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H.C. Crosby,

Grain Conveyor.

No. 108,976.

Patented Nov. 8, 1870.

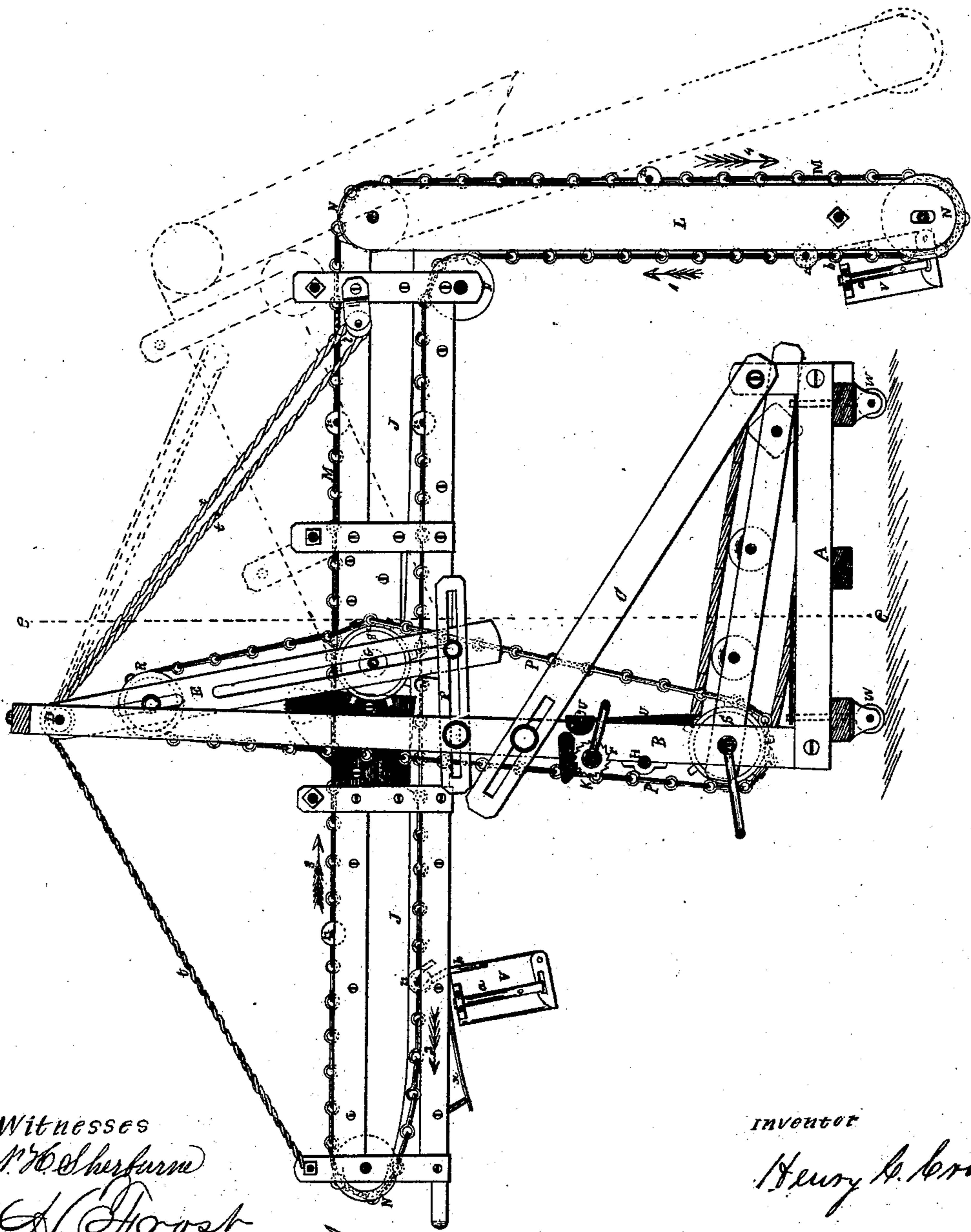


Fig 1

Witnesses

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Inventor

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3. Sheets. Sheet. 2.

Grain Conveyor.

No. 408,976.

Patented Nov. 8. 1870.

