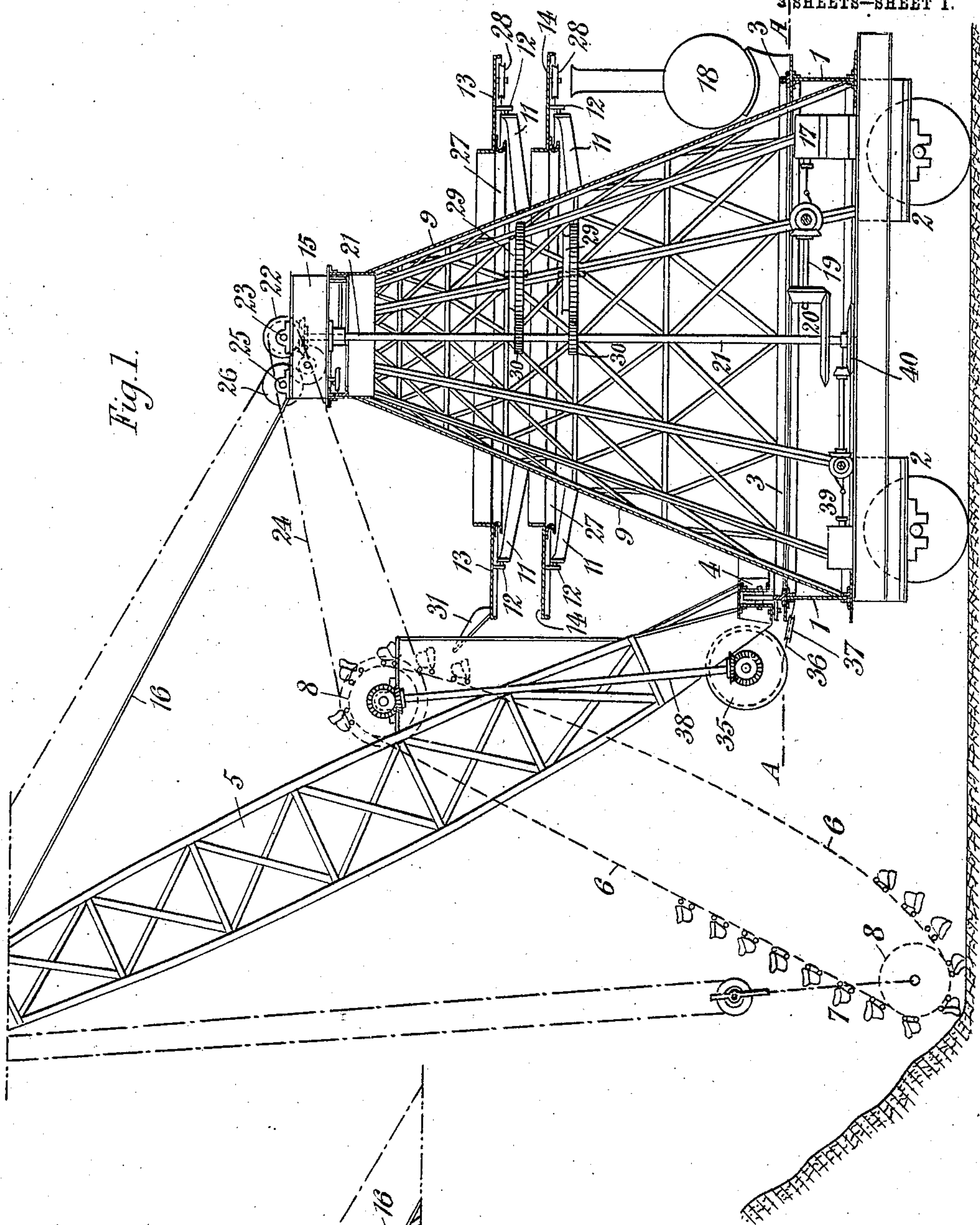


No. 847,331.

PATENTED MAR. 19, 1907.

