

(No Model.)

3 Sheets—Sheet 1.

T. L. JOHNSON.

PULLEY BOX FOR CURVE PULLEYS OF RAILWAY CABLE ROADS.

No. 362,635.

Patented May 10, 1887.

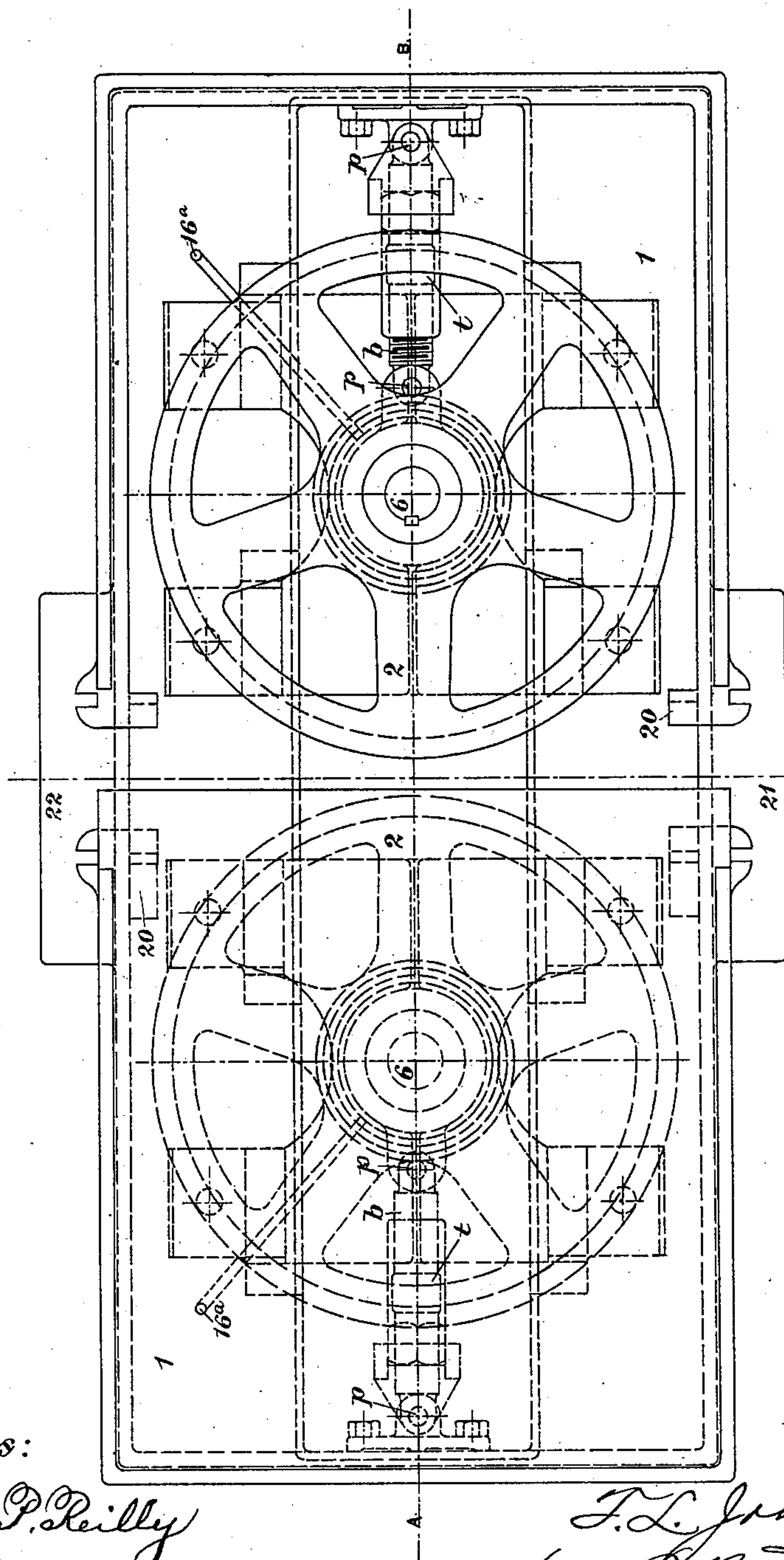


Fig. 1.

