No. 850,356. PATENTED APR. 16, 1907.

L. A. DÉSY.

EXCAVATOR BEAM.

APPLICATION FILED JAN. 21, 1907.

4 SHEETS—SHEET 1.

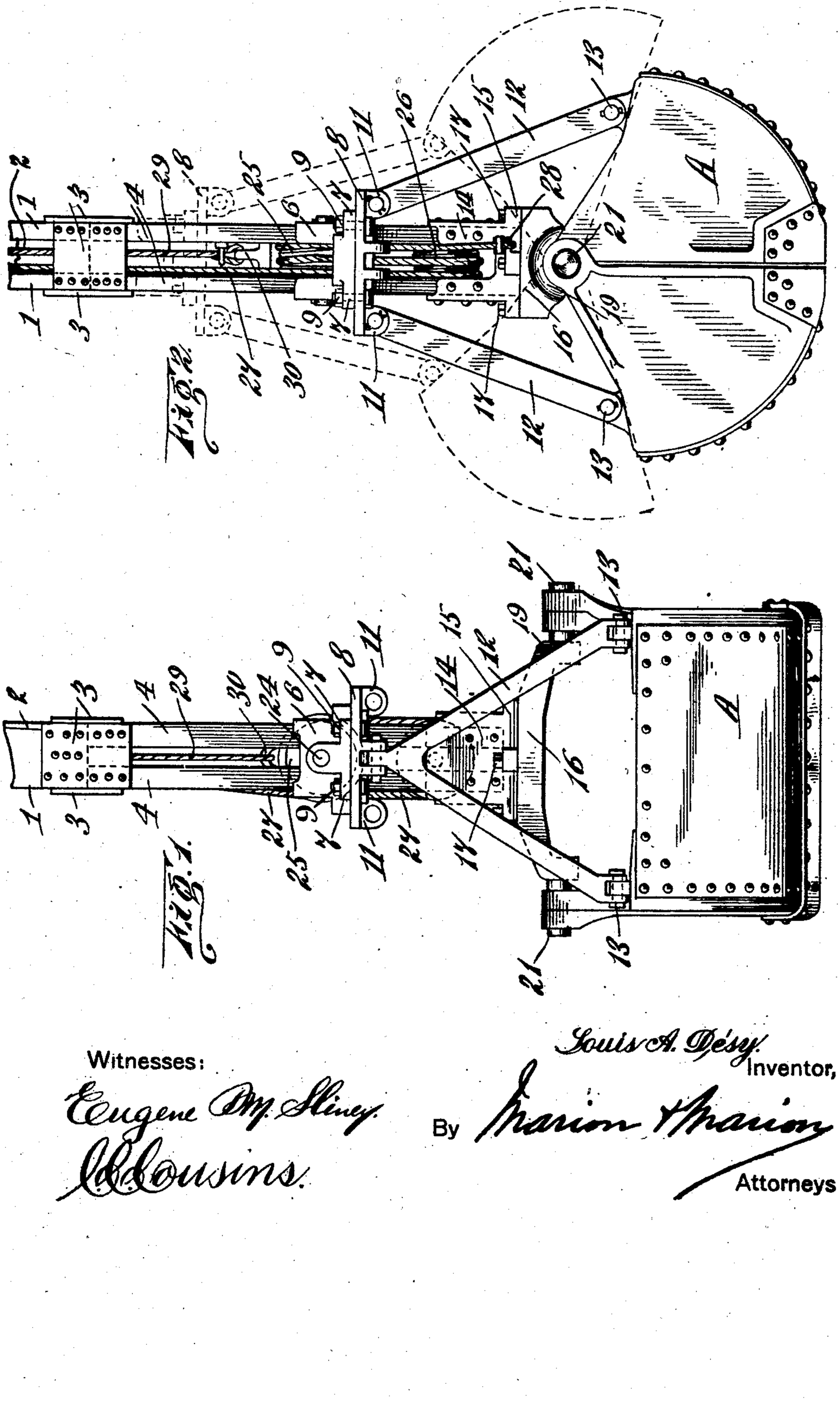

Fig. 2.

Fig. 1.

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4 SHEETS—SHEET 2.

