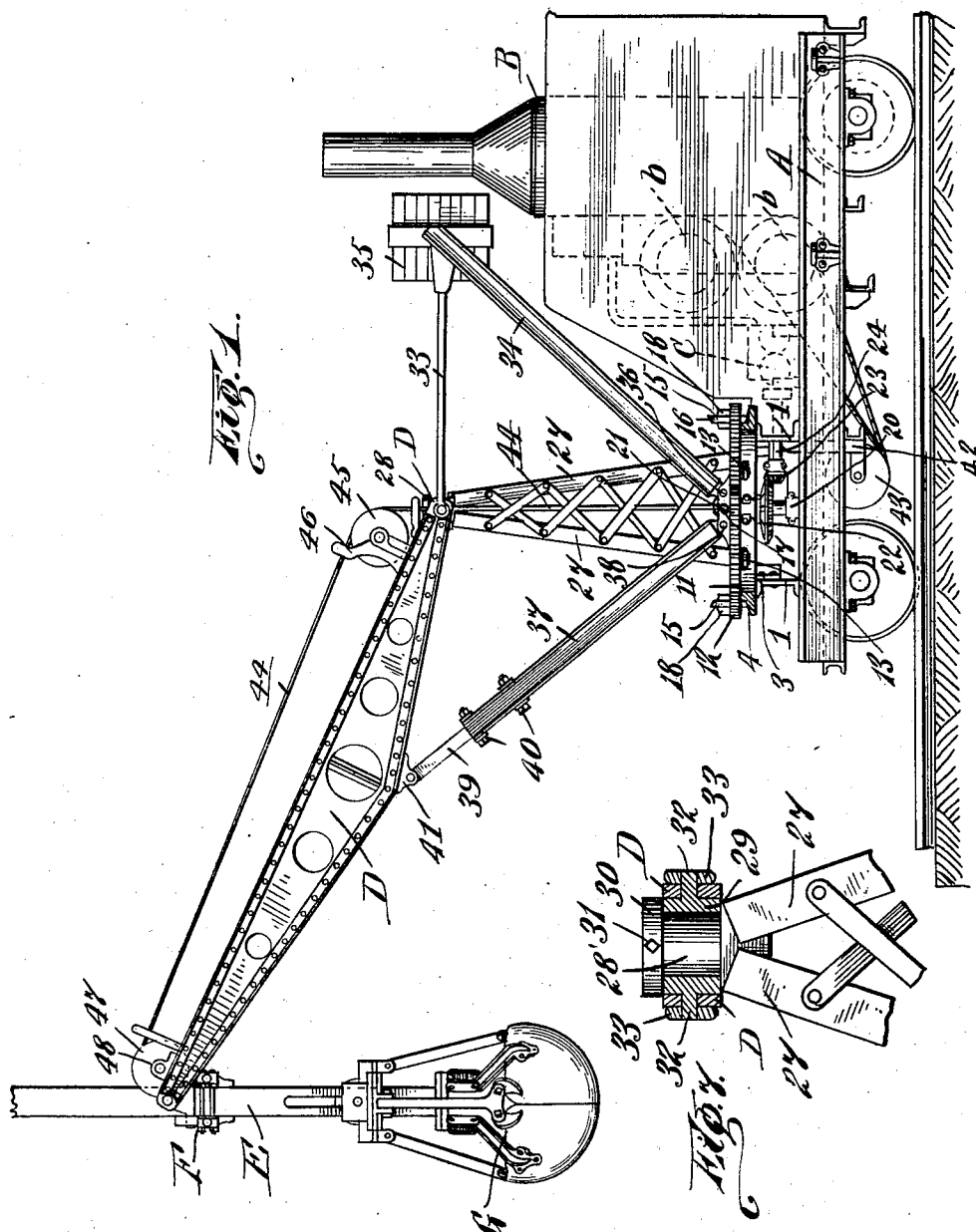


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L. A. DÉSÉ.
EXCAVATING APPARATUS.
APPLICATION FILED JAN. 21, 1907. RENEWED JULY 12, 1909.

Patented Jan. 11, 1910.