A. R. GROSSMITH.
EXCAVATING MACHINERY.
APPLICATION FILED JULY 23, 1906.

3 SHEETS—SHEET 1.



Witnesses
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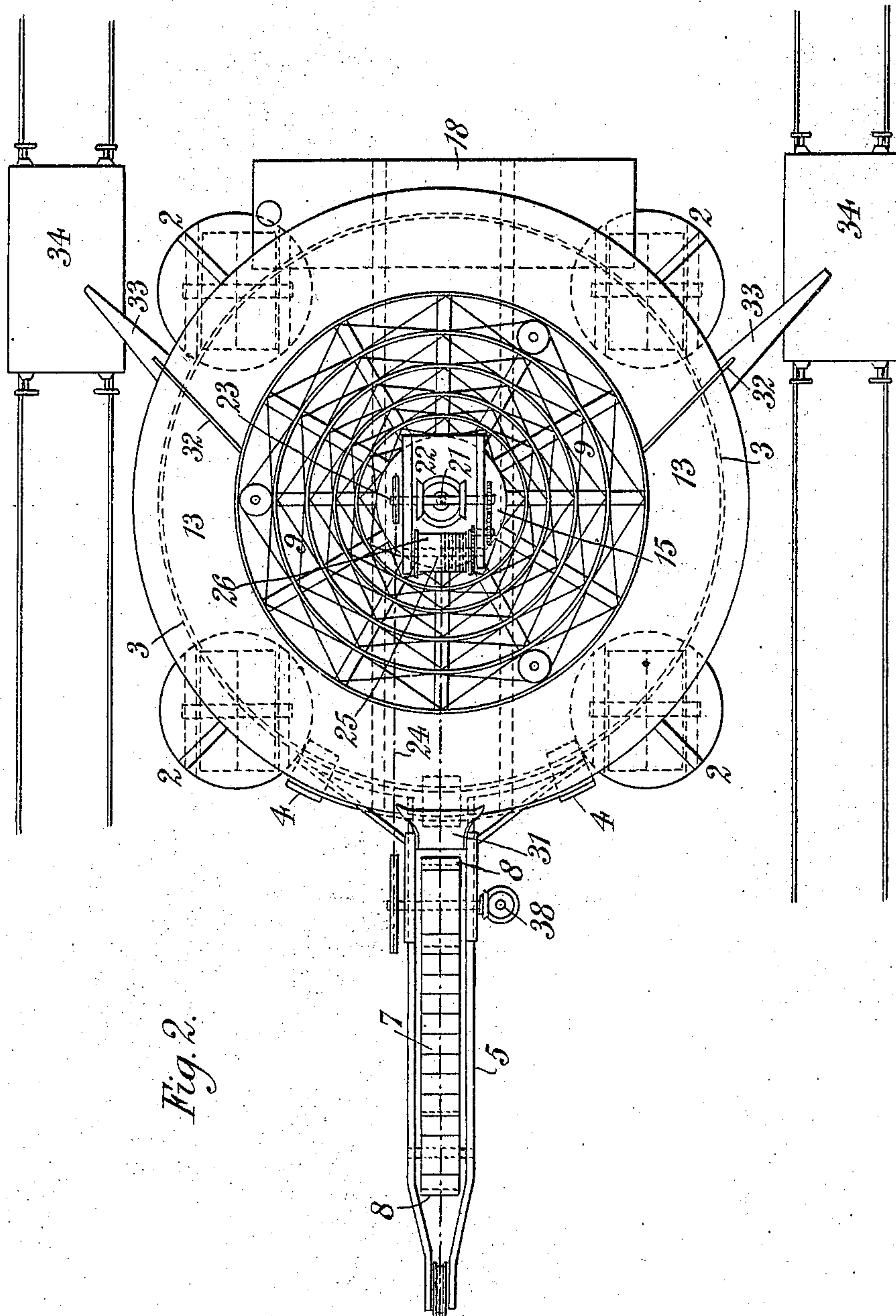


