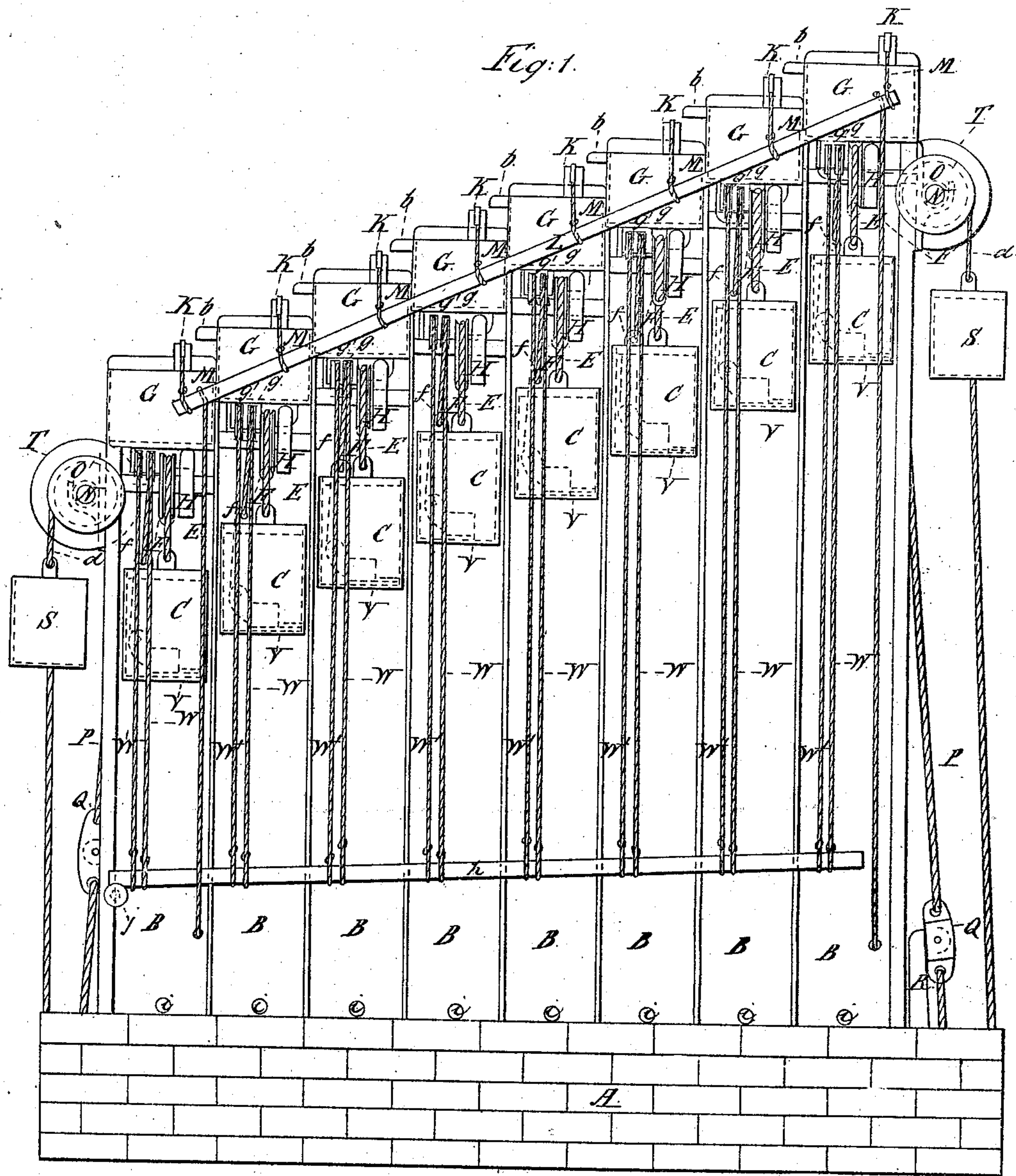


S. K. Hoxsie,

Elevator.

No. 90,103.

Patented May 18. 1869



Witnesses
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Willard Emery

Inventor
S. H. Kopsue
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3. Sheets, Sheet 2.