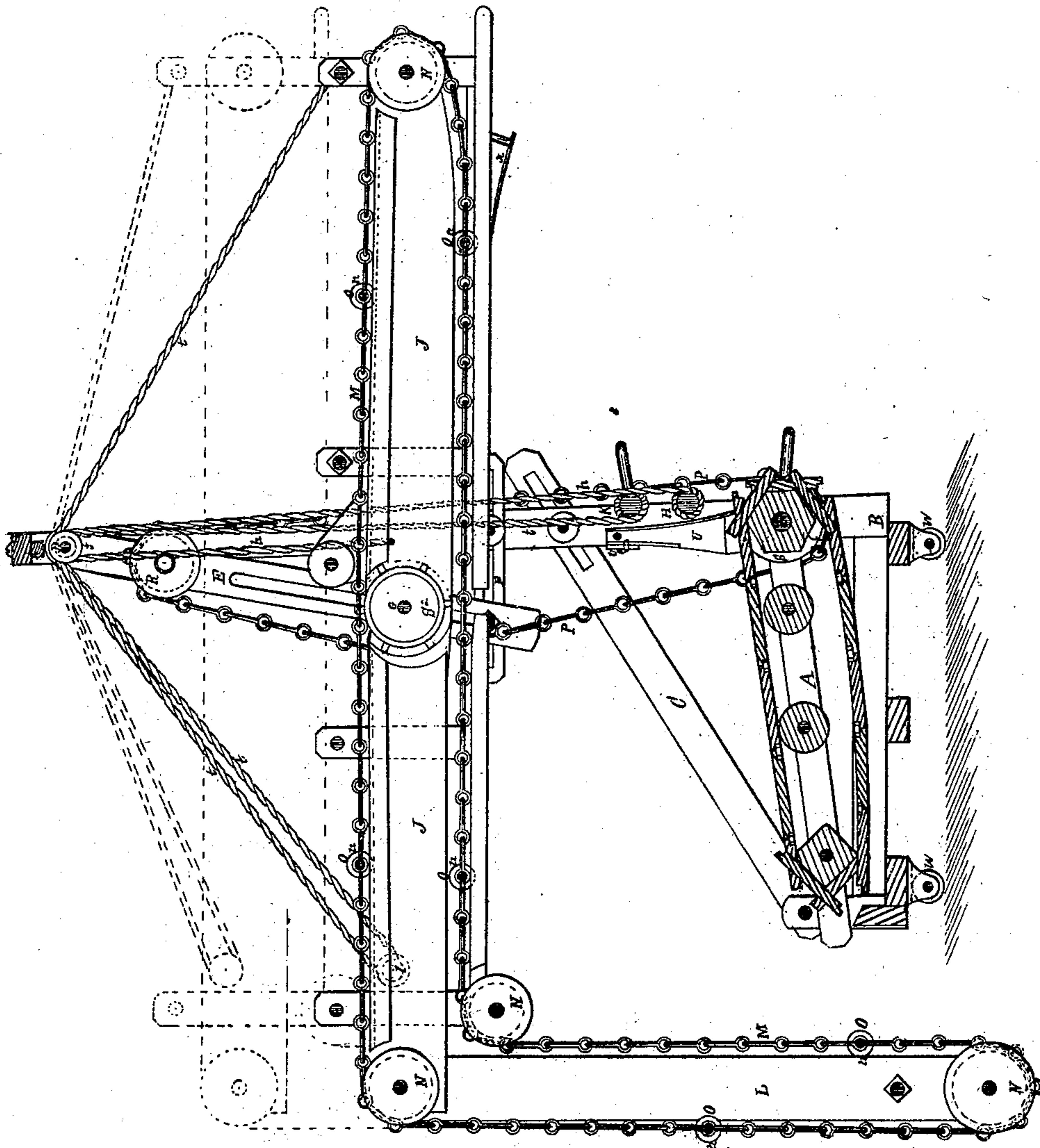


Fig. 2.

