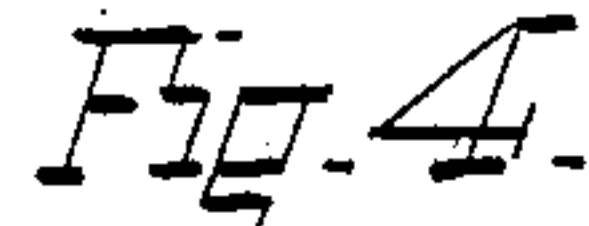
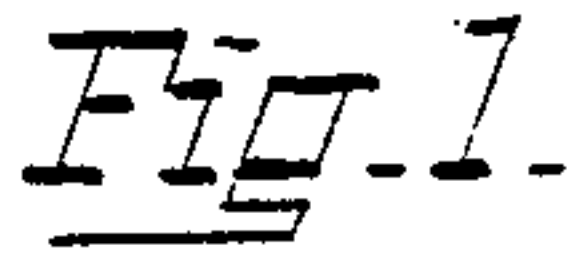


2 Sheets—Sheet 1.

HOISTING APPARATUS.

Patented Aug. 7, 1883.



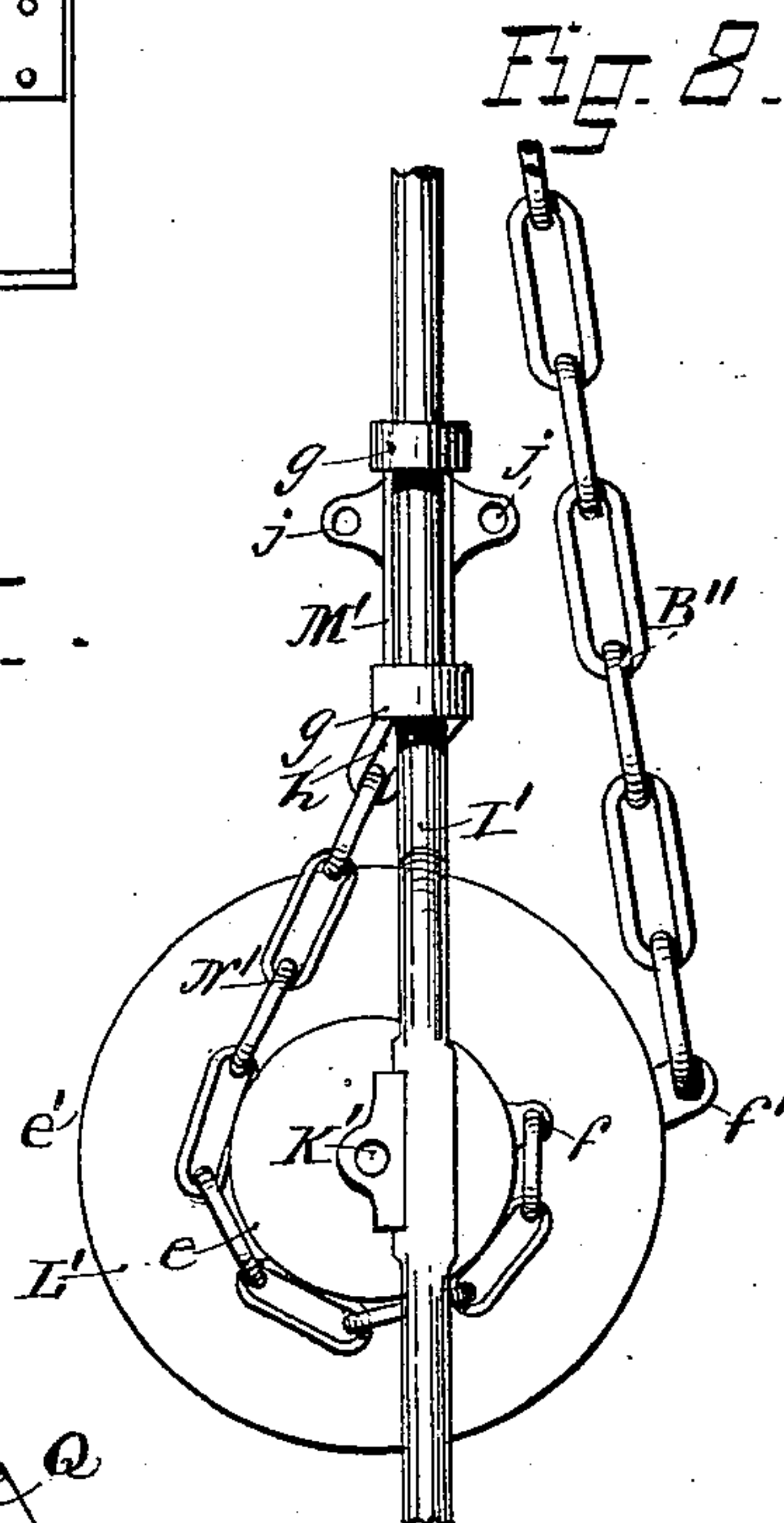
