

(No Model.)

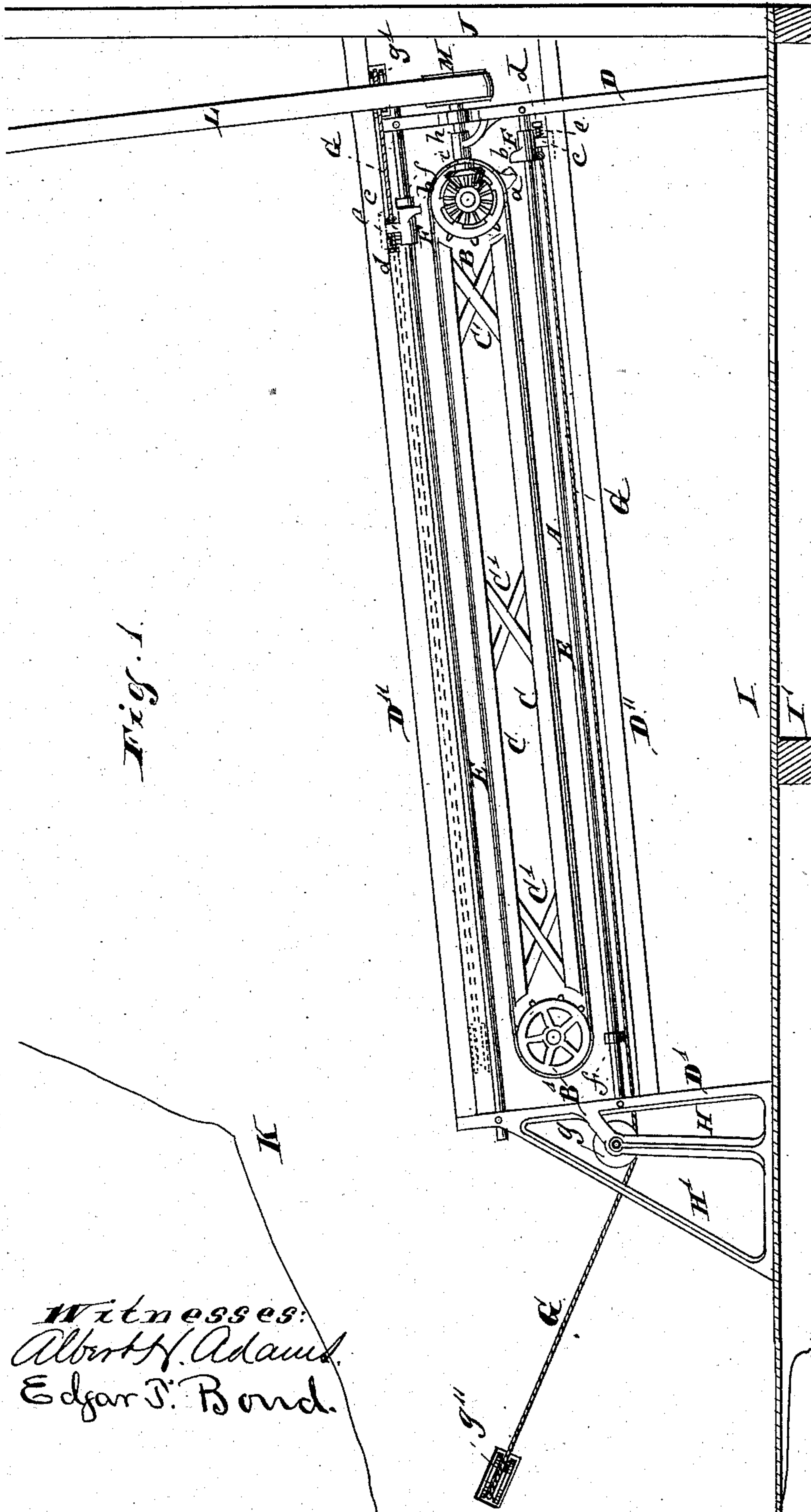
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W. D. RINEHART.

