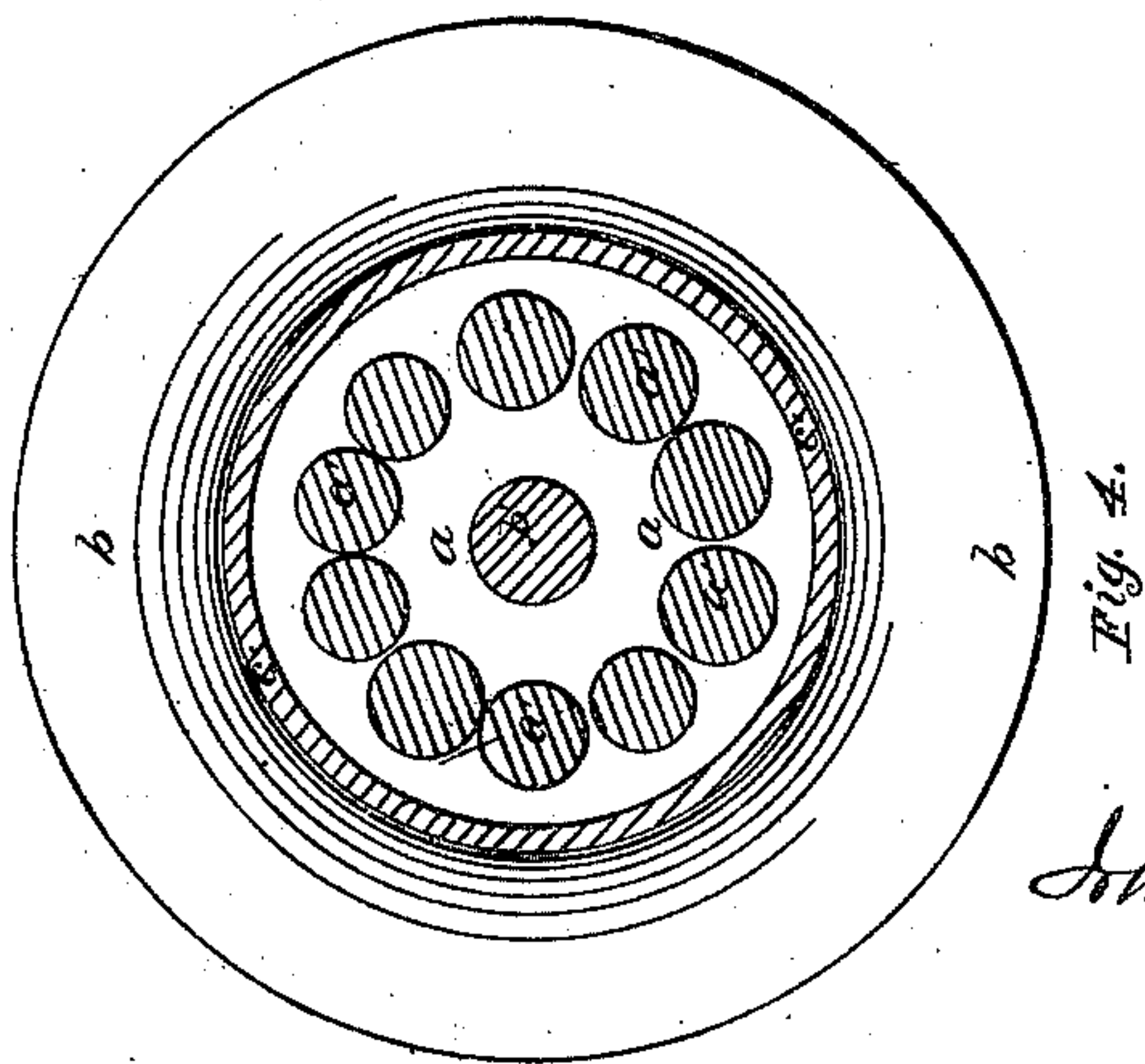
