

932,857.

R. GLOGNER.
EXCAVATOR OR DREDGER.
APPLICATION FILED MAY 7, 1908.

Patented Aug. 31, 1909.
4 SHEETS—SHEET 1.

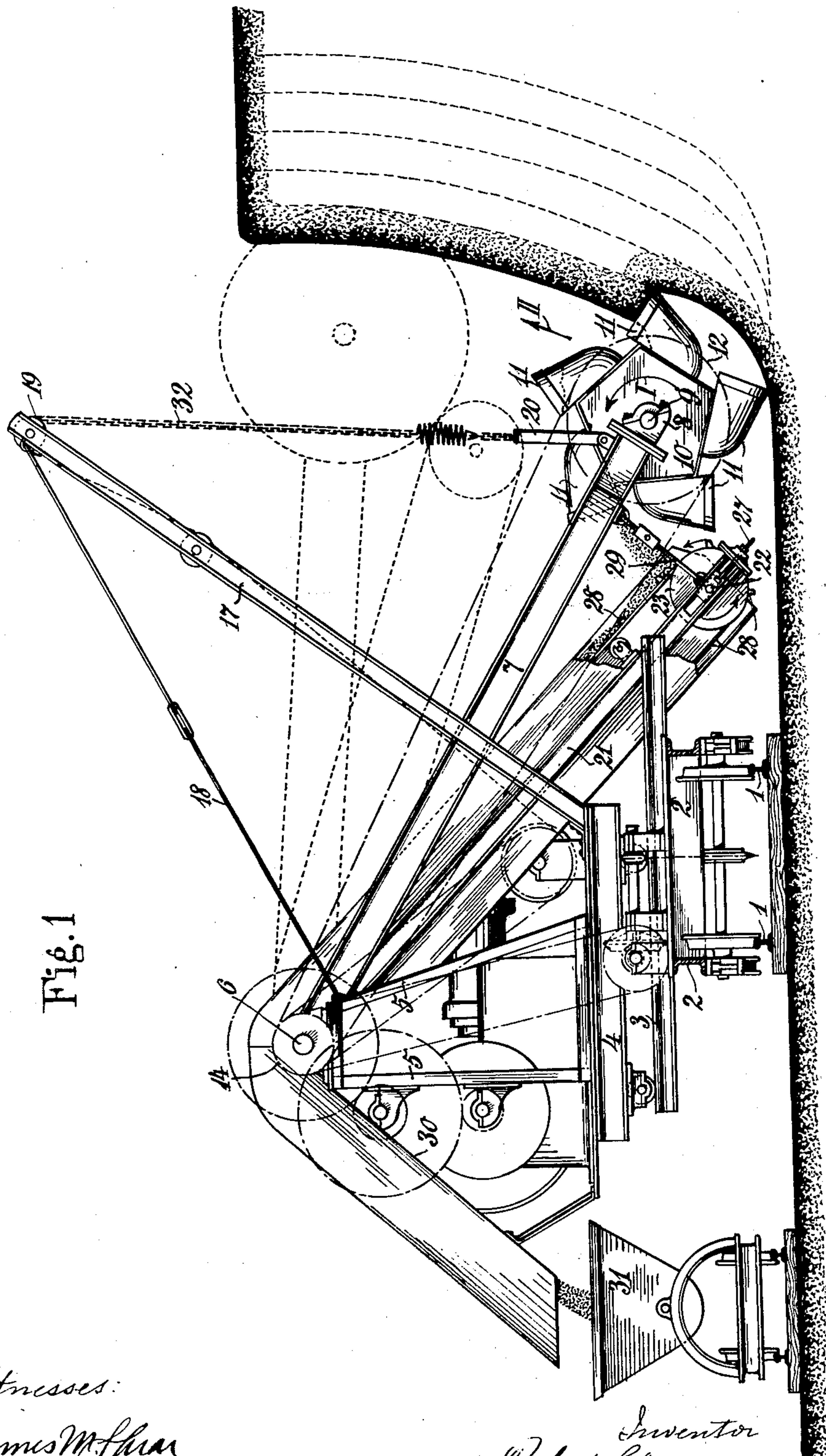


Fig. 1

Witnesses:

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S. B. Middleton

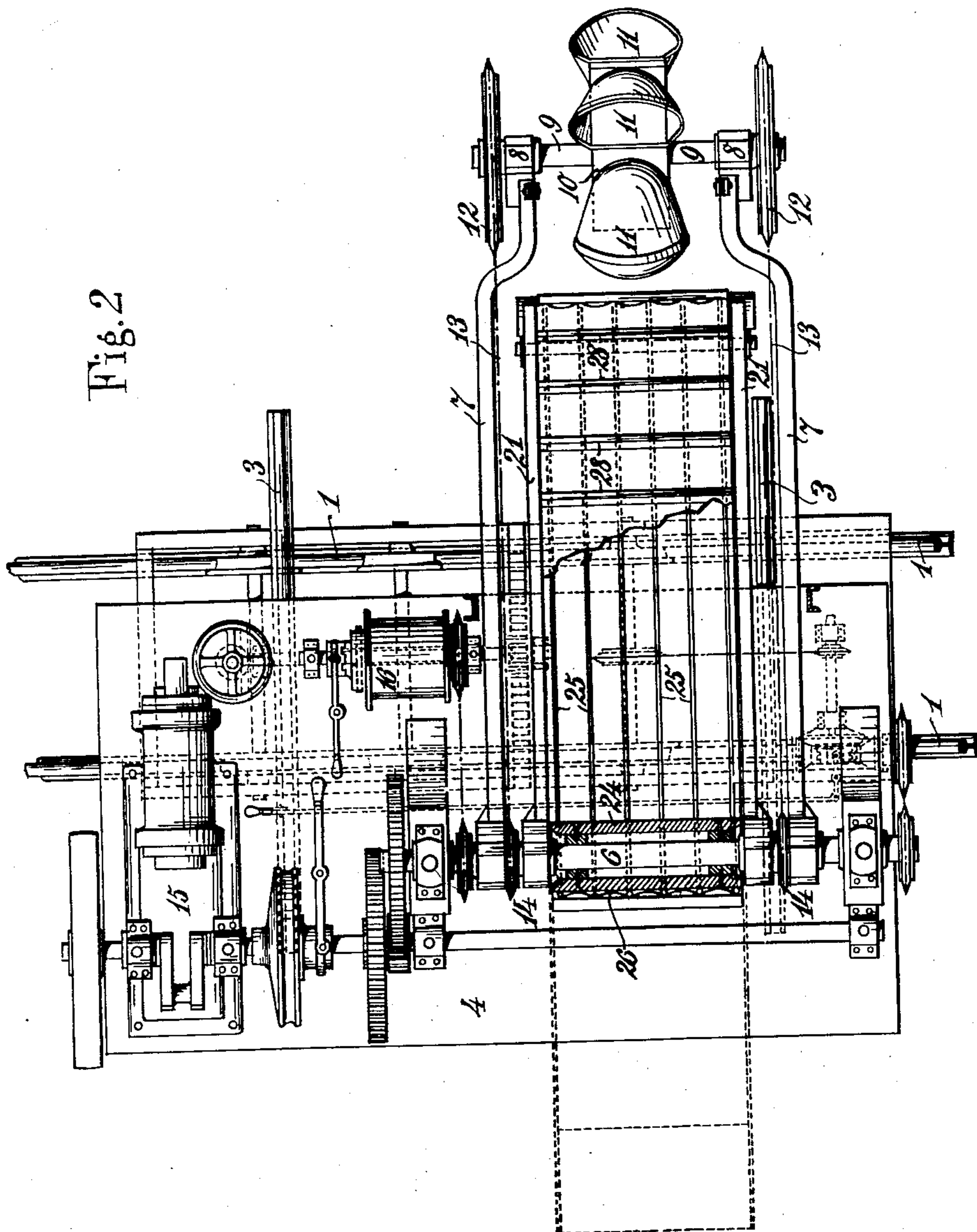
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4 SHEETS—SHEET 2.

Fig. 2



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4 SHEETS—SHEET 3.