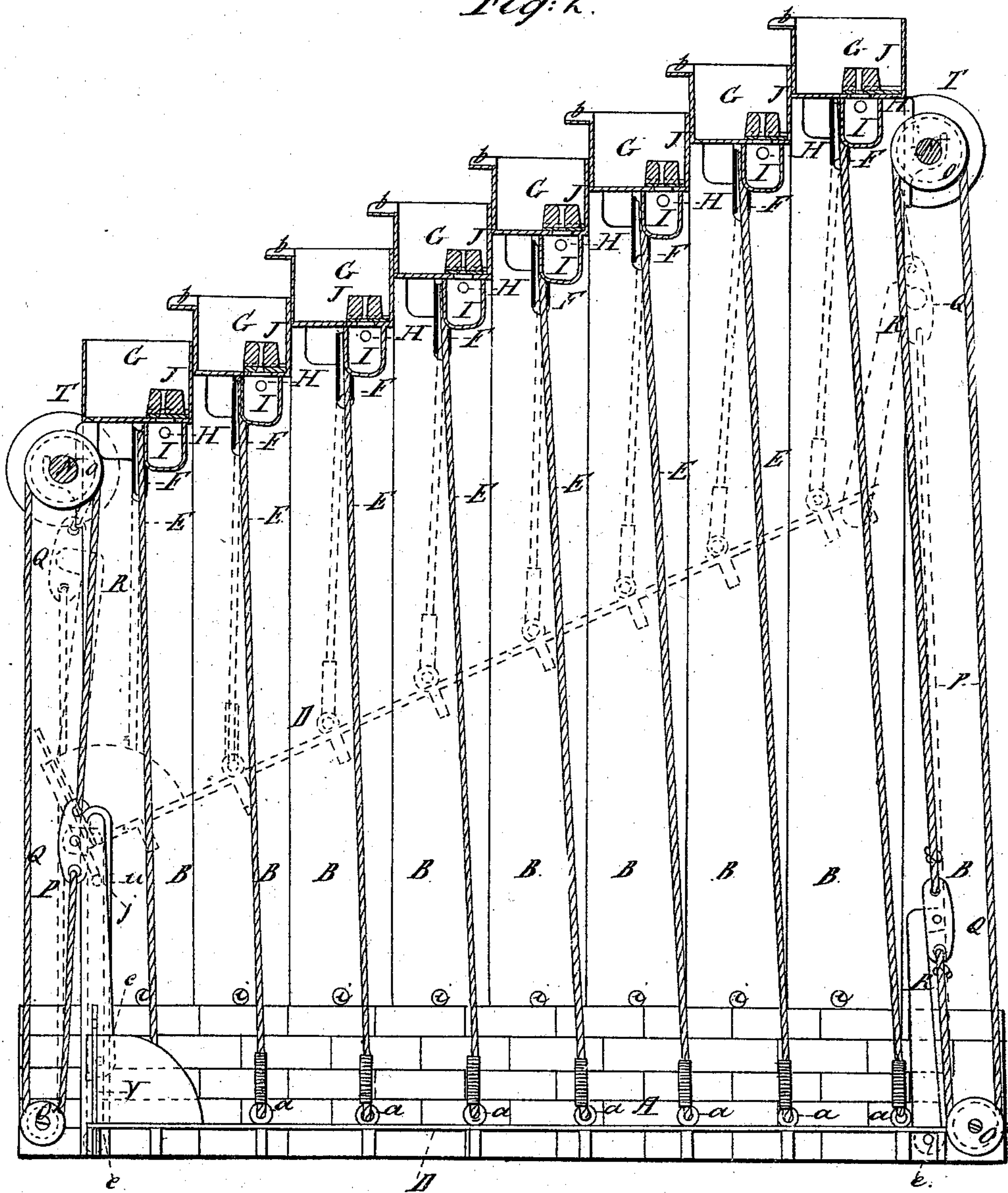
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Fig: 2.



