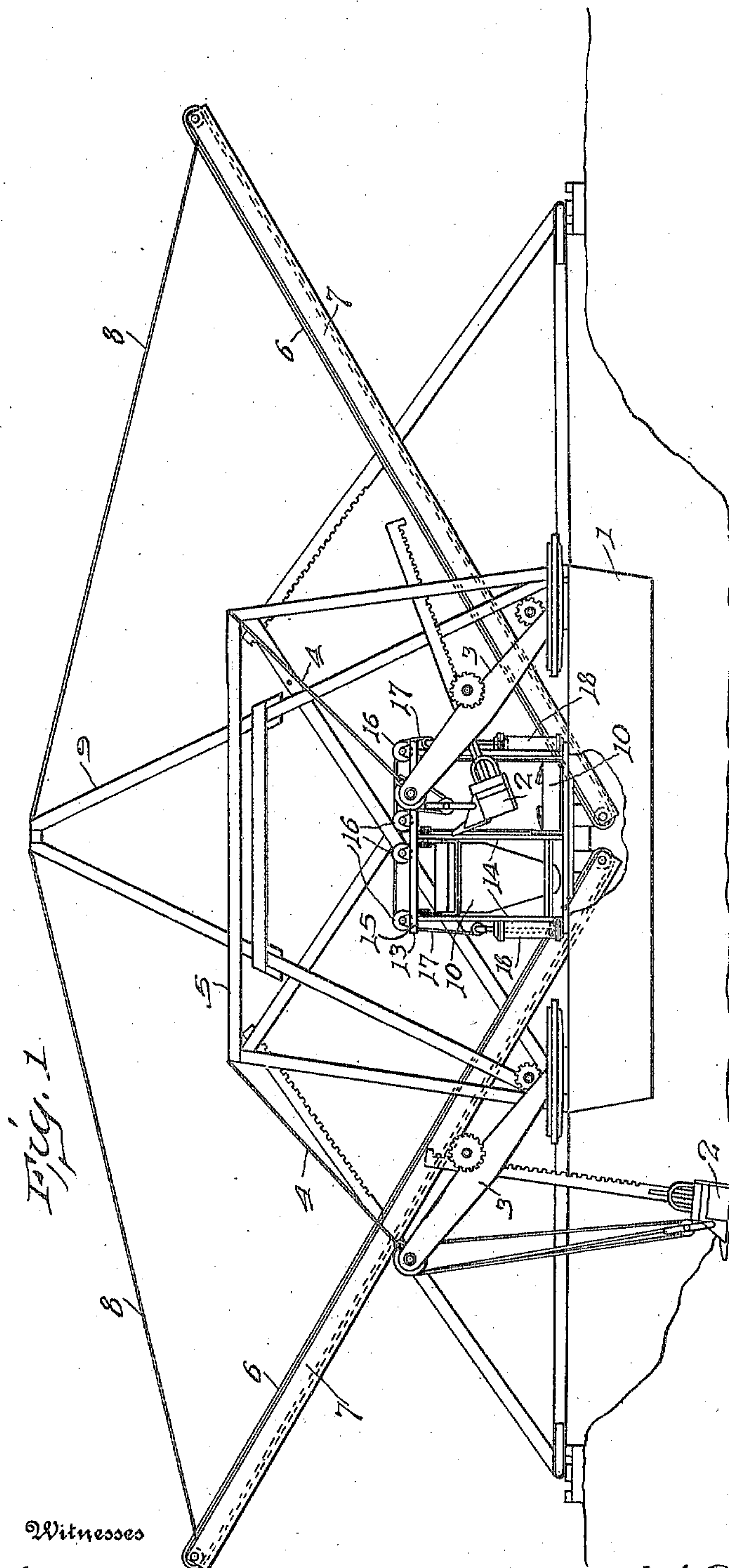


948,051.

G. HOLMES.
EXCAVATING MACHINE.
APPLICATION FILED FEB. 11, 1909.

Patented Feb. 1, 1910.