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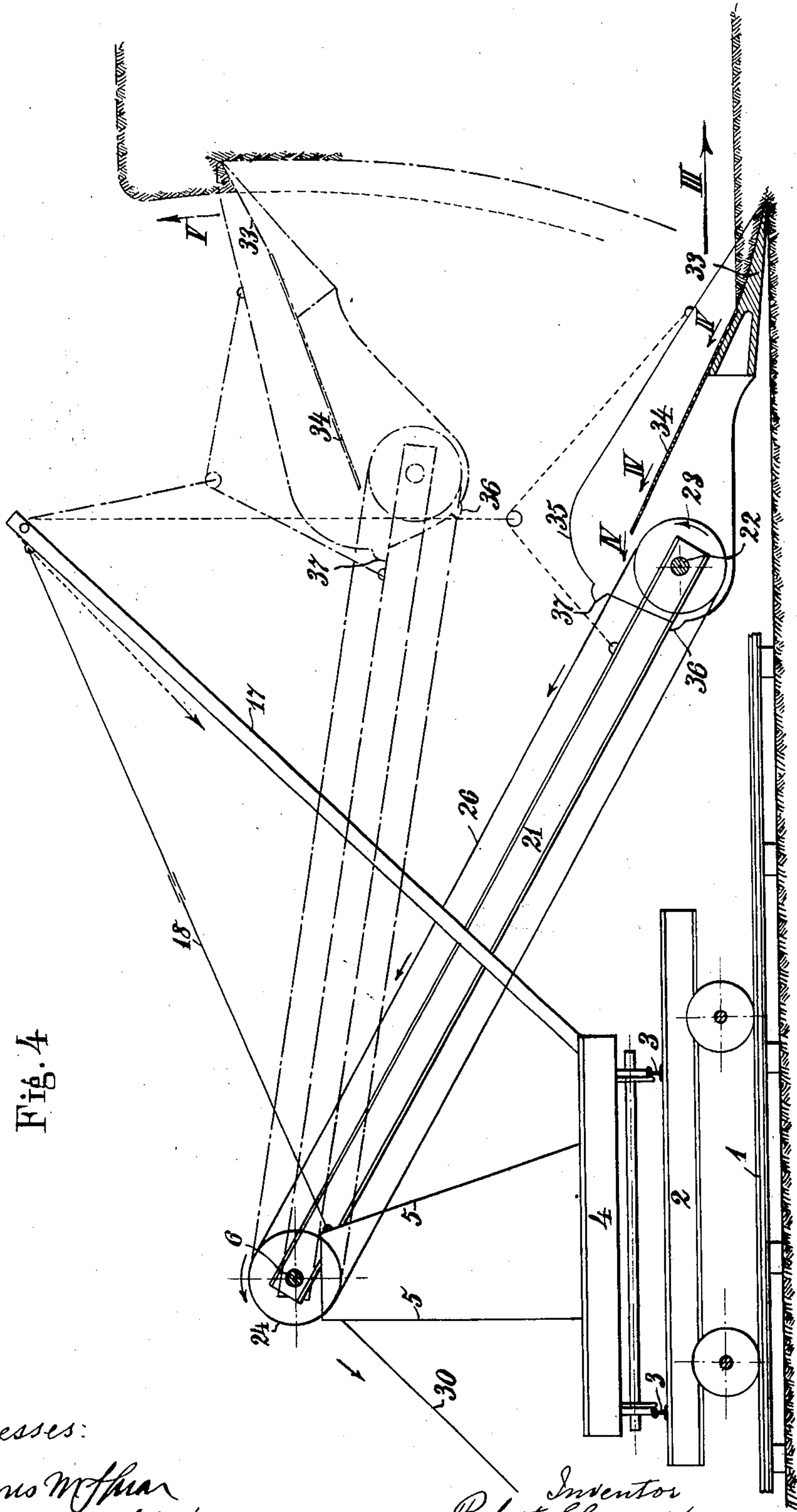


Fig. 4

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UNITED STATES PATENT OFFICE.

ROBERT GLOGNER, OF CHARLOTTENBURG, GERMANY.

EXCAVATOR OR DREDGER.

932,857.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed May 7, 1908. Serial No. 431,513.

To all whom it may concern:

Be it known that I, ROBERT GLOGNER, engineer, residing at Charlottenburg, in the Province of Brandenburg, Germany, have
5 invented certain new and useful Improvements in or Relating to Excavators or Dredgers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable
10 others skilled in the art to which it appertains to make and use the same.

This invention relates to an excavating device or dry dredger which differs from the well known apparatus used for the same
15 purpose in that the excavating tool is not utilized at the same time for transporting, that is to say, conveying the said earth from the point of excavation to the transport carriage, but by a separate continuously working
20 transport or conveyer apparatus being provided for the purpose, so that, since the excavating tool is working also in a continuous manner, the excavation and the conveying of the excavated material take place in
25 a continuous manner.