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

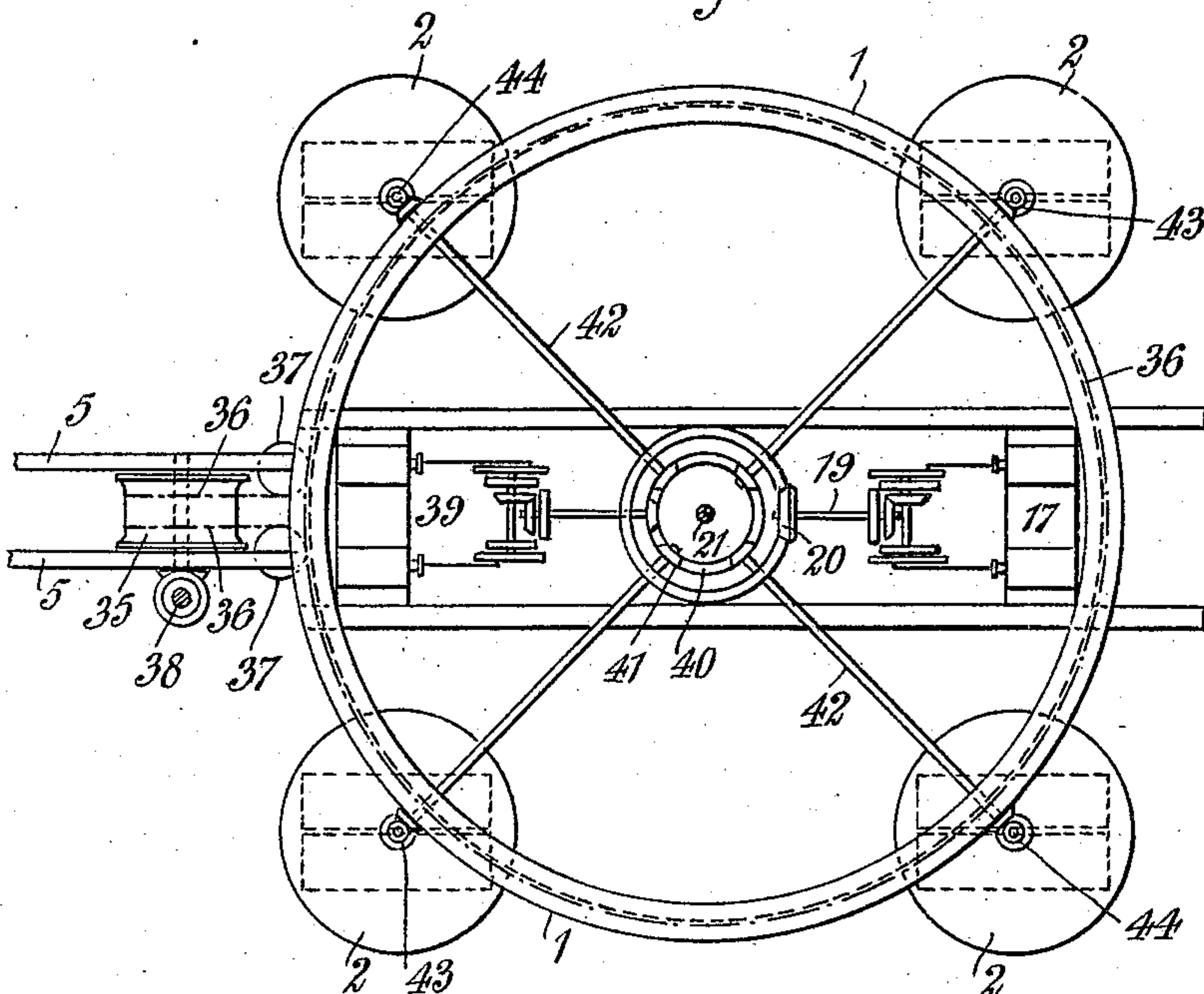
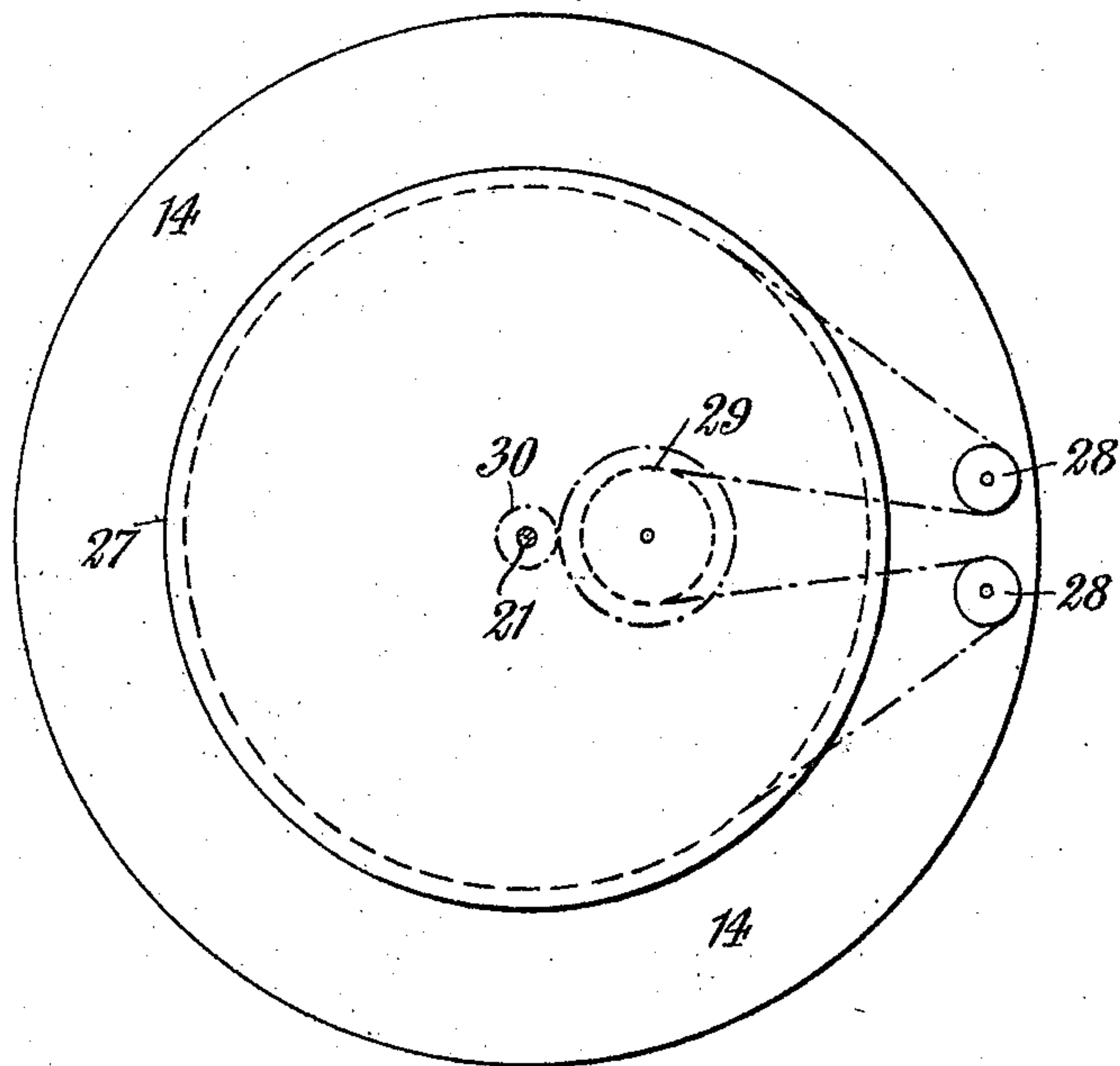