3 SHEETS—SHEET 1.



Witnesses

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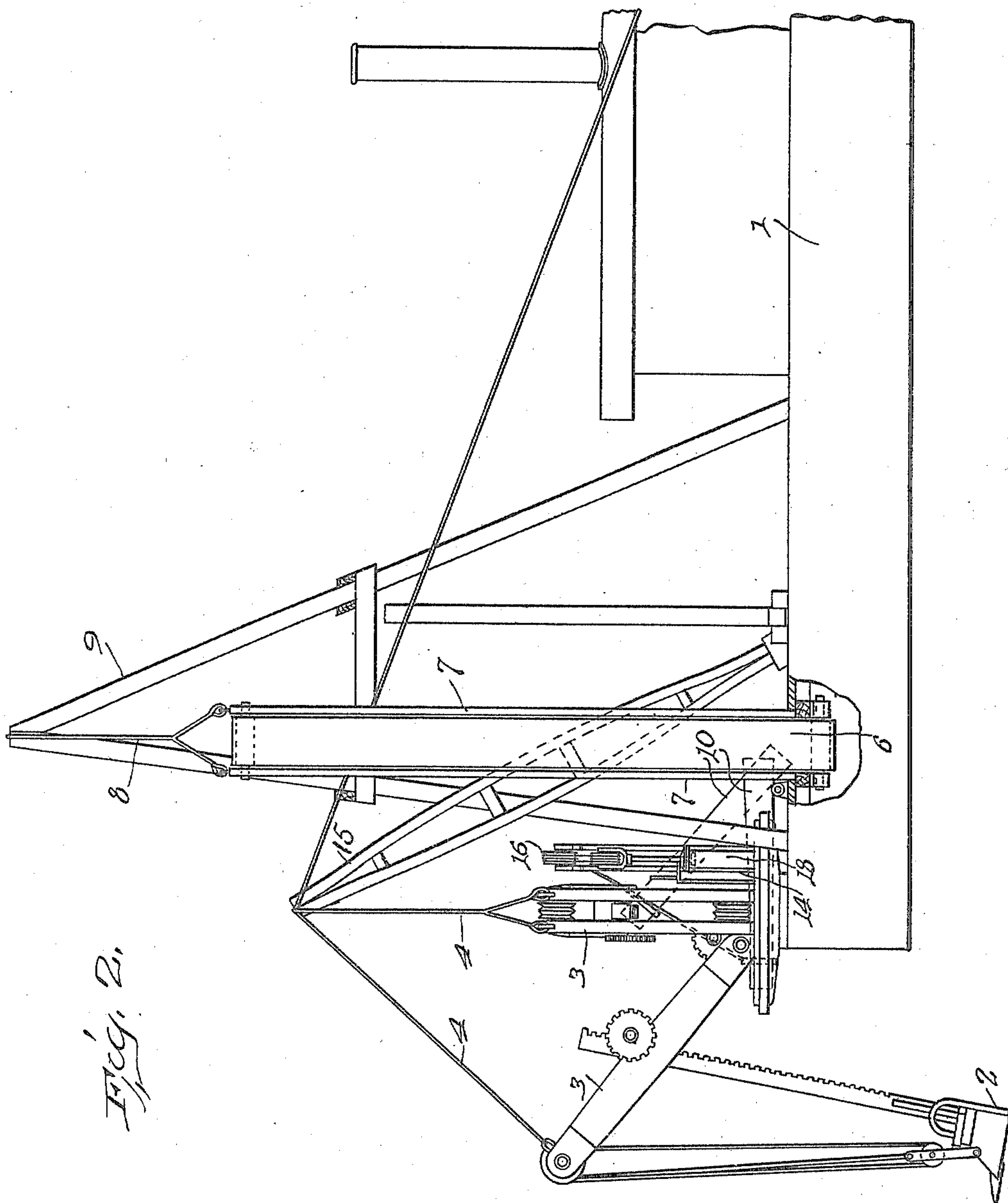
