

(No Model.)

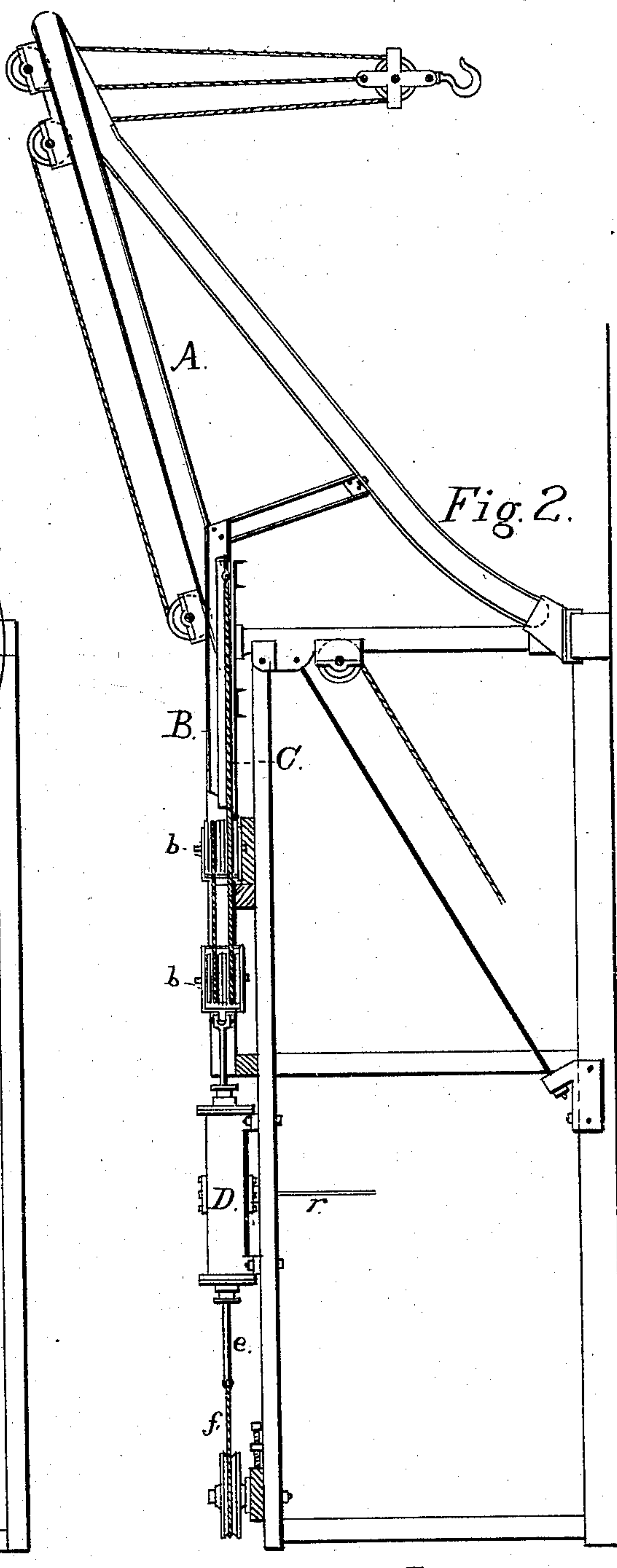
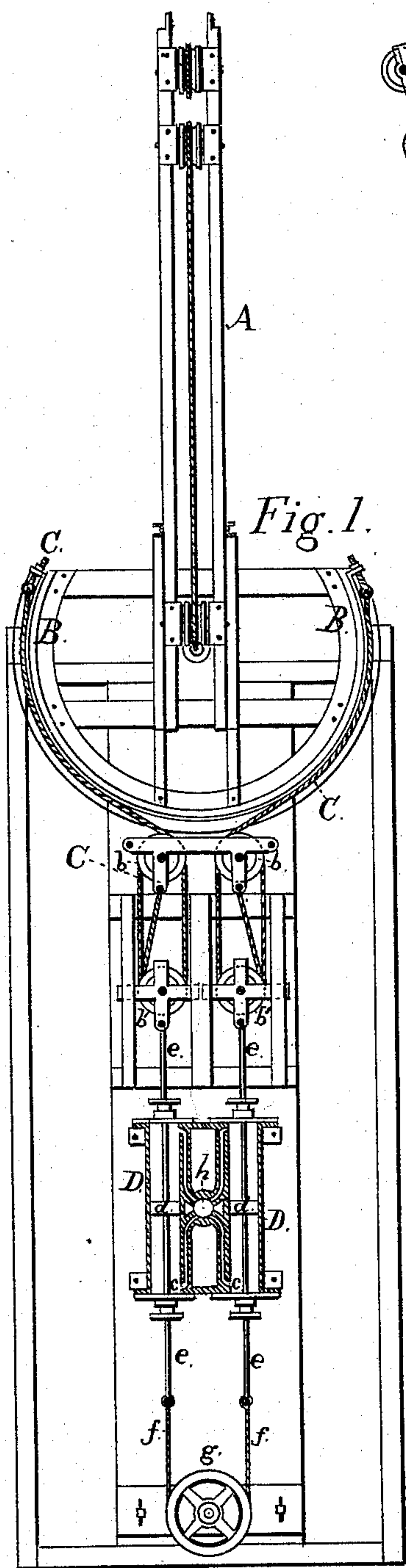
2 Sheets—Sheet 1.

