

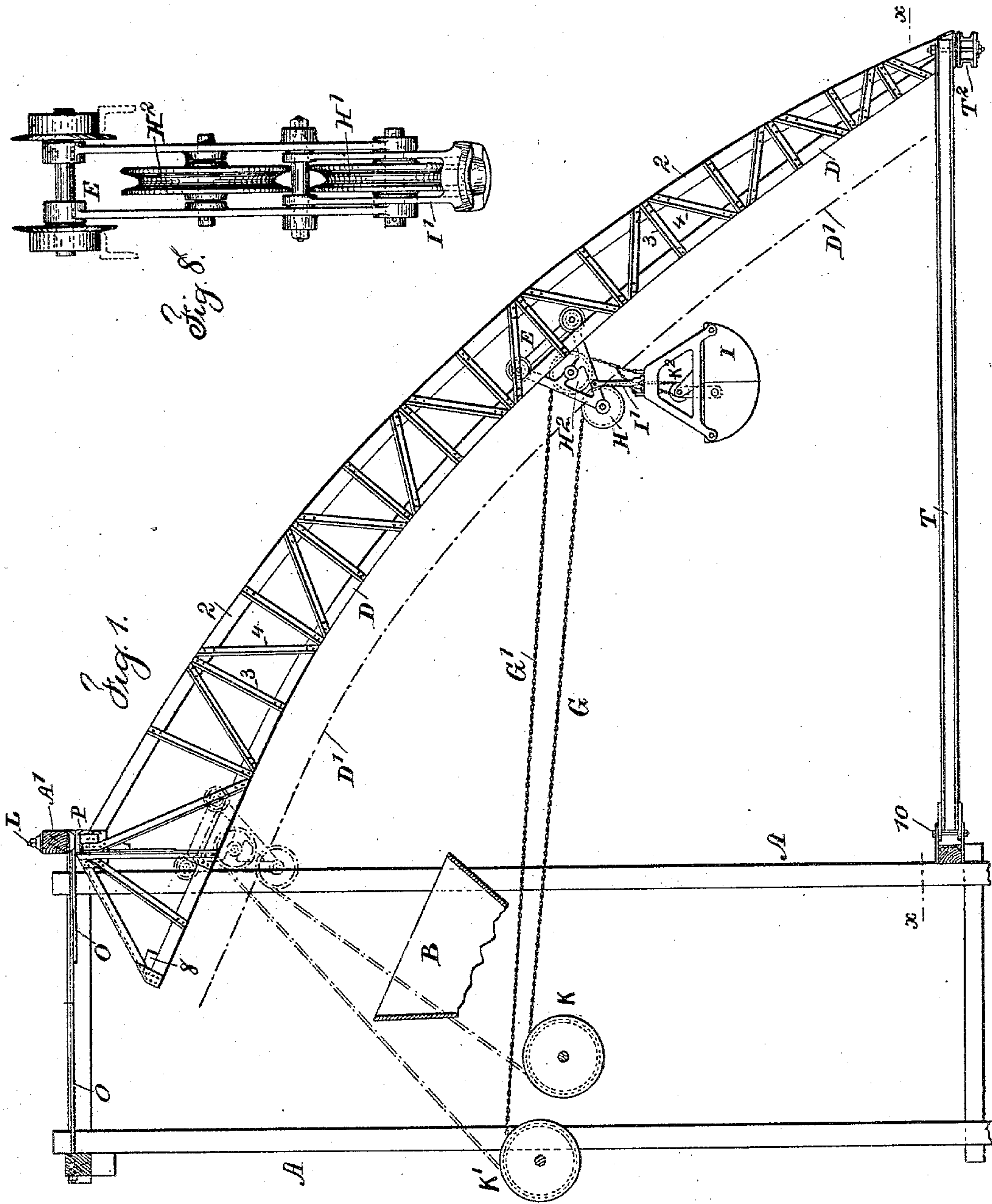
(No Model.)

2 Sheets—Sheet 1.

C. W. HUNT & C. C. KING.  
HANGING BOOM AND SUPPORT.

No. 553,119.