Another novel feature consists in the special shape given to the excavating tool which makes it possible to excavate a thick layer at the outset, this leading not only to
30 an extremely increased output, but also to a reduction of labor.

A constructional form of the apparatus is shown in the drawing in Figure 1 in front elevation, in Fig. 2 in plan and Fig. 3 in
35 side elevation. Fig. 4 finally shows diagrammatically a second construction of the excavator in side elevation.

On a truck 2 traveling on rails 1, are arranged at right angles to the direction of
40 the rails 1, rails 3 on which moves a second truck 4. On the said truck is mounted a bracket or standard 5 carrying a driving spindle 6 about which swings as a pivot a double jib-frame 7, the branches of which
45 carry at their ends 8, 8, by means of bearings, a spindle or pin 9 on which is mounted a polygonal wheel 10. To each face of the said wheel is secured a dredger bucket 11, so that the polygonal body 10 forms, with
50 the buckets 11, a bucket wheel which, as will be seen from Fig. 1, constitutes the excavating tool. The said bucket wheel is driven in the direction of the arrow I, by means of two chain wheels 12 mounted on
55 the pin 9, the diagrammatically indicated

chains 13, and the chain wheels 14 mounted on the spindle 6. On the platform of the truck 4 is mounted the driving motor 15 as well as the necessary gear or transmission apparatus and a winch 16. On the
60 platform of the truck 4 is finally mounted a jib 17 supported by ties 18 and carrying at the end a chain roller 19. Over the said roller travels from the winch drum 16 a chain 32 which, by means of a shackle 20, 65
engages with the end of the jib-frame 7, so that the end of the jib and with it the bucket wheel 10 11, can be raised and lowered again in the direction of the arrow II by means of
70 the winch, the said wheel describing then a circle about the spindle 6 as the center.

The bucket wheel is capable of detaching earth from the ground but not of carrying it away or conveying it into the trucks intended for transport. To that end, there is
75 rotatably mounted on the spindle 6 as axis, a second frame consisting of longitudinal beams 21 carrying at their ends bearings 22 adjustable in slots, for a roller 23. On the spindle 6 is secured a roller 24 of the same
80 size. Over these two rollers or drums pass a number of endless cables 25. Moreover, over the rollers also passes a wide endless transport band 26 which is supported by
85 the cables 25 at points not supported by the rollers. This transport band is, therefore driven by the spindle 6 at the same time as the bucket wheel. By moving the bearings
90 22 by means of the screw spindle 27, the said transport band can be stretched to the desired extent. On the transport band 26 are arranged transversely a number of
ledges 28 which form drivers. The frames 7 and 21 are rigidly connected together by
95 means of an adjustable rod 29, the result of which is that during the movement, that is to say, raising and lowering of the frame 7 and of the bucket wheel 10 and 11, the frame 21 and the transport band 26 are simultaneously moved.

In working, the earth excavated by the
100 buckets 11 is projected in the manner shown in Fig. 1 on to the transport band 26 and carried by the same or, if it is greatly inclined in the bottom position, by the drivers
105 28, and transported to the top, that is to say to the spindle 6. After passing beyond the highest position, the earth detached is discharged into a chute 30 and thence into the truck 31 arranged below the same. The ex- 110

cavator can work either in such manner that after each up and down movement of the bucket wheel, the truck 2 is moved a certain extent, say to half the width of the bucket, so that a uniform thickness of layer can be detached from the ground throughout the whole length of the track, or in such manner that after having done a short piece, that is to say, only a few widths of bucket in the manner described, the truck 4 is moved nearer to the ground to be excavated, to the extent that the bucket can operate at once, that is to say, to the thickness of cut.

By the combination of both methods of working, it is possible to produce, in plan, lines of cut at an angle to the track 1 and if necessary, to produce recesses in the wall of earth.

The excavator shown in Fig. 4 consists also of a truck 2 with rails 3 on which are mounted a second truck 4 with a standard or bracket 5, driving spindle 6, jib 17 and chute 30. In the same way, there is a jib 21 which carries the transport band 26 with its rollers 23 24. Unlike in the first construction shown in Figs. 1-3 where they are parallel to the direction of working, the rails 1 on which the dredger is traveling are however at a right angle to the same. About the spindle 22 of the roller 23 is mounted a spade-like digging tool consisting of a cutting edge 33 and a slide surface 34 with lateral cheeks 35, by means of which this spade is mounted on the spindle 22. The whole transport device, together with the spade is supported by the jib 17 and can be raised and lowered by means of the winch (not shown in the drawing). In this case, it is possible to turn the spade to a certain extent relatively to the jib, which movement is limited by the stops 36 37.