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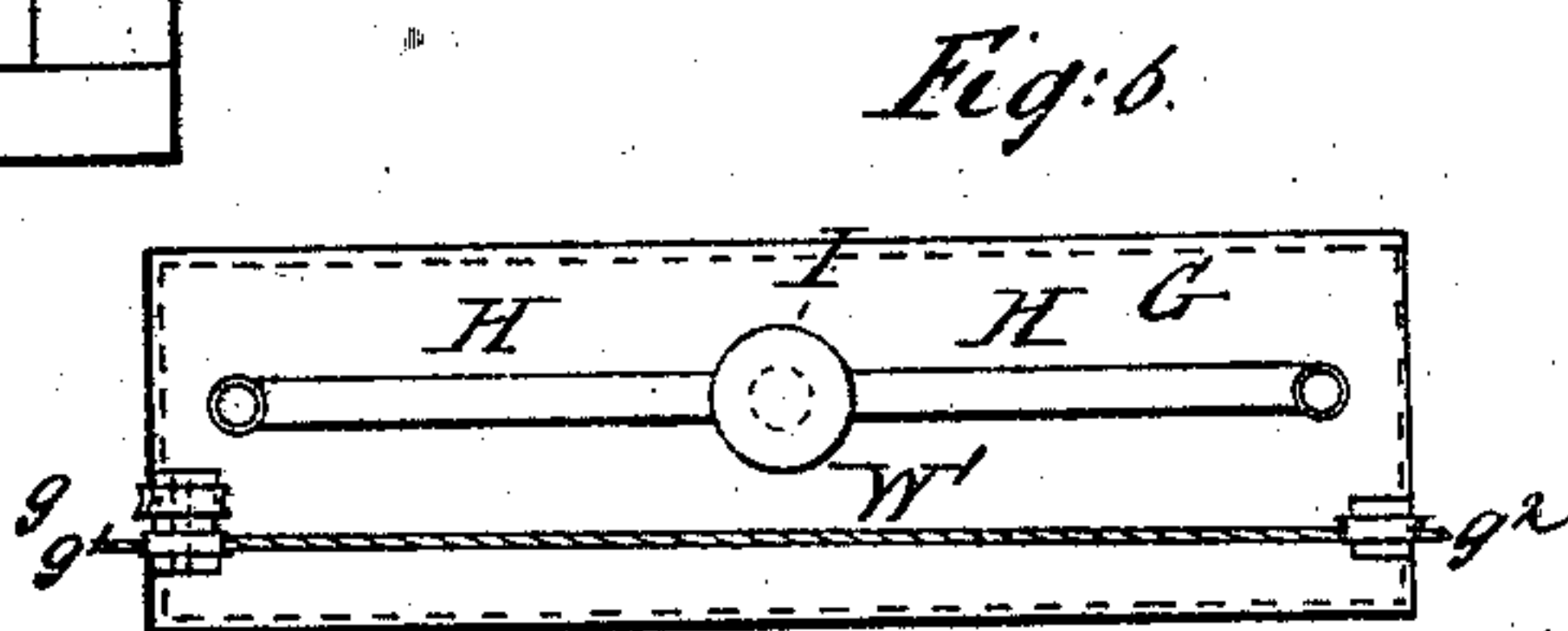