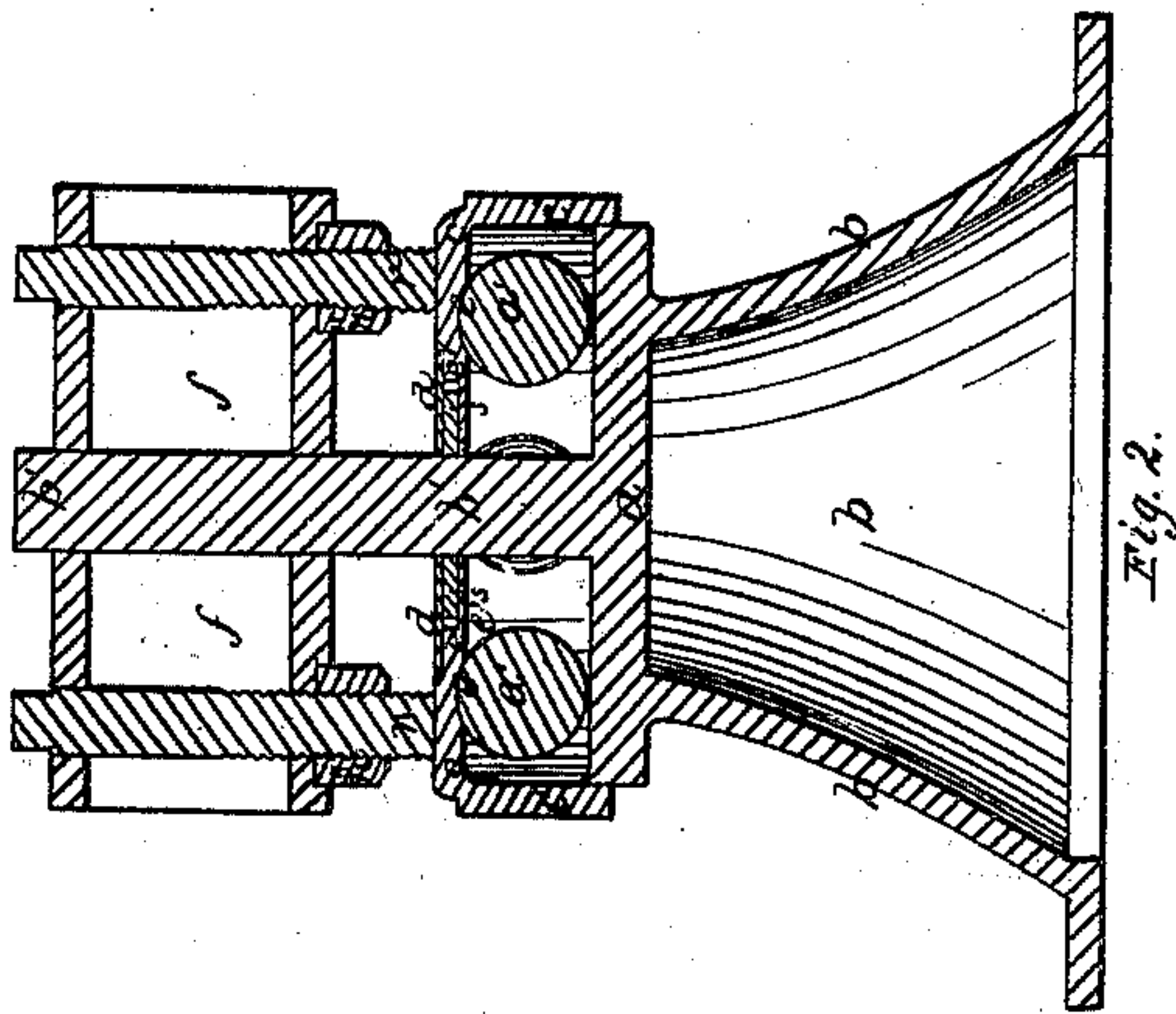
