

No. 750,915.

PATENTED FEB. 2, 1904.

D. B. VAN DORN.

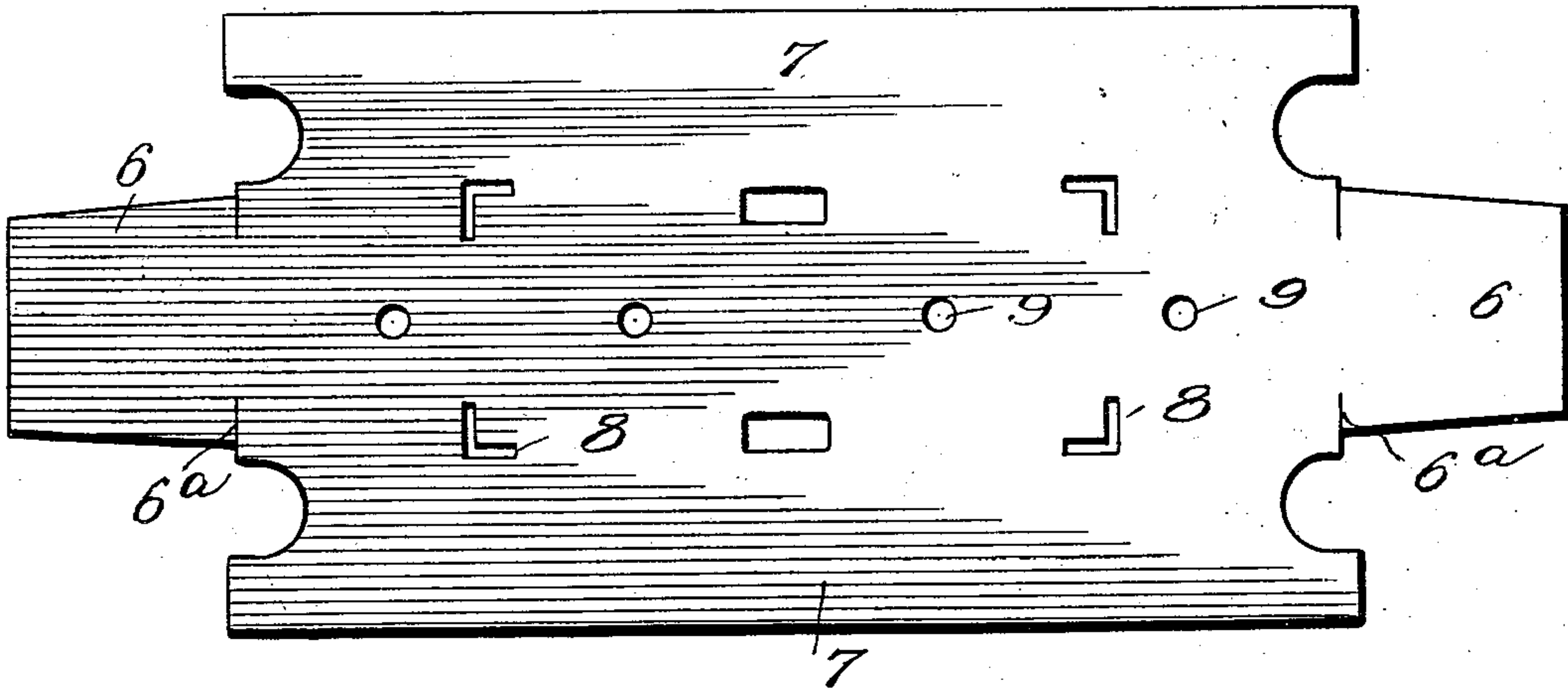
RUNNING GEAR.

APPLICATION FILED OCT. 30, 1903.