DEVICE FOR OPERATING SHOVELS BY POWER.

No. 284,485.

Patented Sept. 4, 1883.



Witnesses:
Albert H. Adams.
Edgar J. Bond.

Inventor:
William D. Rinehart.

(No Model.)

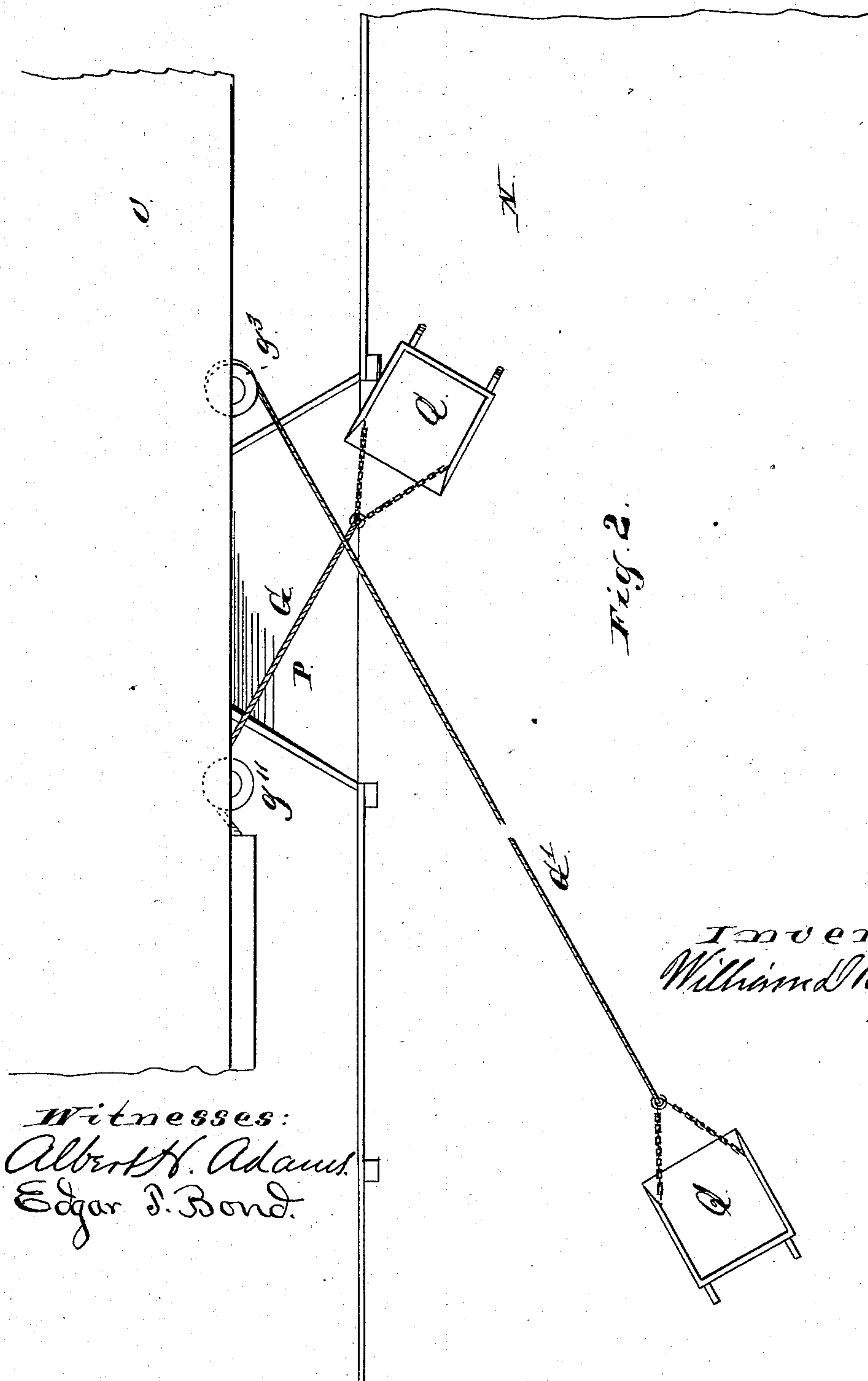
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Fig 3.

