

(No Model.)

4 Sheets—Sheet 1.

W. G. PRICE.  
MACHINE FOR BUILDING EMBANKMENTS.

No. 528,891.

Patented Nov. 6, 1894.

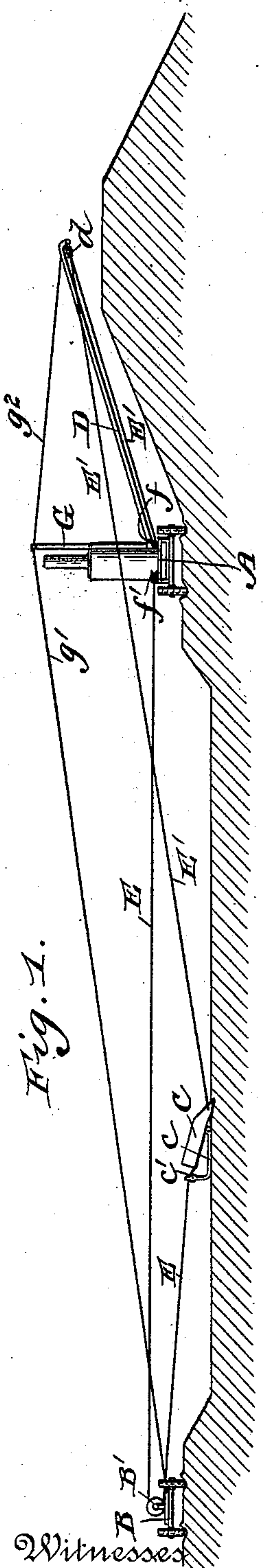


Fig. 1.

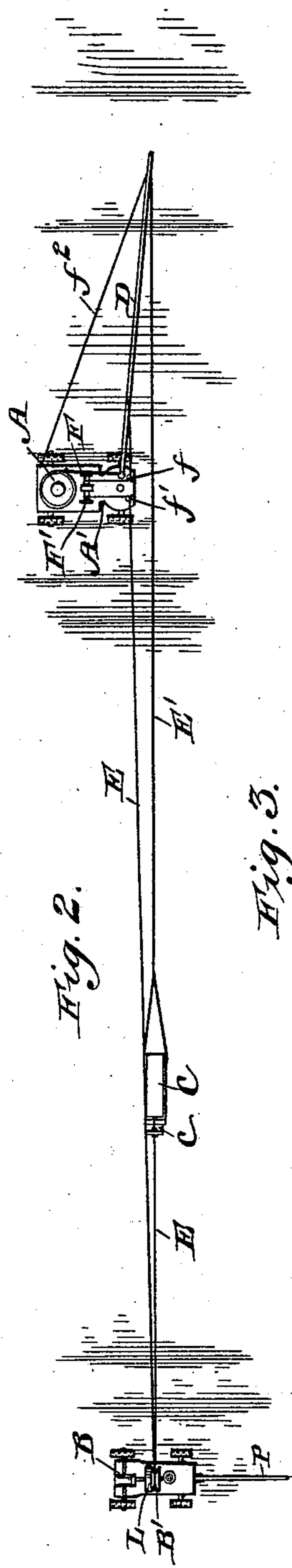


Fig. 2.

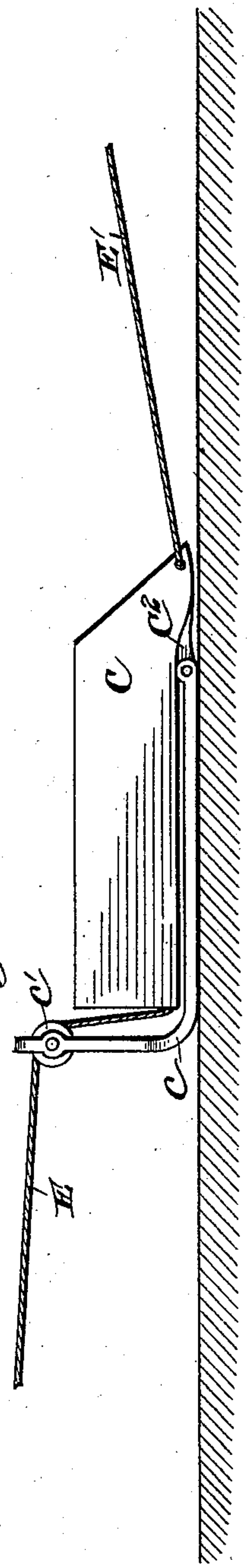


Fig. 3.