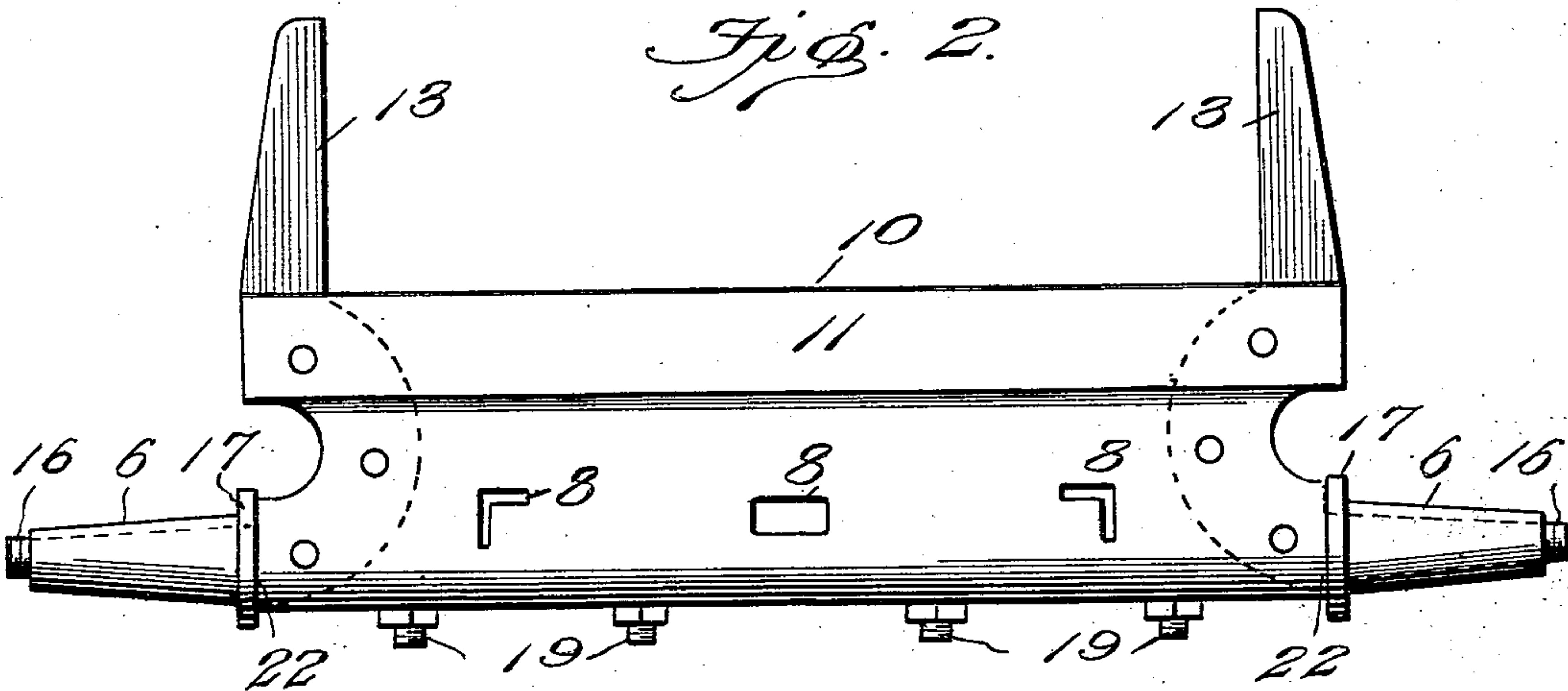
NO MODEL.

3 SHEETS—SHEET 1.

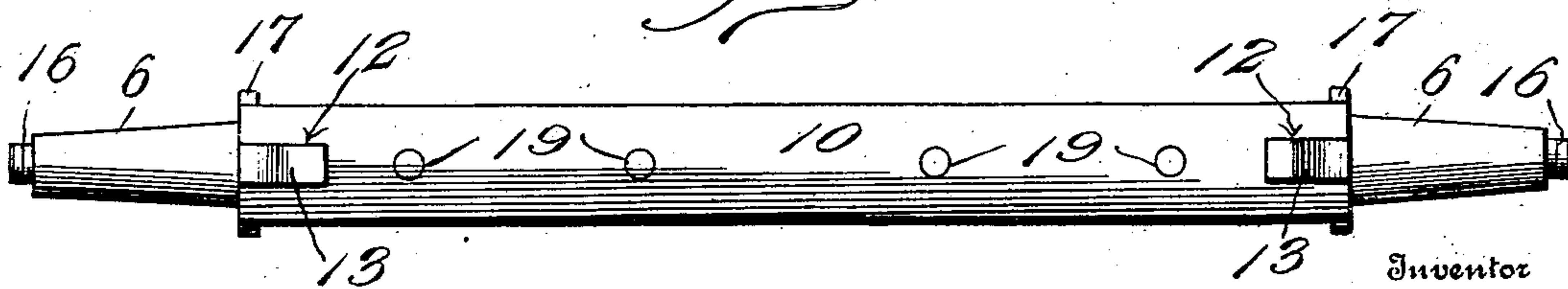
*Fig. 1*



*Fig. 2*



*Fig. 3*



Witnesses

*C. H. Walker*  
*Geo. E. Tew*

Dwight B. Van Dorn

By *Miles S. Stevens & Co.*  
Attorneys

No. 750,915.

PATENTED FEB. 2, 1904.

D. B. VAN DORN.

RUNNING GEAR.

APPLICATION FILED OCT. 30, 1903.

NO MODEL.

3 SHEETS—SHEET 2.

Fig. 4. Fig. 5. Fig. 6.

