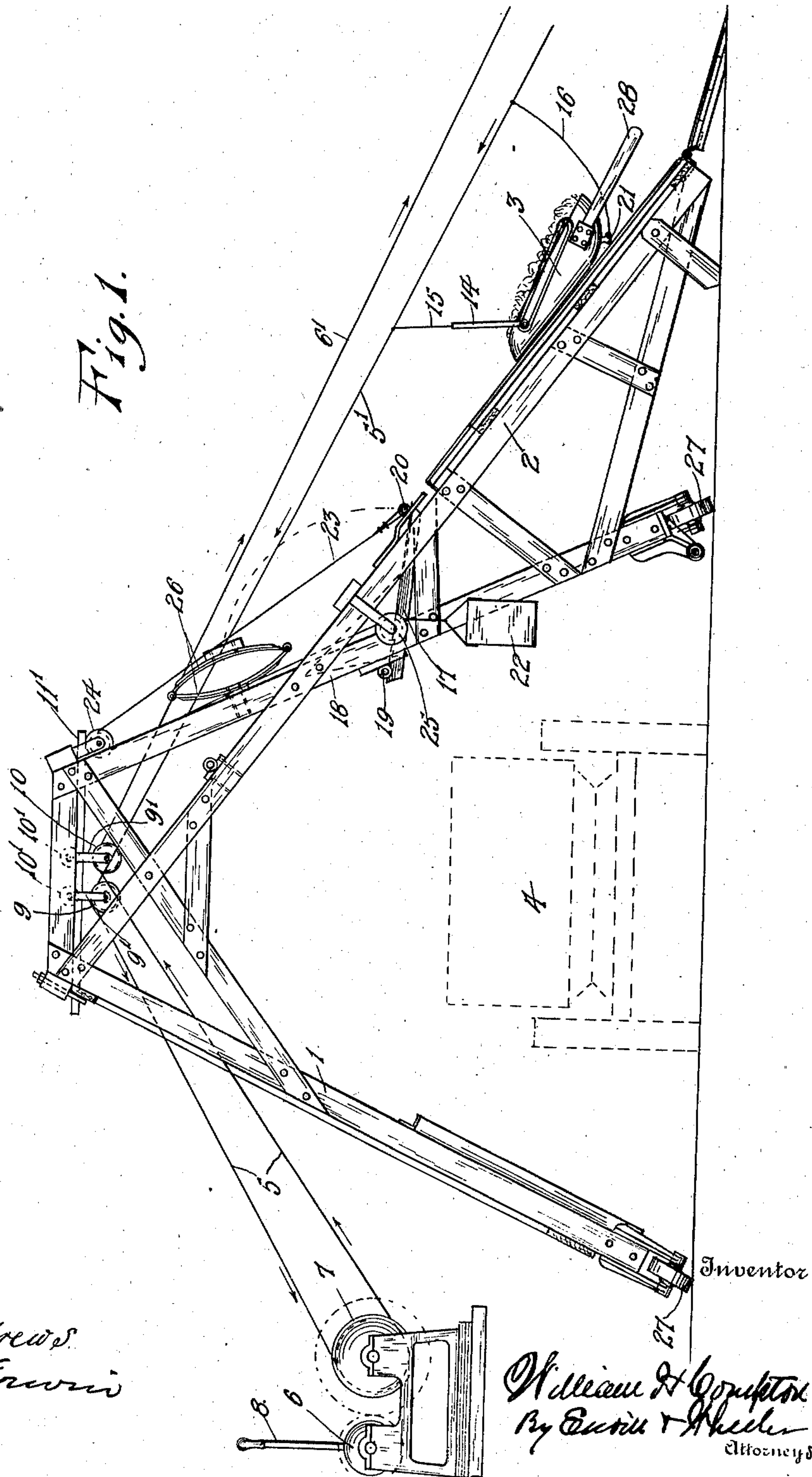


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 4 SHEETS—SHEET 1.

