *t t*, which are also of cast-iron. The ends of the braces *s s* and the sides of the blocks *i* and *t*, against which they abut, are curved so as to admit of motion about each other. The blocks *t t* are supported by tie-rods *u u*, which pass between the stringers *g g* and through holes in the cast plates *o o* and are secured by a nut. The rods *u u* have in them turn-buckles *w w*.

When one-half of the table is loaded, as in the cases when the engine is entering upon or leaving it, the weight tends to produce deflection in the loaded portion of the stringer. This deflection is resisted by the action of the strut *h* and the tie-rods *m m*. When the engine is balanced upon the table the portion of the load collected on the stringers at the points midway between the center and ends of the table is transmitted through the struts *h h* to the blocks *i i* and produces tension in the center inclined rods *m m* and compression in the braces *s s*. The vertical component of this thrust in the braces *s s* is resisted by the vertical rod *u*. At the same time the portion of the load acting on the ends of the table is carried through the braces *k k* to the blocks *i i*, producing tension in the stringers *g g* and thrust in the braces *k k*, and is then transmitted

through the center inclined rods *m m*, the braces *s s*, and the vertical rod *u*. The entire weight of the engine is, therefore, by the plan of the truss, concentrated upon the cross-beams *f* and the pivot-screw *b*. By shortening the rod *u* by means of the turn-buckle *w* the blocks *i i* are forced apart, and through the resistance of the braces *k k* the ends of the table can be so raised and adjusted that no portion of the weight will be borne by the outer wheels *d d*.

As described so far the premise has been that while the rods and some other parts were of iron the braces, struts, and stringers were of wood, and due allowance has been so far made for the defects of wood, especially in the matter of strength and the increased weight demanded thereby. I, however, contemplate constructing

my turn-table of iron throughout, in which case the provisions at the joints or places of union for motion and flexibility previously necessary become unnecessary if not injurious. I, therefore, propose to build such a turn-table with riveted or otherwise firmly-secured and rigid joints, wherein there will be little or no motion, and the turn-table will continue ready for its work.

I claim as my invention—

The combination of the tie-rods *m m m m* and *u* with the stringers *g g*, the struts *h h*, and the braces *k k* and *s s*, substantially as and for the purpose hereinbefore set forth.

CHAS. H. FISHER.

Witnesses:

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