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Inventor:

T. L. Johnson  
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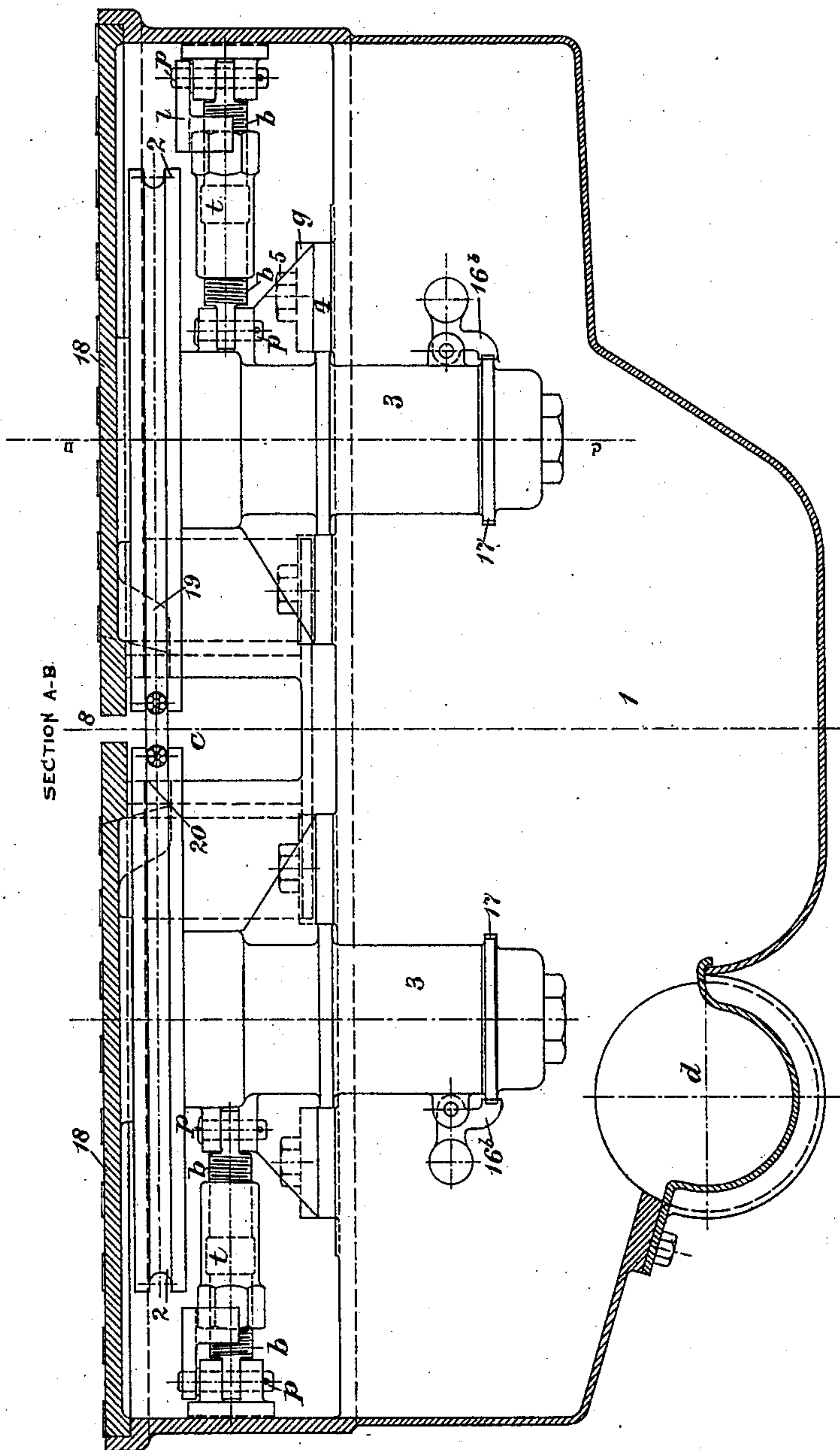


Fig. 2.