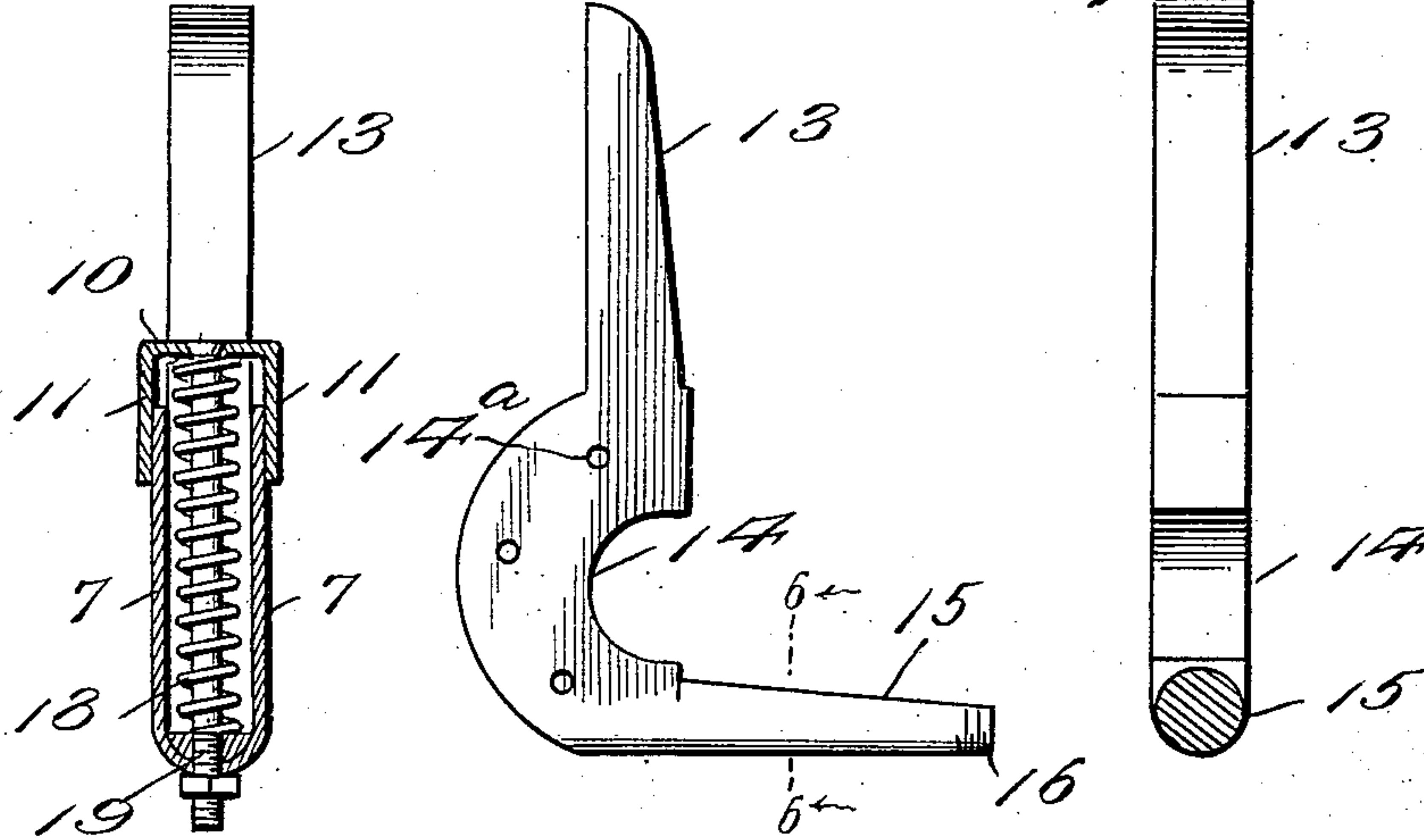


Fig. 7.