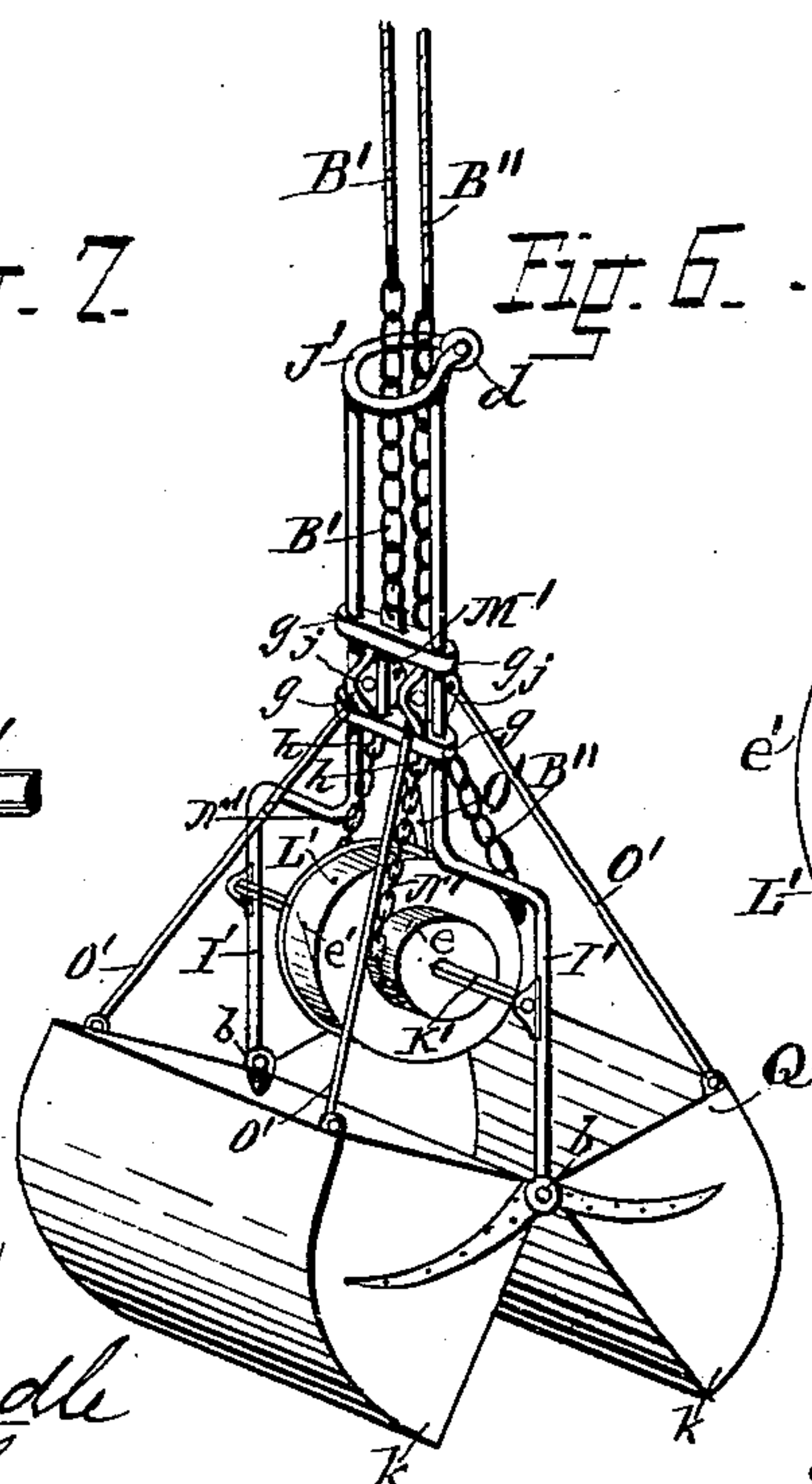
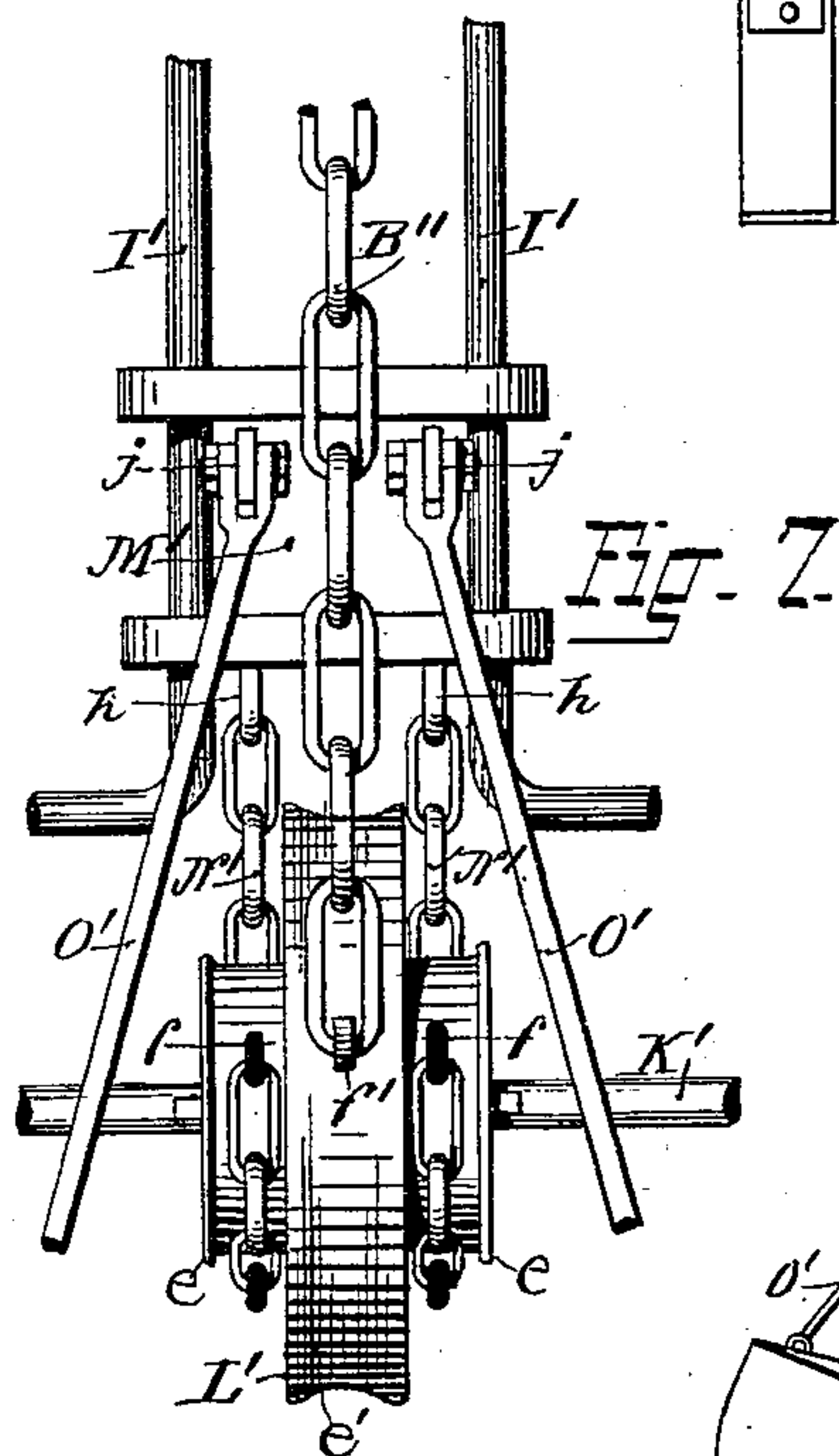
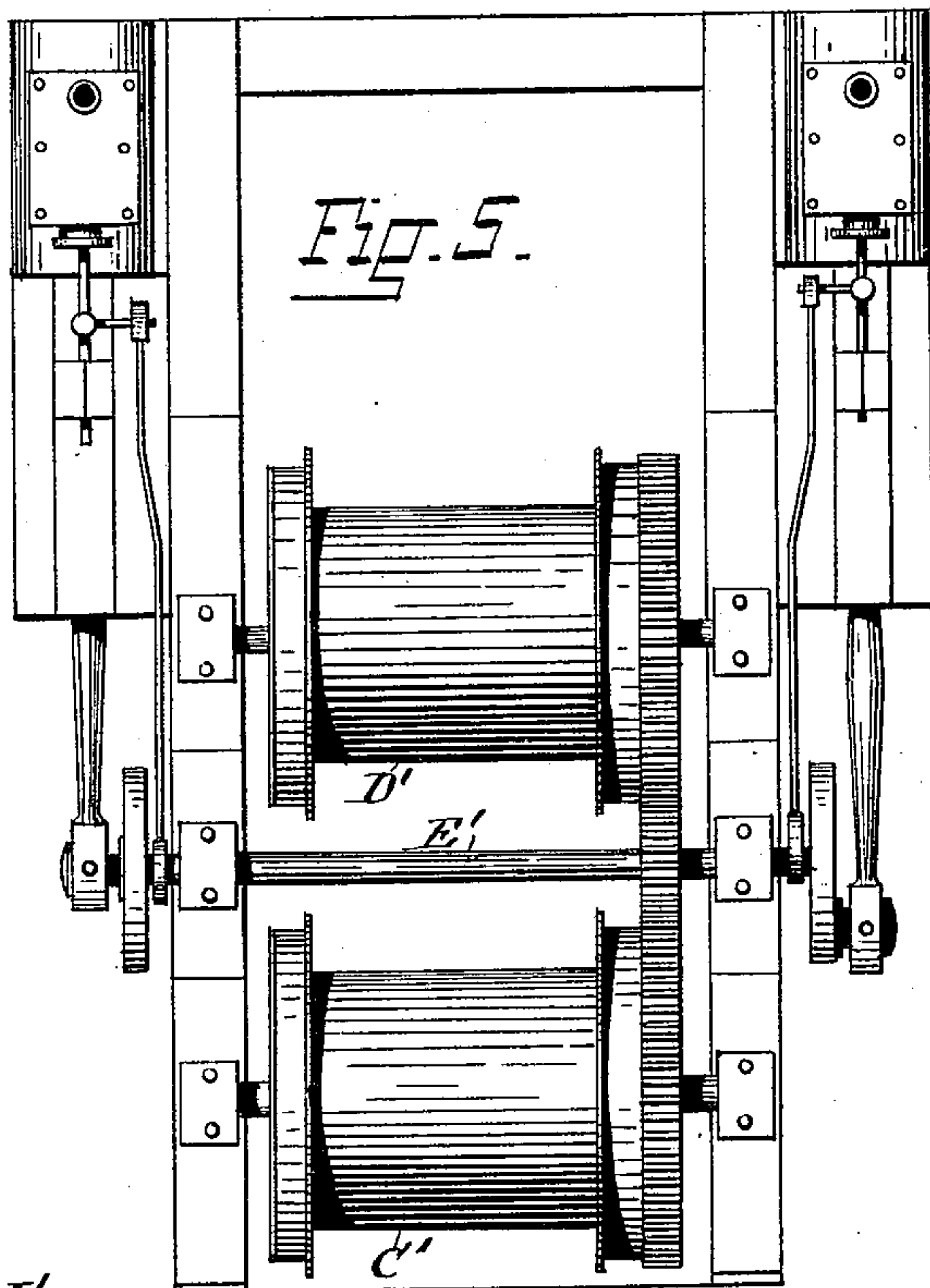
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G. E. NEWELL & L. G. LADD.
HOISTING APPARATUS.