Witnesses

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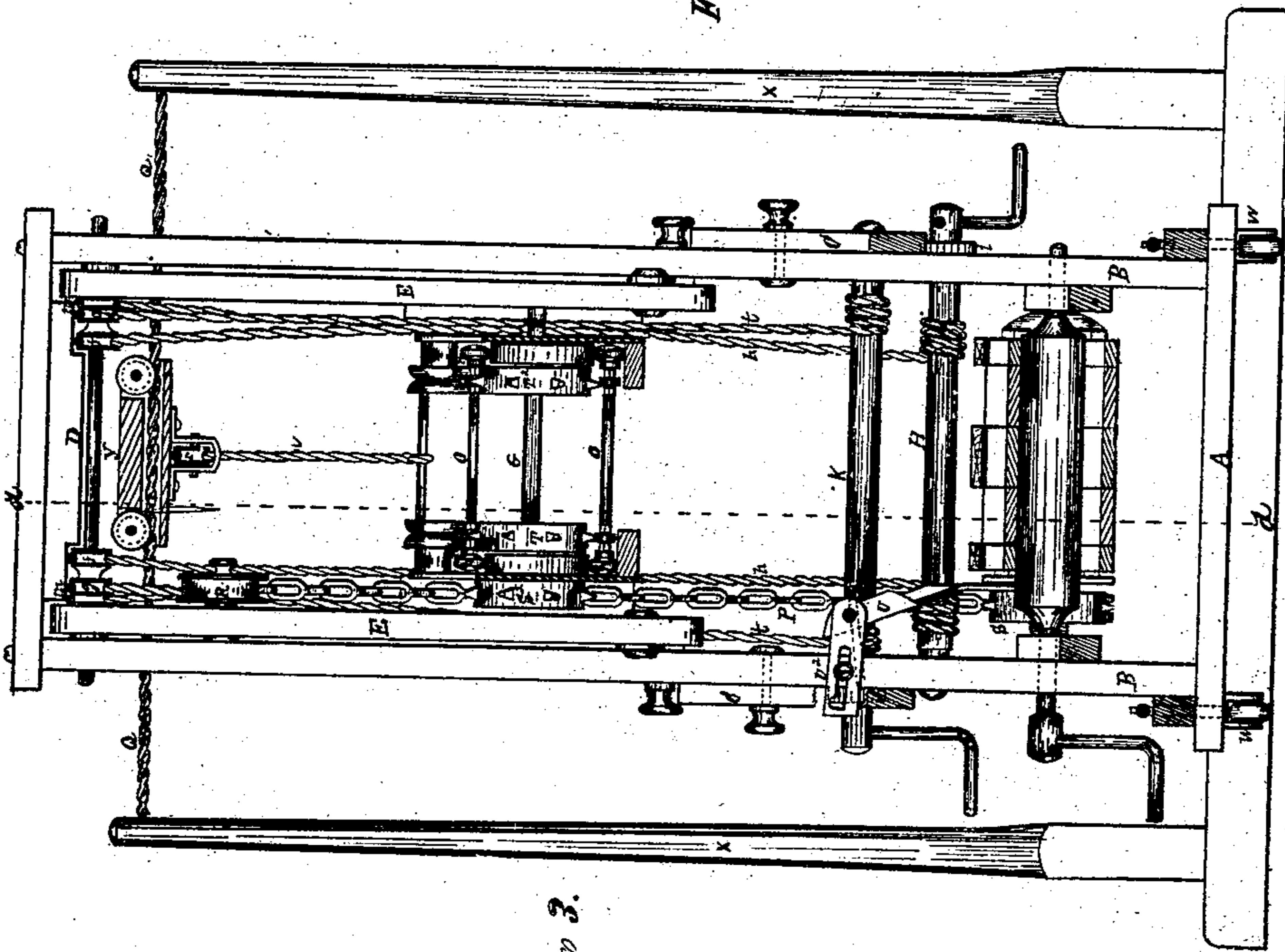