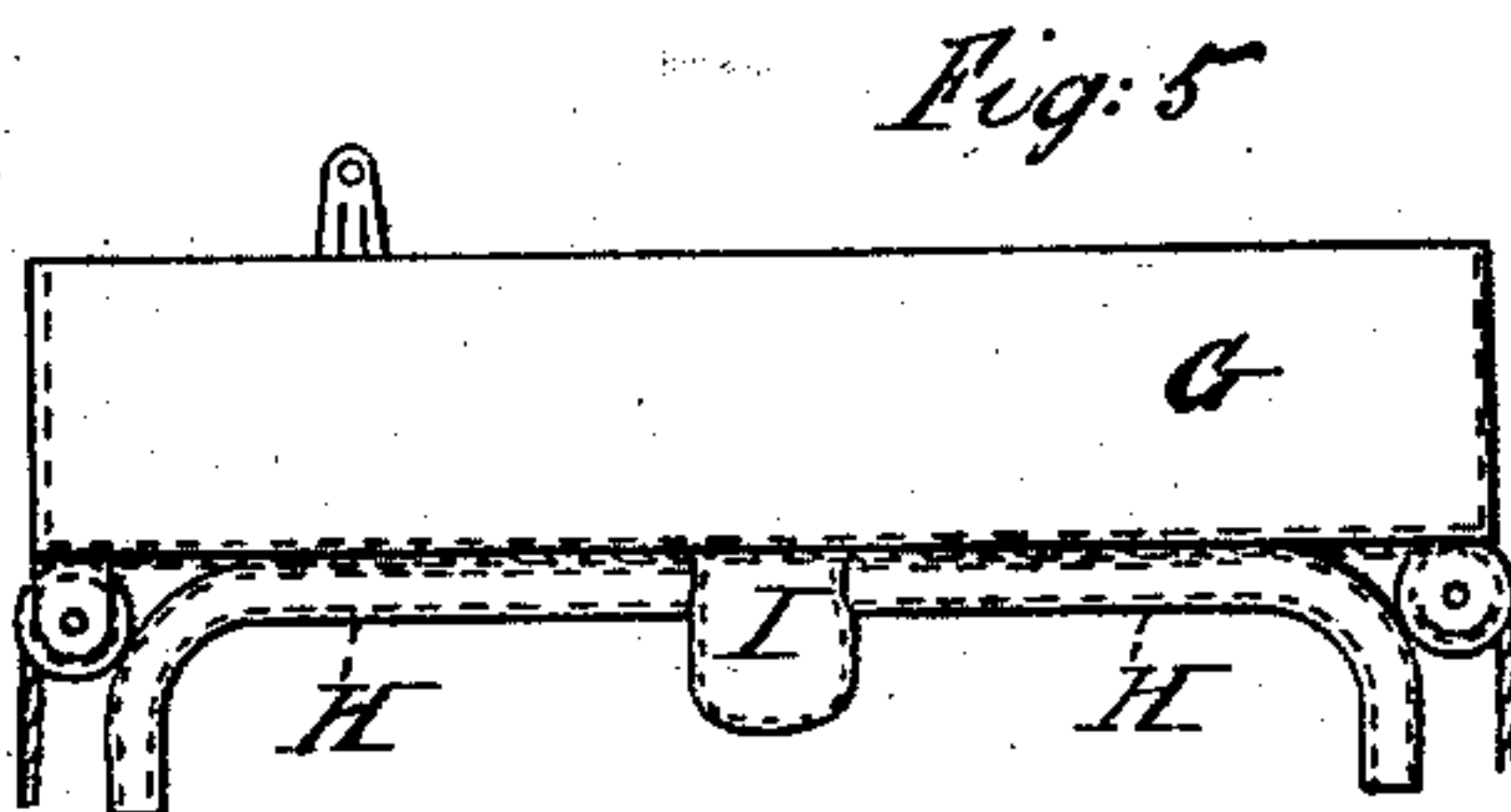
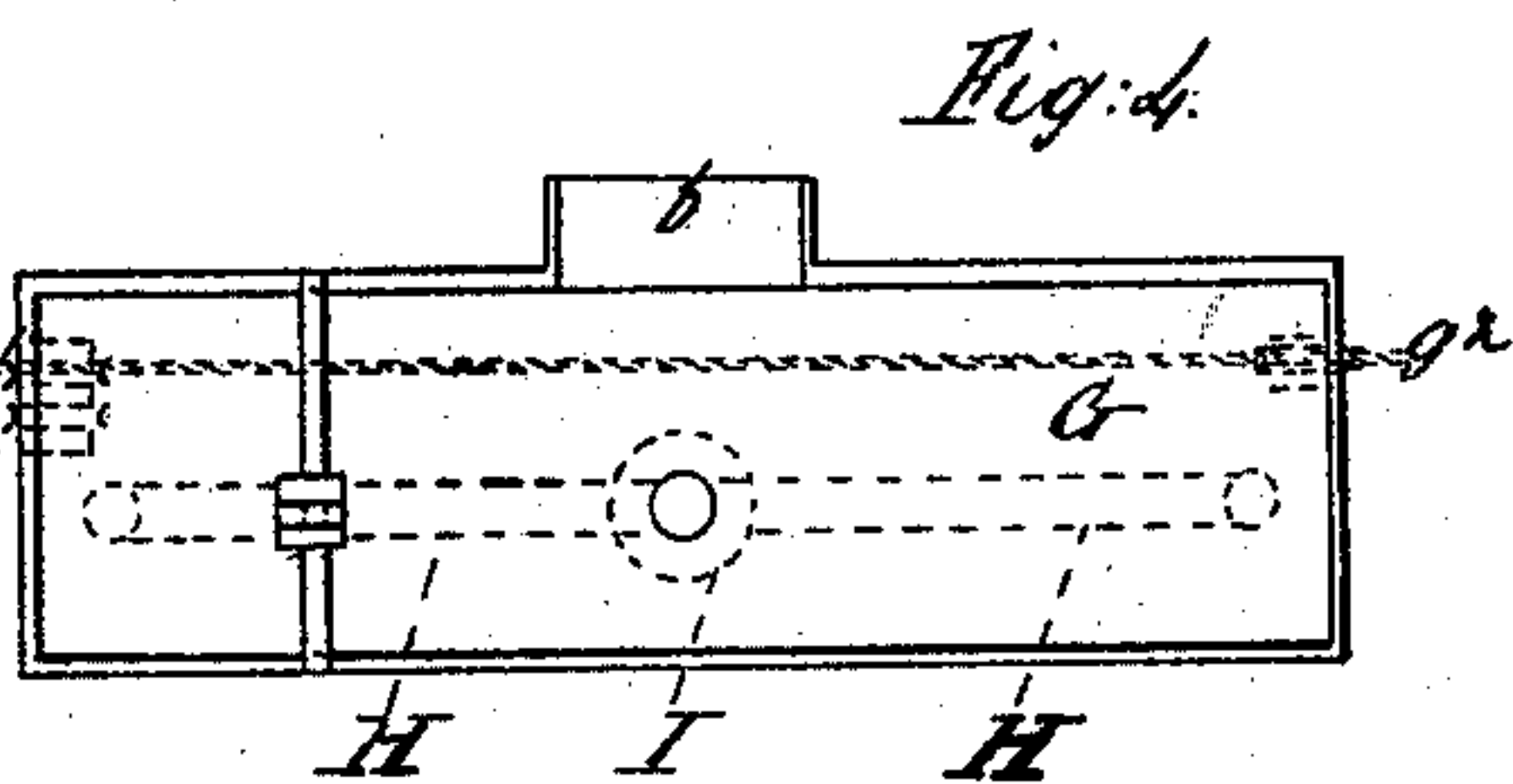
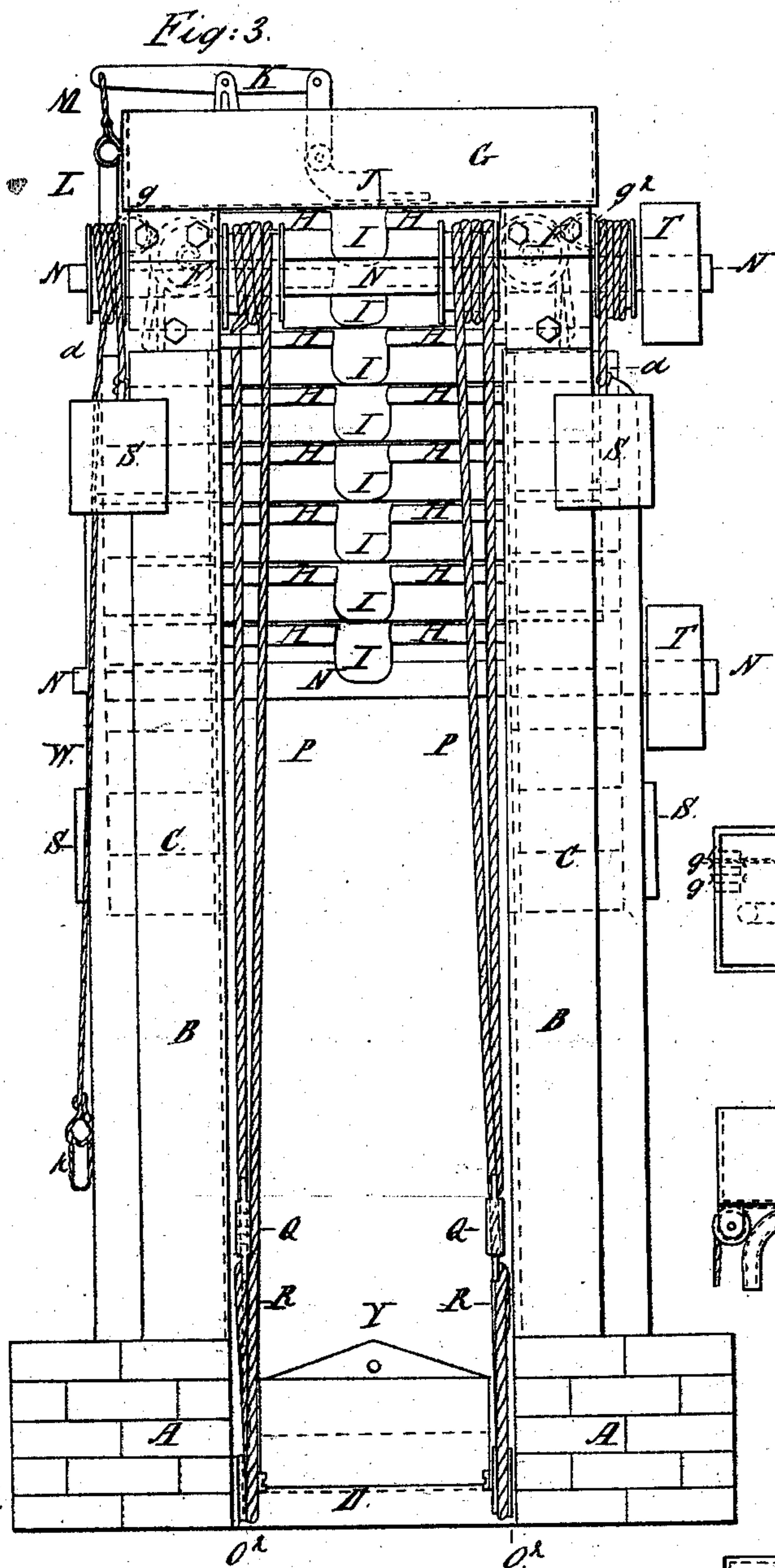
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Letters Patent No. 90,103, dated May 18, 1869.