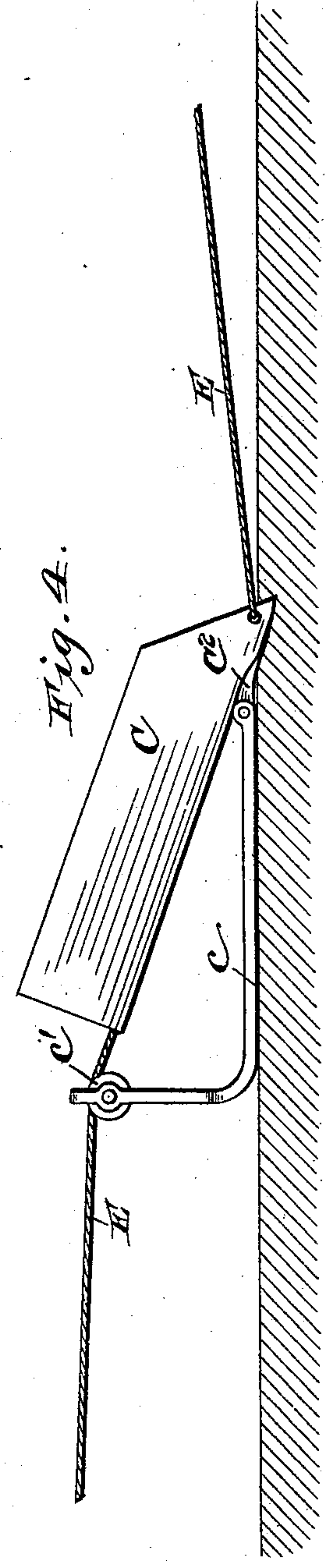


Fig. 4.