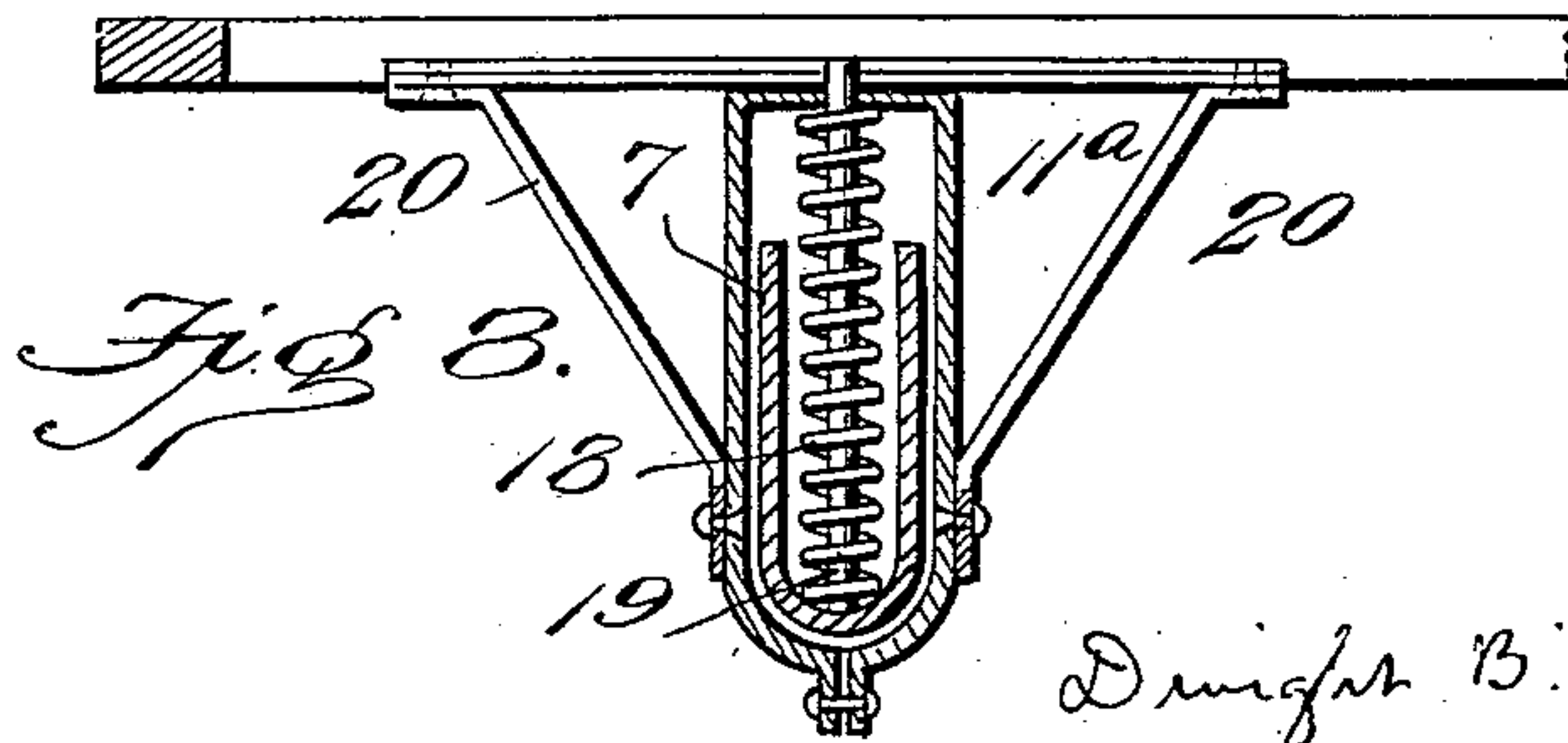
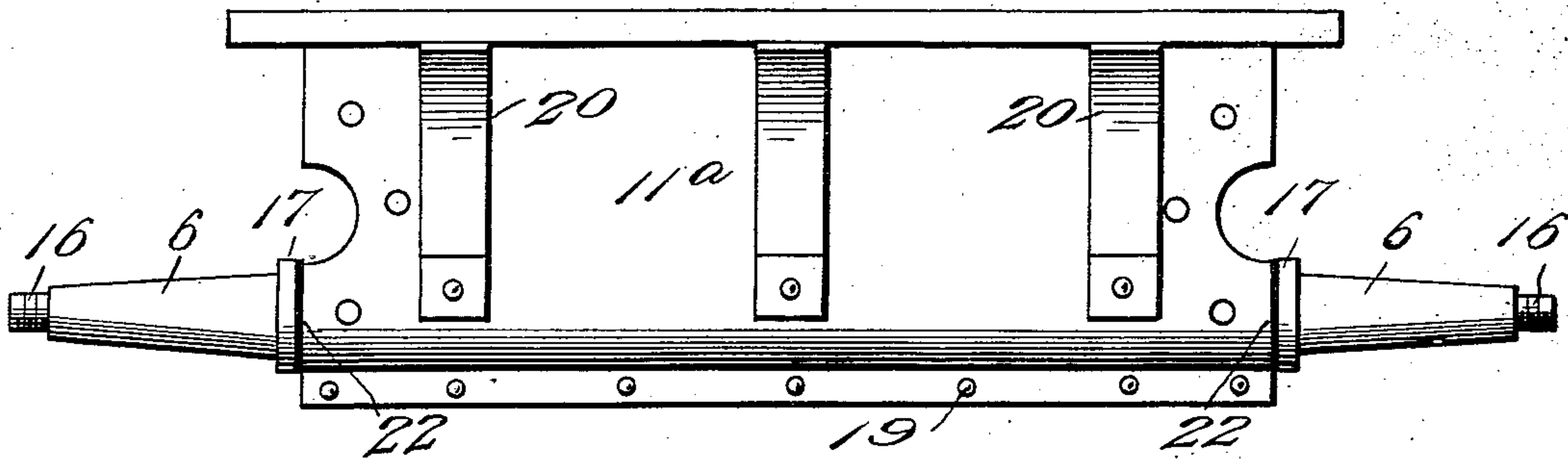


Fig. 8.

Witnesses

C. H. Walker  
Geo. E. Tew

Inventor

Dwight B. Van Dorn

By Milo B. Stevens  
Attorneys

No. 750,915.

PATENTED FEB. 2, 1904.