IMPROVEMENT IN COAL AND GRAIN-BOAT ELEVATOR.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, S. K. HOXSIE, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Coal and Grain-Boat Elevators; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention, in the first place, consists in the combination and arrangement of an elevating-platform with elevated reservoirs, and altitudinally-movable tanks, which receive a supply of water therefrom, which cause them to descend, and the said tanks being connected with the platform by means of chains or wire ropes, which are supported by means of sheaves, elevate the same, to raise a boat or other vessel, which is supported by the platform, to a proper height and angle for discharging its contents into another vessel, or other receptacle.

In the second place, the invention consists in the combination, with two wharves, between which the boat is floated, of a series of vertical trunks with each wharf, in which the said movable tanks are caused to ascend and descend, for lowering the platform, previous to floating the boat above it, and elevating the same, to bring the boat to the proper height and angle.

In the third place, it consists in increasing the length of the chains for elevating and depressing the movable tanks, in regular succession, from one end of the platform to the other, so as to elevate one end of it more than the other, to bring the boat on an incline for the easy discharge of its contents.

In the fourth place, it consists in the combination of brakes with the platform, to check or control its motion.

In the fifth place, it consists in the combination and arrangement of a rod and series of chains and pulleys, in such a manner as to open the valves in each series of tanks, at each side of the boat at the same time, for discharging the water therefrom, when the boat is unloaded, to cause it to descend from its elevated position.

In the accompanying drawings—

Figure 1 is side elevation of the improved elevator.

Figure 2, Sheet No. 2, is a longitudinal section through the middle.

Figure 3, Sheet No. 3, is an end elevation.

Figures 4, 5, and 6, are respectively a plan, side elevation, and reversed plan of one of the reservoirs, G, and parts in connection with its bottom.

Like letters in all the figures indicate the same parts.

There are two wharves, A A, parallel to each other, and of sufficient distance apart to receive a canal-boat, or other vessel to be unloaded.

Projecting upward from each wharf is a series of vertical trunks, B, for the movement up and down of the tanks C.

D is a movable platform, which is elevated and depressed between the two series of trunks, for raising the boat which has been previously floated over it, for the discharge of its contents, and lowering it into the river after it has been unloaded, to be floated off from between the wharves.

The tanks are provided with chains or wire ropes E, which are passed over the sheaves F, at the top of the vertical trunks B, and confined at their lower ends to the eyes a, which are secured to lugs on the edges of the platform D.

There are water-reservoirs G, which rest on the top of the trunks, which, combined, hold water enough to elevate one or more boats in succession.

The reservoirs are filled by means of a pump, operated by means of a steam-engine, or other motive-power. The water is pumped into the highest reservoir. The rest are filled in succession, from highest to lowest, the water running from one to the other through the spouts b.

The water is discharged from the reservoirs into the tank C through the twin pipes H, which convey it right and left from the chambers I, there being valves J for opening and closing the communication between said chambers and the reservoirs.

The valves are operated by means of the series of levers K, with which is connected the operating-rod L, by means of the wire ropes M.