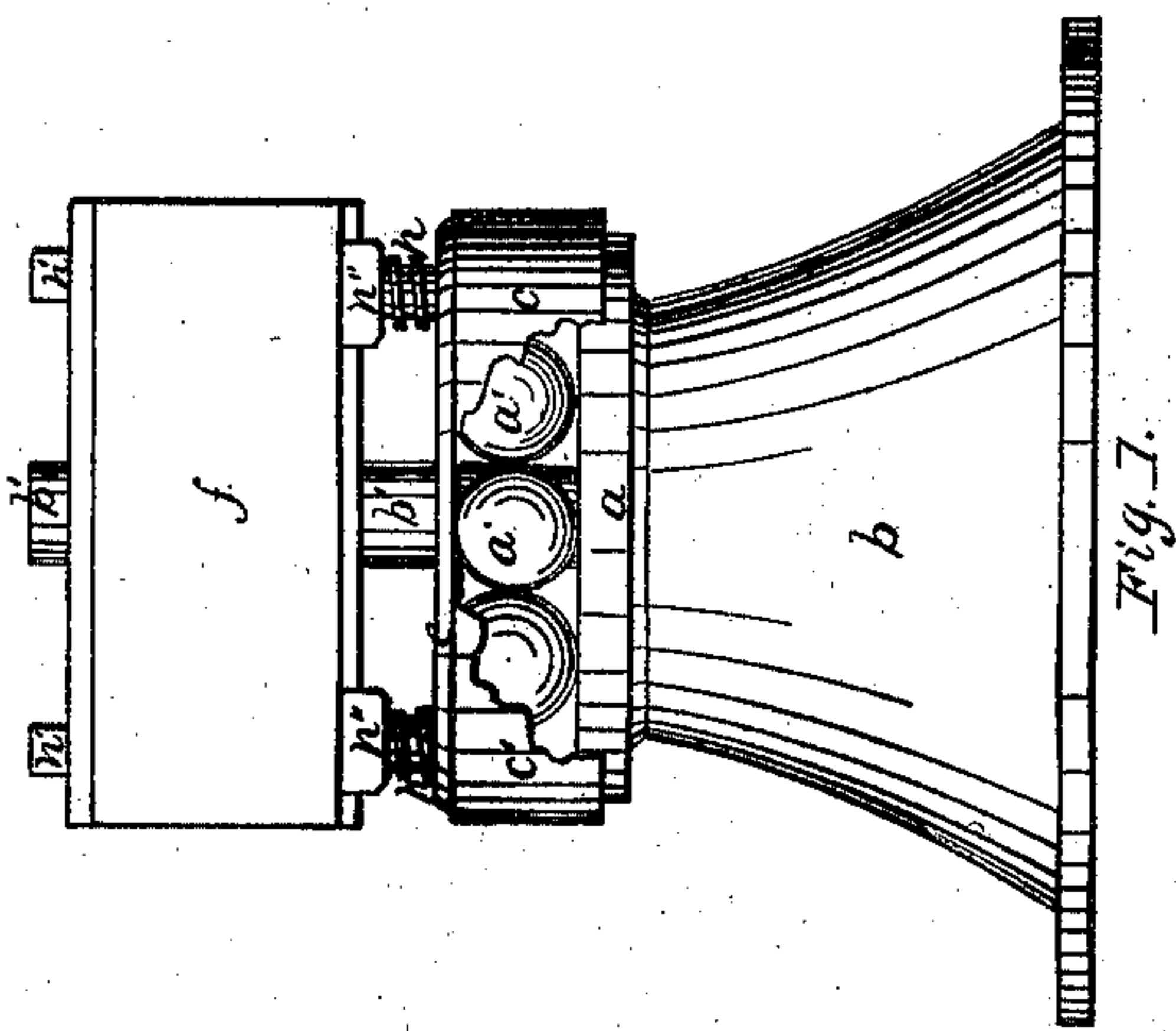