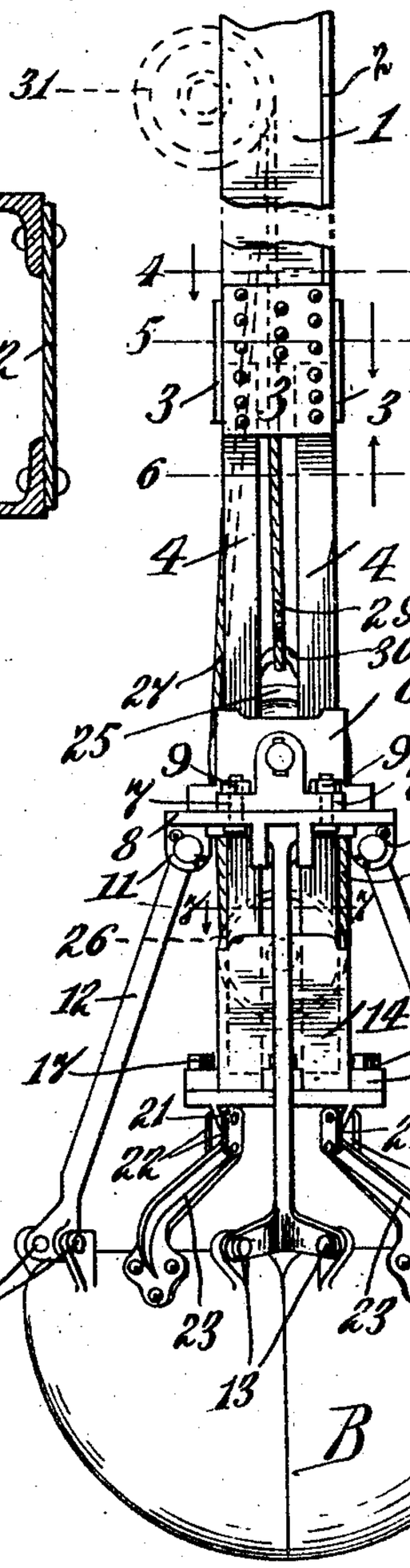

Fig. 3.

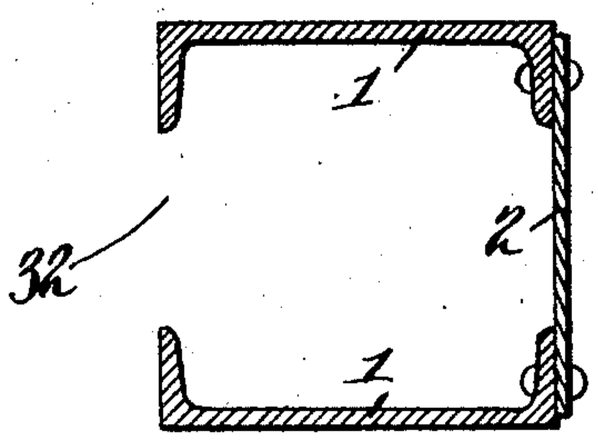

Fig. 4.

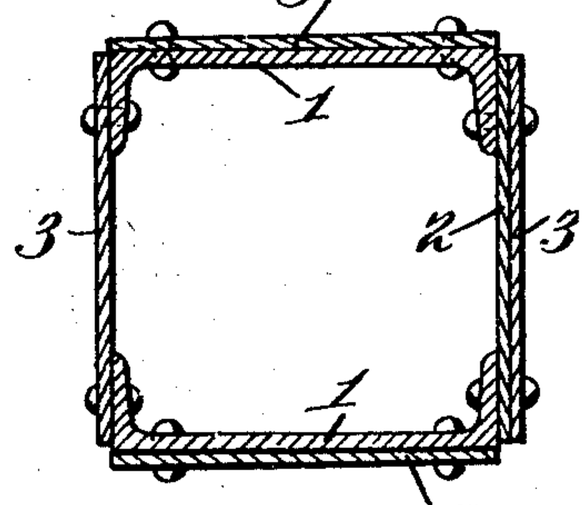

Fig. 5.

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4 SHEETS—SHEET 3.

Fig. 6.