Witnesses

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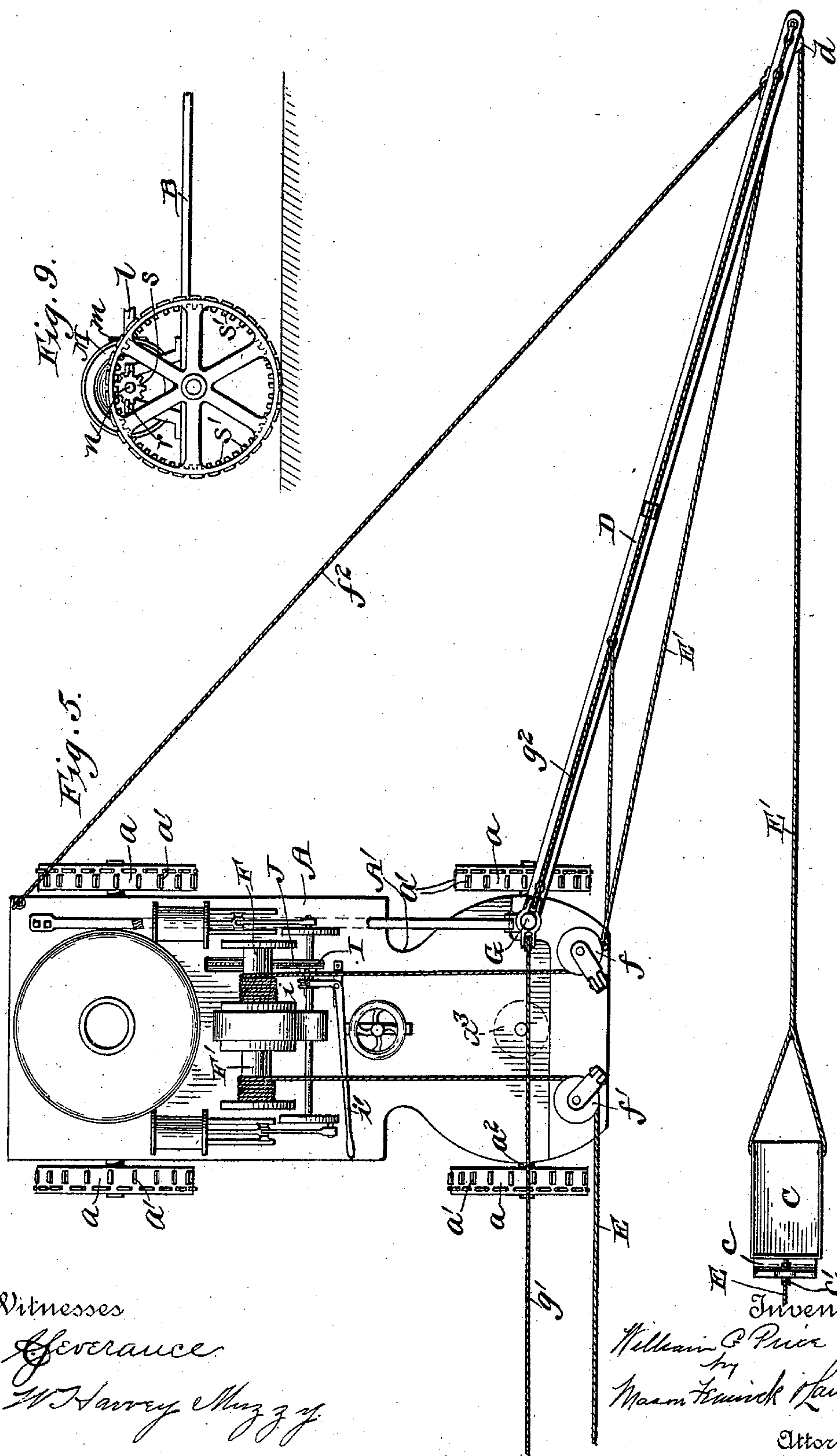
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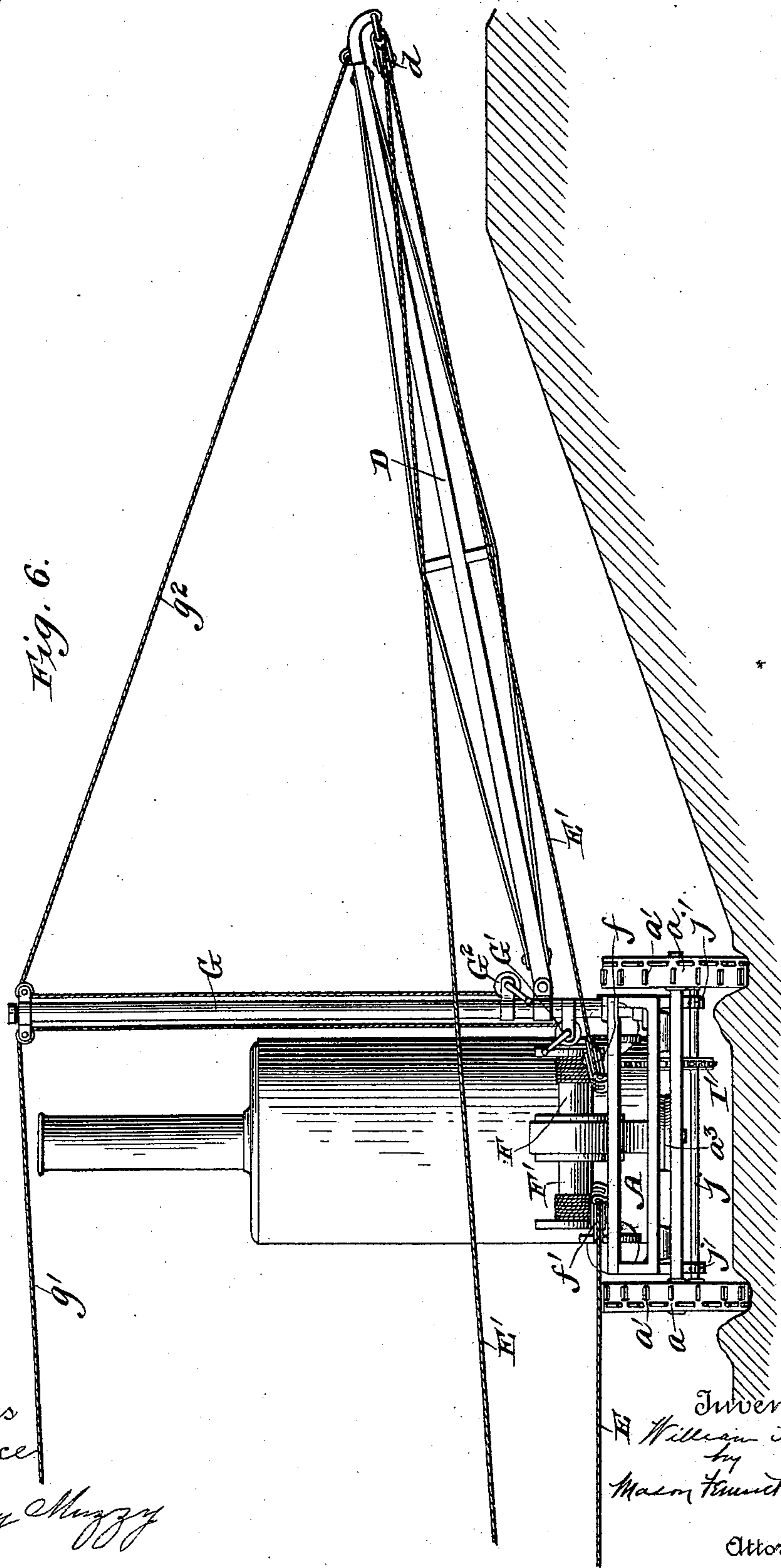
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Fig. 6.