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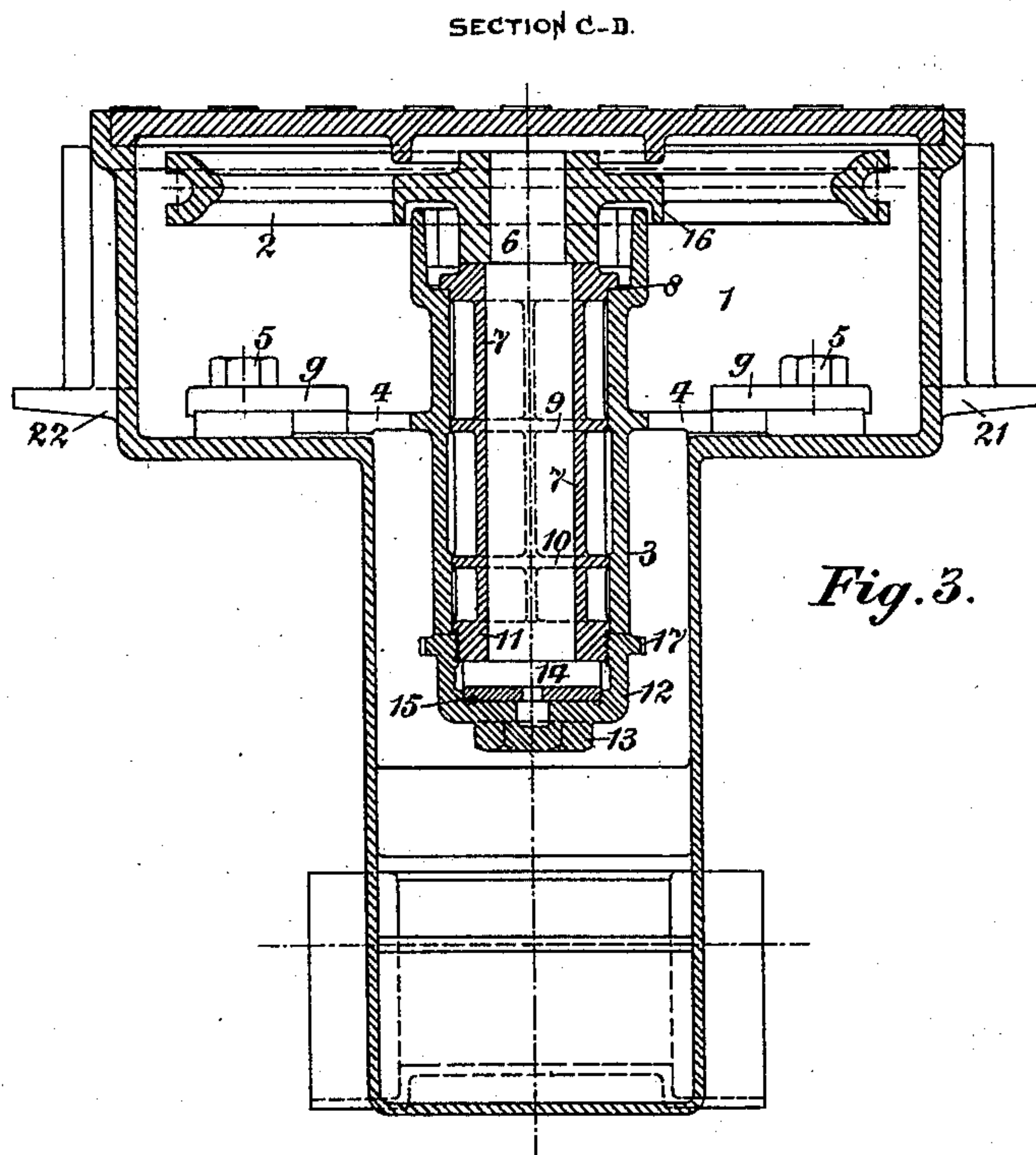
3 Sheets—Sheet 3.

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PULLEY BOX FOR CURVE PULLEYS OF RAILWAY CABLE ROADS.

No. 362,635.

Patented May 10, 1887.



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# UNITED STATES PATENT OFFICE.

TOM L. JOHNSON, OF CLEVELAND, OHIO.

PULLEY-BOX FOR CURVE-PULLEYS OF RAILWAY CABLE ROADS.

