

No. 721,317.

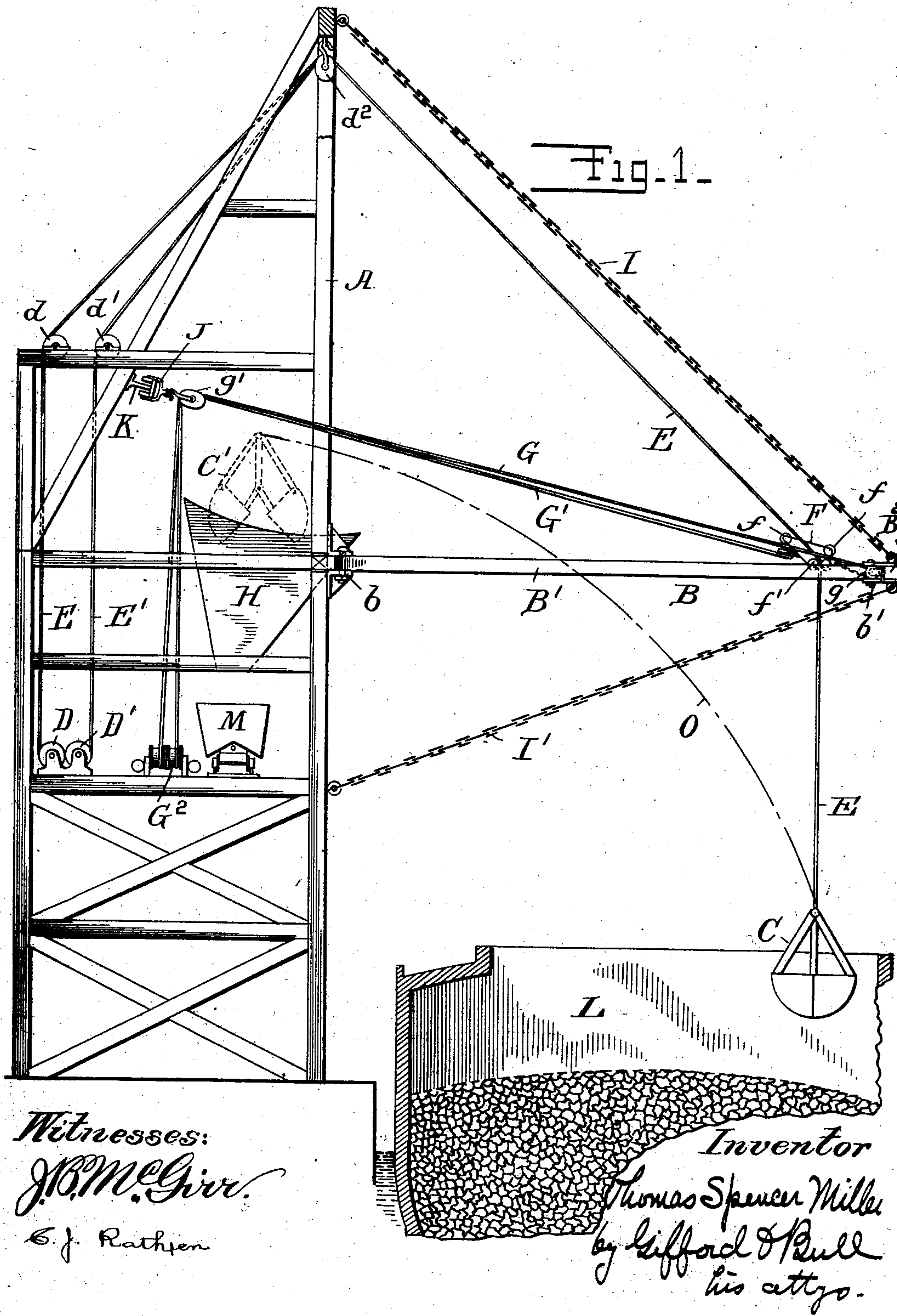
PATENTED FEB. 24, 1903.