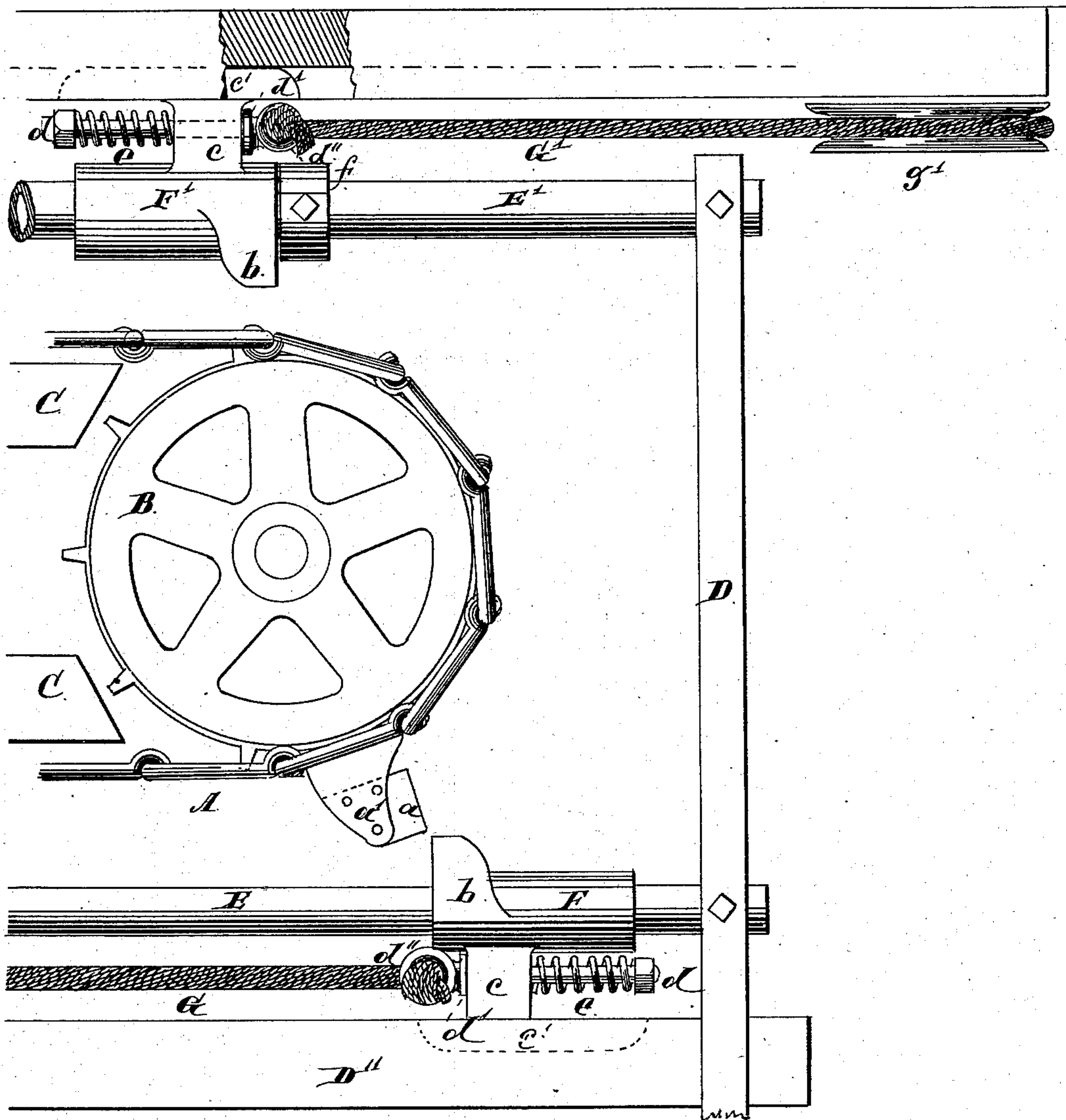