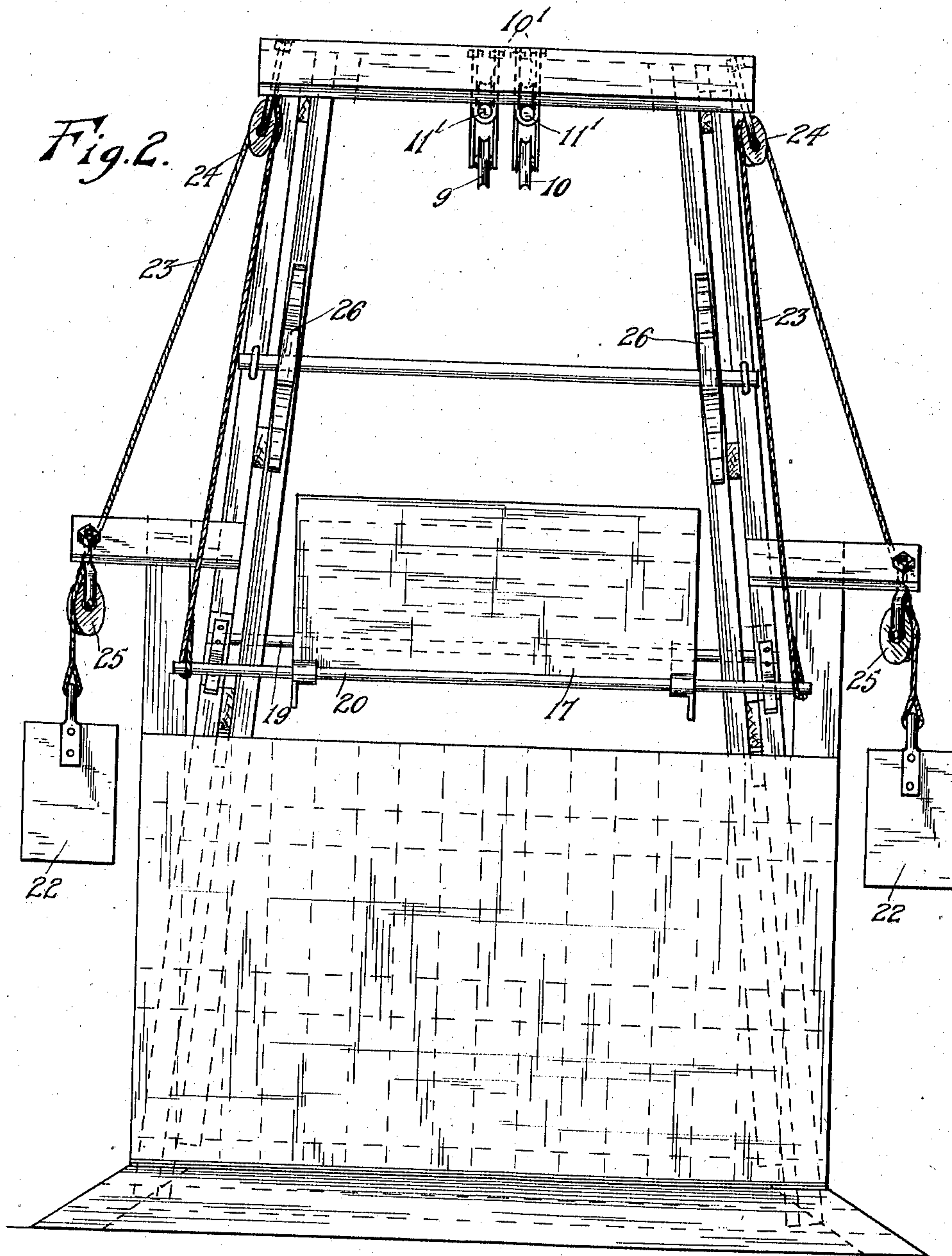
Fig. 1.