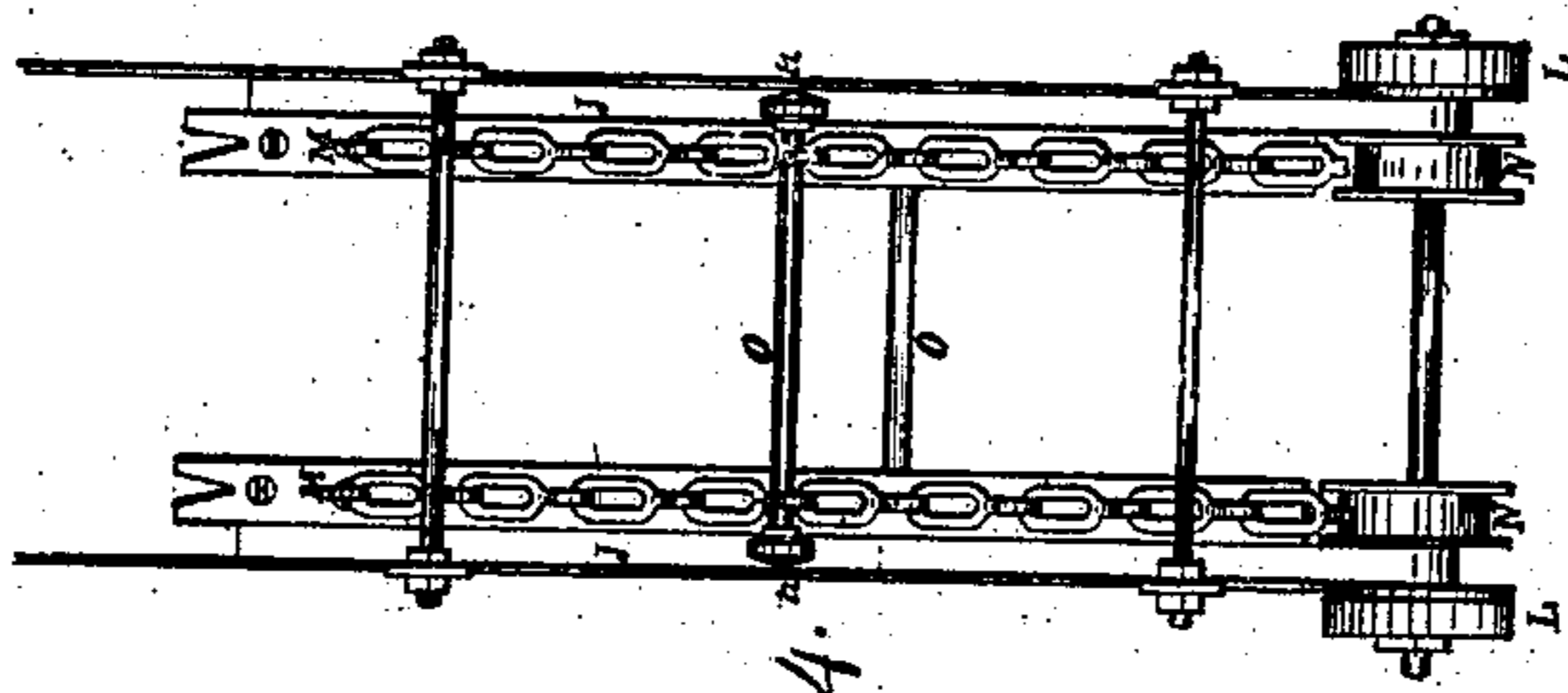
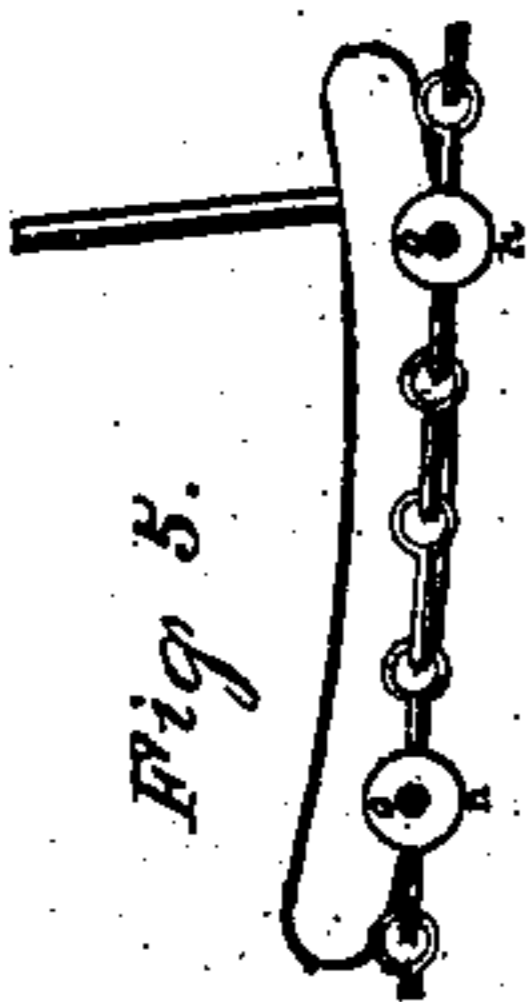