8 SHEETS—SHEET 1.



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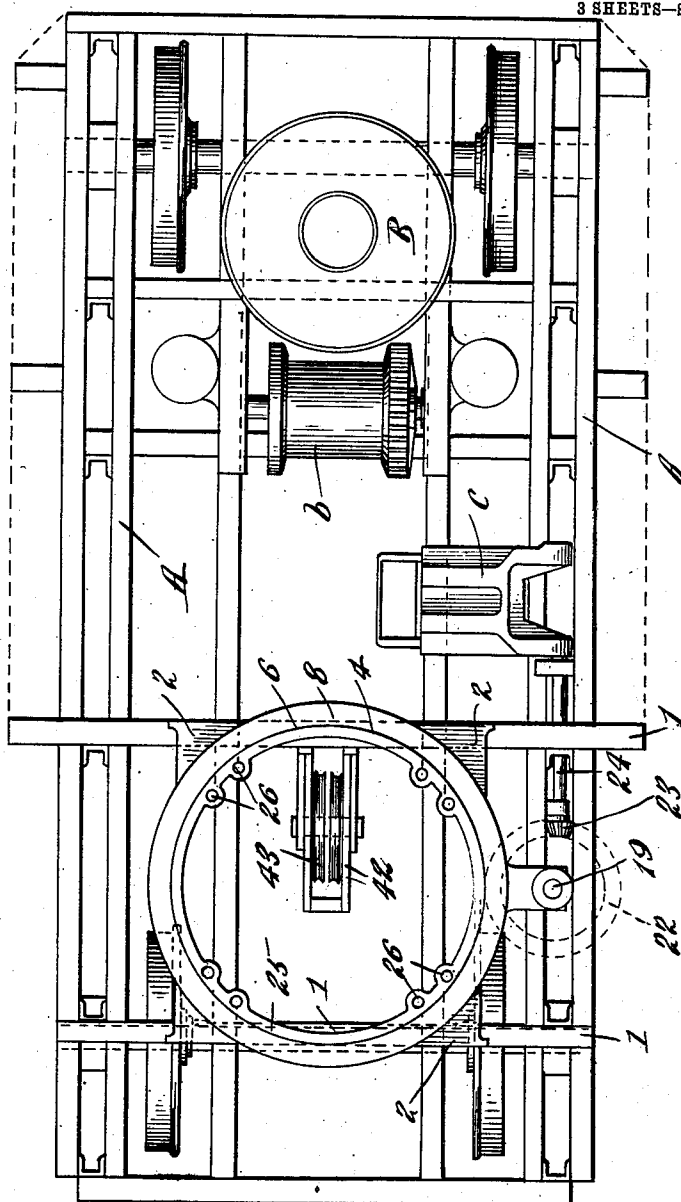
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3 SHEETS—SHEET 2.

Fig. 2.