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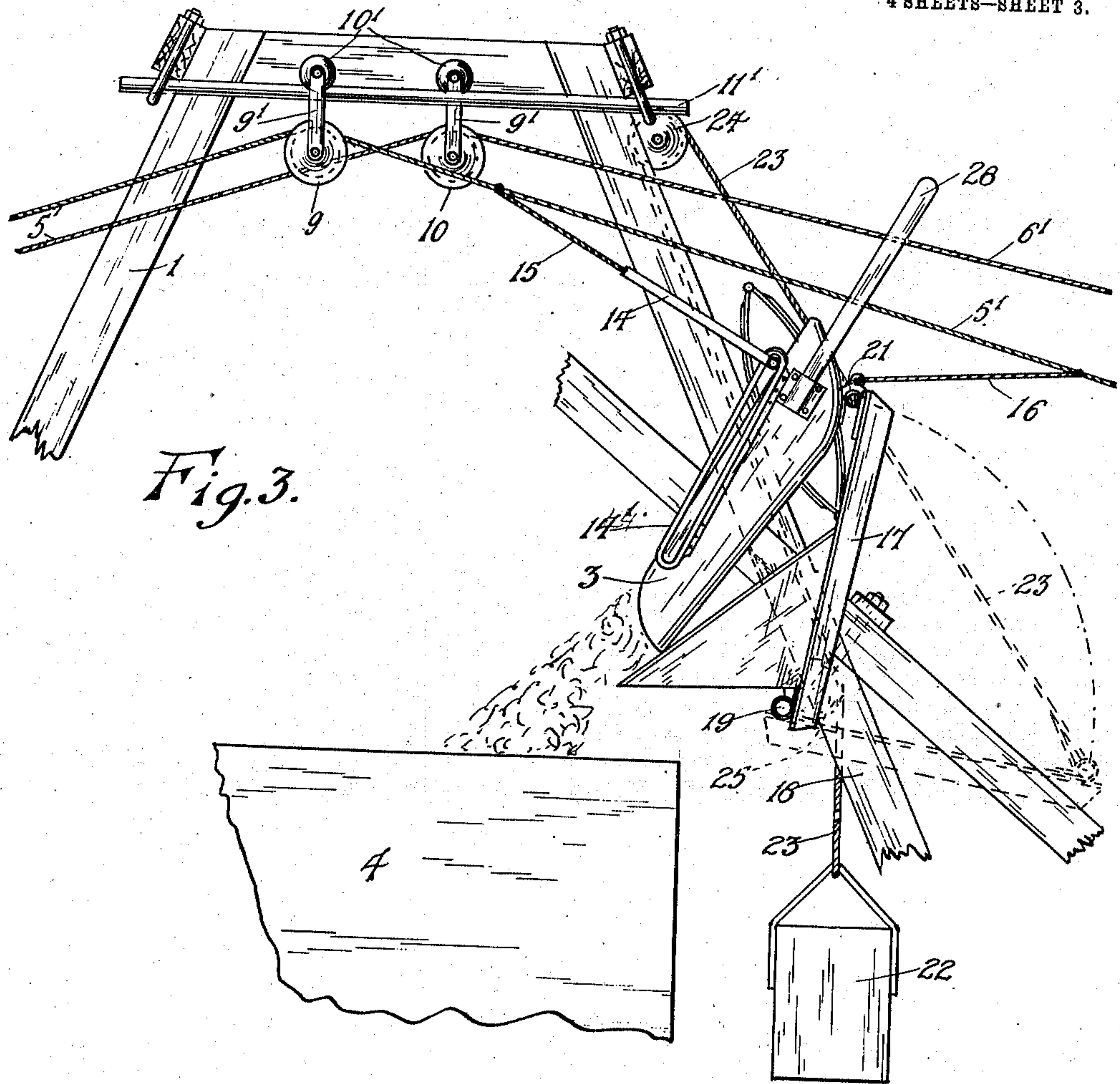


Fig. 3.