H. T. STOCK.

MACHINERY FOR SWINGING CRANES.

No. 283,037.

Patented Aug. 14, 1883.



Witnesses:

Wesley Royce
W. J. Burgess

Inventor:

H. T. Stock
By Samuel Hall Atty

(No Model.)

2 Sheets—Sheet 2.

H. T. STOCK.

MACHINERY FOR SWINGING CRANES.

No. 283,037.

Patented Aug. 14, 1883.

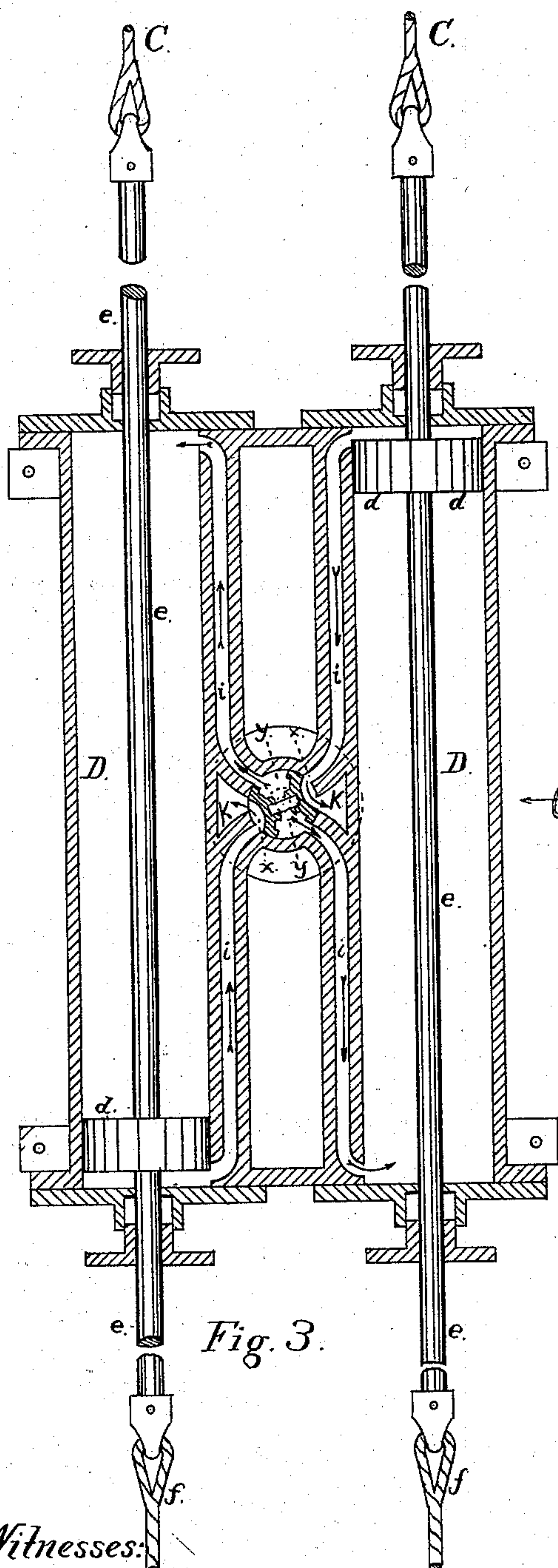


Fig. 3.