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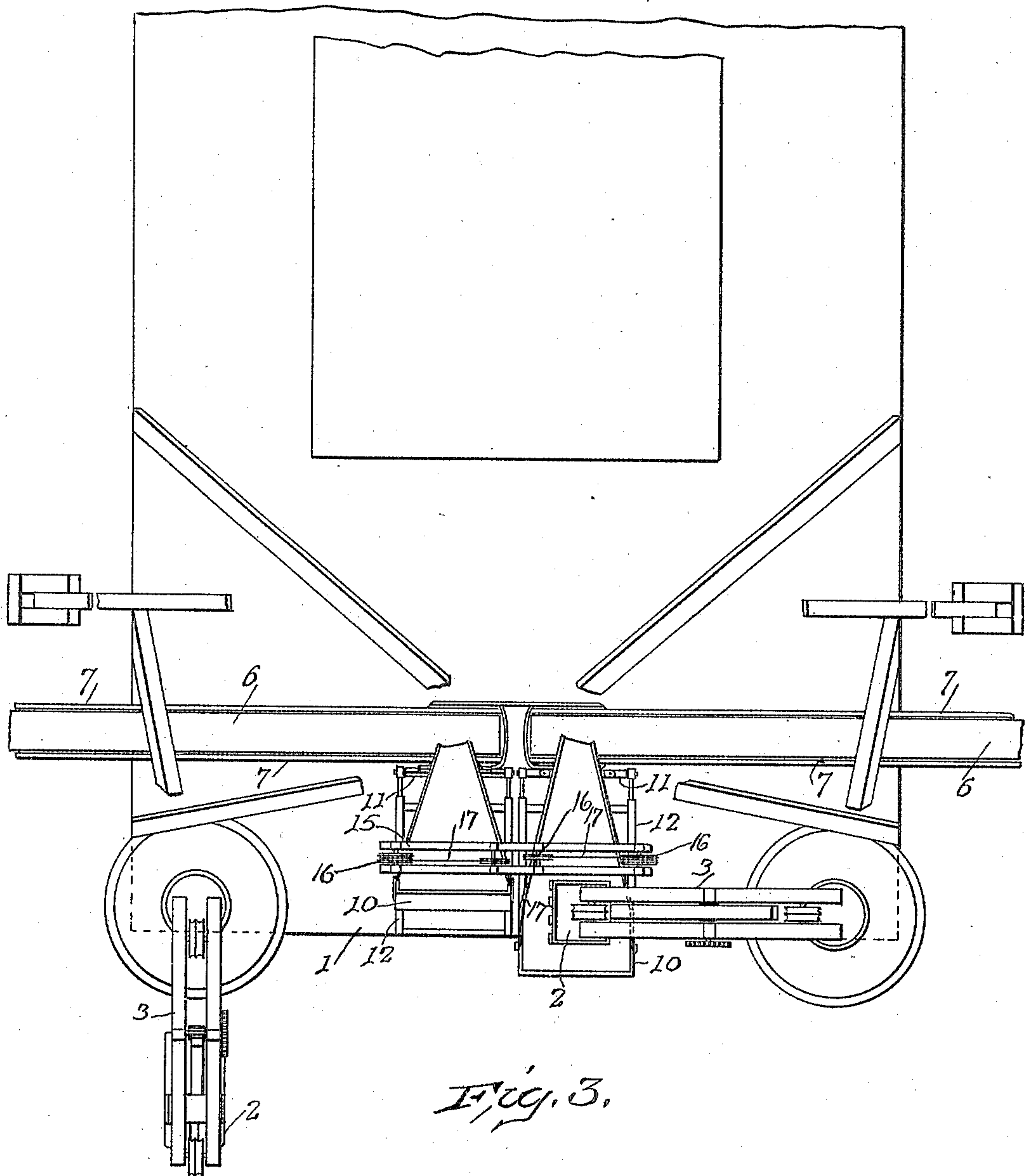
Witnesses