Patented Jan. 14, 1896.



Witnesses

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Inventors

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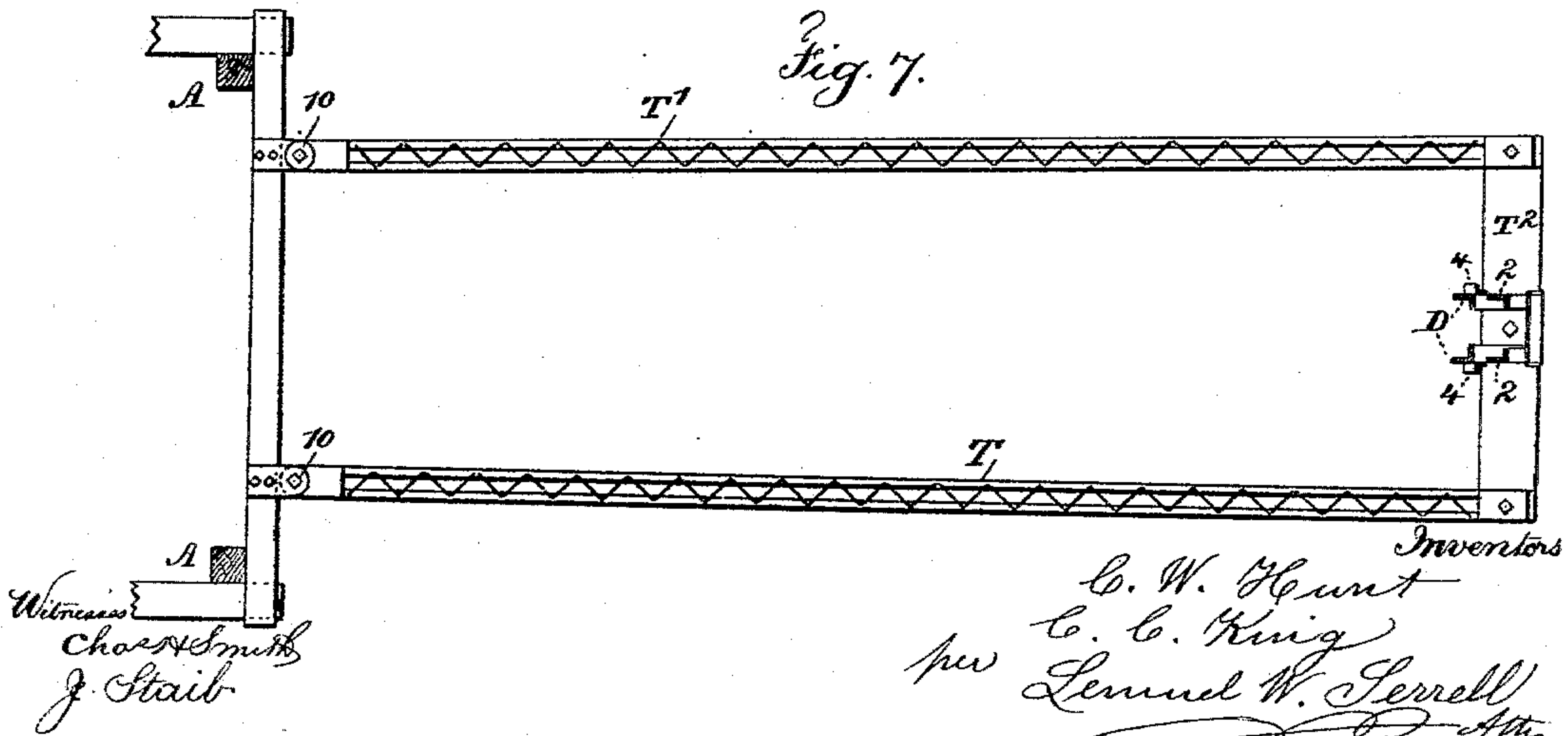
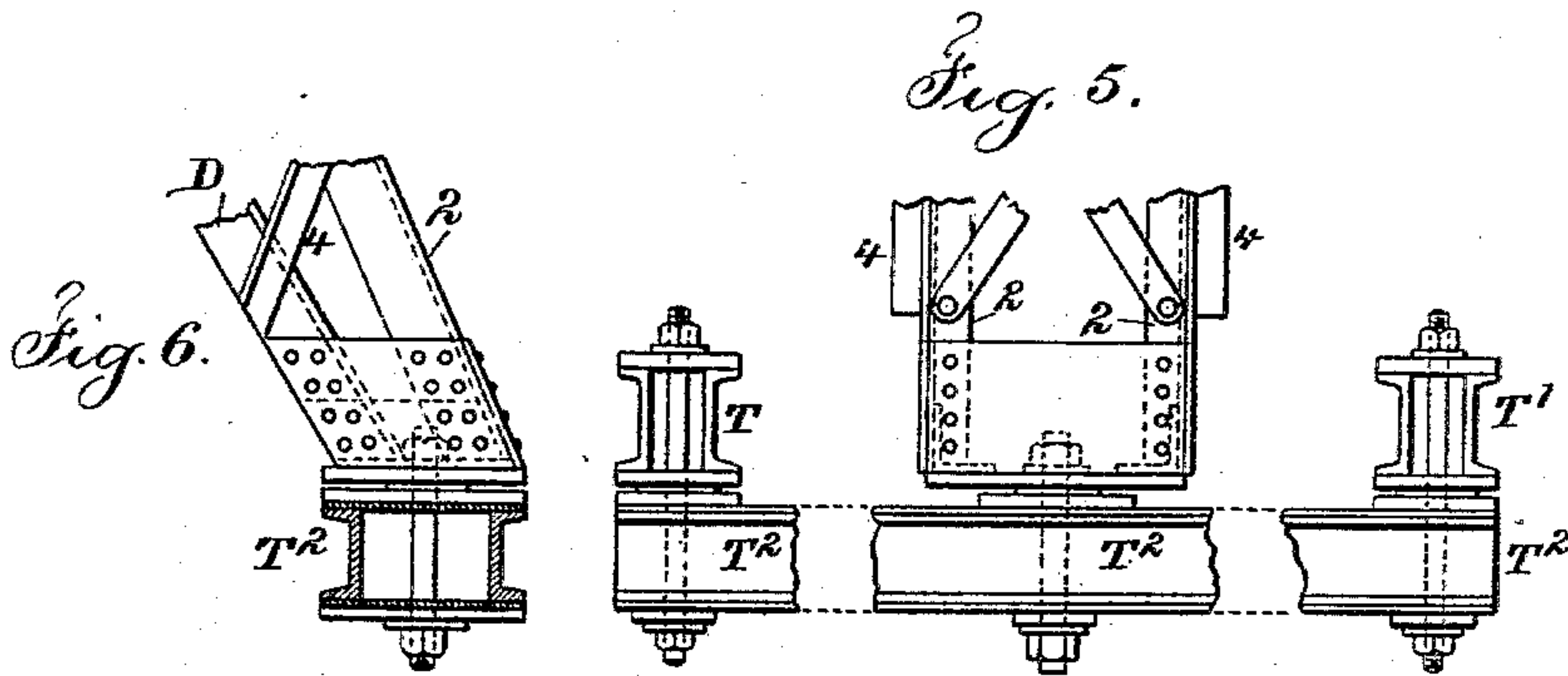