D. B. VAN DORN.

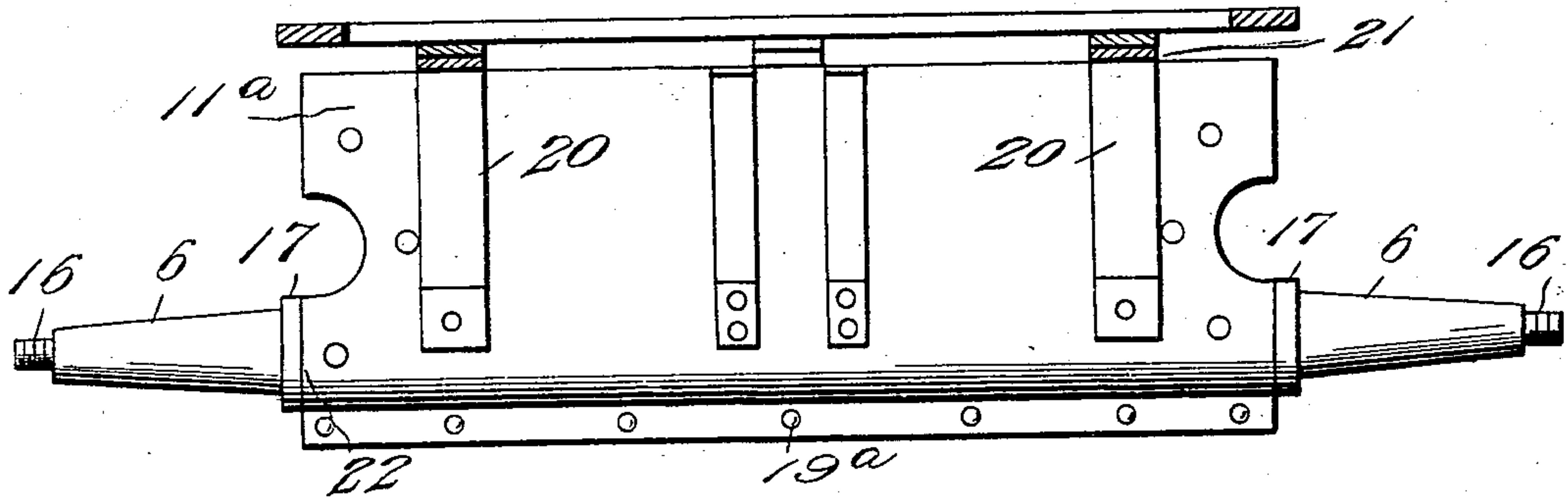
RUNNING GEAR.

APPLICATION FILED OCT. 30, 1903.

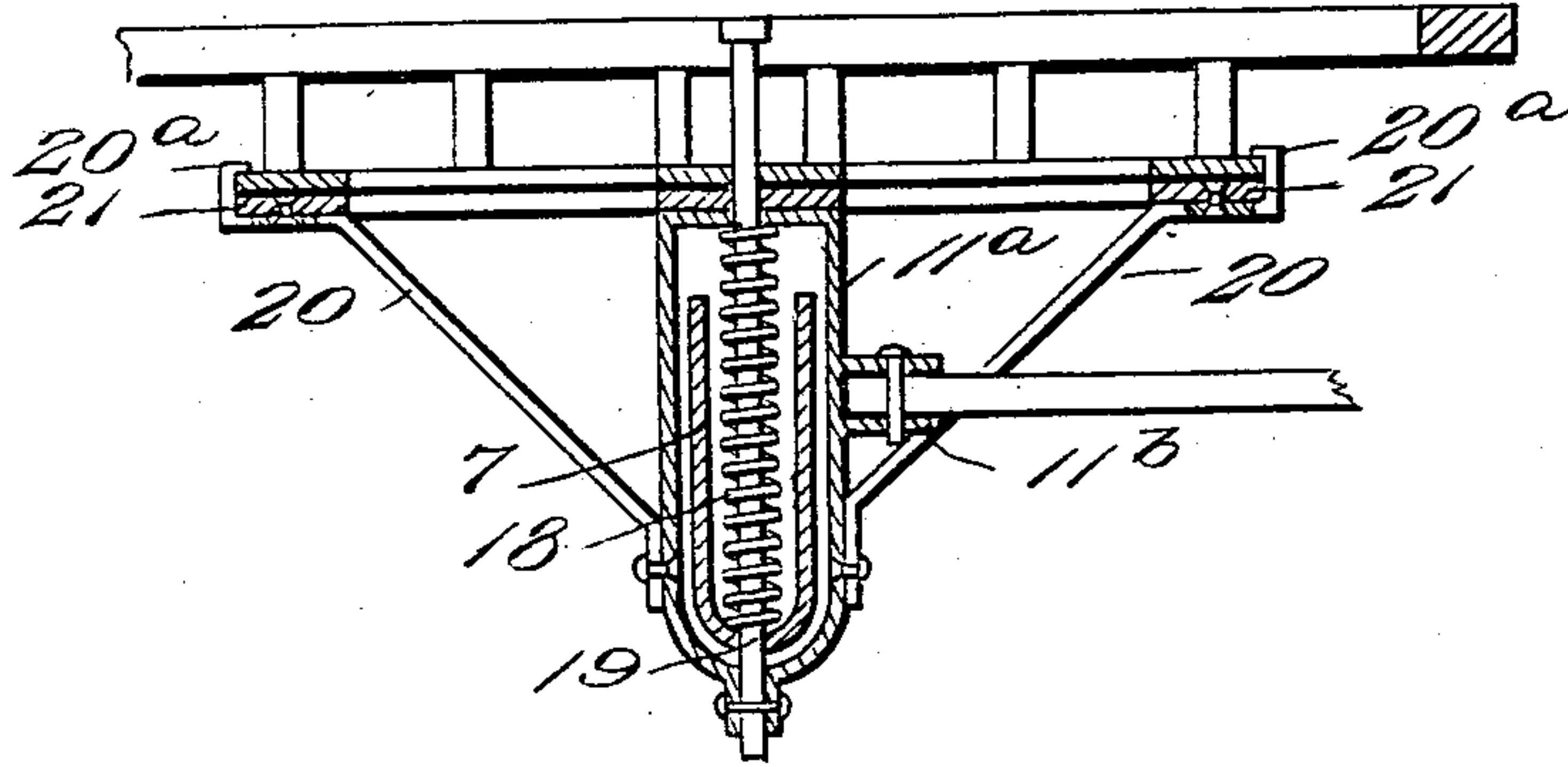
NO MODEL.