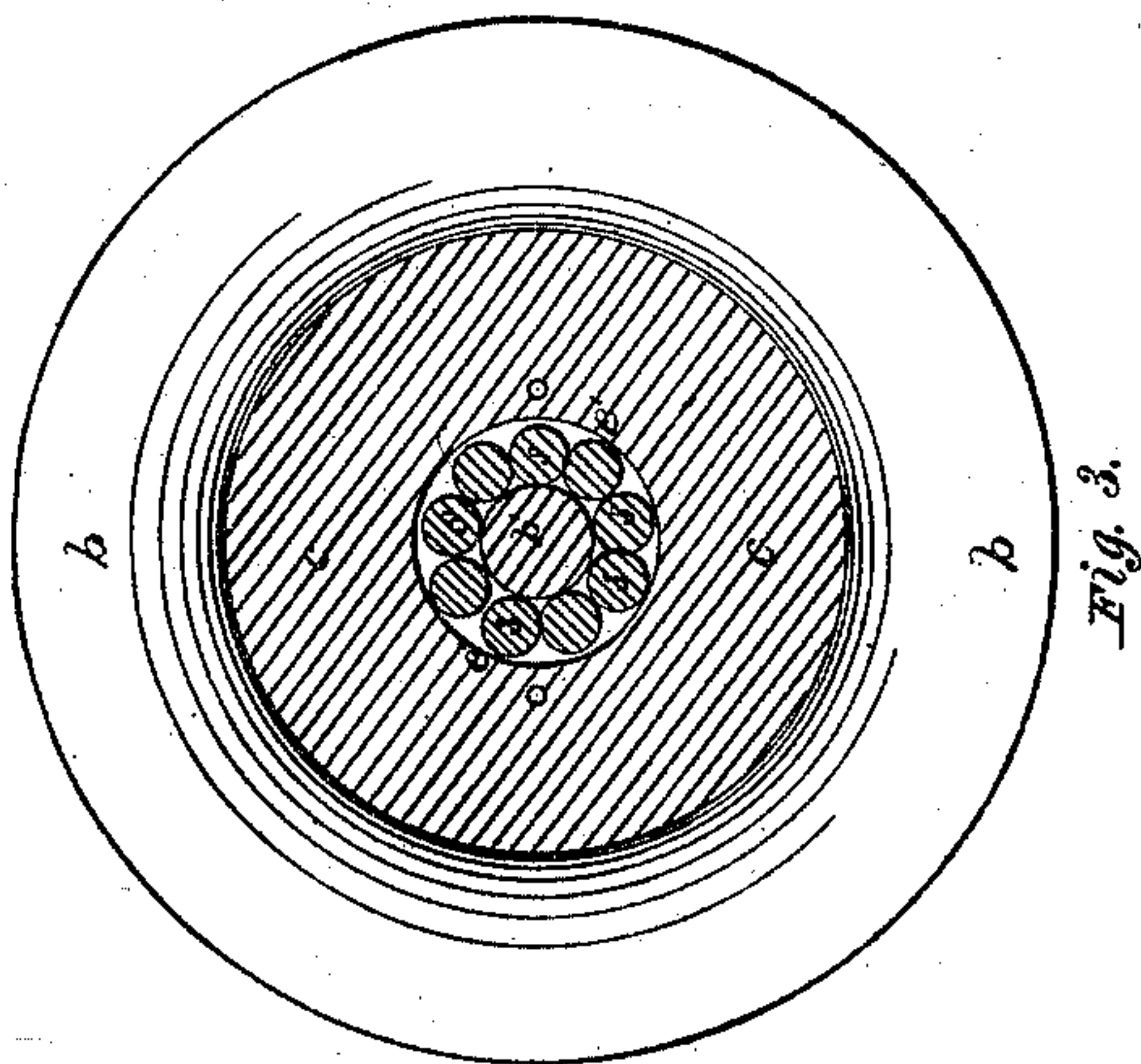