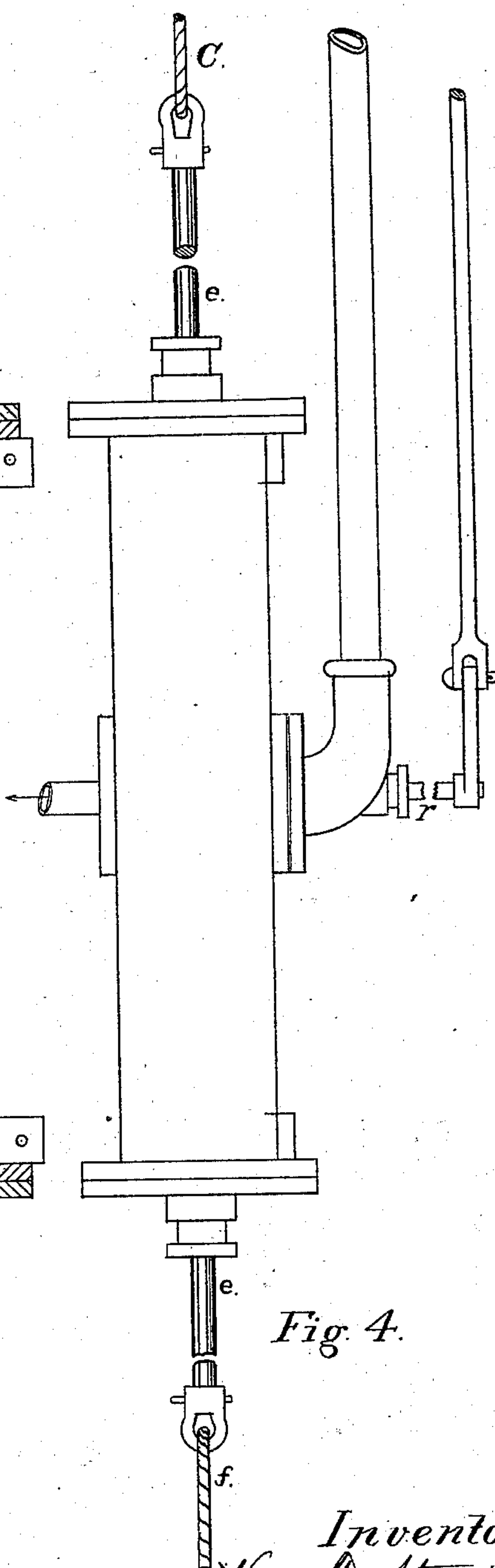


Fig. 4.

Witnesses:

Wesley Royce
W. D. Burgess

Inventor:

Hosia T. Stock
By Almon Hall
His Atty.

UNITED STATES PATENT OFFICE.

HOSEA T. STOCK, OF TOLEDO, OHIO.

MACHINERY FOR SWINGING CRANES.

SPECIFICATION forming part of Letters Patent No. 283,037, dated August 14, 1883.

Application filed January 10, 1883. (No model.)

To all whom it may concern:

Be it known that I, HOSEA T. STOCK, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented certain new and useful Improvements in Machinery for Swinging Cranes, of which the following is a specification.

My invention relates to a device for swinging cranes of excavators, dredges, and like machines, and other cranes, by means of reciprocating pistons operating in steam or compressed-air cylinders, and attached to an arm of the crane or the ordinary "swinging circle" by the usual ropes or chains; and the objects of my invention are, first, to obviate the unwieldy character and great length and weight of cylinders heretofore in use in machines in which the cranes are swung by the direct action of steam-pistons; second, to economize space by arranging the crane-swinging machinery in relation to the body of the machine in the manner shown; third, to provide a device which may be readily applied to excavators and dredges already in use without necessitating changes in the crane or the internal arrangement of the machine; and, fourth, to provide such machine with a double steam or compressed-air cylinder having pistons moving in opposite directions and controlled by a single valve. I attain these objects by means of the mechanism hereinafter described, and illustrated in the accompanying drawings, constituting part hereof, in which—

Figure 1 is a plan of my device as applied to a railroad-excavator. Fig. 2 is a side view of the same. Fig. 3 is a horizontal longitudinal section of the double-cylinder pistons and valve employed in my device, and Fig. 4 is a side view of said cylinders, showing manner of connection with steam or air pipe and exhaust-pipe, together with rod by which the valve above referred to is actuated.