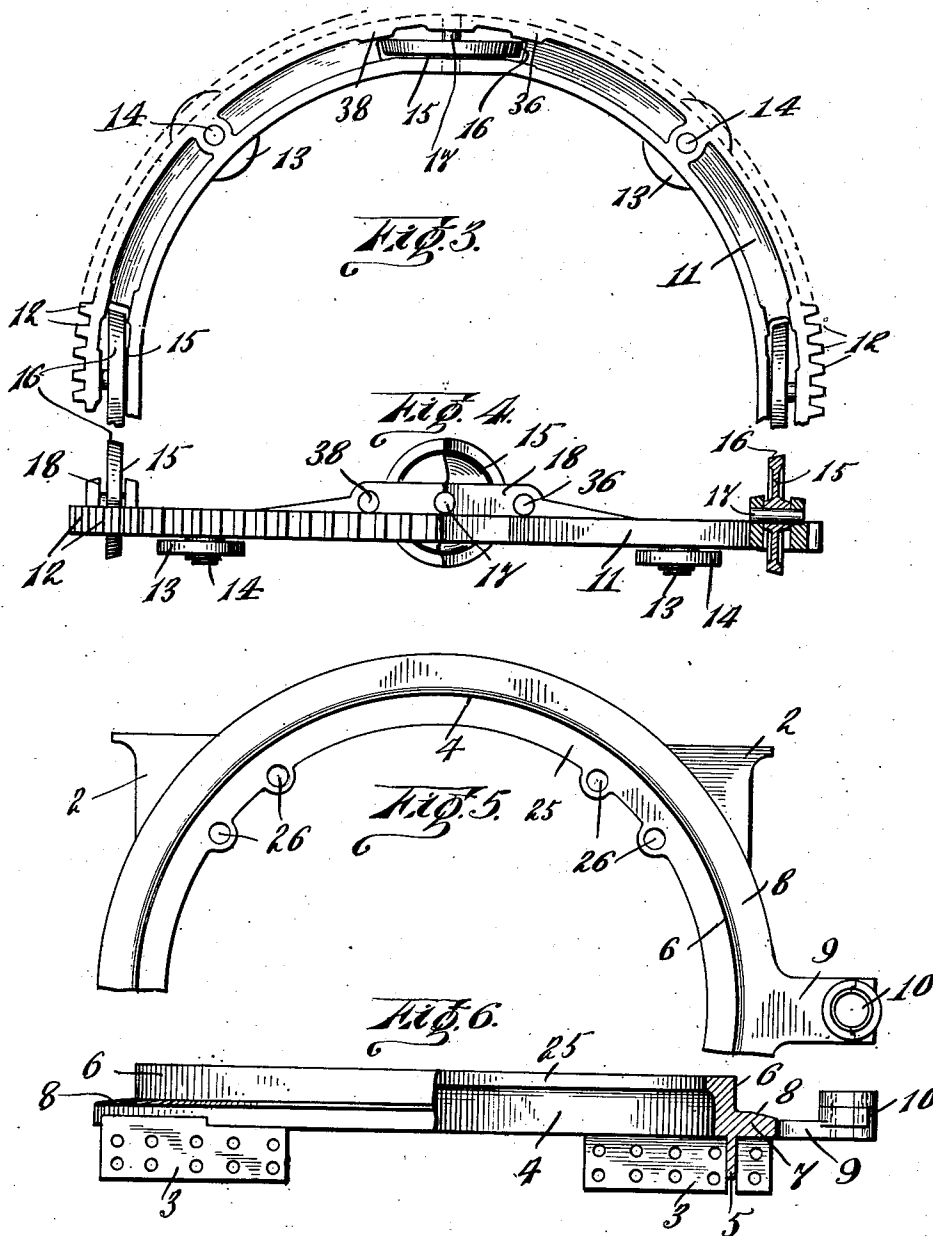


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UNITED STATES PATENT OFFICE.

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EXCAVATING APPARATUS.

946,114.

Specification of Letters Patent. Patented Jan. 11, 1910.

Application filed January 21, 1907, Serial No. 353,185. Renewed July 12, 1909. Serial No. 507,261.

To all whom it may concern:

Be it known that I, LOUIS ARSÈNE DÉSY, a subject of the King of Great Britain, residing in the city and district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Excavating Apparatus; and I do hereby declare that the following is 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.

My invention relates to excavating apparatus.

15 The object of my invention is to provide a fixed boom support on a truck frame, and to provide means for balancing the boom on the support.

20 A further object is to provide means for rotating the boom around the support and pivoting the boom to permit its movement in a vertical plane.

25 A further object is to provide a slidably adjustable support for the boom; and, my invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

30 In the accompanying drawings, forming part of this application, I have illustrated one form of embodiment of my invention, in which drawings similar reference characters designate corresponding parts, and in which:

35 Figure 1 is a side elevation; Fig. 2 is a plan view, the boom, its fixed support and its rotating means being removed; Fig. 3 is a fragmentary detail in plan of a movable supporting ring; Fig. 4 is a fragmentary detail, partly in side elevation, and partly broken away, of the movable supporting ring; Fig. 5 is a fragmentary detail in plan of a portion of a fixed supporting track; Fig. 6 is a fragmentary detail in side elevation, partly in section, of the fixed supporting track; and, Fig. 7 is a fragmentary detail, partly in rear elevation and partly in section, of the upper end of the boom support.

Referring to the drawings, A designates 50 a wheeled truck of suitable construction, adapted to support a hoisting engine B, which may actuate a winding drum b. A suitable rotating engine C is disposed on the truck, and is adapted to actuate the boom

rotating or swinging mechanism herein described.

Disposed transversely of the truck A are supporting cross pieces 1 of channel iron construction. Disposed on the cross pieces 1 are triangular shaped braces 2 provided with flanges 3 riveted to the cross pieces 1.

60 Disposed on the triangular braces 2 and the cross pieces 1 is a circular supporting track designated as a whole by the numeral 4, provided with a lower flange 5 inserted into the flanges 3 of said braces, and bearing against the cross pieces 1, so that the track is firmly supported. Said supporting track is provided with an upwardly extending vertical flange 6 and a horizontal flange 7, having an inclined face 8. Projecting from one side of the horizontal flange 7 is a neck 9, formed with a bearing 10, for the purpose hereinafter described.

75 Disposed over the supporting track 4 is a supporting ring 11, provided with peripheral teeth 12. Horizontal friction reducing wheels 13 are mounted on the vertical axles 14 carried by the supporting ring 11, and are adapted to bear on the vertical flange 6. Vertical wheels 15, provided with beveled faces 16, are mounted on the horizontal axles 17 adjacent the periphery of the supporting ring 11, and the beveled faces 16 are adapted to bear on the inclined face 8 of the flange 7, so that when the supporting ring 11 is rotated, a smooth bearing is provided which resists strains set up at right angles to the axis of the supporting ring, yet which provides a structure easily assembled.