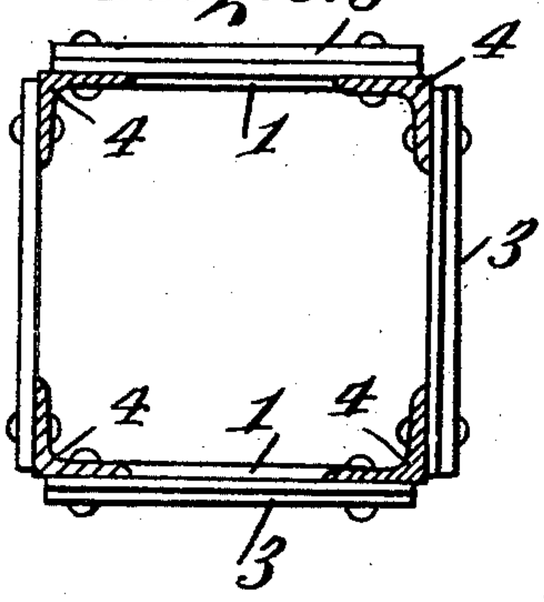


Fig. 7.

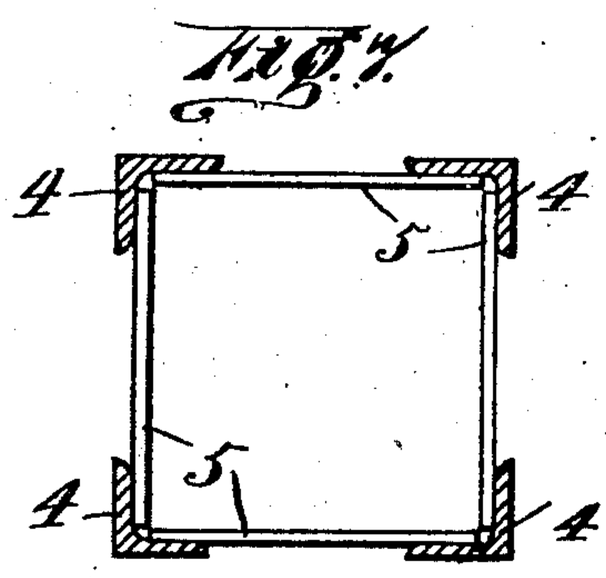


Fig. 8.

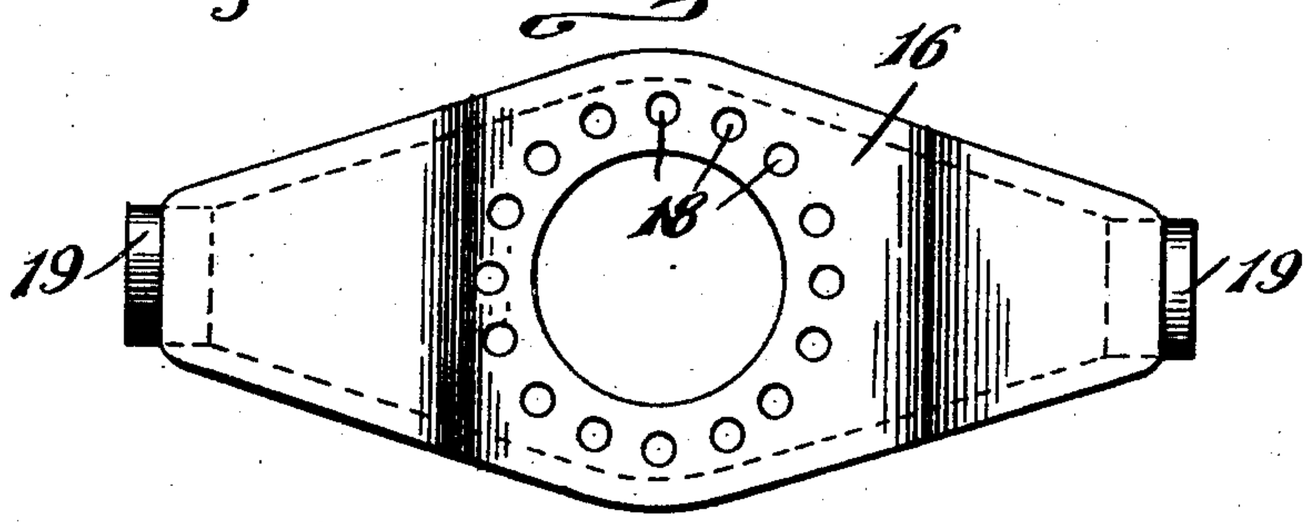


Fig. 9.