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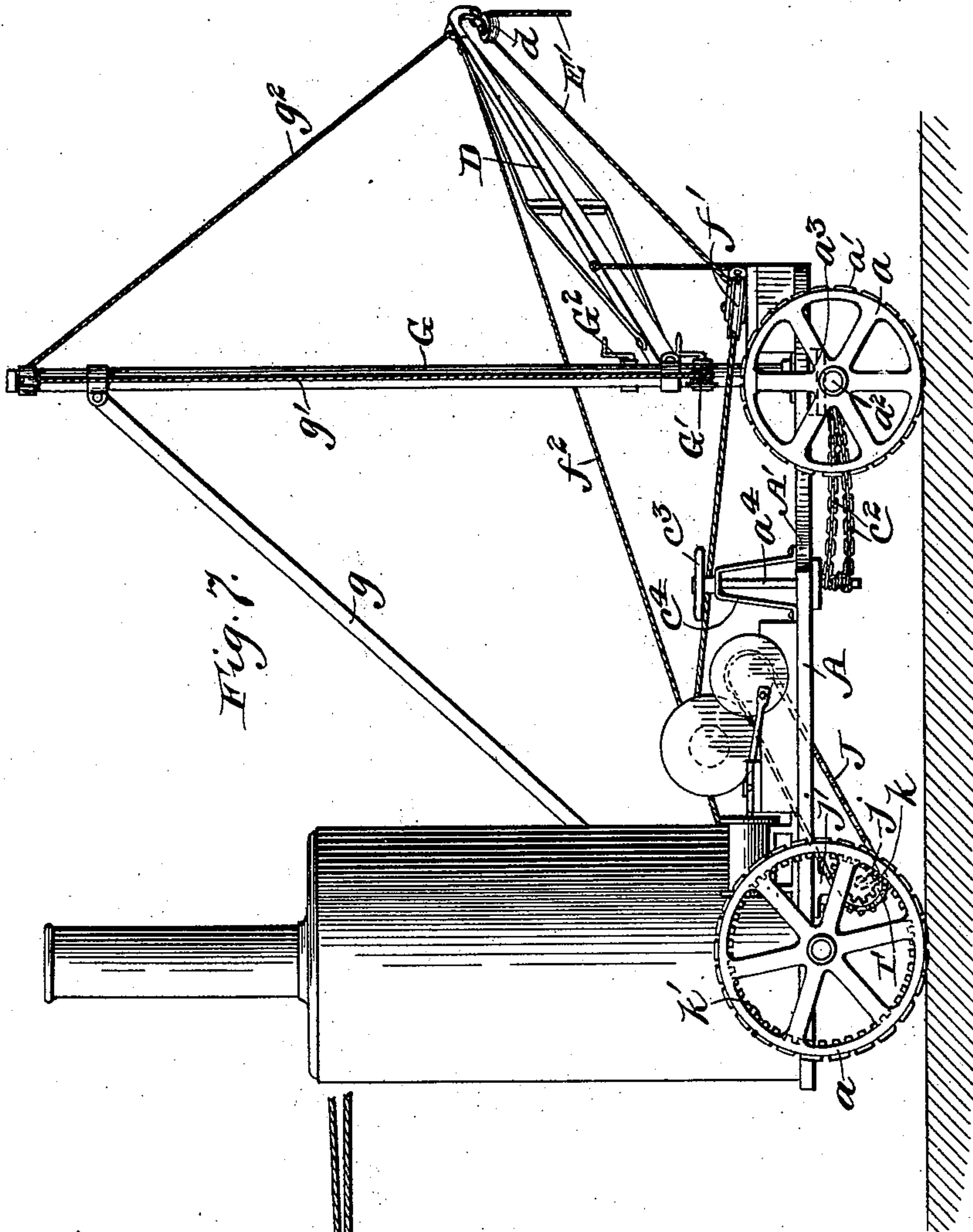