Similar letters refer to similar parts throughout the several views.

A is a swinging crane. B is a swinging circle or horizontal segmental pulley attached to the upper part of the crane. Made fast to pulley B, and passing around its periphery in suitable grooves, are ropes or chains C C, one of which being pulled as the other is paid out

causes pulley B to rotate on its axis, carrying with it the crane, which is thus swung either to the right or left. Ropes C C pass around blocks and pulleys *b* and *b'*, as shown in Figs. 1 and 2, after the usual manner of double blocks and tackle. To avoid entanglement and rubbing of tackle, blocks and pulleys *b* and *b'* are supported and kept in line by a frame, the sides of which form slides for blocks and pulleys *b' b'*, as shown.

D D are cylinders, or constitute a double cylinder, provided with piston-heads *d* and piston-rods *e*. The forward ends of piston-rod *e* are attached to pulleys *b'*, and the other ends of said piston-rods are connected by rope or chain *f*, passing around pulley or guide *g*. By the arrangement of the valve and ports hereinafter described, the two cylinders D D always take steam simultaneously at opposite ends, causing the two pistons to travel in opposite directions, one piston pulling one of the ropes C, while the other rope C is eased off by the opposite piston, the tackle, however, being kept taut and in place by rope and guide *f g*. It will be observed, however, that, though the pistons move in opposite directions, the pull on tackle C is by both cylinders and pistons, by reason of the connecting-rope *f*. The same result obtained by the double cylinders and blocks and tackle may obviously be obtained by dispensing with one of the cylinders and pistons, and by attaching one end of rope *f* to the remaining piston, and the other end of rope *f* directly to block *b'*, though I prefer the method above described. The short stroke of the two pistons is converted into the long sweep of the "circle" B by means of the intervening blocks, pulleys, and tackle shown. By these means the heavy, long, and cumbersome single oscillating cylinder in use for swinging cranes is dispensed with, and by placing the machinery on top of the car, as shown, space inside the car (much needed in this class of machinery) is afforded, the whole being readily applicable to ordinary excavators and like machines already in use. Cylinders D D are provided with steam or air ports *i i i*, leading from a common central valve, *h*, each cylinder having two ports, one leading into each end of the cylinder. These ports serve

alternately as induction and eduction passages. The admission of steam or compressed air into and its escape from cylinders D D are controlled by an oscillating four-chambered valve, two of said chambers, *x x*, being eduction-passages, the remaining two, *y y*, serving for induction. The several chambers of valve *h* are so arranged with reference to steam-ports *i* and exhaust-ports *k* that when steam or air is admitted at one end of one cylinder the same is simultaneously admitted at the other end of the other cylinder through the induction-chambers of valve *h*, while at the same instant steam or air is permitted to escape through the eduction-chambers *x*, thence through exhaust-ports *k k*, and thence into escape-pipe L, as the piston-heads advance in opposite directions. Upon giving valve *h* a quarter-turn, (which is done by the operator by means of a lever within convenient reach attached to rod *r*,) the operation is reversed and the crane is caused to swing in the opposite direction.

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

1. In an excavator, dredge, or like machine, provided with a crane, in combination with such crane, swinging circle B, ropes C C, blocks and pulleys *b b'*, cylinders D D, taking

steam simultaneously at opposite ends, provided with pistons moving in opposite directions, rope *f*, and pulley *g*, substantially as shown and described, for the purposes set forth.

2. In an excavator, dredge, or like machine, provided with a crane, in combination with such crane, swinging circle B, ropes C C, blocks and pulleys *b b'*, cylinders D D, provided with pistons moving in opposite directions, rope *f*, pulley *g*, and valve and port mechanism *h, i i, k k, x x*, and *y y*, substantially as shown and described, for the purposes set forth.

3. In combination with crane A, swinging circle B, ropes C C, and cylinders D D, the block and pulleys *b b'*, arranged in a supporting-frame, said block and pulley *b'* being attached to piston-rods *e e*, and sliding in said supporting-frame, substantially as shown and described, for the purposes set forth.

4. The combination of pulley B, ropes C C, blocks and pulleys *b b'*, cylinders D D, rope *f*, and pulley *g*, arranged in relation to the body of the supporting car or carriage, and crane A, substantially as shown and described, for the purposes set forth.

HOSEA T. STOCK.

Witnesses:

HARRY E. KING,
W. F. CULBERSON.