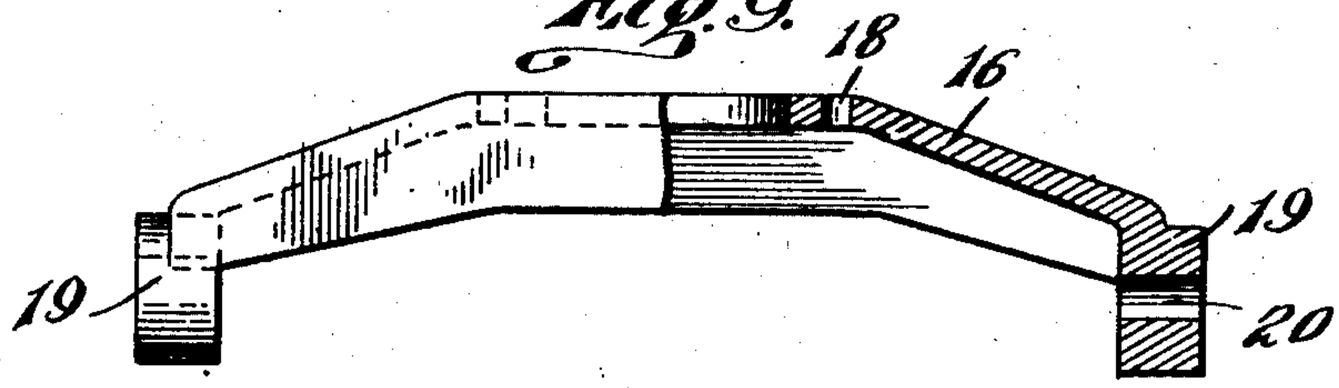
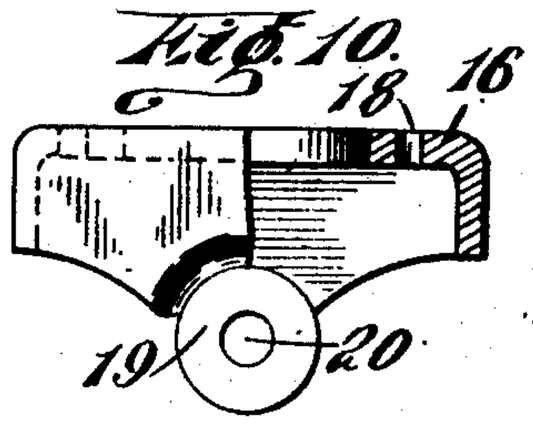


Fig. 10.



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4 SHEETS—SHEET 4.

Fig. 11.