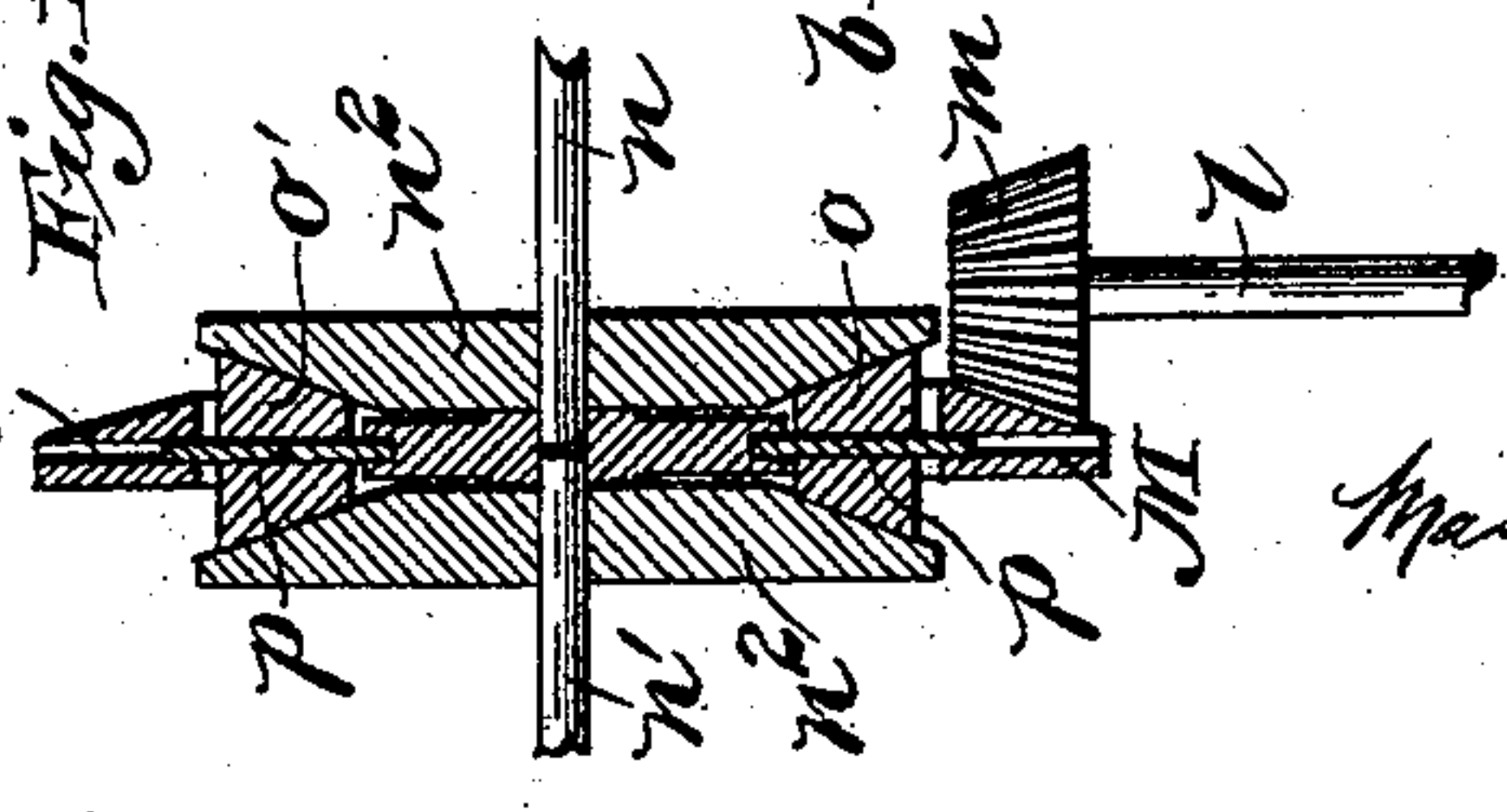
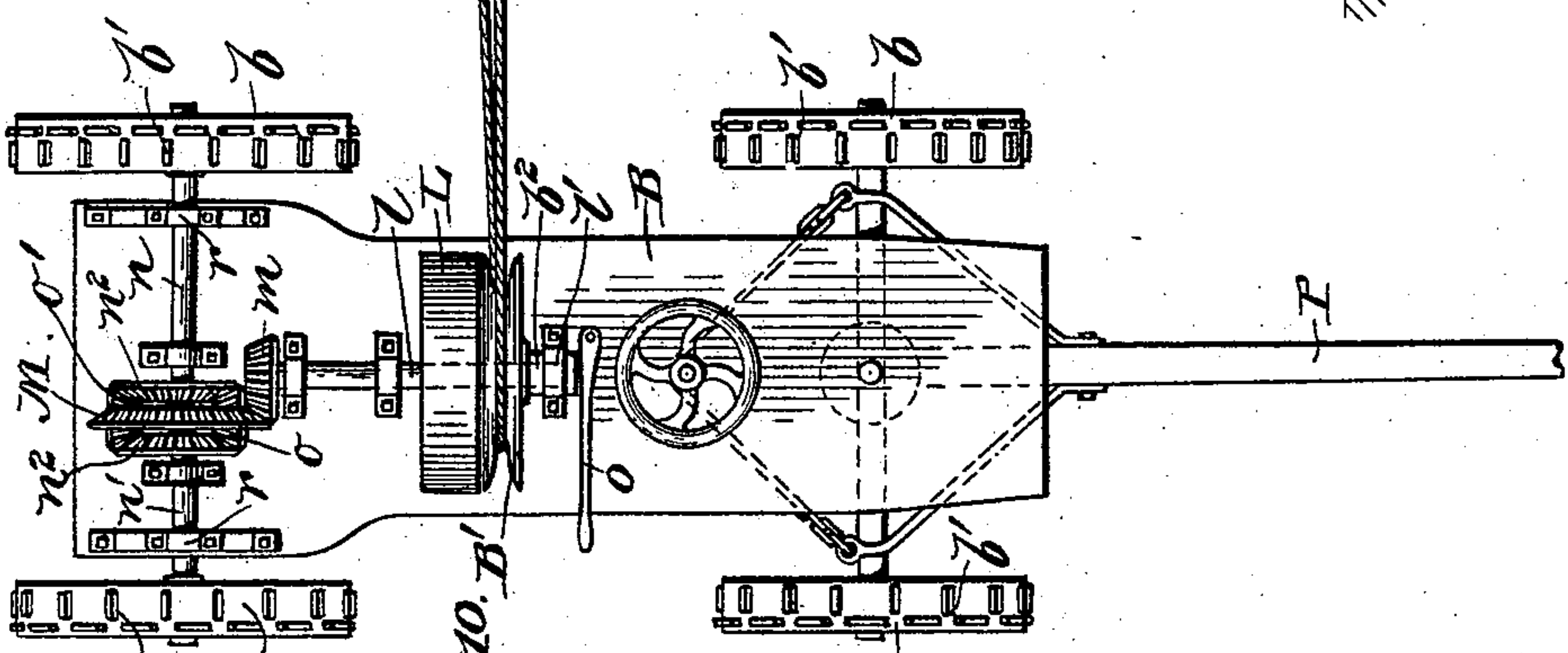