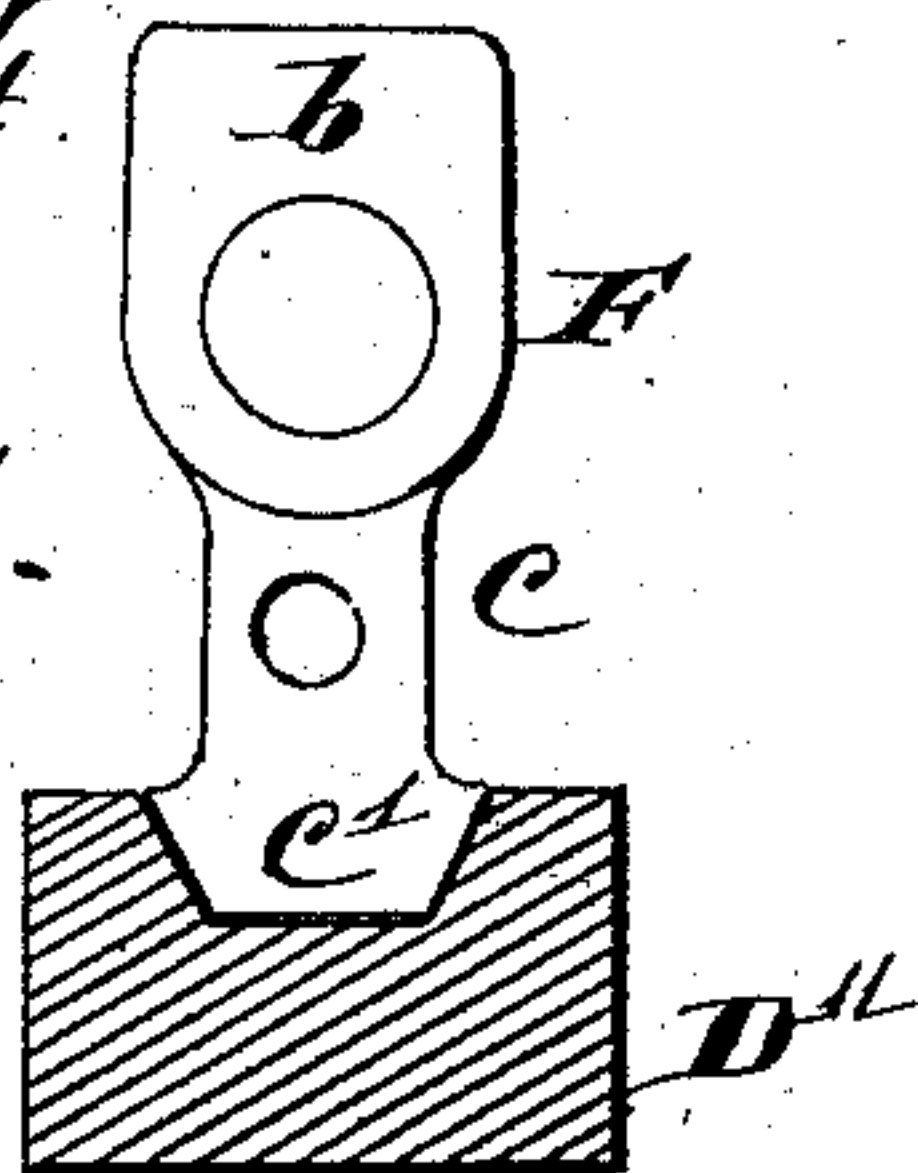