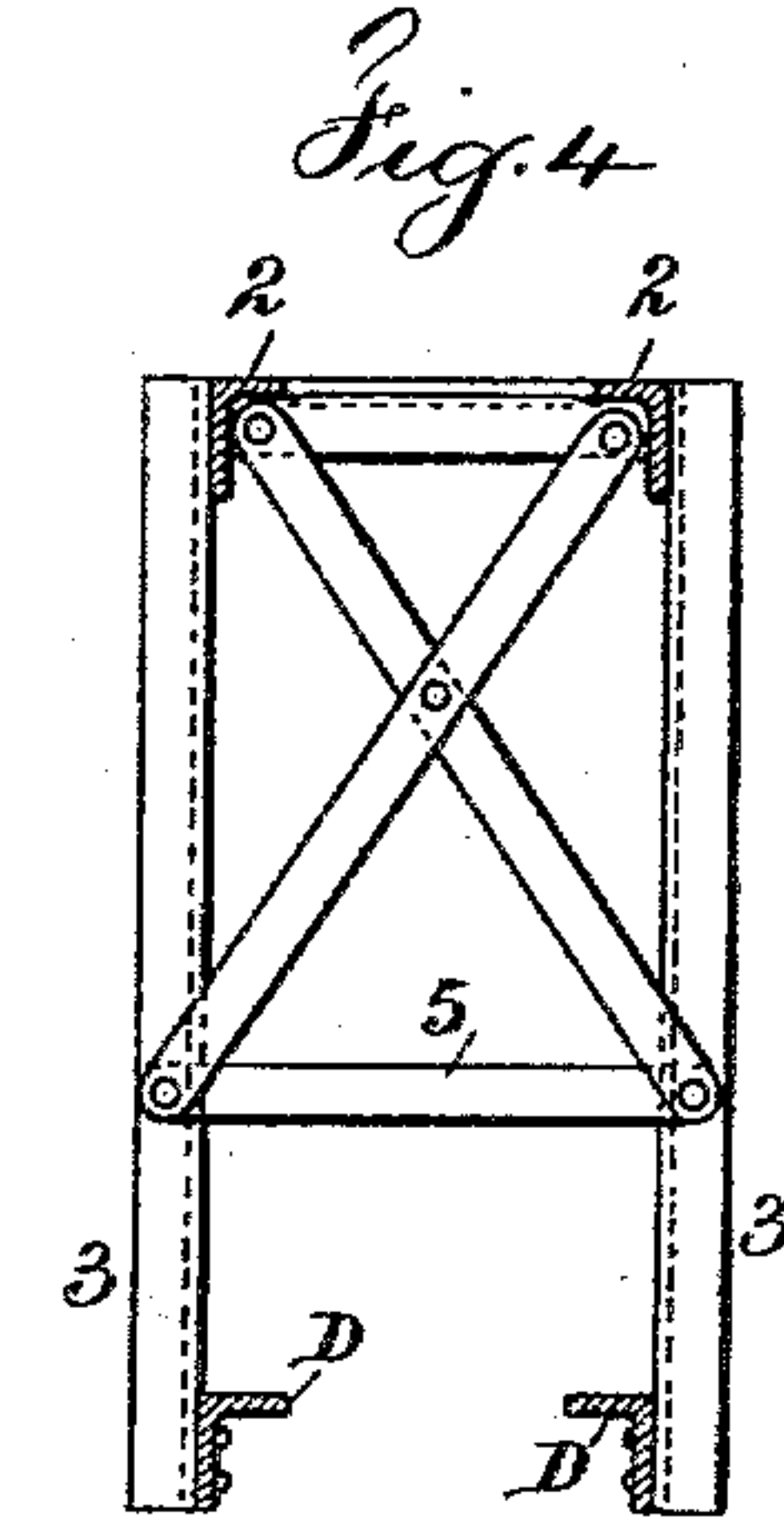
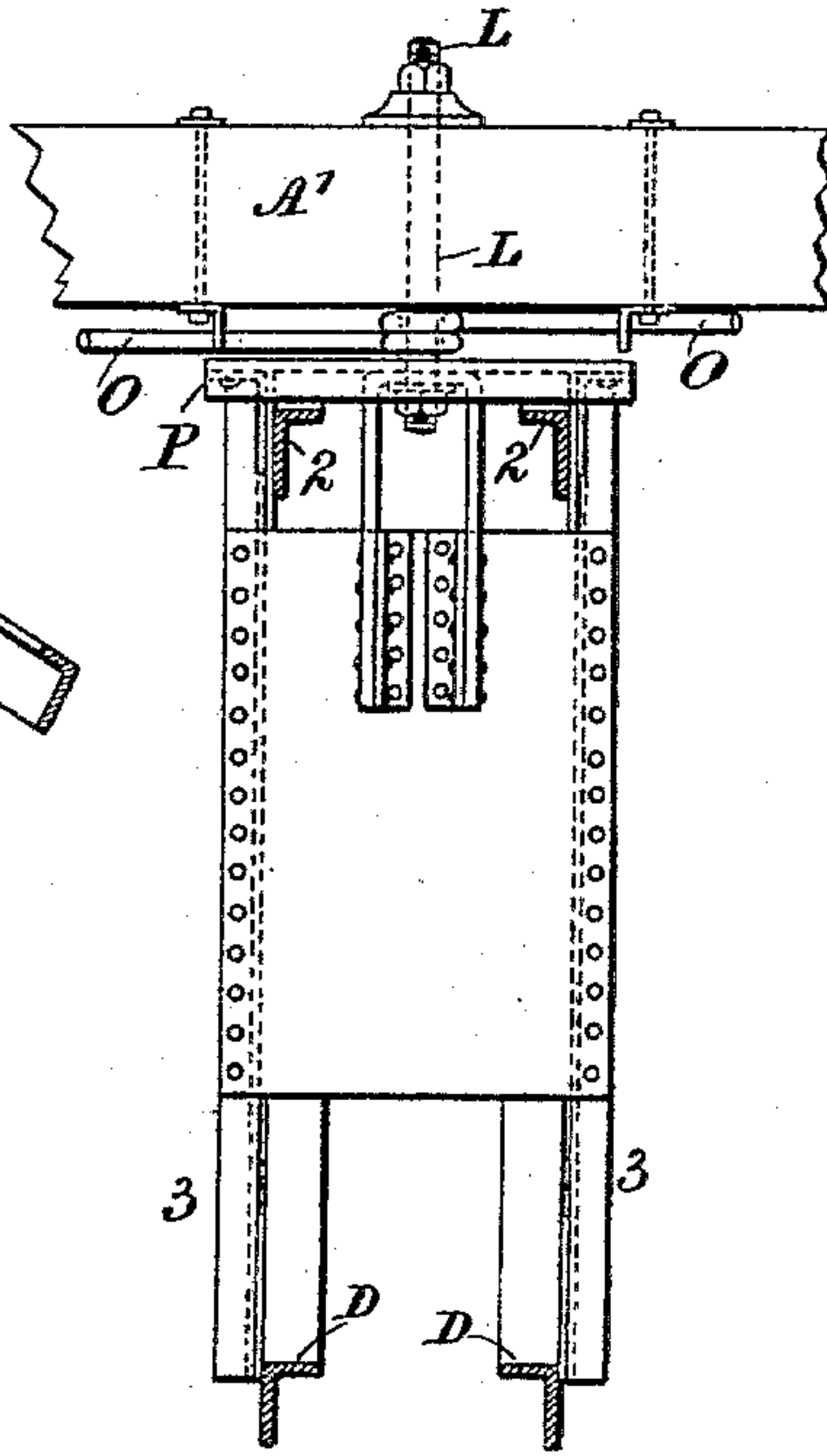