*J. L. Piper,*

*Turn-Table.*

*No. 97,440.*

*Patented Nov. 30. 1869.*



*Witnesses:*

*Thos. B. Vero*  
*Reuben Kuge*

*Inventor:*

*John L. Piper, by his attys*  
*Baxwell, Christy.*



# United States Patent Office.

JOHN L. PIPER, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 97,440, dated November 30, 1869.

## IMPROVED TURN-TABLE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN L. PIPER, of the city of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Turn-Tables; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a side view, partly in section, of my improvement;

Figure 2 is a longitudinal vertical section thereof, formed by a plane passing through the axis thereof;

Figure 3 is a sectional plan view, formed by a plane passing horizontally through the cap, just below the main girder-beam; and

Figure 4 is a like view, as formed by a plane passing horizontally through the friction-balls, which are the main support of the table.

Like letters of reference indicate like parts in each.

The nature of my invention consists in the construction of improved devices for operating turn-tables for railroads, swinging or drawbridges, &c, as hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation.

On any suitably-constructed bed or foundation, I fix the main or central pier or pedestal *b*, of any desirable size and shape, the upper end, however, terminating in a pivoting-stem, *b'*, of sufficient length to extend up through the girder or main beam *f*.

Around the base of the stem *b'*, the pedestal widens out into a broad, flat circular disk or plate, *a*.

On the stem *b'* is placed a cap, *c*, chambered out on its under side, or made with a cylindrical flange, *c'*, projecting downward around its outer edge, sufficiently far to hold in place the balls *a'*, which are placed between it and the plate *a*, in a continuous series, and also sufficiently far to exclude, as effectually as possible, the dirt from getting in between the cap *c* and plate *a*.

At the same time, the cap *c* and plate *a*, to avoid loss by friction, should not work in contact with each other.

The cap is also cast with an annular concavity or concave-faced groove, *e*, on its under face, near its outer edge, for a track, the face of which works on the upper faces of the spherical balls *a'*.

The radius of concavity of the groove *e* should be, at least, equal to the radius of the balls *a'*, and preferably, to save friction, I use a longer radius in the former case than in the latter.

The balls *a'* are made of cast-metal, solid or hollow, and of a uniform spherical size.

The hole through the cap *c* for the stem *b'* is slightly larger than the stem *b'*.

To reduce to a minimum the friction of the cap *c* on the stem *b'*, I chamber out the cap *c*, on its upper face, for a uniform distance around its centre, leaving a shoulder, *e'*, which forms the boundary of a chamber, and in this chamber place a series of flat circular disks, *s*, of such diameter, that while one edge of each plays against the shoulder *e'*, the opposite edge will work against the stem *b'*.

Since, as presently to be described, the cap *c* supports the girder-beam trusses and track or road-bed, I avoid all sliding friction by the construction described.

All vertical pressure comes on the balls *a'*, and all lateral strain is received by the disks *s*. And I not only reduce friction to a minimum, but so construct the devices described that the cap *c* cannot tip or wobble.

I thus secure a perfectly solid support for the turn-table, as well as one easily operated, substantial, and durable.

The main girder *f*, made in any desirable way, or of any known form, also passes over the stem *b'*.

In building the turn-table, the girder *f* should extend across the main track or roadway. Then, on its opposite ends, I hang the trusses, not shown in the drawings, on which the track is laid.

I have described what I consider the best mode of construction, but some changes may be made without at all changing the nature the invention.

The concave track *e* may, if so preferred, be made on the face of the disk *a'*, though it would be more liable, in that case, to accumulate dirt, to prevent the free operation of the balls. Also, the chamber in the upper face of the cap *c*, which holds the disks *s*, may be made deeper, so as to admit spherical balls in lieu of the disks. The operation in either case would be the same.

The disks *s* are covered and held in place by a cap, *d*.

The stem *b'* may be cast as a part of the pedestal, or otherwise rigidly attached thereto.

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

1. The arrangement, in a pier which supports the turn-table at or near its centre, of a series of spherical balls within a confining-cap or rim, *c*, substantially as described.

2. A series of flat circular disks or cylindrical balls, arranged to operate on the one side or edge against the main pivoting-stem, and on the other against a shoulder in the revolving cap or other equivalent device, substantially as described.

In testimony whereof, I, the said JOHN L. PIPER, have hereunto set my hand.

Witnesses:

JOHN GLENN,  
G. H. CHRISTY.

JOHN L. PIPER.