No. 282,556.

Patented Aug. 7, 1883.



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UNITED STATES PATENT OFFICE.

GEORGE E. NEWELL AND LOREN G. LADD, OF PAWTUCKET, RHODE-ISLAND,
ASSIGNORS TO SMITH GRANT & CO., OF SAME PLACE.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 282,556, dated August 7, 1883.

Application filed December 23, 1882. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. NEWELL and LOREN G. LADD, of Pawtucket, in the county of Providence and State of Rhode Island, have invented an Improvement in Hoisting Apparatus, of which the following is a specification.

Our invention relates to apparatus for hoisting coal from the holds of vessels and depositing the same at suitable points on the wharf; and it consists in improved devices for operating with an opening and closing bucket, as hereinafter fully set forth.

Figure 1 is an elevation of the complete apparatus. Fig. 2 is a plan view, showing the derrick-boom and its attachments. Figs. 3 and 4 are detail elevations. Fig. 5 is a plan view of the hoisting-drums and engines. Fig. 6 is a perspective view of the opening and closing bucket. Figs. 7 and 8 are detail views of the bucket mechanism.

In the drawings, A is the upright post of the hoisting-derrick. B is the derrick-boom, secured to the post A by means of the chains or rods C C and the step E.

Above the roof of the engine-house F, located on the wharf, are placed the upright posts G and H, to the top of which, and extending from one post to the other, is secured the rod I, which serves to form a track for the truck-roll J, connected by means of the swivel-joint K to the wooden bar L, which is connected to the derrick-boom B by means of the loose joint M.

To the ear N is attached the rope O, passing over the pulley P, which is secured to one side of the post G, so that by pulling downward upon the rope O the bar L and boom B will be forced outward, so that the bucket Q may be brought to a position exactly over the hatch of the vessel containing the coal to be discharged, and a suitable stop for the outward movement of the boom B is secured by means of the rope R, which is attached to the outer end of the bar L, and passes thence over the pulley S, attached to the post G, and the lower end of the rope R may be fastened at the vessel, so as to adjustably limit the outward movement of the bar L and boom B.

To the band T, at the upper end of the boom B,

is attached the tackle-block U, and the tackle-block V is secured below the block U to the arm W, which is bent horizontally in U form, and made to embrace the boom-band X, to which it is secured by means of the bolt r. The arm W, which serves to hold the block V perpendicularly under the block U, is properly supported by means of two connecting-bars, Y, one on each side of the arm W and boom B, and connected to the arms s of the band T, and in the central opening of the arm W is placed the friction-roll A', which serves to prevent friction against the hoisting rope or chain B'.