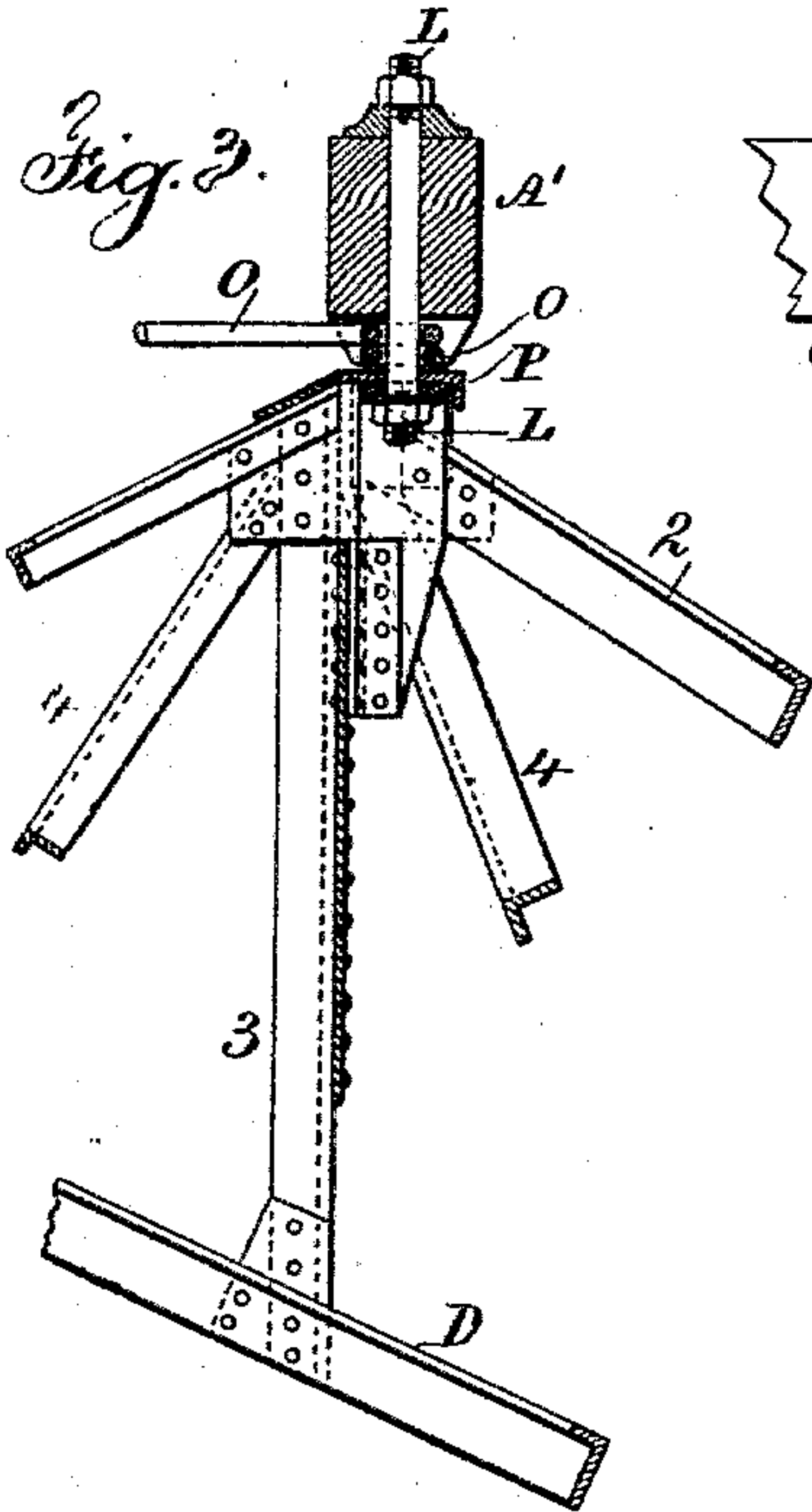
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# UNITED STATES PATENT OFFICE.