3 SHEETS—SHEET 3.

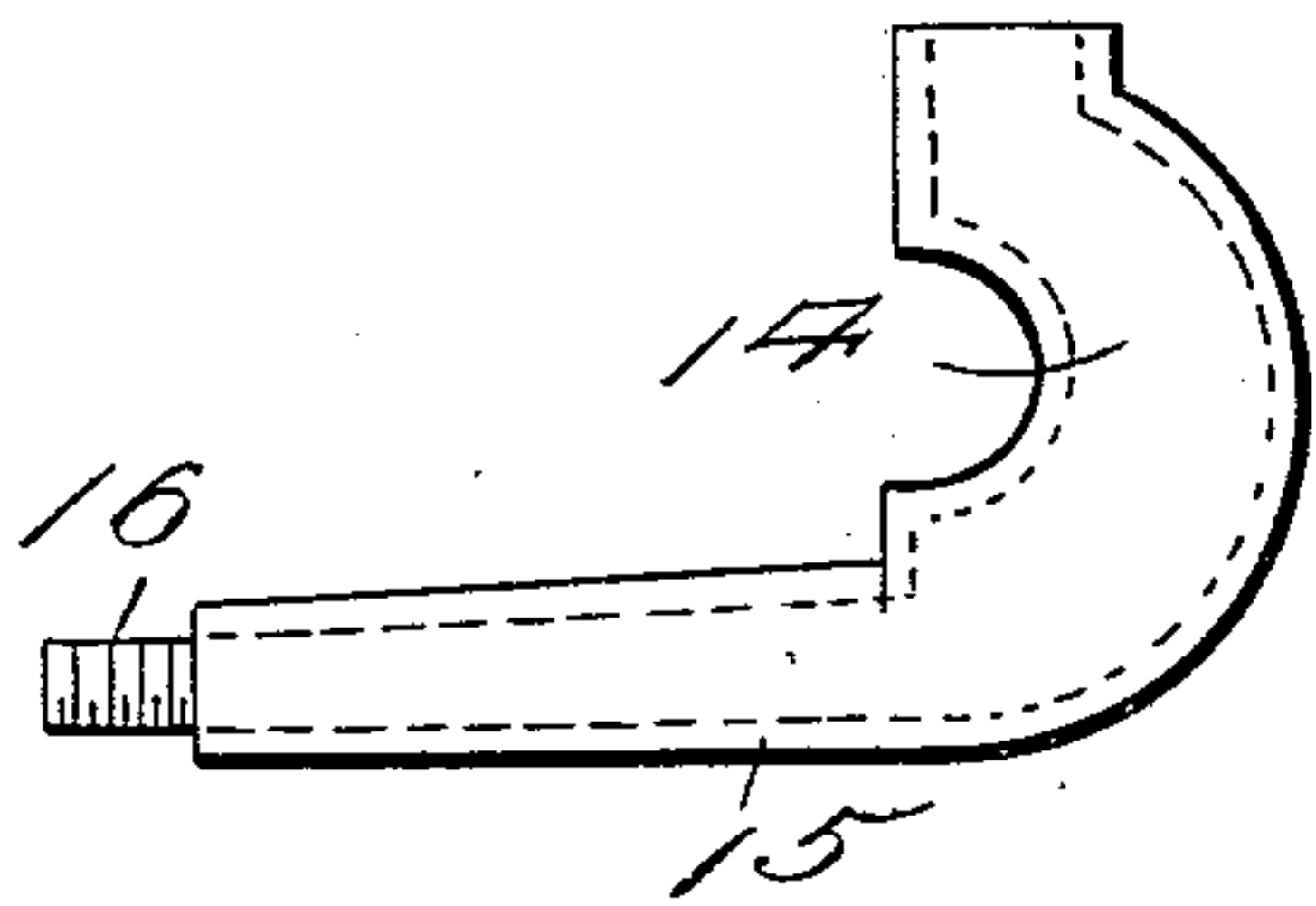
*Fig. 9.*



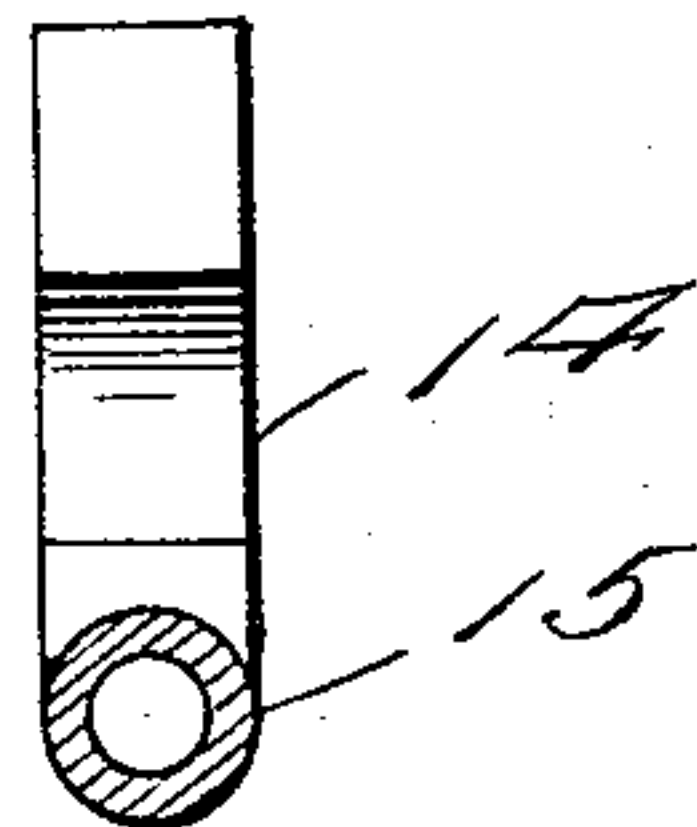
*Fig. 10.*



*Fig. 11.*



*Fig. 12.*



Inventor

Dwight B. Van Dorn

Witnesses

C. H. Walker.  
Geo. E. Tew.

By

Miles B. Stevens & Co.  
Attorneys



# UNITED STATES PATENT OFFICE.

DWIGHT B. VAN DORN, OF CLEVELAND, OHIO.

## RUNNING-GEAR.

SPECIFICATION forming part of Letters Patent No. 750,915, dated February 2, 1904.

Application filed October 30, 1903. Serial No. 179,167. (No model.)

*To all whom it may concern:*

Be it known that I, DWIGHT B. VAN DORN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Running-Gears; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates particularly to running-gears made of sheet metal, such as pressed steel, and has for its object to provide an improved construction, particularly with reference to a spring-supported bolster; to a reinforcement for the axles integral with the stakes; to a novel construction of bolster and axle particularly suitable for platform-wagons, and to such other special features as may be pointed out in the following description and claims.