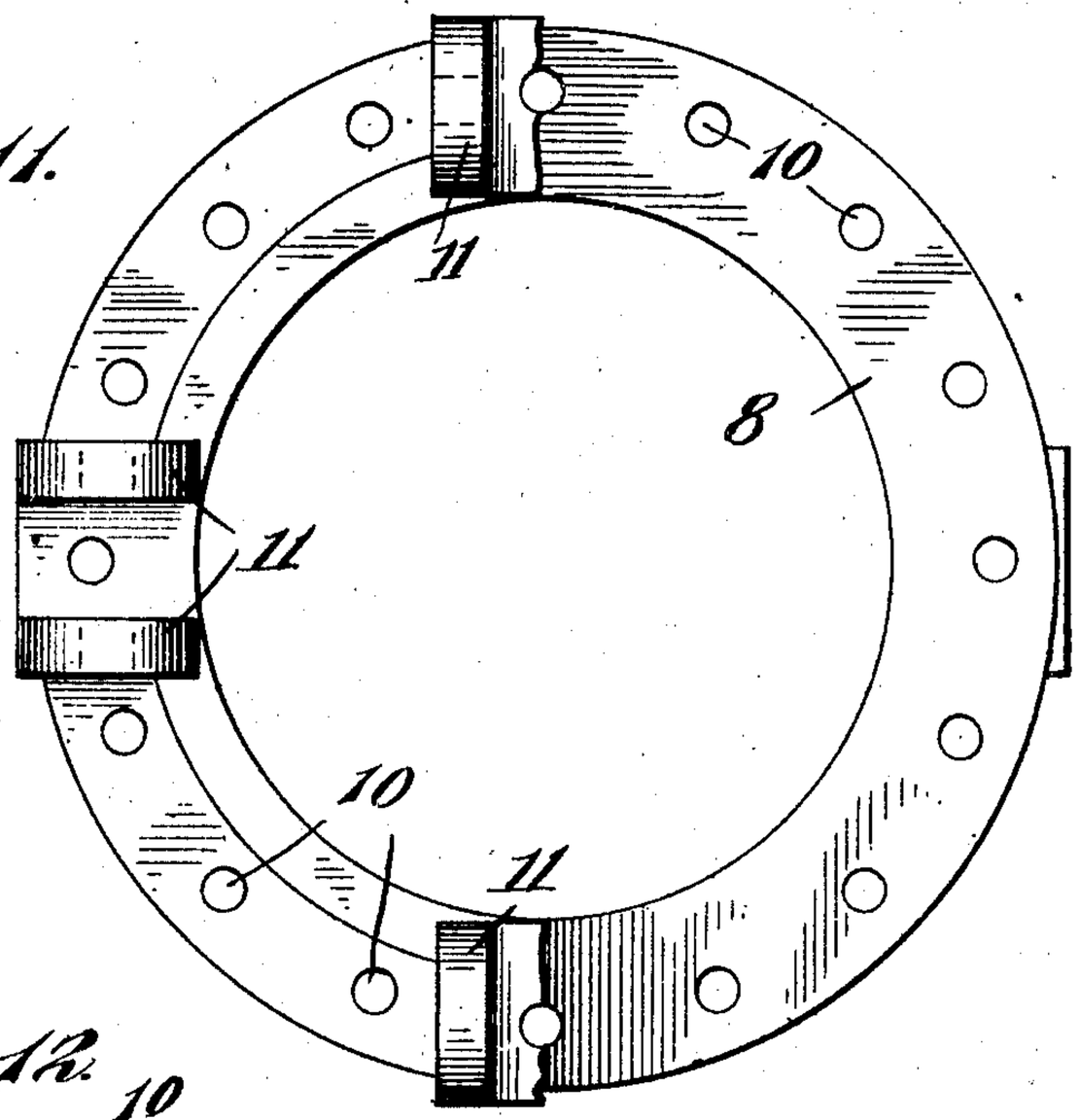
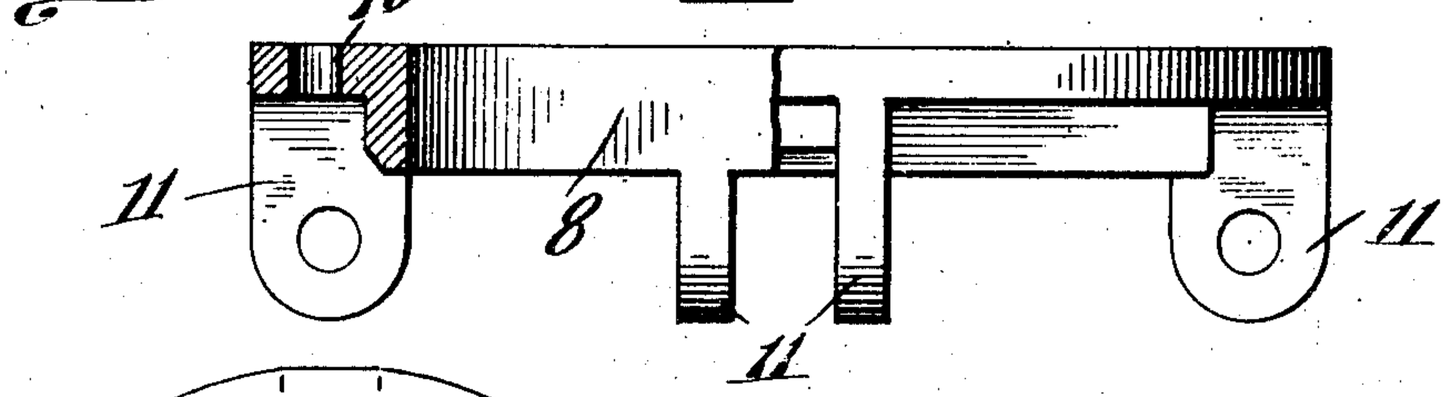


Fig. 12.