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM D. RINEHART, OF CHICAGO, ILLINOIS.

DEVICE FOR OPERATING SHOVELS BY POWER.

SPECIFICATION forming part of Letters Patent No. 284,485, dated September 4, 1883.

Application filed July 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. RINEHART, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Devices for Operating Shovels, &c., by Power, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a detail showing the relative position of two shovels or scrapers in use; Fig. 3, an enlarged detail, showing one of the sprocket-wheels, the carrying-chain, the traveling heads and their supporting-rods and guides, and the operating-ropes; Fig. 4, a detail, being an end view of the traveling head and a cross-section of its guide.

This invention relates to devices designed for operating shovels or scrapers in transferring grain or other substances from one car to another, or from a car to an elevator, but which can be used for operating other devices for other purposes and in other places where it is desirable to have the force applied in the forward movement and leave the devices operated free from the power on the return movement; and its nature consists in the several devices and combinations of devices hereinafter described, and pointed out in the claims as new.

In the drawings, A represents an endless chain, having secured thereto at one point a bumper or stop, *a*, which bumper or stop may be attached to the chain by means of plates *a'*, secured to the side bars of a link, or in any other suitable manner.

B B' are sprocket-wheels for driving and carrying the chain A, and supported in any suitable manner to have free rotation. These wheels are located at the required distance apart to give the chain a sufficient length of travel for the distance required for the shovels or scrapers or other devices in operation.

C represents tracks supported in any suitable manner to lie within the chain and furnish a support therefor, and, as shown, these tracks are braced one with the other by diagonal pieces C'.

D D' are posts or uprights, located one at each end of the traveling-chain frame.

D'' represents guides, one above and the other below the chain, and supported by the posts or uprights D D', and arranged to be in line with the chain.

E E' are bars or rods, one above and the other below the chain, and between the chain and the top and bottom guides, D'', and held in position by being supported at their ends in the uprights or posts D D'.

F F' are heads or slides, located, respectively, on the rods or tracks E E', and free to slide back and forth thereon. The heads or slides F F' are each provided with a projection or lip, *b*, arranged to be engaged by the bumper or stop *a* and carry the head, which is engaged forward on its track or rod, the heads having a reverse forward movement in respect to each other. Each head is also provided with an extension, *c*, on the end of which is a shoe, *c'*, having inclined sides, as shown in Fig. 4; and, as shown in Fig. 3, the ends of the shoe are rounded off to facilitate the free movement of the head. The shoes *c'* for the respective slides F F' enter correspondingly-shaped grooves in the guides D'', as shown in Figs. 3 and 4, and prevent the slides from turning on the rods or tracks in traveling back and forth. The main or body portion of each slide is provided with a longitudinal opening corresponding in size and shape to the size and shape of the rods or tracks on which the slides are mounted, and the necks or extensions *c* are each provided with a longitudinal opening, through which the shank of a draw pin or bolt, *d*, passes. One end of each draw pin or bolt is provided with a collar or flange, *d'*, and an eye, *d''*, and, as shown, between the neck *c* and the end of the draw pin or bolt opposite to the eye, around the shank of the pin or bolt, is located a coiled spring, *e*, which allows the pin or bolt to yield and relieve the chain, in case the scraper or other device which is being operated comes in contact with anything solid or unyielding, thereby preventing any breakage or straining of the chain; and, as shown, the forward end of the draw-pin projects beyond the end of the slide, so that the spring *e* forms a cushion for the slide when the limit of the forward movement is reached, and the spring *e* also allows the slide to yield sufficiently at the end of the forward movement for the disengagement of

the bumper *a b* without straining on the chain and without interfering with the travel of the chain.

G G' are cables or ropes for the respective slides *F F'*, each cable or rope being attached at its end to the draw pin or bolt *d* of the slide, and the other end of the cable or rope is attached to the scraper or other device which is to be operated. As shown, the cable or rope *G* passes under a grooved pulley, *g*, and over a grooved pulley, *g''*, thence to the scraper which it operates, and the rope or cable *G'* passes over a pulley, *g'*, and around a pulley, *g'''*, to the scraper which it operates.