Fig. 8.



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# UNITED STATES PATENT OFFICE.

WILLIAM G. PRICE, OF SIOUX CITY, IOWA, ASSIGNOR OF ONE-HALF TO  
GEORGE E. MOTT, OF NEW ORLEANS, LOUISIANA.

## MACHINE FOR BUILDING EMBANKMENTS.

SPECIFICATION forming part of Letters Patent No. 528,891, dated November 6, 1894.

Application filed February 23, 1894. Serial No. 501,159. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. PRICE, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented certain new and useful Improvements in Machines for Building Embankments; and I do hereby declare the following to be 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 improvements in excavators and has more especially to do with machines for building forming levees or embankments and the objects of my invention are, first, to provide a power wagon and a sheave wagon or movable guy rope anchor wagon to be placed at some distance therefrom and means for excavating the earth between said wagons and conveying it out over the levee and dumping it; second, to propel said sheave and anchor wagon by power furnished by the power wagon; third, to construct the drag scoop so that it can be filled and dumped out over the center of the levee without the aid of any one to handle it and, fourth, to provide a boom and mast supporting the same on the power wagon so that the scoop may be carried out over the center of the levee and dumped. I accomplish these objects by the devices described in the following specification and illustrated in the accompanying drawings, in which—

Figure 1. represents a side elevation of my invention in operation building a levee. Fig. 2. is a top plan of the same. Fig. 3. is a side elevation of the drag scoop in its lowered position that it takes when filled. Fig. 4. represents a side elevation of the same in the raised or tilted position that it takes while being dragged forward to be filled. Fig. 5. represents a top plan view of the power wagon, its boom and mast and the drag scoop. Fig. 6. represents an end elevation of the power wagon and its mast and boom. Fig. 7. represents a side elevation of the same. Fig. 8. represents a top plan view of the sheave and guy rope anchor wagon. Fig. 9. represents a detail side elevation of the gearing for operating said wagon to move it forward and,

Fig. 10. represents a central horizontal section through the clutch gearing for operating the sheave wagon and allowing it to turn a curve at the same time.

A in the drawings represents the power wagon mounted on wheels *a* which are provided with spurs *a'* so that they will not slip on the soft earth when the said wagon is being propelled forward by its own power. This wagon is adapted to travel along the berm of the levee with its wheels in furrows cut in the ground by a plow so that there will be no lateral slipping of the wheels while the devices are in operation when the lateral strain is the greatest. The sheave or guy rope wagon B is also mounted on wheels *b* having spurs *b'* similar to wheels *a* on the power wagon, so that they will not slip over the earth while the wagon is being moved forward by power applied to said wheels as hereinafter described. This sheave wagon is mounted or placed at some distance from the wagon A and also has its wheels set in furrows to prevent lateral slipping when a drag scoop is being operated. The said drag scoop is adapted to travel in the barrow pit and between the sheave wagon and the end of the boom D which is movably mounted on the power wagon A. This scoop is formed of an angular shoe *c* the vertical portion of which is provided near the top with a pulley wheel *c'* over which the power rope E is passed before it is secured to the rear end of the scoop or bucket proper. This bucket is preferably rectangular in form and has its upper side and forward end open, said forward end being slightly depressed so as to form a scoop like edge which will readily bury itself under the surface when the scoop is in the position shown in Fig. 4. The forward end of the scoop is also provided on its under side with lugs *c''* which are pivotally connected to the forward end of the horizontal portion of the base *c* so that said scoop can rise and fall into the respective positions shown in Figs. 3 and 4. A power rope E' is attached to the forward end of the said scoop and passes about a pulley *d* on the end of the boom D and then to and about a pulley *f* on the forward end of the power wagon and then to the power drum