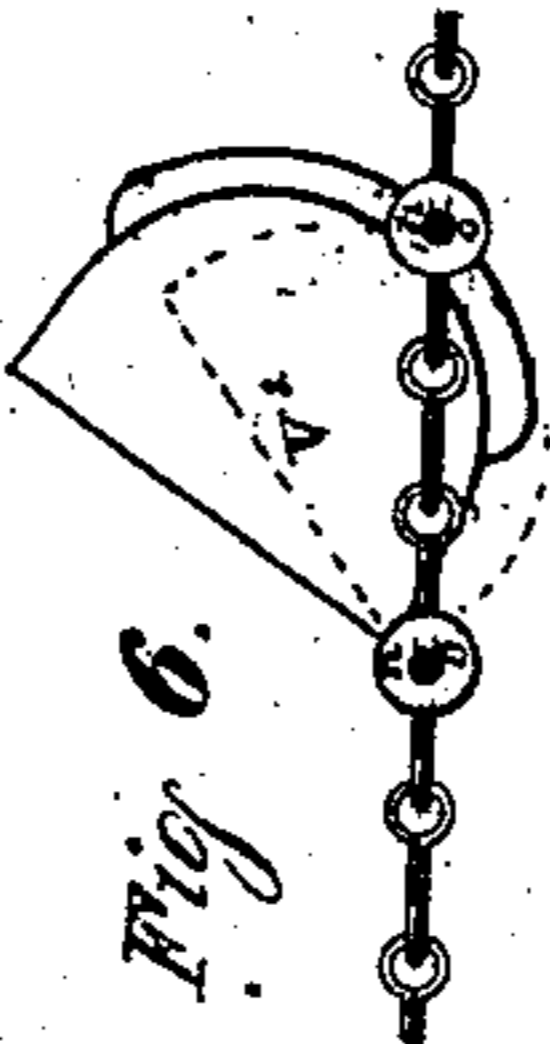
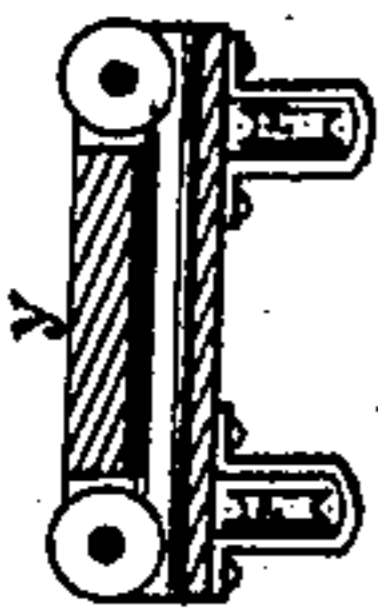
H.C. Crosby,