90 Bearing blocks 18 are formed on or secured to the upper surface of the supporting ring 11 and form a supporting means for the horizontal axles 17, carrying the rotatable members 15. A vertical shaft 19 has one end disposed in the bearing 10 formed on the neck 9 of the supporting track 4, and has its opposite end disposed in a bearing 20 formed on the truck A. Secured on the upper end of the shaft 19 is a pinion 21, disposed in mesh with the peripheral teeth 12 of the supporting ring 11. By rotating the shaft 19, the ring 11 will be caused to rotate and to carry with it the connecting mechanism hereinafter described.

105 As a means for rotating the shaft 19, a beveled gear 22 is secured to its lower end, and disposed in mesh with a beveled pinion

23 carried on a horizontal shaft 24, which latter shaft is adapted to be driven from a suitable rotating engine C carried by the truck A.

3 An inwardly projecting horizontal flange 25 is formed on the supporting track 4, and is provided with openings 26 adapted to receive suitable securing members passed through the lower ends of the legs 27 of a boom support, which is preferably of a trussed construction, but which may be of any other construction which is hollow or tubular in nature to permit the passage of actuating ropes through its center.

15 Secured on the upper end of the boom support 27 is a tubular head 28, on which is disposed a rotatable collar 29, maintained in place as by means of a ring 30 and a bolt 31 disposed horizontally through the ring. The collar 29 is provided with lugs 32 on each side, adapted to pivotally receive the end of the boom D and to receive the end of a counterbalanced brace 33. A stay 34 is secured to the outer end of the brace 33, and said stay and brace are adapted to support a plurality of removable weights 35. The lower end of the stay 34 is pivoted as at 36 to the bearing blocks 18 carried by the supporting ring 11.

30 A suitable hollow stay 37 has its lower end pivoted as at 38 to the bearing block 18 opposite to the lower end of the stay 34, and slidably disposed in the stay 37 is a boom supporting arm 39, adapted to be adjustably secured to the stay 37 as by means of the bolts or other insertible members 40 disposed through the wall of the stay 37 and the arm 39. The upper end of the arm 39 is pivoted as at 41 to the boom D, which may be of any suitable metallic construction, but is preferably of the "box" type. The boom D being raised or lowered to the desired degree of inclination, may be fixed in said position by means of the bolts 45 40, and may then be swung into any desired vertical plane.

Secured to one of the cross pieces 1 is a yoke 42 carrying the sheaves 43 adapted to receive the actuating ropes 44, which ropes are passed over the sheaves 45 disposed in a bearing 46 having a rope guide and being disposed adjacent the pivoted end of the boom D. The ropes are then disposed over the sheaves 47 disposed in a bearing 48 adjacent the free end of the boom D.

Carried by the free end of the boom is a suitable clamping mechanism F, through which is slidably disposed the beam E carrying the bucket G, all of which may be of any suitable type or construction, but preferably of the construction shown in my allowed United States application Serial Number 291,448, it being intended that the ropes 44 should form actuating means for opening and closing the bucket G.

In the operation of the invention, the boom support 27 being rigidly secured on the supporting track 4, the boom may be readily swung around the boom support by means of the rotatable supporting ring 11, to which is connected the stays 34 and 37, which stays are connected with the boom D. To raise or lower the boom D the clamp F may be caused to engage the beam E, and the ropes 44 actuated to raise the boom. The boom D being free to swing with the collar 29, it may be carried completely through a circle on its pivotal support, without changing the position of the truck A, which in practice is generally placed upon suitable supporting tracks. The boom support being fixed and only the boom itself being rotatable, it should be apparent that the boom is easily adjusted on account of its comparative lightness of weight.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In an excavating apparatus, the combination comprising a truck, a boom support fixed on the truck, a boom pivoted to swing around the support, means for adjustably supporting the boom intermediate of its ends, and means for swinging the boom around the support.

2. In an excavating apparatus, the combination comprising a truck, a boom support fixed on the truck, a boom pivoted to swing on the support, means for supporting the boom intermediate of its ends, and means for swinging the boom around the support.

3. In an excavating apparatus, the combination comprising a truck, a boom support fixed on the truck, a boom pivoted to swing on the support, adjustable means for supporting the boom, and means for swinging the boom around the support.

4. In an excavating apparatus, the combination comprising a truck, a boom support fixed on the truck, a boom pivoted to swing around the support, means for adjustably supporting the boom intermediate of its ends, said means comprising a pivotally mounted hollow stay, a supporting arm adjustably mounted therein, and means for swinging the boom around the support.