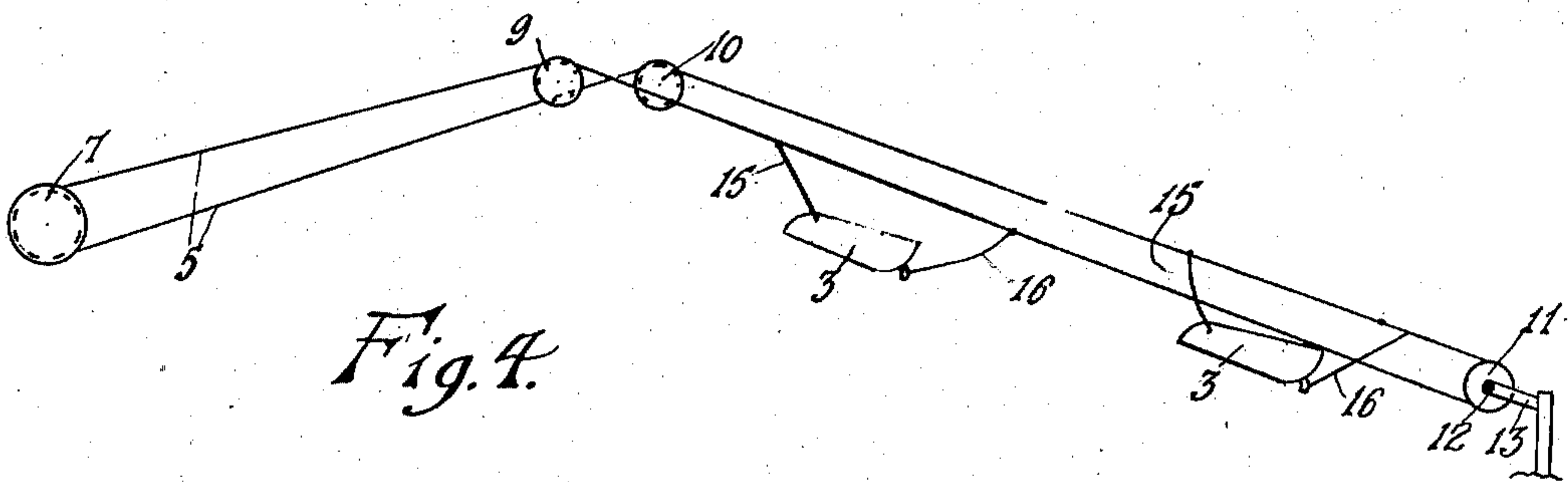


Fig. 4.

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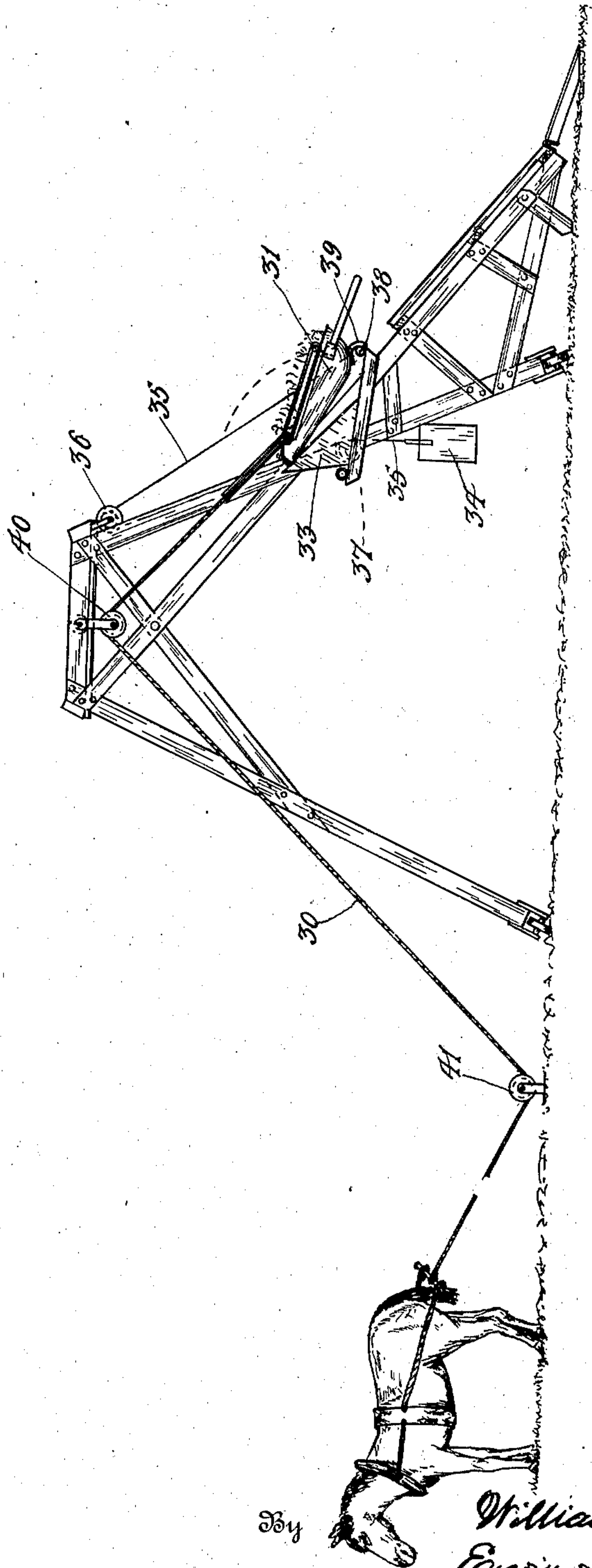
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Fig. 5.



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SYSTEM OF DEVICES FOR EXCAVATING AND LOADING GRAVEL AND THE LIKE.

967,613.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed September 7, 1909. Serial No. 516,420.