SPECIFICATION forming part of Letters Patent No. 362,635, dated May 10, 1887.

Application filed August 26, 1886. Serial No. 211,886, (No model.)

*To all whom it may concern:*

Be it known that I, TOM L. JOHNSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Pulley-Boxes for Curve-Pulleys of Railway Cable Roads, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

10 This invention is more particularly adapted for that type of cable road in which the cable used is double, or composed of two cables united at intervals by cross-stops.

15 The object of the invention is to provide the road-bed with adjustable curve-pulleys for the cable, which, with their journals, boxes, and other attachments, shall embody greater simplicity of construction and economy in cost and time in the street work of putting in place, particularly in changing road-beds from 20 ordinary horse-car tracks to the system of cable-traction, suitable drainage of said pulley-boxes being also at the same time provided for.

25 The invention consists of the parts and combinations of parts hereinafter described, and set forth in the claims.

30 In the accompanying drawings, Figure 1 shows in plan a pulley-box containing two curve-pulleys, the covers of said box being removed. Fig. 2 shows a pulley-box in transverse vertical section, taken at the line A B of Fig. 1, its covers in place, and the pulleys and their vertical bearings and adjusting-screws in side elevation. Fig. 3 shows a longitudinal vertical section of the pulley-box, taken through the center of one of the curve-pulleys at the line C D of Fig. 2.

35 In said figures the several parts are indicated by numbers and letters, as follows: The number 1 indicates the pulley-box, containing the pulleys 2 2, mounted in vertical bearings 3 3, adjustable on side flanges, 4 4, under guides *g*, secured to the wings or offset-body of the box 1 by the bolts 5. The pulleys 2 45 are keyed fast to the vertical shafts 6, running in the vertical bearings 3, provided with metal bushings 7, preferably of brass or some other suitable anti-friction alloy or metal. Said bushings are provided with flanges 8 at their 50 tops, which rest on internal flanges in the bearings 3, and also with horizontal flanges 9

and 10, which bear against the interiors of the bearings 3 and prevent the bushings from turning. Said bushings have also bottom 55 flanges, 11, screw-threaded, to which are screwed the caps 12, provided with hexagonal heads 13, for holding a wrench, by which said caps may be screwed up in place or removed. The bottoms of the shafts 6 have collars 14 formed 60 thereon, which project under the bottom flanges, 11, and between said collars and the bottoms of the caps 12 are placed liners or bearing-plates 15. The hubs of the pulleys 2 are provided with downwardly-projecting 65 flanges 16, which exteriorly lap the top edges of the bearings 3, and thus form hoods or covers for excluding dirt from the annular oil-spaces between the bearings 3 and bushings 7. It can now be easily observed that by setting 70 up on the caps 12 the weight of the pulleys 2 can be accurately adjusted to be taken upon the bearing-plate or liners 15.

By means of the oil-pipes 16<sup>a</sup> lubrication of the shaft 6 is amply provided for, the oil 75 flowing first into the annular space between the hubs of the pulleys and the bearings 3, and thence running down between the shafts 6 and the bushings 7 until the bearing-plates 15 are reached, suitable holes in the bushings 80 7 for the flow of the oil being provided. The caps 12 are prevented from turning when adjusted by means of pawls or keepers 16<sup>b</sup>, which take into teeth or indentations, as seen at 17, on the caps 12. 85

The pulley-boxes 1 are provided with covers 18, which covers, at their inner ends or sides nearest the cable-slots, are made with inclined lugs 19, which fit or abut matched lugs 20 on the inner sides of the pulley-boxes. This fitting of lugs together prevents the covers from 90 tipping up at any time should any weight, as the wheel of a wagon or the foot of a horse, be brought to bear upon any part of the covers. Said covers, however, can be raised with 95 perfect ease by simply elevating the outer ends opposited said lugs by hooks or handles attached thereto for the purpose, said lugs on their inner ends offering no resistance to such elevation.