5. In an excavating apparatus, the combination comprising a supporting truck, channel irons disposed transversely of the truck, triangular braces riveted to the channel irons, a supporting track carried by the braces, a boom support fixed on the track, a boom pivoted to swing on the support, rotatable supporting means disposed on the track, and connected to the boom, and means for rotating the supporting means.

6. In an excavating apparatus, the combination comprising a supporting truck, channel irons disposed transversely of the truck, a supporting track carried by the

channel irons and provided with an inwardly extending flange, a boom support secured on the inwardly extending flange, a boom pivoted to swing on the support, rotatable supporting means disposed on the track and connected to the boom, and means for rotating the supporting means.

7. In an excavating apparatus, the combination comprising a supporting truck, a circular track secured to the truck and provided with a vertical flange and an inclined flange, a boom support fixed on the track, a supporting ring rotatably disposed on the track, friction reducing members carried by the ring and adapted to run on said flanges on the track, means for rotating the supporting ring, a boom pivoted to swing around the boom support, and stays connecting the supporting ring and the boom.

8. In an excavating apparatus, the combination comprising a supporting truck, a circular track secured to the truck and provided with a vertical flange and an inclined flange, a boom support fixed on the track, a supporting ring rotatably disposed on the track, horizontal rollers carried by the supporting ring and disposed to bear on the vertical flange of the track, vertical rollers carried by the supporting ring and provided with beveled faces disposed to run on the inclined flange, means for rotating the supporting ring, a boom pivoted to swing around the boom support, and stays connecting the supporting ring and the boom.

9. In an excavating apparatus, the combination comprising a supporting truck, a circular track secured to the truck and provided with a vertical flange and an inclined flange, a boom support fixed on the track, a supporting ring rotatably disposed on the track, horizontal rollers carried by the supporting ring and disposed to bear on the vertical flange of the track, vertical rollers carried by the supporting ring and provided with beveled faces disposed to run on the inclined flange, means for rotating the supporting ring, a boom pivoted to swing around the boom support, and stays connecting the supporting ring and the boom, said stays being pivoted at their lower ends to bearing blocks secured to the supporting ring and having their upper ends in pivotal connection with the boom.

10. In an excavating apparatus, the combination comprising a supporting truck, a supporting track fixed on the truck and provided with a projecting bearing, a boom support carried by the track, a rotatable ring disposed on the track and provided with peripheral teeth, a vertical shaft disposed in said projecting bearing, a gear on the shaft

disposed in mesh with said peripheral teeth, means for rotating the shaft, a boom pivoted to swing on the boom support, and means for connecting the boom and the rotatable ring. 65

11. In an excavating apparatus, the combination comprising a supporting truck, a supporting track carried thereby, a boom support secured to the track, rotatable supporting means disposed on the track, a rotatable collar on the aforesaid support, a boom pivoted to swing on the support, connections between the boom and collar, and means for swinging the boom. 70

12. In an excavating apparatus, the combination comprising a supporting truck, a hollow boom support fixed on the truck, a collar rotatably disposed on the boom support, a ring secured on the support above the collar, a boom pivoted to the collar below the ring, stays connecting with the boom at their upper ends, and a rotatable supporting ring to which the stays are pivotally connected at their lower ends. 75

13. In an excavating apparatus, the combination comprising a supporting truck, a hollow boom support fixed on the truck, a collar rotatably disposed on the boom support and provided with projecting lugs, a ring fixed on the support above the collar, a boom pivoted to the lugs below the ring, a stay connected with the boom at one end, a stay pivoted to the lugs at one end, and a rotatable supporting ring to which the stays are connected at their opposite ends. 80

14. In an excavating apparatus, the combination comprising a supporting truck, a fixed boom support on the truck, a boom pivoted to swing around the support, an arm pivoted to the boom, a hollow stay in which the arm is disposed, a rotatable supporting ring to which the stay is secured, and insertible members disposed through the stay and the arm. 85

15. In an excavating apparatus, the combination comprising a supporting truck, cross beams carried by the truck, a fixed hollow boom support disposed on the truck, a yoke immediately below the boom support, sheaves carried by the yoke, a boom pivoted to swing around the support, sheaves carried by the pivoted end of the boom in alignment with said sheaves, sheaves carried by the opposite end of the boom, and guides carried adjacent the two last mentioned sheaves. 100

In witness whereof I have hereunto set my hand in the presence of two witnesses. 110

LOUIS ARSÈNE DÉSY.

Witnesses:

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