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UNITED STATES PATENT OFFICE.

GRANT HOLMES, OF DANVILLE, ILLINOIS, ASSIGNOR TO ROBERT HOLMES & BROTHERS,
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EXCAVATING-MACHINE.

948,051.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed February 11, 1909. Serial No. 477,289.

To all whom it may concern:

Be it known that I, GRANT HOLMES, a citizen of the United States, residing at Danville, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Excavating-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to excavating machines, and more particularly to that type of excavating machines in which the excavating mechanism proper consists of an excavating dipper carried by a boom.

15 The object of the invention is to provide an excavating machine in which the boom will be of comparatively short length, which will have a maximum range of operation and which will deposit the material which has been excavated at a suitable distance from the point where the excavation is made.

To this end it is a further object of the invention to provide an excavating machine with a plurality of excavating mechanisms; 25 to provide conveying mechanism for conveying the material to the proper point of deposit; to provide separate means to receive the material from each excavating mechanism and deliver the same to the conveyor; 30 and further, to so arrange the several parts of the machine that the excavating mechanisms may be operated either simultaneously or individually, the operation of the one interfering in no wise with the operation of 35 the other.

With these objects in view my invention consists in certain novel features and in certain combinations and arrangements of parts hereinafter to be described, and then more 40 particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of an excavating machine embodying my invention; Fig. 2 is a side elevation of the same; and Fig. 3 is a top plan 45 view thereof.

In these drawings I have illustrated one embodiment of my invention and have shown the same as applied to a dredge of ordinary construction comprising a body portion or hull 1, upon which the excavating mechanisms are mounted. These excavating mechanisms may be of any suitable character and the number and arrangement of the same may be determined by the char-

acter of the work to be done. In the present 55 instance I have shown two of these mechanisms arranged near the opposite sides of the body portion or hull 1, and near the forward end thereof, and I have shown each excavating mechanism as comprising the 60 usual excavating dipper 2 and hoisting boom 3, the outer end of which boom is connected by a cable 4 to a frame 5. This frame is of the usual construction with the exception that it is made wider at the upper end and 65 the cables are connected thereto at the outer corners thereof. The operation of these excavating mechanisms is the same as in dredges or steam shovels where a single excavating mechanism is employed. The op- 70 eration of each excavating mechanism is independent of the operation of the other excavating mechanism and the length of the boom of each mechanism is such that the dipper will extend in its operative position 75 to a point midway between the two mechanisms or beyond such a point. Thus, the two dippers will excavate all the material lying within the path of the body portion or hull 1, and, inasmuch as each is located 80 near the side of the body portion, they will excavate an amount on each side of the hull substantially equal to half the width of the hull. This arrangement gives the excavating machine a very wide range and at the 85 same time, enables a comparatively short boom to be employed, thus greatly expediting the operation of the excavating mechanism and also lessening the power necessary to operate the same, owing to the shorter distance through which the dipper must move 90 and the smaller weight of the excavating mechanism. It will be obvious, however, that the booms are not of sufficient length to enable the material excavated to be dumped 95 at the proper distance from the point of excavation. Consequently, other means are provided for conveying the material to the desired point of deposit. This conveyor mechanism may be of any suitable character 100 and its arrangement and the length of the conveyers will depend largely upon the character of the work being done, but in the present instance, I have shown the same as comprising two endless conveyor belts 6 105 mounted in a suitable frame 7. These conveyers are preferably supported from the body portion 1 and their inner ends are lo-

cated near the transverse center of the hull and slightly beneath the upper deck thereof, as shown in Fig. 1, while the outer ends of the conveyer extend a considerable distance beyond the sides of the body portion 1. The outer portions of the conveyers 6 are supported by one or more cables 8 extending therefrom to the tower 9 and serving to adjustably support the conveyer.

As the conveyer belts are comparatively narrow in width it is impractical to deposit the entire contents of the excavating dipper upon the belt at one time. Consequently, suitable means are interposed between the dipper and the conveyer mechanism to receive the material from the dipper and deliver the same to the conveyer mechanism, there being preferably one of these receiving mechanisms for each of the excavating mechanisms. In the present instance, I have shown the receiving mechanisms arranged between the excavating mechanisms and each comprising a pan 10 having a wide, flat rear end, as shown in Fig. 3 and having its side walls converging from a point removed from the rear end of the pan toward the front end thereof, thus providing a narrow discharge mouth which is arranged above one of the conveyers 6 of the conveyer mechanism. The forward end of the receiving pan 10 is rigidly secured to a transverse bar or axle 11 which is pivotally mounted on the supporting frame 12. Suitable means are provided for moving the receiving pan 10 about its pivotal center, thus causing the material, which has been deposited thereon by the dipper 2, to be delivered to the conveyer. This may be accomplished in any desired manner, but I have here shown the receiving pans 10 as mounted in a suitable frame 13 comprising the upright members 14 arranged at each side and in the center thereof and a transverse member 15 connecting the upper ends of the upright members. Guides or pulleys 16 are carried by the upper ends of this frame and cables 17 are secured to each receiving pan near the rear or receiving end thereof and extend upwardly about the respective pulleys 16; thence downwardly where they are connected to a power cylinder 18, the operation of which serves to move the receiving pan, to which that particular cylinder is connected, into an inclined position. Each of the pans 10 is independent of the other and each is provided with a separate operating cylinder. The construction and operation of the receiving pan and its operating mechanism are fully shown and described in the application for patent filed by me Dec. 26, 1908, Ser. No. 469,438. Consequently, I have not shown or described the detailed construction of the same.