F and said rope is thus drawn forward or payed out according to the direction in which it is desired to move the drag scoop C. The power rope E passes from the power drum F' to and about a pulley  $f'$  similar to the pulley  $f$  and to and about the sheave B' on the sheave wagon and then over the pulley  $c'$  of the drag scoop and then is attached to the rear end of the said scoop as before described. Thus when the rope E is tightened the scoop assumes the position shown in Fig. 4. and on then being moved forward in the barrow pit it scoops the earth therefrom until it is filled, when the rope E is slackened allowing the scoop to assume its normal position as shown in Fig. 3, the scoop continuing its forward movement by being pulled by the rope E' and ascends the inclined inner side of the levee and is drawn to the middle of the same when the rope E' is slackened and a sudden pull is given to the rope E in the direction opposite to that in which the scoop has been traveling which raises the scoop into the position shown in Fig. 4. and at the same time draws it backward and thus the earth is dumped therefrom onto the levee and the operation is then repeated the drag scoop being first returned to its former position by the power rope E.

In order to support the long heavy boom D which is necessary in order to cause the scoop to move to the middle of the levee, a mast G is mounted on the power wagon by having its lower end set in a socket so that it may rock slightly if necessary or rotate and the end of the boom is pivotally connected to said mast near its lower end. The mast is held in its vertical position by means of a rigid lateral brace  $g$  and a guy rope  $g'$  which latter passes from a tightening winch G' about a pulley at the top of said mast and then to the anchor wagon on which it is made fast. Other guy ropes  $f^2$  may also be provided to assist in keeping the boom in the desired position.

A guy rope  $g^2$  passes from a tightening winch G<sup>2</sup> about a pulley at the top of the mast and then to the outer end of the boom where it is made fast and the boom thus supported in the desired position above the middle of the levee and not far above the surface of the same. It will be seen by reference to Fig. 4. that the boom does not extend directly at right angles to the power wagon but is inclined slightly forward so that the scraper when being pulled forward will not come in contact with any part of said power wagon and thus have its contents spilled. The boom can be swung around in any direction and raised and lowered because of the socket connection of the mast to the power wagon and its own pivoted connection to said mast.

The power for operating the drums F, F' consists of an ordinary double cylinder steam engine and boiler which operate said drums through any ordinary and well known gearing so that said drums may be operated independently of one another.

It becomes necessary as the work on the

levee progresses to move both the power wagon and the sheave wagon forward so that the scoop may find a new barrow pit. The power on the power wagon that operates the said scoop is then brought into use to propel said wagons forward as follows:

A sprocket I is loosely mounted on the shaft carrying the gears that operate the drums and is caused to turn with said shaft by means of a clutch  $i$  loosely keyed to said shaft and forced into engagement with said wheel by a hand lever  $i'$ . A sprocket chain J connects this sprocket wheel with a similar sprocket wheel I' mounted on a shaft  $j$  which is journaled in hangers  $j'$  pendent from the floor of the wagon. This shaft  $j$  is provided at each end with a small gear wheel  $k$ , said gears being adapted to mesh respectively with cog teeth  $k'$  formed on the inner faces of the rims of the two rear wheels of said power wagon and thus when the hand lever  $i$  is pressed forward the sprocket wheels and chain and gear wheels are operated and the wagon propelled forward. The said wheels  $a$  of the power wagon are all mounted loosely on their respective axles.

The axle  $a^2$  of the front wheels of the power wagon has a fifth wheel connection  $a^3$  with the said wagon so that said axle may be turned from side to side by means of the guiding mechanism which consists of a vertical shaft  $a^4$  provided with operating chains  $c^2$  and hand wheel  $c^3$  and supported on the wagon by a spider support  $c^4$ . The sides of the forward end of the wagon are cut away as at A' to allow the aforesaid movement of the wheels.

To move the sheave wagon forward a friction disk L is rigidly mounted on the shaft  $l$  which carries the sheave B' and said sheave and disk are adapted to be forced into contact with each other and thus operate the said shaft  $l$  as hereinafter described.