The trunks have successively an increased elevation, as represented, so that when the tanks are brought to the upper end of each, as represented in fig. 1, before the elevation of the vessel, and are caused to descend by the weight of water admitted into them from the reservoirs G, as described, to the bottom of the trunks, and the wire ropes E are of corresponding length to the height of the trunks, the platform D is brought on an angle, as represented in red lines in fig. 2, to admit of the free discharge of the contents of the vessel. The same object may be accomplished if the trunks are all of the same height, by still having the wire ropes E of unequal lengths, as described, so that there shall be an increased descent of the tanks in regular order.

There is a brake-shaft, N, at each end of the elevator, which is provided with pulleys O O, over which, and the stud-pulleys O', at the ends of the wharves, the chains P P, pass, the said chains being connected at each end with the swivels Q Q, to which are jointed the upper ends of the bars R R, the lower ends of which are connected to the platform by means of pins c.

The joint connection of said pieces is to allow of a free movement of the platform, when the latter is thrown on an angle, as shown in its elevated position by red lines in fig. 2.

The vessels S S, which are suspended by means of the chains d d, connected with the pulleys O' O', are weighted to overcome friction.

On one end of the shaft N are brake-wheels T T, with which are connected brakes, in any ordinary manner, to control the up-and-down motion of the platform.

To guide the platform, and prevent longitudinal motion as it is brought on an angle, as represented by red lines in fig. 2, there are, at one end, projecting pins *e*, which move in the vertical-grooved guides U, at one end of the platform. The wire ropes E are placed on an angle, as represented in fig. 2, to favor the angular elevated position of the platform.

After the vessel has been unloaded, it is lowered into the river, to be floated off from between the wharves A A, by discharging the water from the tanks C. This is done by opening the valves V in the bottoms of the tanks.

The valves are actuated by means of the ropes W, which are connected at one end with the upper ends of the weight-shafts *f*, the lower ends of which are jointed to the said valves V.

The ropes pass around the sheaves *g*, and connect with the rod *h*, so that by depressing each end of the rod all the valves in the tanks, seen in fig. 1, are opened. The valves in the tanks in the opposite side are opened at the same time. The ropes W', which also connect with the rod, pass over the sheaves *g*¹, and similar sheaves *g*², on the opposite side of the elevator, and connect with the valves on that side, in the same manner, as above described.

The arrangement of the ropes with the sheaves is shown in detail in figs. 4, 5, and 6.

After the boat has been unloaded, as the water runs out of the tanks, it passes through the holes *i*, and passes between the wharves into the river.

When the water is discharged from the tanks, the latter are raised into the position seen in fig. 1, by the descent of the boat and platform. There are pins *j*, which are slipped through the grooved guides U, when the platform is brought into its elevated position, represented by red lines in fig. 2, which sustain the lower end of the platform.

There may be a more or less number of movable

tanks, arranged as described, to suit the magnitude of the work to be accomplished; and, if found necessary, there may be two or more rows over each of the wharves. There is a gate, Y, at this end of the platform, to regulate the discharge of the freight.

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

1. The combination and arrangement of the vertical trunks B with the wharves A A, for the passage of the reciprocating tanks C, substantially as described.

2. The combination of the elevating-platform D and reciprocating tanks C, with the elevated water-reservoirs G, the several parts being arranged and operating substantially in the manner and for the purpose above set forth.

3. The combination and arrangement of the brake-shaft N, wheels T T, pulleys O O, O² O², chains P P, swivels Q Q, and bars R R, with the platform D, substantially as described.

4. The combination and arrangement of the weighted vessels S, chains D, and pulleys O' O', with the brake-shaft N, substantially in the manner and for the purpose set forth.

5. The connection of chains or ropes E of regularly-increased length, with the movable tanks C, for giving an angle to the platform D, when in its elevated position, substantially as described.

6. The combination and arrangement of the rod L, ropes N, and levers K, with the valves J, for operating the latter, as above described.

7. The combination and arrangement of the rod *h*, ropes W and W', sheaves *g* *g*¹ *g*², and weight-shaft *f*, with the valves V, substantially in the manner and for the purpose set forth.

In testimony that the above is my invention, I have hereunto set my hand and affixed my seal, this 9th day of November 1868.

S. K. HOXSIE. [L. s.]

Witnesses:

STEPHEN USTICK,
WM. LARZELERE.