CHARLES W. HUNT AND CHARLES C. KING, OF WEST NEW BRIGHTON,  
ASSIGNORS TO THE C. W. HUNT COMPANY, OF NEW YORK, N. Y.

## HANGING BOOM AND SUPPORT.

SPECIFICATION forming part of Letters Patent No. 553,119, dated January 14, 1896.

Application filed April 11, 1895. Serial No. 545,277. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES W. HUNT and CHARLES C. KING, of West New Brighton, in the county of Richmond and State of New York, citizens of the United States, have invented an Improvement in Hanging Booms and Supports, of which the following is a specification.

In Letters Patent No. 351,445, granted to C. W. Hunt, a boom is represented as suspended and pivoted so that it may be swung out at right angles to the pier or bulk-head to be used in connection with a truck upon the boom and a bucket or other device for hoisting coal or other material, and when the boom is not in use the same can be swung around in one direction and lie parallel with the pier or bulk-head and out of the way of vessels leaving such pier or being brought into position adjacent to such pier. It is sometimes desired to move the vessel in the opposite direction to that in which the boom swings and hence the boom may become an obstruction to the movement of a vessel. To obviate this difficulty we hang the boom from above upon a support that projects sufficiently for allowing the boom to be swung in either direction and into a position parallel with the pier or bulk-head, it being understood that the boom itself is beneath the hanging pivot sufficiently far for the truck and the article carried by the same to be drawn up the boom and past the pivot to the point of discharge.