T. S. MILLER.  
UNLOADING DEVICE.

APPLICATION FILED AUG. 28, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



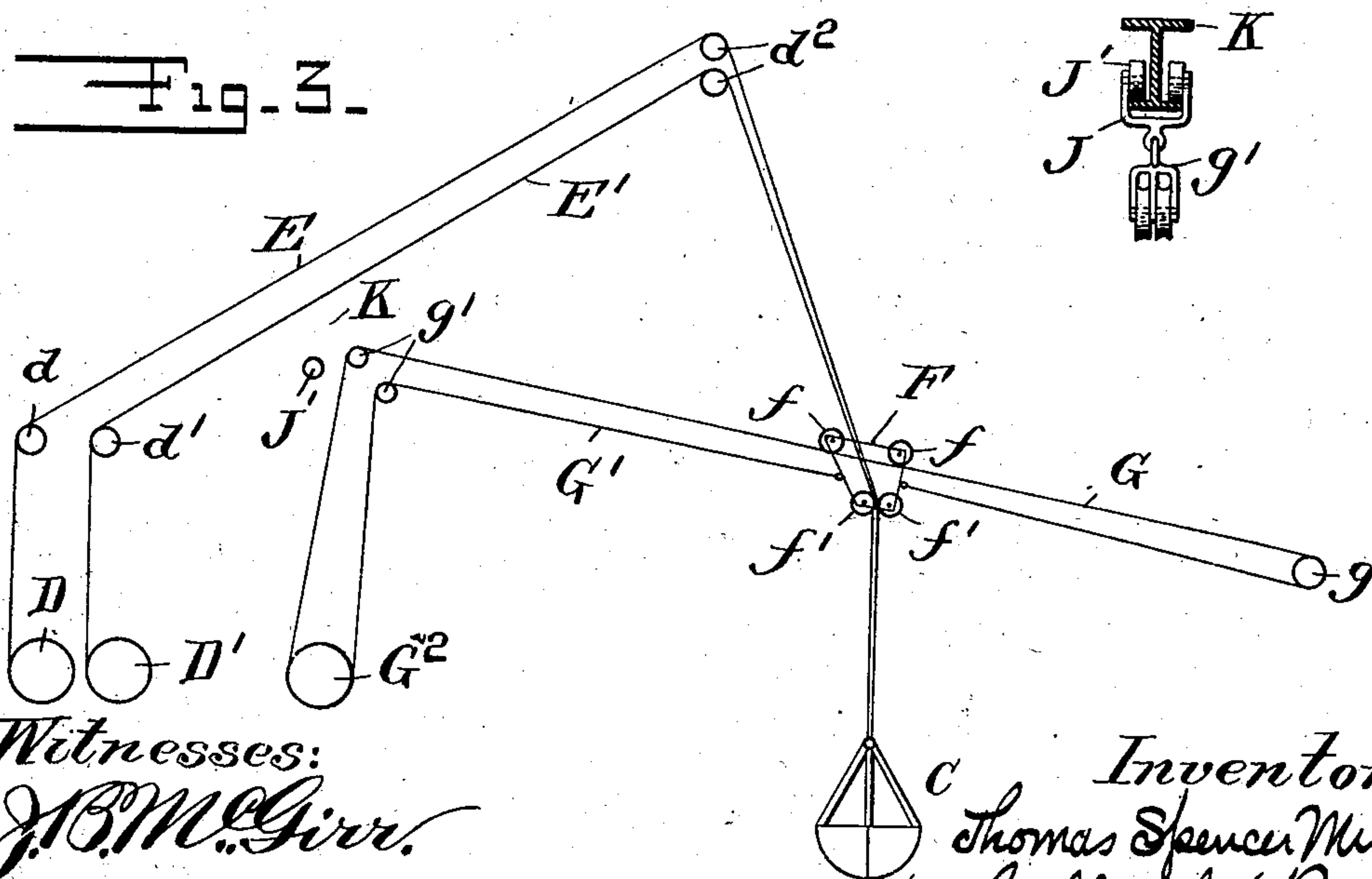
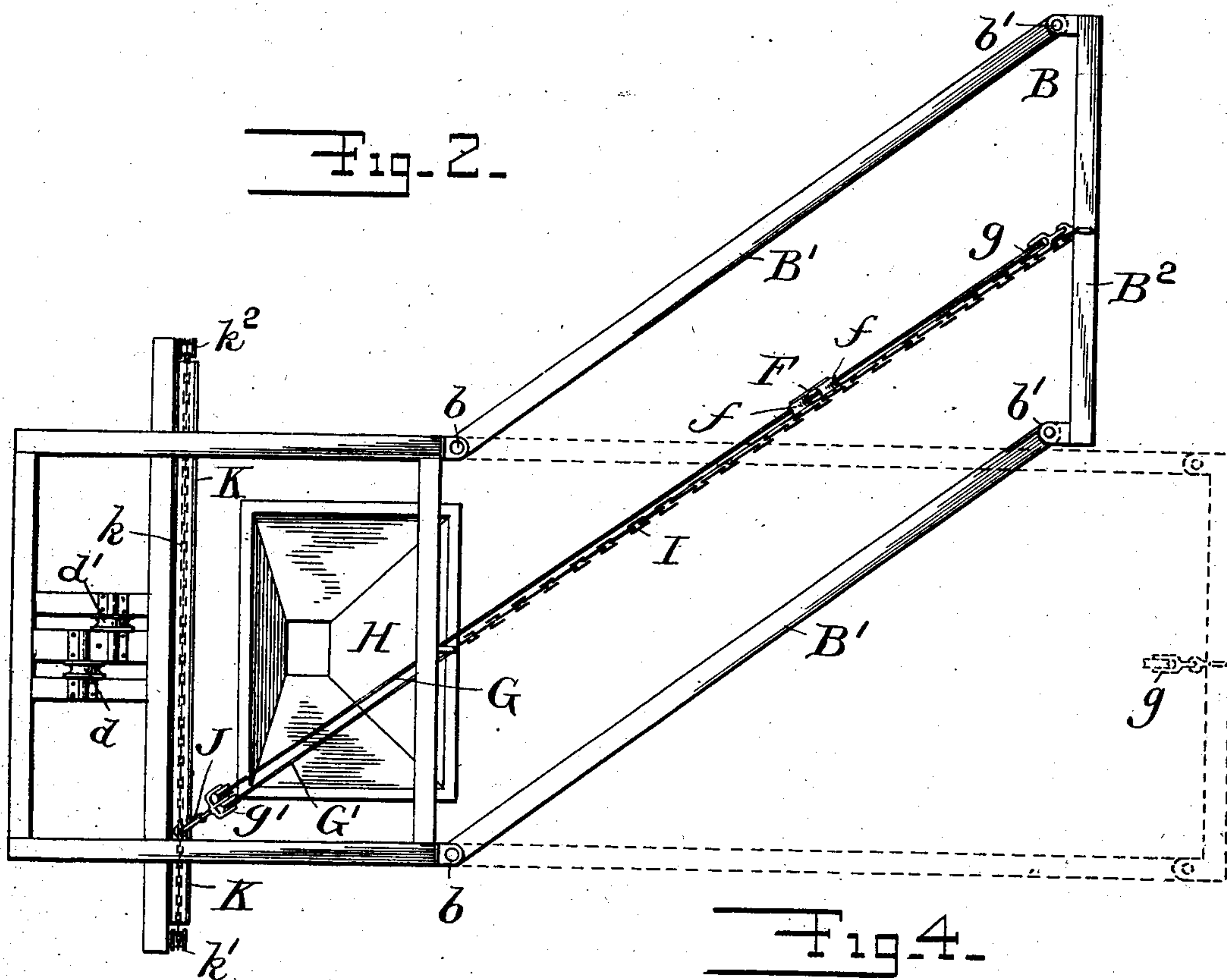
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*Witnesses:*