To all whom it may concern:

Be it known that I, WILLIAM H. COMPTON, a citizen of the United States, residing at the city of Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in a System of Devices for Excavating and Loading Gravel and the Like, of which the following is a specification.

My invention relates to improvements in a system of devices for elevating and discharging gravel and the like.

The object of my invention is among other things, to provide means for elevating gravel and similar substances to a place of deposit and automatically discharging the same.

The construction and arrangement of the several cooperating parts of the system is explained by reference to the accompanying drawings, in which,

Figure 1 represents a side view of several of the elements of the system as connected together in position for use. Fig. 2 is an end view thereof. Fig. 3 is a detail of the dumping mechanism. Fig. 4 is a diagrammatic view of a motor driven cable and drum shown in the other views, 1 to 4 inclusive, and Fig. 5 is a side view of a modified form of system in which a single cable is used in connection with a single scraper and discharge mechanism.

While my system is adapted to be used for general excavating purposes, and for elevating and discharging earth, ore and a great variety of substances, and is also adapted to be operated by horse as well as by a motor driven power, I have for brevity of description referred to the same as a motor driven system for elevating gravel and the like.

Like parts are identified by the same reference numerals throughout the several views.

1 is a portable derrick or frame beneath which a vehicle 4 is indicated in position to receive the gravel as it is elevated and discharged from the upper end of the derrick.

2 is an inclined plane or platform, upon which the scoop 3 is drawn with its load preparatory to discharging its contents. The scoop 3 is adapted to be drawn to and from the platform by the cable 5, and said cable is moved longitudinally in opposite directions by and through the motor 6 and motor driven drum 7. The motor 6 is pro-

vided with a lever 8, by which it is adapted to be started, stopped and its movement reversed at the will of the operator.

The cable 5 is supported at one end by and upon a revoluble drum 7, and it passes from thence over the pulleys 9 and 10, thence downwardly and rearwardly past the place of supply where the gravel is located, to and around the pulley 11, and said pulley 11 is connected with the ground or any other stationary object through the bolt 12 and pulley block 13.

It will be obvious that as the drum 7 is revolved, one of the cable members 5' will be moved forwardly and the other 6' rearwardly above the platform 2, as indicated by the arrows shown above said cable members, whereby a scoop connected with one of said cable members will be drawn forwardly to the place of discharge, while the other scoop will be drawn rearwardly from the place of discharge back to the place of supply.

The scoop 3 is connected at its front end with the cable 5' through the bail 14 and branch cable 15, and at its rear end through the branch cable 16, by which branch cable it is adapted to be drawn back from the platform as the movement of the drum and motor is reversed.

As the respective scoops approach the upper end of the platform 2, they are brought upon the inverting table 17, when by the further forward movement of the cable, the scoops 3 and tables 17 are inverted together and the contents of the scoops discharged into the vehicle below. The inverting table is pivotally connected at one end to the standards 18 of the derrick by the hinge rod 19, and is provided at its opposite end with a trip rod 20, which rod as the scoop passes over it is engaged by the trip hook 21, which is connected with the rear end of the scoop, whereby as said scoop is moved forward, the rear end of the table is carried upwardly and forwardly in a circular course around its pivotal support, whereby the rear end of the scoop is raised until its contents are discharged, as stated. The inverting table is partially counterbalanced by two weights 22, which weights are connected with the table through the cables 23, one end of said cables 23 being connected with the free end of said table, whence they pass upwardly and over the pulleys 24, and from thence downwardly partially around the pulleys 25

and from thence to said weights 22 with which they are connected as stated. Thus it will be obvious that the weights 22 not only serve to cooperate with the forward movement of the scoop in raising the table, but they also retard the downward movement of the table as the scoop 3 is moved in the opposite direction, whereby the shock and jar which might otherwise be caused by the downward movement of the table and scoop is avoided.

26 are springs which are supported from the standards 18 in such a position that the scoop is brought in contact therewith as the table is inverted, when owing to their resiliency they serve as cushions to the scoop and diminish the jar which might otherwise occur as the scoop is thrown forward in the act of discharging its contents.

The derrick is preferably mounted upon a plurality of rollers 27 to facilitate moving the same from place to place as circumstances may require. The scoop is provided with handles 28 by which it is controlled by the operator as it is being filled.

The pulleys 9 and 10 are movably suspended from the top of the derrick by hangers 9'—9' and rollers 10'—10' operating upon the horizontal rods 11'—11'.