In the accompanying drawings, Figure 1 is a plan view of the axle-blank. Fig. 2 is an elevation of a hind axle. Fig. 3 is a top view thereof. Fig. 4 is a cross-section. Figs. 5 and 6 are respectively elevation and section on the line 6 6 of the axle and stake-forging. Figs. 7 and 8 are respectively an elevation and section of the hind axle of a modification suitable for platform-wagons. Figs. 9 and 10 are similar views of the same modification as applied to a front axle, and Figs. 11 and 12 are respectively elevation and section of the reinforcement for the front axle.

In Fig. 1 the blank is shown from which the axle is made. Its end portions 6 are of proper shape to form when bent the spindles of the axle. The sides 7 are bent to parallelism with the free edges presented upwardly and have suitable hound and reach openings, (indicated at 8,) as well as a row of bolt-holes 9 along the median line. The blank is cut at 6<sup>a</sup> to allow the spindles to be bent to tubular form and the three edges to be welded together.

The bolster, as shown in Figs. 3 and 4 at 10, is made of a metal plate bent or pressed to the form of an inverted channel-beam, the flanges

11 of which embrace the upper edges of the axle-plate, and to accommodate the stakes the ends of the bolster are cut away, as at 12, although the side flanges 11 of the bolster are left to extend beyond the stakes to hold the bolster in position.