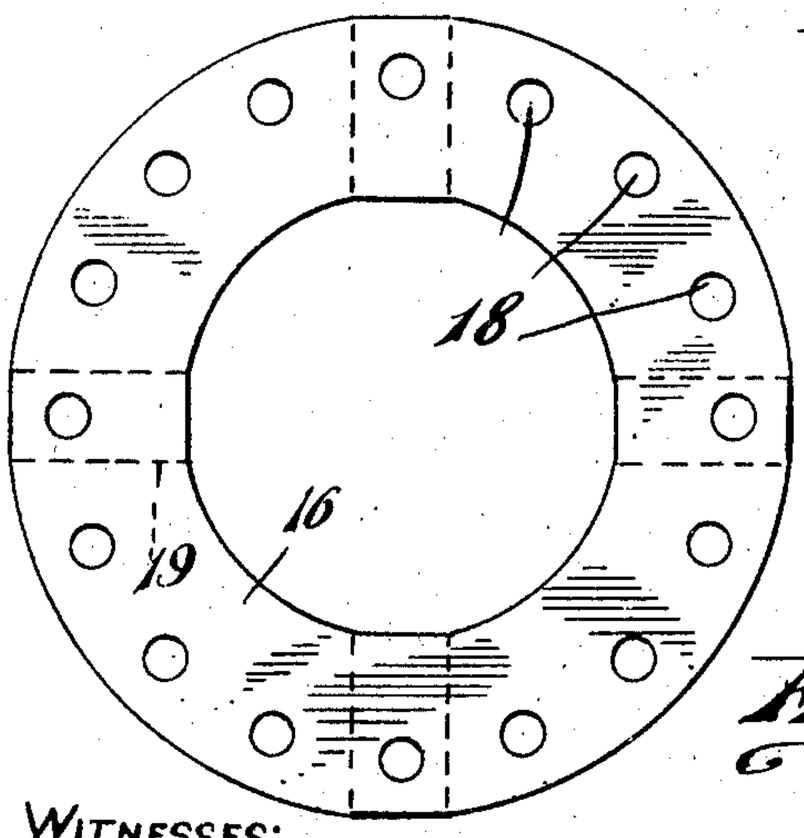
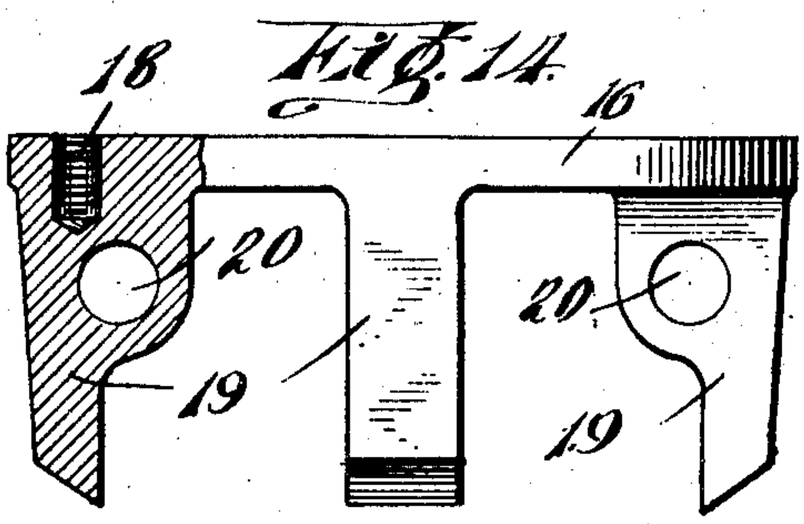


Fig. 13

Fig. 14.



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UNITED STATES PATENT OFFICE.

LOUIS ARSÉNE DÉSY, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO JOSEPH WILLIAM HARRIS, OF MONTREAL, CANADA.

EXCAVATOR-BEAM.

No. 850,356. Specification of Letters Patent. Patented April 16, 1907.

Application filed January 21, 1907. Serial No. 353,184.

To all whom it may concern:

Be it known that I, LOUIS ARSÉNE DÉSY, a subject of the King of Great Britain, residing at the city and district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Excavator-Beams; 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 excavator-beams.

The object of my invention is to provide means for mounting a bucket on a beam so that the bucket may be shifted axially of the beam and which will permit the attachment of either a clam-shell or an orange-peel bucket.

A further object is to provide a beam constructed to permit the passage therein of the actuating-ropes of the bucket.

More specifically, the object is to provide means for detachably securing a bucket on a hollow beam, so that the bucket may be shifted axially of the beam or easily detached.