The operation of the device is simple and it will be understood that when each dipper,

after having been filled with material to be excavated, is moved into a position above one of the receiving pans 10, the material is discharged upon that pan and the dipper immediately removed from above the same. As soon as the dipper has been removed the pan 10 is moved into its inclined position and the material thereon is delivered from the small or discharge end thereof upon the conveyer belt which deposits the same at the desired point. Obviously, either dipper can be worked independently of the other, and, inasmuch as the booms carrying the dippers are comparatively short, the power necessary to operate the same is considerably less than that required to operate the boom and dipper where the boom is of a much greater length; and, further, owing to the short distance through which each dipper must move from the point where it is filled to its point of discharge, the speed with which the dipper may be operated is materially increased, and, consequently, the capacity of each excavating mechanism is very much greater than that of an excavating mechanism having a long boom, and, by combining two or more of these excavating mechanisms in a single excavating machine, the amount of work which that machine is capable of performing is increased to a corresponding extent.

I wish it to be understood that I do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. An excavating machine comprising a body portion, a plurality of excavating mechanisms carried by said body portion, conveyer mechanism, receiving pans supported normally in substantially horizontal positions to receive the material from said excavating mechanisms, and means for moving said receiving pans into inclined positions to discharge the material therefrom.

2. An excavating machine comprising a body portion, a plurality of independent excavating mechanisms carried by said body portion, conveyer mechanism, an independent receiving pan for each of said excavating mechanisms supported normally in a substantially horizontal position to receive the material, and means for moving said receiving pan into an inclined position to deliver the material to said conveyer mechanism.

3. An excavating machine comprising a body portion, a plurality of excavating mechanisms carried by said body portion, conveyer mechanism, normally horizontal receiving pans pivotally supported on said body portion in a position to receive the material from said excavating mechanisms, and

means for moving said receiving pans about their pivotal centers to discharge the material onto said conveyer mechanism.

5 4. An excavating machine comprising a body portion, a plurality of booms movably mounted on said body portion, a dipper carried by each of said booms, a plurality of conveyers, each having one end supported near said body portion and the other end
10 supported at a point removed therefrom, and a plurality of receiving pans arranged between said booms and adapted to receive the material from said dipper and to discharge the same upon said conveyers.

15 5. An excavating machine comprising a body portion, a plurality of excavating mechanisms carried by said body portion, a plurality of conveyers each having one end supported near said body portion and having the other end supported at a point removed from said body portion, a corresponding plurality of receiving pans pivotally mounted on said body portion and arranged
20 normally in a substantially horizontal position to receive the material from said excavating mechanisms, and means for moving said receiving pans about their pivotal centers to discharge the material therefrom onto said conveyer mechanism.

25 6. An excavating machine comprising a body portion, a plurality of booms movably mounted near the front of said body portion and arranged on opposite sides of the center thereof, an excavating dipper carried by
30 each of said booms, a conveyer arranged in the rear of each of said booms and having one end supported near said body portion and the other end supported at a point removed therefrom, receiving pans pivotally

40 mounted on said body portion between said booms and arranged normally in substantially horizontal positions to receive the material from the respective excavating dippers, and means for moving said receiving
45 pans about their pivotal centers to discharge the material therefrom onto said conveyer mechanism.

7. An excavating machine comprising a body portion, a boom mounted thereon, an excavating dipper carried by said boom, a
50 conveyer having one end supported near said body portion and the other end supported at a point removed from said body portion, a receiving pan pivotally mounted on said body portion and arranged normally in a
55 substantially horizontal position to receive the material from said dipper, and means for moving said receiving pan about its pivotal center to discharge the material therefrom onto said conveyer. 60

8. In an excavating machine, the combination, with a boom, a dipper carried thereby, and a conveyer mechanism having one end supported near said boom and the other end supported at a point removed therefrom, of
65 a receiving pan pivotally supported near said boom and arranged normally in a substantially horizontal position to receive the material from said dipper, and means for moving said receiving pan about its pivotal
70 center to discharge the material therefrom.

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

GRANT HOLMES.

Witnesses:

FRANK LINDLEY,
GERTRUDE C. KOCH.