The sheave B' is provided with a sleeve  $b^2$  which is journaled in one of the bearings  $b'$  and the shaft  $l$  passes loosely through this sleeve. The sheave is rotated by the power rope E from the power wagon and the engagement of said sheave with the friction disk is caused by means of the hand lever O which when pressed backward against the end of sleeve  $b^2$  will cause the sheave to engage the friction disk and rotate the same and the shaft  $l$  which carries it. A spur  $m$  is attached to the end of the shaft  $l$  and meshes with a bevel gear M which is loosely mounted on the abutting ends of two independent shafts  $n, n'$ . These latter shafts each carry a bevel gear  $n^2, n^2$ , fast thereon, the same being on each side of the gear M and in proximity thereto. The two spurs  $o, o'$  are mounted in said gear by means of pins  $p$  so as to be capable of rotation axially on said pins, the cog teeth of said spurs engaging the gears  $n^2, n^2$  and causing the latter to both turn with the gear M. The shafts  $n, n'$  are mounted in bearings  $r, r$ , and are provided on their ends with small gear wheels  $s, s$ , which mesh with



cog teeth  $s'$  formed on the inner surface of the tires of the rear wheels of the wagon and thus the said wagon is propelled forward.

When the shaft  $l$  is rotated the spur  $m$  engages and rotates the bevel gear  $M$  which also rotates the gears  $n^2, n^3$  because of the connecting spurs  $o, o'$  and the shafts  $n, n'$  thus operate and move the wagon forward.

If it is necessary to move the wagon in a curve one of the gears  $n^2$  or  $n^3$  can move in one direction and the other in the opposite direction or one may move faster than the other as is necessary in making such a turn or curve. The wheels of the sheave wagon are all loose on their respective axles and the front axle and its wheels are capable of movement for guiding in the same manner as those of the power wagon. The sheave wagon is also provided with a tongue  $P$  by means of which it may be drawn by horses if so desired.

By my arrangement of the sheave or anchor wagon at a distance from the power wagon I am enabled to use the long heavy boom necessary to convey the material in the scoop to the very center of the levee, because I can support the mast for said boom by guy ropes to said anchor wagon. If I did not have the sheave wagon at a distance this would be impossible as the strain on the mast would be too great for any ordinary guy rope attached to the wagon itself or any other object near it, which guy rope would of course have to be changed every time the wagon was moved.

The shoe of the drag scoop might be provided with wheels or rollers to lessen the friction between it and the ground.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A drag scoop for an excavator comprising in its construction a suitable shaped shoe, a scoop proper pivoted at the forward end of said shoe, means for raising the rear end of the scoop proper and thus causing it to fill and after the scoop is filled permitting it to lower to its normal position and means for drawing the drag scoop forward, substantially as described.

2. A drag scoop for an excavator comprising in its construction a suitable shaped shoe, provided with a guiding support at its upper end a scoop pivoted near its forward end at the forward end of the shoe, a rope attached at the lower rear end of the shoe for elevating said rear end and passed over the guiding support on the shoe and permitting it to lower to its normal position and a rope attached to the forward end of the shoe for drawing it forward, substantially as described.

3. In an excavator the combination of the power wagon having the extended boom and mast therefor, a sheave wagon placed at a distance from said power wagon, a drag scoop adapted to operate between said sheave wagon

and the end of said boom and a guy rope from said sheave wagon to the said mast, substantially as described.

4. In an excavator the combination of the power wagon provided with means for moving it forward and having an extended boom and mast therefor, a sheave wagon placed at a distance from said power wagon and provided with means for moving it forward, a self dumping drag scraper adapted to operate between said sheave wagon and the end of said boom and a guy rope from said sheave wagon to said mast, substantially as described.

5. In an excavator the combination of a power wagon provided with gearing for moving it forward and having an extended boom and mast therefor, an anchor wagon placed at a distance from the power wagon, a guy rope from said anchor wagon to said mast, a winch for tightening said rope, a winch and rope for raising said boom, and a drag scoop adapted to operate between said anchor wagon and the end of said boom, substantially as described.

6. In an apparatus for constructing levees the combination of a power wagon adapted to be moved by its own power and provided with a mast and extended boom, a sheave and anchor wagon placed at a distance from the power wagon and adapted to be moved forward by power from the same, a drag scoop and means for moving it between the said sheave wagon and the outer end of the said boom and causing it to dump at the latter place, and a guy rope from said anchor or sheave wagon to said mast, and a guy rope from said mast to the end of said boom, substantially as described.

7. In an apparatus for constructing levees the combination of the power wagon and a sheave and anchor wagon placed at a distance therefrom, both wagons being adapted to move forward by power from the power wagon and a drag scoop adapted to move between said wagons and means for causing said scoop to either scoop the earth or slide smoothly over the same, substantially as described.

8. In a machine for building embankments, the combination of a movable power wagon, a movable sheave wagon, means for connecting the two wagons, and a tilting drag scoop connected to and operated by said wagons, whereby as the scoop is moved forward its rear end is raised, and when the scoop is filled it lowers again and is dumped at the desired point, substantially as described.

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

WILLIAM G. PRICE.

Witnesses:

ISAAC A. HARVEY,  
NINA A. GREGORY.