3. Sheets. Sheet. 3.

Grain Conveyor.

No. 108,976.

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Witnesses

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INVENTOR

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HENRY C. CROSBY, OF CHICAGO, ILLINOIS.

Letters Patent No. 108,976, dated November 8, 1870.

IMPROVEMENT IN PORTABLE ELEVATORS AND CONVEYERS.

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, HENRY C. CROSBY, of Chicago, in the county of Cook and State of Illinois, have invented a new and improved Portable Elevator and Conveyer; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1, plate 1, represents a side elevation of my invention;

Figure 2, plate 2, is a vertical longitudinal central section, showing those parts of the machine at the left of the line *d d*, drawn vertically through fig. 3;

Figure 3, plate 3, is a vertical transverse section, showing those parts of the machine which are at the left hand of line *e e*, shown in fig. 1;

Figure 4, plate 3, is a plan or top view of a detached portion of the tramway or railway which is at the right hand of line *e e*, fig. 1;

Figure 5, plate 3, is a side elevation of a carrier employed for removing wood, bags, &c.; and

Figure 6, plate 3, is a side elevation of a self-adjusting carrier-bucket for removing coal, grain, &c.

Similar letters of reference indicate corresponding parts in the several figures of the drawing.

The object of my invention is to provide a device by the use of which coal, grain, and other articles of merchandise may be unloaded from ships or cars and conveyed to any desired point upon the dock; and

The nature of my improvement consists—

First, in an elevated tramway or railway suspended from a portable derrick, the arrangement of which is such as to admit of being adjusted vertically in a horizontal position to any desired height within the derrick, or to any angle; also longitudinally forward or backward. At one end of said tramway or railway is jointed a vertical section, so arranged as to freely oscillate upon its bearings, whereby the whole may be adapted to the size and location of the vessel and point of delivery of merchandise.

Second, in providing said tramway or railway with an endless-chain belt, to and upon which is attached and conveyed the several devices for the transmission of merchandise, together with the mechanical construction of the derrick, whereby said tramway or railway and its working parts may perform their necessary function, a description of which will be hereinafter more fully given.

In the accompanying drawing—

A is a horse-power, giving motion to the moving parts of the machine; but as the same forms no part of the present invention a description thereof is not necessary to be herein fully given.

Pivoted to the forward end of said power are the vertical uprights B P of the derrick. Said uprights are so arranged as to admit of their upper ends being moved forward or backward, and firmly secured at any adjusted angle, by means of slotted tie-braces O O, the lower ends of which are firmly bolted to the frame-work of the power. Said uprights are provided at their upper ends with a horizontal shaft, D, extending laterally through the same.

Upon said shaft is suspended frame E, the lower end of which is secured to said uprights by means of slotted stirrup-plates F F, through which pass suitable bolts. The arrangement of said frame E is such as to admit of an oscillating movement upon its supports, whereby the same may be adjusted and secured at any desired angle. Said frame E is provided with vertical slots, which receive shaft G of the tramway or railway.

At or near the platform of said power, and attached to the uprights of said derrick, is a windlass, H, around which pass ropes or chains *h h*. Said ropes extend upward and over pulleys *f f*, on shaft D, thence downward, and are secured to the sides of the tramway or railway J. Thus, as said windlass is revolved, said tramway is raised or lowered horizontally to any desired height within the derrick, and is secured in position by means of pawl and ratchet *i* of windlass H.

Attached to said uprights is a second windlass, K, which is also provided with a system of ropes or chains, *t t*, extending upward and over pulleys *g g* on shaft D, thence obliquely forward and around pulleys *l l*, secured to the forward end of said tramway, thence backward over pulley *m m* on shaft D, and obliquely downward to the rear end of the tramway, and is firmly secured thereto. Thus, as said windlass K is rotated, the forward end of said tramway is raised or lowered to any desired angle above or below a horizontal position, as shown in dotted lines, fig. 1, and is firmly secured in position by means of pawl and ratchet *i* on said windlass.

The central portion of said tramway, at or near the place of suspension, is provided with a joint to admit of the movement.

Attached to the forward or receiving end of said tramway is a vertical suspending section, L, so arranged as to freely oscillate upon its bearings; thus the same may be readily adapted to any size of vessel and desired point of delivery of merchandise.

Said tramway is provided with a chain-belt, M, passing over and around a system of wheels, N, as indicated by arrows 1, 2, 3, and 4, fig. 1.

The sides of said belt are connected laterally by a system of carrying-shafts, O O, the outer ends of which are provided with anti-friction wheels *n n*, which

traverse the track of the tramway, thus retaining said belt in proper position.

Fixed to the main shaft of the horse-power is a rag-wheel, S, which receives chain-belt P, said belt passing upward and around pulley R, fixed to the upper end of frame E, at or near its bearings, thence downward against or partially around a like rag-wheel, S², on the outer end of shaft G.

Upon said shaft, between the sides of the tramway, are fixed rag-wheels, T T², that engage with chain-belt M, by which motion is communicated to the same as wheel S of the power is rotated.

Said wheel S is loosely fixed upon the shaft, and provided with a clutch and lever U.

Said lever is attached to the upright B of the derrick, and extending obliquely downward to said wheel, and is there bent to a vertical position, passing between said wheel and the flanged end of the roller, carrying the endless rotating platform of the power, and is provided, at its upper end, with a slotted stirrup-plate, U², by which the same is secured in position. Thus, as the upper end of said lever is moved or forced inward toward the center of the machine, wheel S is disengaged from the clutch and the curved portion of the lever is thrown against the flanged end of the roller, forming a brake for the same, by which means the proper amount of friction upon the end of said roller may be obtained to secure a uniform motion of the power.