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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EXCAVATING MACHINERY.

No. 847,331.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed July 23, 1906. Serial No. 327,408.

To all whom it may concern:

Be it known that I, ALFRED ROGER GROSSMITH, works manager of Lloyds Ironstone Company, Limited, a subject of the King of Great Britain, residing at Corby, near Kettering, England, have invented certain new and useful Improvements in and Relating to Excavating Machinery and the Like, of which the following is a specification.

This invention relates to an improved appliance for the excavation and removal of materials—such, for instance, as is required in the removal of earths and the like in mines, railway and canal cuttings, docks, and harbors and for excavating purposes generally—and has for its object a means whereby the said materials may be removed and loaded in a much quicker and more convenient manner than has hitherto been the case. For this purpose I carry an excavator or dredge on traveling bogies or trucks, having mounted above them a circular girder or frame, upon which is carried a tower of suitable construction. Around the top of the said circular girder or frame is attached a rail-path, traveling upon which is a carriage supporting the bottom end of the jib or boom which carries the excavator or dredge arm. At any convenient elevations on the said tower are provided brackets carrying one or more annular platforms capable of revolving in a horizontal plane about the axis of the tower. Upon the top of the tower is provided a turn-table so arranged as to support the jib by means of suitable stays and revolve with it. The turn-table is also provided with hoisting machinery for the excavator-arm.

By this invention any large quantities of earth or other materials can be elevated continuously and directly onto the said platform or platforms, and thereby conveyed after being screened, if necessary, to any advantageous position for depositing or loading.

In order that this invention may be clearly understood and more easily carried into practice, I will now describe drawings in which I have illustrated an apparatus constructed according to this invention.

Figure 1 is a sectional elevation of the apparatus. Fig. 2 is a plan. Fig. 3 is a sectional plan on the line A A, Fig. 1. Fig. 4 is an under side view of one of the platforms, showing how it is rotated.

1 is the circular girder or frame, carried on

four trucks 2, which may be supported by wheels on rails, but are preferably such as are described in a specification of even date herewith. On the frame 1 is a rail-path 3, traveling on which is a carriage 4, with vertical and horizontal rollers, supporting the jib 5, carrying the excavator-arm 6, which is here shown provided with a series of ordinary excavating-buckets 7, passing over pulleys 8, but may conveniently be fitted with a digging-drum and conveyer, such as are described in another specification of even date herewith.

9 is a tower of any convenient construction erected on the girder 1 and carrying on brackets 11 and rollers 12 two revolving annular platforms 13 14. At the top of the tower is a turn-table 15, turning on horizontal and vertical rollers and connected by stays 16 to the jib 5.