H is a standard, in the upper end of which is located the pulley *g*, and, as shown, this standard is connected with the upright *D'* and forms a brace for the upright, and the upright is further braced by a piece, *H'*; but it may be braced in any other suitable manner, and the post *H* may be independent of the upright, or the pulley *g* be supported in some other manner than by the post *H*.

I is a floor or support for the apparatus. This floor or support may be the floor of the car or building, laid on beams *I'* or otherwise, or it may be the flooring or support to suit the place where the shovels or other devices are to be operated.

J represents the uprights or posts of a car or building or other frame-work within which the apparatus is located.

K is the side walls of a car, building, or other frame-work.

L is a driving-belt for imparting the power to drive the chain *A*.

M is a pulley-wheel over which the belt *L* passes. A chain and sprocket-wheel could be used in place of the belt and pulley, if desired. The pulley *M* is located on a shaft, *h*, which has its bearings in the post *D*, and is provided at its opposite end with a beveled-gear wheel, *i*, which meshes with a corresponding bevel-wheel on the shaft of the wheel *B*, and drives the wheel which imparts rotation to the chain *A*. It is to be understood that the chain can be driven by other devices than those shown, and in any other suitable manner.

The construction and arrangement of the supports *D D'*, guides *D''*, and tracks *E E'* can be varied from that shown to suit the location where the work is to be done, and the length of these parts, and also the chain *A*, is to be governed by the amount of travel which it is desired that the scrapers or shovels or other devices shall have.

In the form of arrangement shown the apparatus is arranged for use in the transfer of grain from one car to another, or to a bin or elevator, and the car containing the grain to be transferred is represented by *N*, while the car in which the scraper-operating devices are located is represented by *O*, through which car the grain is to be transferred to another

car or bin, receptacle, or elevator. The two cars, as shown, are connected by a spout, *P*, and *Q* represents the scrapers or shovels, which are attached, respectively, to the ends of the ropes *G G'*. As shown, the scraper *Q'* is at the limit of its return movement and the scraper *Q* at the limit of its forward movement, to correspond with the positions of the traveling heads or slides *F F'*, by which the ropes *G G'* are operated.

In use power is applied to drive the chain *A* in any suitable manner, and the travel of the chain causes the bumper or stop *a* to alternately engage with the projection *b* of the slides *F F'*, the engagement being at the terminus of the return movement of the slides, and such engagement, by the travel of the chain, carrying the slides forward, which forward movement of the slides acts on the rope or chain attached thereto and draws forward the scraper or shovel to which it is attached, and the operator, in drawing back the scraper or shovel after the forward movement is terminated, draws the head or slide to which the rope is attached back therewith to the limit of its return movement, to be again engaged and carried forward by the chain, and this forward and return movement of the scrapers is alternate, so that when one scraper is being returned the other is being carried forward. When both scrapers are in the position of *Q'*, the driver or bumper *a* moves without disturbing either, and the driver *Q* moves either scraper from any position less than its full return movement, and by this arrangement the movements of the scraper may be irregular as to distance, and the movement of one or both scrapers may be intermitted at the will of the operator without stopping the machine or driver.

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

1. The traveling chain *A*, having a stop or bumper, *a*, in combination with slides arranged to be engaged by the bumper, and carrying ropes attached to scrapers or shovels, substantially as specified.

2. The traveling chain *A*, having a stop or bumper, *a*, guides *D''*, and tracks *E E'*, in combination with the slides *F F'* and ropes *G G'*, secured to the slides and to scrapers or shovels, for operating the scrapers or shovels, substantially as specified.

3. The traveling chain *A*, having a bumper or stop, *a*, guides *D''*, and tracks *E E'*, in combination with the slides *F F'*, each having a draw-pin, *d*, and a resisting-spring, *e*, and ropes *G G'*, attached to the draw-pins and to scrapers or shovels, for operating the scrapers or shovels, substantially as specified.

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Witnesses:

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