The frame-work of said horse-power is mounted upon or provided with central-acting caster-wheels W, whereby said machine may be readily moved in any desired direction, and firmly secured in a fixed position by turning said wheels to a diagonal position with the power, their construction being such as to admit of the same.

The delivery end of said tramway is suspended from a cable, Q, attached to independent fixed posts X X, shown in fig. 3 of the drawing.

Attached to said cable is a carriage, Y, so arranged as to freely move longitudinally thereon.

Said carriage is provided with one or more pulleys r, around or over which pass ropes v, extending downward to said tramway, whereby the same may be readily moved laterally to any desired point, or raised or lowered.

V is a bucket for conveying coal, the bottom of which is hinged to the sides and secured in a closed position by means of clutch-hooks a a, pivoted to the sides of the bucket, which take into mortises cut in the upward-projecting flanges of the bottom.

Said bucket is provided with hooks b b, by which the same is attached to the carrying-shafts O of the tramway.

V², fig. 6, is a bucket for conveying grain.

Said bucket is fixed or hinged to the carrying-shaft O of the tramway in a manner which admits of its adjusting itself to the same relative position as chain-belt M is made to traverse the different positions of the tramway.

In operating my invention the machine is placed near the front line of the dock, allowing section L of tramway J to be suspended over or enter the hatchway of the vessel.

Tramway J is then adjusted to the proper position (reference being had to the receiving and delivery of the coal or merchandise) by means of ropes h h, t t, and v of the derrick and carriage.

Wheel S of power A is given a rotating motion, which communicates with chain-belt M of the tram-

way by means of belt P, wheels T T, and S² of shaft G, giving the same a rotating motion.

Bucket V being filled, is hooked on or attached to shaft O of belt M, which traverses the tramway, as indicated by arrows 1 and 2.

Said bucket coming in contact with or between trips x x, fixed to the lower side of the delivery end of the tramway, thus compressing the upper ends of clutch-hooks a a, disengaging the bottom of the bucket, and the coal is delivered upon the dock.

Said bucket then recedes, as indicated by arrows 3 and 4, to the vessel, and is there removed from said shaft (by hand or by any other suitable mechanical device) preparatory to being filled.

In using my invention, should it be found necessary to allow said belt M to remain stationary to admit of filling the buckets, clutch-lever U is moved inward toward the center of the machine, which disengages wheel S from the shaft of power A, and the curved surface of said lever is brought against the flanged end of the roller carrying the endless platform, and a uniform motion is obtained.

Having thus described the nature and object of my invention,

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

1. The jointed section L, having the movements described, with the tramway J, the whole arranged substantially in the manner and for the purpose set forth.

2. Chain-belt M, provided with carrying-shafts O O, in combination with tramway J, the several parts arranged substantially as and for the purpose specified.

3. The adjustable uprights B B of the derrick, when pivoted to power A as described, whereby the same may be moved forward or backward, substantially as and for the purpose specified.

4. Caster-wheels W, arranged to operate by means of levers, as described, in combination with frame A and uprights B B, the whole arranged in the manner and for the purpose set forth.

5. Bucket V, provided with clutch-hooks a a, and arranged to operate in the manner described, in combination with trips x x, the whole constructed substantially as and for the purpose specified.

6. Self-adjusting bucket V², arranged substantially in the manner and for the purpose set forth.

7. A portable elevator and conveyer, consisting of an adjustable jointed tramway mounted upon an adjustable frame, and provided with an endless conveying chain, substantially as described, for the purpose specified.

8. The endless chain operated from the horse-power A through the medium of the endless chain P and rag-wheels S S² and T T², substantially as herein shown and described.

9. The adjusting ropes h t, arranged for adjusting the tramway and endless conveyer-chain M from the windlasses H K, substantially as herein shown and described.

10. The adjustable frame E, in combination with the adjustable uprights B, and the adjustable tramway J, substantially as described, for the purpose specified.

11. The adjustable wheel R, in combination with the frame E and endless chain P, substantially as described, for the purpose specified.

The above specification of my invention signed by me this 26th day of August, 1870.

Witnesses:

HENRY C. CROSBY.

C. H. FROST,

E. A. ELLSWORTH.