The pulley-boxes are provided with front 100 and rear flanges, 21 22, through which they are secured to the cross-ties of the track, the pulley-boxes themselves being inserted in suitable depressions excavated between the cross-



ties and the stringers or main-track rails. This arrangement forms a very rapid method of road-curve construction, and saves much street-work in changing roads from horse-  
 5 power traction to cable-car propulsion. Said pulley-boxes being situated on a curve, it is evident that the spaces between the cross-ties may sometimes be appreciably trapezoidal, the cross-ties being placed radially from the  
 10 true center of the curve. In such cases the pulley-boxes, instead of being made parallelograms may be made trapezoidal in plan, of cast-iron or other suitable material.

The pulleys are adjusted laterally, the side  
 15 flanges, 4, of their bearings 3 sliding under guides *g*, so as to properly support the cable *c*, by means of turn-buckles *t* and right and left handed screw-bolts *b*, respectively, secured by pins *p* to jaws in the boxes 1 and bearings 3.

20 It is obvious that by the turning of the parts *t* of the turn-buckles upon their right and left handed screw-bolts *b*, said bolts will tend to be either screwed both together either into said sleeve or both together out of said sleeve.  
 25 One of said bolts being fast to the casing and the other fast to the bearings of the pulleys, respectively, each pulley will thus be adjusted to hold the cable between them, or to drop it, according as each pulley is positively drawn  
 30 by its respective turn-buckle either inward under the cable or outward and away from its support. Thus is effected the engagement and disengagement of said pulleys and cable.

The keepers or lock-pieces 1 span hexagonal parts of the turn-buckles *t*, and thus prevent them from being turned after the adjustment of the pulleys has been effected.

That portion of the pulley-box, Fig. 2, to the right of the drain-pipe *d* forms a convenient catch-basin for any sediment or dirt that  
 40 may pass through the cable-slot *s* into said box, the water overflowing the depression in the bottom and escaping into said drain-pipe from pulley-box to pulley-box to any conveniently attached sewer. The pipe *d* therefore  
 45 acts as a continuous curved pipe, connecting the pulley-boxes, in curve, longitudinally under one side of the track. It can be easily seen from the description above given that  
 50 upon the removal of the covers 18 the pulleys 2 can be detached from their bearings 3 and lifted out of their boxes 1. By the removal of a single pulley access for clearing out or removing any obstruction in the drain-pipes  
 55 *d* is easily obtained in either direction as far as several of such pulley-boxes may extend, the openings into said pipes being almost directly

under the centers of said pulleys. Said drain-pipes may be made of terra-cotta, cast-iron, or other suitable material, and may be conveniently made of a diameter of about six inches.

In Fig. 2 a cast piece is shown hooked and bolted to the bottom of the pulley-box 1 in line with the drainage-pipes *d*. This piece is only used as a convenience in casting the box,  
 65 and has no necessary connection with the drainage-pipe *d* as such.

Having thus fully described my said improvements as of my invention, I claim—

1. A curve-pulley box for cable railways, of the form substantially as described, provided with front and rear flanges for securing the same to the cross-ties of the track, and adapted to be inserted between said ties and the main rails of the track, and to form a drainage and catch-basin for the cable-way, substantially as and for the purposes set forth.

2. A pulley-box for cable railways, adapted to fit between the cross-ties and main rails of the track, provided with curve-pulleys mounted on vertical shafts in bearings, as 3, lined with bushings, as 7, forming lubricating-receptacles for the pulley-journals, substantially as and for the purposes set forth.

3. A pulley-box for cable railways, adapted to fit between the cross-ties and main rails of the track, provided with cable-carrying pulleys journaled in vertical bearings adjustable laterally by means of turn-buckles, as described, whereby said pulleys may be engaged with and disengaged from the cable, substantially as and for the purposes set forth.

4. A pulley-box for cable railways, adapted to fit between the cross-ties and main rails of the track, provided with covers having diagonal lugs on one side shaped to fit corresponding lugs on the inner sides of said box, whereby said covers are held secure from accidental tipping or tilting up, but are adapted for ready opening or removal when desired, substantially as and for the purposes set forth.

5. A pulley-box for cable railways, of the form substantially as described, provided longitudinally with lateral drainage-pipe connections, whereby said pulley-boxes are drained and access obtained to the drainage-pipes of several contiguous boxes by the removal of a single pulley, substantially as and for the purposes set forth.

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