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# UNITED STATES PATENT OFFICE.

THOMAS SPENCER MILLER, OF SOUTH ORANGE, NEW JERSEY.

## UNLOADING DEVICE.

SPECIFICATION forming part of Letters Patent No. 721,317, dated February 24, 1903.

Application filed August 28, 1901. Serial No. 73,537. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS SPENCER MILLER, a citizen of the United States, and a resident of South Orange, in the county of Essex and State of New Jersey, have invented a new and Improved Unloading Device, of which the following is a full, clear, and exact description.

My invention relates to an improvement in unloading devices, which although adapted for unloading other materials has been especially designed for unloading coal and other materials of a similar character.

In the drawings herewith accompanying my device has been illustrated as in use for unloading coal from a barge or vessel alongside of a wharf.

Figure 1 is a side elevation of my device. Fig. 2 is a plan thereof showing the boom in different positions by full and dotted lines. Fig. 3 is a diagram showing the arrangement of the ropes and the various guides therefor, and Fig. 4 is a detail of the mechanism used for shifting the inboard-guide for the load-swinging rope.

My device when used for unloading coal, as herein illustrated, is mounted upon a tower or elevated structure A, which is located close to the edge of the wharf, so that the barge or vessel from which the material is to be taken may be placed close alongside of and beneath it. This structure is provided with a boom B, adapted to bridge over barge or vessel. This boom is of a divided nature or has an opening extending throughout the same of sufficient size to permit free passage of the load through the same. As herein shown, the boom consists of the two side or longitudinal members B' and the transverse end member B<sup>2</sup>, said members being pivoted to each other by pivots b', and the inner ends of the side members B' being pivoted to the tower or elevated structure A by pivots b, so that the boom may be freely swung to one side or the other, as desired, and yet preserve the opening within the boom for the accommodation of the load. The elevated structure is provided with a hopper H, adapted to receive the material hoisted, said hopper being preferably located so that its upper edge is above the pivot of the boom. The outer edge of this hopper may be pro-

jected beyond the face of the elevated structure A, if desired. Upon the tower is placed an elevated rope-guide d<sup>2</sup>, over which the hoisting rope or ropes pass. When the device is equipped for handling coal or similar material, a clam-shell or orange-peel bucket would ordinarily be used. When such a device is used, two ropes are required for operating it. I have therefore shown in connection with the illustration of my invention herein given two ropes E and E', one of which is the hoisting-rope proper and the other one is the rope by which the bucket is opened or closed. These ropes lead from the bucket over the rope-guides d<sup>2</sup> and other rope-guides d and d', mounted upon the elevated structure, and thence to the drums D and D' of a hoisting-engine. These drums will be manipulated in the manner common in connection with such devices. The ropes E and E', or the single hoisting-rope, if such is used, is engaged between the elevated guide d<sup>2</sup> and the bucket C or load by a load-swinging guide F, said guide being herein shown as a trolley. This guide is connected with a load-swinging rope G, which passes about a pulley or guide g, secured to the outer end of the boom. This load-swinging rope, as herein shown, is an endless rope, the ends of the rope being secured to the guide or trolley F. One run of this rope, as the run G, is engaged by wheels f, carried by the guide or trolley F, so that one run of the rope forms a trackway or guide for said trolley. Wheels f' are provided, which engage the ropes E and E', by which the bucket or load is hoisted and controlled. The load-swinging rope passes over guides or pulleys g', which are supported from the tower and inwardly from the boom-pivot and the hopper H and above the same. This rope is then continued downward to a drum G<sup>2</sup>, about which it passes and by which it may be operated, so as to move the guide or trolley F longitudinally of the boom. The boom is supported by means of a guy I, extending from its outer end to the top of the tower or elevated structure A. It is prevented from swinging sidewise and also from rising by means of guys I', which extend from the boom downward and laterally to the tower or any other convenient support. The inboard guides for the load-swinging rope are sup-



ported from a crawl J, which consists of a frame having wheels therein adapted to run upon a trackway K, which extends transversely of the tower A. This trackway is  
 5 herein shown as consisting of an I-beam, which is supported from the frame of the tower. Means are provided whereby this crawl may be caused to move along the trackway and held in any adjusted position, so that  
 10 the load-swinging rope may be maintained substantially in line with the center of the boom. The means herein shown for moving and holding this crawl consist of a chain *k*, which passes about sprocket-wheels or drums  
 15 *k'*, located at opposite ends of the trackway and provided with means whereby they may be turned and held against turning when the crawl has been adjusted to the desired position.

20 A car M is shown as running upon a track, by means of which it may be placed beneath the bottom of the hopper, so as to receive the material from the hopper.

With the construction shown an opening of  
 25 ample width is provided within the boom, through which the load may be freely hoisted. The trackway upon which the trolley F runs being a rope is flexible, so that no damage is done if the bucket or load should engage the  
 30 trackway when hoisted.

In practice the drum which operates the load-swinging rope would be started as soon as the bucket or load is free of the hatchway of the vessel L, from which the material is  
 35 being taken, so that the path of the bucket would be substantially like the broken line O. (shown in Fig. 1.) In consequence the time occupied in transferring the bucket from the vessel to the dumping position over the hop-  
 40 per would be only that required for raising the bucket the required distance, the maximum speed of operation being thereby secured.

While the use of a trolley F, such as herein  
 45 shown and described, is preferred, it is evident that a much simpler guide may be substituted therefor without changing the character of the invention. This guide may consist simply of a pulley, through which the  
 50 hoisting-rope passes. Where my device is used for hoisting boxes or material of a similar character a single hoisting-rope is all that is needed, and the rope herein shown which is used for opening and closing the bucket  
 55 may be dispensed with. It is also evident that a different means for shifting the inboard guide for the load-swinging rope may be substituted for that herein shown without altering the character of the invention.