A further object is to provide a beam with an open side adapted to permit the actuating sheave to project therein, to permit a wide range of vertical adjustment of the beam with relation to its raising and lowering means; and my invention consists of the construction, combination, and arrangement of parts, as herein illustrated, described, and claimed.

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—

Figure 1 is a side elevation. Fig. 2 is an end elevation. Fig. 3 is a side elevation illustrating the application of an orange-peel bucket. Fig. 4 is a horizontal section on line 4 4 of Fig. 3 looking in the direction indicated by the arrow. Fig. 5 is a horizontal section on line 5 5 of Fig. 3 looking in the direction indicated by the arrow. Fig. 6 is a horizontal section on line 6 6 of Fig. 3 looking in the direction indicated by the arrow. Fig. 7 is a horizontal section on line 7 7 of Fig. 3 looking in the direction indicated by the arrow. Fig. 8 is a plan view of a clam-shell-bucket-attaching means. Fig. 9 is a side elevation, partly in section, of a clam-shell-bucket-attaching means. Fig. 10 is an end elevation, partly in section, of a clam-shell-bucket-attaching means. Fig. 11 is a bottom plan view of a circular attaching member adapted for use with either a clam-shell or an orange-peel bucket. Fig. 12 is a side elevation, partly in section, of the attaching member. Fig. 13 is a plan view of an orange-peel-bucket-supporting member; and Fig. 14 is a side elevation, partly in section, of an orange-peel-bucket-supporting member.

Referring to the drawings, 1 designates a pair of vertically-disposed channel-iron members connected at one side by a plate 2, which extends from the lower ends thereof to the upper ends, leaving the opposite side open. Disposed around the lower ends of the channel-iron members 1 and the plate 2 are straps 3, which are riveted solidly to said members 1 and 2. Projecting into the angles of the channel members 1 are the upper ends of angle-irons 4, which are riveted to said straps 3 and have their lower ends connected by means of the braces 5. (Shown in Fig. 7 only.)

Slidably disposed on the beam formed by the angle-iron members 4 and hereafter referred to as the "beam" is a casing 6, provided with ears 7. Disposed around the beam below the casing 6 is a circular flanged member 8, adapted to be connected to the casing 6 by means of the fastening members 9, which may be disposed through any of the openings 10 which are arranged in a circle in the member 8. By this construction the member 8 may be shifted axially of the casing 6, which is slidably disposed on the beam, so that it will not rotate therewith, the casing being preferably of angle-iron or similar construction.

Formed on the under side of the axially-adjustable member 8 are bearings 11, adapted to receive the upper ends of the links 12, the lower ends of which links are pivoted, as at 13, to the outer edges of either a clam-shell bucket A or an orange-peel bucket B. In either event the link 12 is of bifurcated construction, although the bifurcation in the form shown in Fig. 3 is shorter than that shown in the other figures, as the points of pivotal support for the clam-shell bucket are more widely separated than for an orange-peel bucket; also, in the form for a

clam-shell bucket only two points of pivotal support are needed for the upper ends of the links 12; but the member 8 is provided with four points of pivotal support, so as to be adapted for use in connection with an orange-peel bucket, which needs more than two points of support for the upper ends of the links 12.

Fixed to the lower end of the beam is a shoe 14, provided with a horizontal flange 15, against which is disposed a bucket-supporting member 16, adapted to be maintained thereon by means of bolts 17, disposed through openings 18, arranged in a circle on the bucket-supporting member, so that the bucket-supporting member may be easily detached or adjusted axially of the beam.

In both of the forms of bucket-supporting members illustrated there are provided thereon depending ears having openings 20 therein adapted to receive the pins 21, by means of which the leaves of the clam-shell bucket may be pivotally secured or by means of which the links 21 of the orange-peel bucket B may be held. When an orange-peel bucket is used, the arms 23 are pivoted to the links 21 in order to limit the movement of the leaves of the bucket when they are actuated on their pivotal supports 13.

Disposed through the casing 6 and through the lower end of the beam is a horizontal shaft 24, carrying the sheaves 25. Carried by the lower end of the beam are lower sheaves 26, corresponding to the sheaves 25. Said sheaves lie within the beam and have passed thereover an operating-rope 27, the lower end of which is connected to the securing member 28 on the outside of the beam adjacent its lower end. A suitable elevating-rope 29 is secured to an eye 30 within the beam, and both of said ropes are disposed over the sheaves 31, which may be carried by a suitable boom or other actuating mechanism, said sheaves 31 projecting through the open space 32 left on the side of the beam opposite the plate 2, so that the beam may be carried upward until the straps 3 contact with the sheaves 31.