In the drawings, Figure 1 is a side view illustrating the general arrangement of the parts, and Fig. 2 is a front elevation of the hanging pivot and a section of the boom. Fig. 3 is a section of the boom at the pivot. Fig. 4 is a cross-section of the boom. Fig. 5 shows the center and ends of the cross-bar at the lower end of the boom. Fig. 6 shows the lower end of the boom and a cross-section of the cross-bar; and Fig. 7 is a plan below the line  $x x$ , Fig. 1. Figs. 2 to 6 are on a larger scale than Figs. 1 and 7. Fig. 8 is an elevation in larger size of the truck.

The framework or tower A is to be of any desired character, and upon the same we have represented a receiving-hopper B, into which coal or other material is discharged. The

boom is preferably made of two inclined parabolic track-bars D for the truck E, having wheels that run upon the track, and the two tracks of the boom are connected together in any desired manner. We have represented the boom as of iron with top bars 2 and side bars 3 and 4. It is also provided with track-bars D and cross-bars 5, beneath which the truck is free to move, and the hoisting-rope G or chain passes over a pulley H on the truck to the article to be raised. I have shown a "clam-shell" or two-part bucket at I, having a sheave K<sup>2</sup> around which the hoisting rope or chain G passes. The improved hanging pivot which we make use of in connection with this boom is formed of a bolt L, supported at its upper end by the overhanging portions A' of the framework A or tower through which the bolt L passes, and the lower part of the bolt usually goes through eyes at the ends of the braces O, and there is upon the boom a cross-bar or bow-iron P, through which the bolt L passes, and the side pieces from the cross-bar or bow-iron P are connected to the outsides of the inclined track-bars D, so as not to interfere with the movements of the truck upon the track of the boom, and the track of the boom extends past the hanging cross-bar or bow-iron a sufficient distance for the truck to be drawn to the upper end of the boom and over the hopper B, and such hopper does not project from the framework A sufficiently to be in the way of a passing vessel, and the distance between the pivot L and the sides of the framework or tower is sufficient for the upper end of the boom and track-bars to swing clear of the sides of the tower. Hence the boom can be swung around in either direction until it is parallel with and above the line of the bulk-head, pier or other structure.

In Letters Patent No. 527,496, granted to C. W. Hunt October 16, 1894, the boom is represented as curved in the form of a parabola with the sheave or hoisting-drum for the rope at substantially the focus of the parabola. We have improved upon the said invention, especially in connection with the pivot for the boom placed above the boom, as aforesaid, in the following particulars.



It is important that the boom itself be above the devices employed in hoisting, so as not to interfere with the movements of the clam-shell bucket or other device employed in receiving, elevating, and delivering coal or other materials and in carrying out the principle set forth in the aforesaid patent. The edge of the sheave over which the hoisting-rope passes should travel in the line of the parabola, which line is indicated at D', and the track D is sufficiently above and distant from the parabolic line D' for the bucket K or other containing device to travel without coming into contact with the track, and to effect this object the frame of the truck is substantially triangular extending from the axles of the wheels to the axle or pivot of the sheave H, and it is advantageous to provide a pendent arm I' pivoted upon the truck-frame and having a hole through which passes the hoisting rope or chain G, and the end of this hanging arm comes into contact with the top frame of the bucket and stops the same, while the further movement in drawing up the chain G causes the truck to travel up the parabolic track to the place of delivery.

In operating two-part or clam-shell buckets two chains are required, one for hoisting and the other for sustaining the weight of the bucket while the hoisting-chain is slackened to allow the bucket to open and discharge its contents. This second chain G' is represented as passing over the pulley H<sup>2</sup> to the bucket, and it will be observed that the pulley H<sup>2</sup> being above the pulley H' and in line with it the chains pass clear of each other, and at the same time the chain G', as its slack is taken up, causes the bucket to remain in a proper position and not to partially or entirely swing around and twist the chains together, as sometimes occurs when the two lie closely together, and in this way the certainty in operating the bucket is promoted.