The working with the spade or digging tool can be carried out in two ways, either the whole machine can be moved at the lowest position of the spades as shown by full lines, in which case a layer is cut off in horizontal direction which, in accordance with arrows IV, slides along the slide surface 34 and arrives at the transport band which transfers it to the chute 30 or to the truck not shown in the drawing. The work can, however, be also carried out in such manner that the whole excavator is moved in the direction of the arrow only to a short extent, that is to say, to the thickness of cut, so that the edge of the spade penetrates a little into the ground, whereupon the jib, and with it the spade are raised or moved in the direction of the arrow V. In this case, it is preferable to arrange the spade at a greater angle to the jib, as shown by dotted lines. In that case, at each up and down movement, the layer or "shaving" corresponding to the width of the spade, is detached from the ground and carried away.

After each such movement, the upper truck 4 is moved relatively to the bottom truck to the extent of about the width of the spade. With the latter tool it is possible to make narrow recesses or cuttings, while the excavator shown in Figs. 1-3 is more suitable for widening cuttings already made.

It will be clear that by the use of a bucket wheel, that is to say, of a tool of similar formation to a milling-cutter for separating or detaching the earth, a considerably thicker layer can be detached than with the so-called bucket ladder dredgers in which the buckets are not positively guided and are not forced into the earth under strong pressure, but penetrate into the ground with their edges merely under the influence of their own weight and after having been partly filled, are dragged without any effect over the ground, great friction being occasioned thereby. It is further clear that such a tool, owing to the greater thickness of shaving or layer, need not divide the ground to be excavated, into so many small particles as the ordinary bucket ladder dredger, and that consequently the work of separation is considerably smaller than in the case of the latter. It is further clear that the new dredger has the advantage over the bucket ladder dredgers in so far as in working it is situated at the bottom of the cutting, and not on the top edge of the wall of earth.

It is finally clear that the excavator provided with the spade-like digging tool will work in a more favorable manner than with the digging tools hitherto used, as it can work in a continuous manner, and therefore, need not for the purpose of transporting the dredged material make an oscillation during which no excavating work can be done, and as it can cut or excavate a much thicker layer because the excavated material at once moves on to the surface of the spade, no inner friction is produced in the dredged material as soon as the spade is a little filled as is the case with the digging tools hitherto used.

The new excavator works in a very advantageous manner, since the rails on which it is traveling need not be shifted as frequently as in the case of excavators of other types.

What I claim is:

1. In an excavating machine, the combination, with a lower supporting truck, and an upper truck movable crosswise of the said lower truck and provided with a frame; of an endless conveyer pivotally connected with the said frame, a jib-frame also pivotally connected with the said frame and movable in the same plane as the said conveyer and provided with an excavating-tool at its free end, and driving devices for operating the said conveyer and excavating-tool.

2. In an excavating machine, the combination, with a supporting-frame, of an endless

conveyer pivotally connected with the said frame, a jib-frame also pivotally connected with the said frame and movable in the same plane as the said conveyer and provided with an excavating-tool at its free end, an adjustable connection between the free end portions of the said conveyer and jib-frame, and driving devices for operating the said conveyer and excavating-tool.

3. In an excavating-machine, the combination, with a supporting-frame, and an endless conveyer pivotally connected with the said frame; of a jib-frame also pivotally connected with the said frame, an adjustable connection between the outer end portions of the said conveyer and jib-frame, a wheel provided at its periphery with a series of excavating buckets and journaled at the outer end portion of the said jib-frame and adapted to discharge material onto the said conveyer, means for raising and lowering the outer end portions of the said conveyer and jib-frame together with the said wheel, and

driving-devices for revolving the said wheel and operating the said conveyer.

4. In an excavating-machine, the combination, with a supporting-frame, a driving-shaft journaled therein, and an endless conveyer pivoted concentric with the said driving-shaft; of a jib-frame also pivoted concentric with the said driving-shaft, an excavating-wheel journaled at the outer end portion of the said jib-frame and adapted to discharge material onto the said conveyer, means for raising and lowering the outer end portions of the said conveyer and jib-frame together with the said wheel, and driving-devices for revolving the said wheel from the said shaft independent of the said conveyer.

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

ROBERT GLOGNER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.