On account of the circular arrangement of the openings 18 in the bucket-supporting members 16 and the corresponding circular arrangement of the openings 10 in the bucket-attaching member 8 it should be evident that either of the buckets A or B may be easily attached and removed and may be easily shifted axially of the beam.

In the operation of the invention the beam and its connecting parts are raised or lowered by means of the rope 29, while the bucket is opened or closed by means of the rope 27, the function of the ropes and sheaves, in combination with the movable parts of the bucket, being the same as in my allowed United States case, No. 291,448.

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 beam, and means for connecting a bucket to the beam to permit the bucket being shifted axially.

2. In an excavating apparatus, the combination comprising a beam, bucket-supporting members carried by the beam, and means for adjustably securing the bucket-supporting members on the beam to permit axial shifting thereof.

3. In an excavating apparatus, the combination comprising a beam, and an axially-shiftable bucket on the beam.

4. In an excavating apparatus, the combination comprising a beam, and an axially-shiftable vertically-movable bucket on the beam.

5. In an excavating apparatus, the combination comprising a beam, and an axially-shiftable bucket detachably secured to the beam.

6. In an excavating apparatus, the combination comprising a beam, a casing slidably disposed on the beam, a circular plate provided with openings, securing members removably disposed through the casing and the openings, bucket-operating members connected to the circular plate, a bucket to which the operating members are connected, and means for supporting the bucket on the beam.

7. In an excavator-beam, a plurality of channel-iron members, a plate secured to one side of said members, straps riveted to the lower ends of said members, angle-iron members riveted to the straps and abutting against the lower ends of said channel-iron members, braces connecting the lower ends of the angle-iron members, a digging-bucket pivotally secured to the lower ends of the angle-iron members, and means slidable on the angle-iron members for opening and closing the bucket.

8. A built-up excavator-beam of hollow construction having an open side.

9. A built-up excavator-beam of hollow construction having an open side, operating-sheaves projecting into the open side, actuating-ropes inside of the beam and disposed over the sheaves, and a bucket on the beam adapted to be operated by the ropes.

10. In an excavating apparatus, the combination of a hollow beam, a casing slidably disposed on the beam, a bucket-actuating member axially adjustable on the casing and provided with bearings, links disposed in the bearings, a bucket pivoted to the links, and means for pivotally connecting the bucket to the lower end of the beam.

11. In an excavating apparatus, the combination of a beam, a bucket-actuating member slidably disposed on the beam, a plate

provided with a circle of openings, securing means disposed through a portion of the actuating member and the openings, a shoe secured to the lower end of the beam, a bucket-supporting member provided with a circle of openings, securing members disposed through a portion of the shoe and said openings, a bucket, means for connecting the bucket to said plate and said shoe, and means for moving said bucket-actuating member.

12. In an excavating apparatus, the combination of a beam, a bucket-actuating member slidably disposed on the beam, a plate provided with a circle of openings, securing means disposed through a portion of the actuating member and the openings, a shoe secured to the lower end of the beam, a bucket-supporting member provided with a circle of openings, securing members disposed through a portion of the shoe and said openings, said plate and said supporting member being provided with ears having openings, links having their upper ends disposed between said ears and pivotally connected therewith, a bucket pivotally secured to the lower ends of the links, and means for moving said actuating member.

13. In combination with a hollow beam having an open side, a casing slidably disposed on the beam, a shaft carried by the casing, sheaves rotatably disposed on the shaft, sheaves within the lower end of the beam, an eye secured to the outside of the beam, an actuating-rope disposed around the sheaves and having its lower end connected to the eye, a rope-retaining member fixed within the beam, an elevating-rope secured thereto, actuating-sheaves projected into the open side of the beam and adapted to receive said ropes, and a bucket connected with the casing and the lower end of the beam and adapted to be actuated by said ropes.

14. In combination with a beam, a pair of bucket-supporting members, each provided with a circle of openings, and each provided with link-receiving members, means coöperating with said circle of openings for adjustably attaching said supporting means to the beam, and a bucket pivotally connected with said supporting means.

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

LOUIS ARSÉNE DÉSY.

Witnesses:

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E. M. SLINEY.