The drums K K' are advantageously located approximately in the position represented in Fig. 1—that is to say, the hoisting-drum K is at or near the focus of the parabola—and hence the hoisting-chain G therefrom acts in the manner described in my aforesaid patent. It sometimes, however, is desirable to draw the truck farther up the parabola or up a straight incline extending therefrom, as shown in the drawings, than the truck can be drawn by the action of the chain G and drum K alone, and to effect the said object the drum K' is located behind and slightly higher than the drum K. If, therefore, the attendant increases the frictional power applied as usual in rotating the drum K' after the truck has been drawn up into the position indicated by dotted lines, the strain upon the chain G' will cause the truck to run farther up the inclined track, and by this arrangement whenever the chain G is slackened to transfer the weight from the chain G to the chain G' and cause the bucket to open the pull upon the chain G' causes the bucket to

run up to the extreme point upon the inclined track and come into contact with a stop S, which determines the place at which the load is discharged.

We find it advantageous to employ the bars T T' pivoted at 10 to any suitable stationary support, and having at the outer end a cross-bar T<sup>2</sup> to which the ends of the bars T T' are pivoted, and which cross-bar is also pivoted at its center to the lower end of the boom, similar or approximately so to the devices shown in Patent No. 351,445, granted to C. W. Hunt. This supports the lower end of the boom and allows the same to be swung around in either direction and out of the way when not in use, and it also allows ample space for operating the buckets between the bars T T' when the apparatus is in use.

We claim as our invention—

1. The combination with the inclined track bars of a bow iron connected with and extending above such track bars, a tower and a vertical hanging pivot by which the bow iron and track are suspended, and on which the boom can swing around horizontally in either direction substantially as specified.

2. The combination with the inclined track bars of a bow iron connected with and extending above such track bars, a tower and a vertical hanging pivot by which the bow iron and track are suspended and on which the boom can swing around horizontally in either direction and the pivoted bars T. T' and cross bar T<sup>2</sup> pivoted to the outer and lower end of the boom substantially as specified.

3. The combination in a boom of track bars curved as a parabola, top bars 2. and side bars 3. and 4. and the cross bars 5. rigidly connected together, a bow iron connected with and extending above the boom, a vertical pivot upon which the boom hangs and on which it can be swung around horizontally in either direction, and a tower or framework for supporting the pivot, substantially as specified.

4. The combination in a hoisting apparatus, of a parabolic track, a truck upon such track, a sheave carried by the truck for the rope or chain passing to the weight to be raised, the edge of the sheave over which the rope or chain passes following substantially the line of the parabola and the track for the truck being parallel thereto, and a hanging pivot upon which the parabolic track, forming the boom is suspended, substantially as set forth.

5. The combination with the inclined track, of a truck supported by and running upon such track and two pulleys or chain wheels one above the other and carried by such truck, a two part bucket and chains for actuating the same passing over the chain wheels upon the truck, substantially as set forth.

6. The combination with the inclined track, of a truck supported by and running upon such track and two pulleys or chain wheels one above the other and carried by such truck, a two part bucket and chains for actuating



the same passing over the chain wheels upon the truck, two hoisting drums for the chains one of which is located at or near the focus of the parabola and the other behind the  
5 same so that the truck is drawn farther up the inclined track when the weight is transferred or partially so from the hoisting chain to the second chain, substantially as set forth.

10 7. The combination with a parabolic track and a truck running upon the same and having a pulley thereon, of a chain passing over the pulley to the weight to be raised, a hoist-

ing drum for actuating the said chain and raising the weight and drawing the truck up the parabolic track, a second chain and its  
15 actuating drum to aid in moving the truck up the inclined track to the place of delivery of the weight, substantially as set forth.

Signed by us this 8th day of April, 1895.

CHAS. W. HUNT.

C. C. KING.

Witnesses:

WM. SEATON, Jr.,

J. M. W. SHEPHERD.