The hoisting-drums C' and D' are placed upon opposite sides of the engine-shaft E', and the ropes B' B'' pass from the bucket Q, one over the pulley of the tackle-block U and the other over the pulley of the tackle-block V, and together over separate pulleys in the swinging tackle-block F', secured to the beam G', thence under two separate pulleys, H', and thence separately to the hoisting-drums C' and D', which revolve in the same direction. The tackle-blocks U and V, by being located one perpendicularly above the other, serve to prevent the hoisting ropes or chains B' B'' from becoming twisted together, and to hold the opening of the bucket Q in a uniform position with the boom.

The bucket Q is made in two parts, k k, pivoted to each other at the points b b. The offset-rods I' I' extend upward from the pivot-joints b b, and terminate in a ring, J', at one side of which is placed the friction-roll d, in order to prevent friction of the chain B'' against the inner surface of the ring. The shaft K', held by the rods I' I', is provided with the pulley L', formed in three parts, e e e', the middle portion, e', being about twice the diameter of the smaller end portions, e e. Upon the same side of the pulley L', and in line with each other, are placed the eyes f f f', and upon the offset-rods I' I' is placed the sliding piece M', provided with the ears g g g g, bored out, so as to pass loosely up and down on the rods I' I'. The lower end of the sliding piece M' is provided with the eyes h h, from which connection is made to the eyes f f on the smaller portions of the pulley L' by means of the chains

N' N'. The opposite sides of the slide-piece M' are provided with the eyes *j, j*, to which are loosely connected rods O' O' O' O', which diverge to the four corners of the bucket, to which they are also loosely connected.

The chain B' is attached to the upper end of the sliding piece M', and passes upward through the ring J'. Fig. 6 represents the bucket partially opened, and by holding the chain B' stationary and slacking upon the chain B'', the bucket will become still more open, and by holding the chain B'' and slacking up on the chain B' the bucket will become closed.

The bucket mechanism above described is similar to that heretofore employed in opening and closing buckets, with the exception of the offset made in the guide-rods I' I' above the shaft K', thus narrowing down the upper portion of the bucket mechanism, and adapting the same for passing through the hatch of a vessel without obstruction. The rods O', diverging from the slide-piece M' to the upper corners of the bucket-jaws, serve to guide the bucket clear of any obstruction in its ascent through the hatch, and the comparatively small size of the ring J' renders it desirable to employ a friction-roll, *d*, in order to prevent the chain B'' from drawing over the surface of the ring.

The arrangement of the drums C' and D' abreast of each other and in line with the pulleys H' tends to simplify the rope or chain connection with the bucket, and the above-described arrangement of hoisting drums and pulleys serves to prevent the tendency of swinging the boom by the operation of the engine, as in the coal-hoisting apparatus heretofore employed.

The position of the swinging block F' with regard to the step of the boom is to be such as

to cause the bucket and boom to swing from the vessel toward the wharf, and the movement of the bucket in this direction may be limited, as desired, by means of the rope O and bar L.

We claim as our invention—

1. The combination of the opening and closing bucket, the ropes or chains for operating the same from the hoisting-drums, the derrick-boom, the tackle-blocks at the head of the boom, arranged one above the other, the swinging tackle-block arranged below the step of the boom to cause the boom to swing inward toward the wharf, the intermediate fixed pulleys, and the hoisting-drums arranged parallel with each other and revolved in the same direction, substantially as described.

2. The combination of the derrick-boom with the bar jointed at one end to the boom, and connected at its opposite end with a guiding rod or track and the oppositely-connected ropes for operating the boom, substantially as described.

3. In a coal-hoisting apparatus, the combination of the pivoted jaws *k k* of the bucket with the offset-rods I' I', sliding piece M', rods O', diverging from the sliding piece M' to the four corners of the bucket, pulley L', the chains N' N', chains B' B'', ring J', and friction-roll *d*, substantially as described.

4. The combination of the derrick-boom B, band T, carrying the block U, with the band X, arm W, carrying the block V, and the bars Y, which serve to support the arm W, substantially as described.

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LOREN G. LADD.

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