The combined axle reinforcement and stake is shown in Fig. 5. This is made in one piece, the stake being indicated at 13, the neck at 14, properly curved to conform to the shape of the axle-plate, and the spindle reinforcement at 15. This fits the axle-skein 6 at a close fit and terminates in the threaded portion 16 to receive the axle-nut. A collar 17 is welded at the base of the spindle to form a shoulder for the wheel-hub. The axle reinforcement may be made hollow, as shown in Fig. 12, to form an oil-chamber for lubricating the bearing, and the neck of the forging has bolt-holes 14<sup>a</sup> to receive the bolts which join the axle and reinforcement together. The parts may, if desired, be joined by welding or brazing, which would probably be preferable to the bolts.

Between the axle and the bolster are a sufficient number of coiled springs 18, coiled around bolts 19, which are secured to the bolster and which work loosely through the holes 9 in the axle. These springs and bolts are contained within the hollow of the axle and serve to yieldingly support the bolster, which works up and down freely between the stakes, according to the weight or the movements of the wagon.

The above-described construction is particularly useful for farm or lumber wagons, and although only the hind gear is described the same construction, with the exception of the combined stakes and axle reinforcements, may be applied to the front gear.

In the remaining figures a structure more adapted to platform-wagons is disclosed. In this the axle construction is substantially the same, except that it is without hound and reach openings and is indicated by the same symbols. The front-axle reinforcement is shown in Figs. 11 and 12, consisting simply of the spindle portion 15, terminating in the threaded stud 16 and having at the other end the neck 14 without the stake; but instead of making the bolster as shown in the construction above de-



scribed the bolster for use with platform-wagons is a tubular structure or hollow beam, the flanges 11<sup>a</sup> of which are extended downwardly to completely inclose the axle-piece and are joined at the bottom by a row of bolts 19<sup>a</sup>. The bolster is properly shaped to fit the curve of the axle at the bottom thereof and is deep enough to leave a space in which the axle has relative vertical movement as the springs are compressed. The bolts and springs 18 and 19 are contained within the hollow of the axle and bolster, as in the other construction, and the resulting action is similar. To steady the bolster, braces 20 are secured adjacent the lower edge thereof and extend thence to attachment to the bed of the wagon.

The front gear has the modifications incident to its swiveling use. The bolster has a tongue-socket 11<sup>d</sup> on the front face thereof and also supports the fifth-wheel 21, the braces 20 extending to the fifth-wheel instead of to the bed of the wagon, and said braces are continued and bent over, as at 20<sup>a</sup>, to hold the two rings of the fifth-wheel together. The ends 22 of the bolster abut against the inside of the collars 17, which serves to prevent endwise movement of the axle with respect to the bolster, while permitting the vertical vibration incident to the spring action.

The reinforcement of the axle in the manner indicated gives the strength where it is needed, and both the bolster and the axle can be pressed from sheet metal, the only forgings or castings necessary being the stake and reinforcement-pieces, and with respect to platform-wagons the construction is particularly serviceable, the springs being virtually contained within the bolster and axle and concealed therein. Hence it is adapted to much lighter vehicles than the ordinary metal running-gear.

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

1. A sheet-metal axle bent to form tubular spindles, and having reinforcing-pieces secured to its body and extending through the spindles, and threaded at their outer ends to receive the axle-nuts.

2. An axle formed of folded sheet metal, in combination with stakes having blocks at their lower ends secured between the folds.

3. An axle formed of a sheet of metal folded into shape and to form tubular spindles, in combination with reinforcing-pieces secured between the folds and fitting within the spindles and having stakes projecting at the upper ends.

4. The combination with the metallic axle, of the stake-and-spindle reinforcement formed in one piece and secured to the axle.

5. The combination with the metallic axle having hollow spindles, of the combined stake-and-spindle reinforcement formed in one piece and extending through a spindle and threaded at the outer end to receive the axle-nut.

6. A sheet-metal axle having a tubular spindle reinforced by a separate piece fitting within the spindle and secured to the body of the axle.

7. A wagon-stake and axle-spindle formed in one piece, and connected by a neck adapted to be secured to the body of the axle.

8. A trough-shaped sheet-metal axle, in combination with an inverted trough-shaped sheet-metal bolster thereon, and springs between the axle and bolster and within the same.

9. The combination of the trough-shaped sheet-metal axle having stakes at the ends, the inverted channeled metal bolster fitting over the axle and between the stakes, and springs between the axle and bolster.

10. The combination of the trough-shaped sheet-metal axle having holes in the bottom thereof, and the inverted trough-shaped metal bolster, the flanges of which lap the flanges of the axle, bolts projecting from the bolster within the same and working through the holes, and springs coiled around the bolts.

11. The combination with an axle, of a hollow bolster inclosing the same, and springs between the axle and bolster.

12. The combination with an axle, of a hollow bolster inclosing the same and having vertical movement relative thereto, and guides and springs between the axle and bolster.

In testimony whereof I do affix my signature in presence of two witnesses.

DWIGHT B. VAN DORN.

Witnesses:

JOHN A. BOMMARDT,  
LOTTIE NEWBURN.