The bail 14 is connected at its respective ends to the scoop 3 through a pair of links 14', in which the lower ends of the bail are adapted to slide forwardly and backwardly as the scoop is being drawn and dumped. When drawing the scoop forward, the lower ends of the bail are drawn to the front end of the links, when however the scoop is inverted, the lower ends of the bail slide upward to the opposite or rear ends of said links, as shown in Fig. 3.

In the modified system shown in Fig. 5, a single operating cable 30 is shown in connection with the scoop 31, and said cable and scoop are adapted to be operated by horse or other power, while the invertible member 33, counter weight 34, weight supporting cable 35 cable supporting pulleys 36 and 37, and trip members 38 and 39 are constructed and arranged substantially as shown in the other figures of the drawings. The cable is centrally supported from the top of the derrick on the pulley 40 and passes from thence beneath the pulley 41, and from thence to the horse or other power.

Attention is respectfully called to the fact that by applicant's construction the trip member which is attached to the rear end of the scoop is located below the line of draft of the scoop, or in other words, it is located below the pivotal attachment of the scoop with which the operating cable is connected, whereby the power required to elevate the scoop and scoop supporting table is reduced to the minimum.

I am aware that a platform has previously

been pivotally supported at or near its center from the upper end of an elevating derrick in such a manner that when the elevating carriage is drawn thereon past such pivotal support, said carriage and platform are both simultaneously caused to be inverted by the gravity of the load, which has thus been drawn past the center of gravity of such pivotally supported platform. It will be obvious, however, that a platform thus pivotally supported below its center of gravity, when once inverted, will require great power to bring it back to its original position. By my improvement, however, the invertible table 17 is pivotally supported not at its center, but at its upper end and such table is raised and the contents of the scoop discharged solely by the action of the cable, which is connected with the rear end of the scoop, while the rear end of the scoop is temporarily connected with the lower rear end of said table, whereby when the contents of the scoop is discharged and the movement of the cable reversed, said scoop and table will be brought back to their original position by their own gravity, and a counterweight is used simply to retard the downward movement of the table after the contents of the scoop have been discharged and to cooperate with the cable in raising the rear end of the table and scoop, preparatory to discharging the contents of the latter.

I am aware of the fact that pivotally supported tables have been connected with a counterbalancing weight through a flexible member, which flexible member is connected with said tables above their pivotal support, the object of said weight being to draw the table back to its normal position after its contents have been discharged, while by my construction, the counterbalancing weight 34 is connected with the pivotally supported table below its pivotal support and serves to retard the backward or downward movement of the table after the contents of the scoop have been discharged.

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

1. In an elevating system of the described class, the combination of a derrick, a table pivotally connected at its upper end to said derrick, a trip member connected with said table, an elevating scoop, a bail connected with said scoop, a trip member connected with the lower rear end of said scoop, a scoop operating cable connected with said bail, a counterbalancing weight, a pulley suspended from said derrick above said table, a flexible member connected at one end to said table below its pivotal support passing from thence over said pulley and connected at its opposite end with said weight, said weight being adapted to partially counterbalance the weight of said table and

scoop and retard their rearward movement after the contents of said scoop have been discharged independently of the action of said scoop operating cable.

- 5 2. In an elevating system of the described class, the combination of an elevating derrick, upwardly inclined scoop supporting ways supported from said derrick, a table
10 pivotally connected at its upper end with said derrick, a trip member connected with said table, an elevating scoop, a bail slidably connected at its respective ends with the respective sides of said scoop, a trip member attached to the lower rear end of said
15 scoop, a motor actuated cable connected with said bail and adapted to draw said scoop upon said ways and from thence to said pivotally supported table, whereby the trip member of the scoop is caused to engage the
20 trip member of said pivotally supported table and the lower rear end of said scoop

and table are simultaneously elevated by the further movement of said cables and the contents of said scoop thereby discharged, a pair of cables connected with the rear end 25 of said pivotally supported table and extending from thence over pulleys supported from the upper end of said derrick and from thence downwardly, and a pair of weights connected with the lower ends of said cables, 30 said weights being adapted to partly counterbalance the weight of said table and scoop and retard their movement after the contents of the scoop have been discharged, all substantially as and for the purpose specified. 35

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

WILLIAM H. COMPTON.

Witnesses:

JAS. B. ERWIN,

O. R. ERWIN.