17 is an engine with furnace and boiler 18, driving by the shaft 19 and bevel-gear 20 the central vertical shaft 21, which passes up to the turn-table 15 and drives by bevel-gear 22 the horizontal shaft 23, which actuates by a chain 24 the upper pulley 8, driving the excavating-buckets. The shaft 23 also drives another shaft 25, to which can be clutched the drum 26 for raising the excavator-arm 6.

The platforms 13 and 14 may be rotated in any convenient way; but they are shown as driven by ropes passing round rings 27 and guide-pulleys 28 on the platforms and drums 29, carried by the tower and provided with teeth gearing with pinions 30 on the vertical shaft 21.

As the material is emptied from the excavator-buckets it falls by a chute 31 onto the platform 13, which may be perforated to screen the material, and thence to the lower platform 14. The unscreened and screened materials are scraped from the platforms by plows 32, which may be adjusted to discharge the material at any point desired—say over chutes 33, delivering into trucks 34, or onto conveyers or distributing-wheels, such as are described in the former specification, Serial No. 327,407.

In order to slew the jib, I may provide a rope-drum 35 at the foot of the jib, having on it a rope 36, passing round guide-pulleys 37 on the carriage 4 and all round the frame 1. This drum may be actuated by a shaft 38

which can be clutched to the upper pulley 8.

When it is required to move the whole machine, the engine 39 may be employed to drive the bevel-wheel 40, loose on the shaft 21 and gearing with bevel-wheels 41 on radial shafts 42, drawing through bevel-gear 43 the vertical shafts 44, passing down through the pivots of the bogies.

Gear may be provided for turning the trucks or bogies when it is desired to move the machine out of the straight course.

The boiler and furnace may be fixed or may be mounted on a carriage capable of moving round the rail-track 3.

What I claim is—

1. In excavating machinery the combination of a circular frame, a carriage capable of movement around the frame, a tower supported by the frame, an annular platform carried by the tower, and means for revolving the platform substantially as described.

2. The combination of a circular frame, a carriage capable of movement around the frame, a jib on the carriage, a tower supported by the frame, an annular platform carried by the tower, a conveyer carried by the jib and adapted to deliver material onto the platform, and means for revolving the platform substantially as described.

3. The combination of a circular frame, a carriage capable of movement around the frame, a jib on the carriage, a tower supported by the frame, a perforated annular platform carried by the tower, an annular platform carried by the tower below the first, a conveyer carried by the jib and adapted to deliver material onto the upper platform, and means for revolving the platforms substantially as described.

4. In excavating machinery the combination of a circular frame, a carriage capable of movement around the frame, a tower supported by the frame, an annular platform carried by the tower, means for revolving the platform, wheels supporting the frame, and means for driving the wheels, substantially as described.

5. The combination of a circular frame, a carriage capable of movement around the frame, a jib on the carriage, a tower supported by the frame, an annular platform carried by the tower, a conveyer carried by the jib and adapted to deliver material onto the platform, means for revolving the platform, wheels supporting the frame, and means for

driving the wheels substantially as described.

6. The combination of a circular frame, a carriage capable of movement around the frame, a jib on the carriage, a tower supported by the frame, a perforated annular platform carried by the tower, an annular platform carried by the tower below the first, a conveyer carried by the jib and adapted to deliver material onto the upper platform, means for revolving the platforms, wheels supporting the frame, and means for driving the wheels substantially as described.

7. The combination of a circular frame, a carriage capable of movement around the frame, a jib on the carriage, a tower supported by the frame, an annular platform carried by the tower, a conveyer carried by the jib and adapted to deliver material onto the platform, means for revolving the platform, a turn-table on the top of the tower connected to the jib, and means carried by the turn-table for operating the conveyer substantially as described.

8. The combination of a circular frame, a carriage capable of movement around the frame, a jib on the carriage, a tower supported by the frame, an annular platform carried by the tower, a conveyer carried by the jib and adapted to deliver material onto the platform, means for revolving the platform, a turn-table on the top of the tower connected to the jib, means carried by the turn-table for operating the conveyer, wheels supporting the frame, and means for driving the wheels substantially as described.

9. The combination of a circular frame, a carriage capable of movement around the frame, a jib on the carriage, a tower supported by the frame, a perforated annular platform carried by the tower, an annular platform carried by the tower below the first, a conveyer carried by the jib and adapted to deliver material onto the upper platform, means for revolving the platforms, a turn-table on the top of the tower connected to the jib, means carried by the turn-table for operating the conveyer, wheels supporting the frame, and means for driving the wheels substantially as described.

ALFRED ROGER GROSSMITH.

Witnesses:

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