60 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a hoisting device the combination with a hoisting-rope, and an elevated guide-sup-  
 65 port therefor, of a divided or double boom adapted to permit the passage of the load therethrough and pivoted to swing horizon-

tally, a load-swinging rope adapted to engage the hoisting-rope between its elevated guide and the load, and a guide for said load-swing- 70  
 ing rope extending below said elevated guide.

2. In a hoisting device the combination with a hoisting-rope, and an elevated guide-sup-  
 port therefor, of a divided or double boom adapted to permit the passage of the load 75  
 therethrough and pivoted to swing horizontally, a load-swinging rope adapted to engage the hoisting-rope between its elevated guide and the load, a guide for said load-swinging rope carried by the outer end of the 80  
 boom, an inner guide for the load-swinging rope back of the boom-pivots and means for shifting said inner guide transversely of the boom.

3. In a hoisting device the combination with 85  
 a hoisting-rope, and an elevated guide-support therefor, of a divided or double boom adapted to permit the passage of the load therethrough and pivoted to swing horizon- 90  
 tally, a load-swinging rope adapted to engage the hoisting-rope between its elevated guide and the load, a guide for said load-swinging rope carried by the outer end of the boom, an inner guide for the load-swinging rope, a 95  
 transversely-extending support for said inner guide, and means for shifting the inner guide along its support.

4. In a hoisting device the combination with a hoisting-rope, and an elevated guide-sup-  
 port therefor, of a divided or double boom 100  
 adapted to permit the passage of the load therethrough and pivoted to swing horizontally, a load-swinging rope adapted to engage the hoisting-rope between its elevated guide and the load, a guide for said load-swinging 105  
 rope carried by the outer end of the boom, a trackway back of the boom-pivots and extending transversely of the central position of the boom, and an inner guide for the load-swinging rope movable along said trackway. 110

5. In a hoisting device, the combination with a supporting-frame, a boom comprising plu-  
 ral longitudinal members and a member connecting their outer ends, said members being 115  
 pivoted to each other and the longitudinal members to the frame to permit lateral swinging of the boom, of a rope-guide supported upon the frame above the boom, a hoisting-rope extending through said guide and downward between the side members of the boom, 120  
 a rope-guide carried by the outer end of the boom, and a load-swinging rope passing through said last-mentioned rope-guide and having a sliding connection with the hoisting-rope and extending inward from said sliding 125  
 connection at an angle with said hoisting-rope.

6. In a hoisting device the combination with a supporting-frame, a boom comprising plu-  
 ral longitudinal members and a member connecting their outer ends, said members being 130  
 pivoted to each other and the longitudinal members to the frame to permit lateral swinging of the boom, of a rope-guide supported



upon the frame above the boom, a hoisting-rope extending through said guide and downward between the side members of the boom, a rope-guide carried by the outer end of the boom, a double-run or endless load-swinging rope passing through the guide carried by the boom, and a guide secured to one run of the load-swinging rope and having a guiding and supporting connection with the other run and also adapted to embrace the hoisting-rope to control its position.

7. In a hoisting device the combination with an elevated rope-guide, and a hoisting-rope passing through the same, of a boom, a rope-guide carried at the outer end of the boom, a load-swinging guide embracing the hoisting-rope between its elevated guide and the load, a flexible trackway for said load-swinging guide, and means for moving said guide along its trackway.

8. In a hoisting device the combination with an elevated rope-guide, and a hoisting-rope passing through the same, of a boom, a load-swinging guide engaging the hoisting-rope between its elevated support and the load, a flexible trackway for said guide secured to the outer end of the boom and back of the elevated support for the hoisting-rope, and means for moving the load-swinging guide along said trackway.

9. In a hoisting device in combination a tower or elevated structure, an open-center or divided boom projecting therefrom and pivoted to swing horizontally, an elevated rope-guide on the tower, a hoisting-rope passing over said guide and depending through the

opening in the boom, an outboard rope-guide carried by the boom, a combined trackway and load-swinging rope passing about said outboard guide, an inboard guide for said trackway and load-swinging rope located inwardly from the boom-pivot, and means for shifting said inboard guide, laterally to place it substantially in line with the boom when it is swung horizontally.

10. In a hoisting device in combination, a hoisting-rope, a fixed elevated guide therefor, a load-swinging rope engaging the hoisting-rope, an outboard and an inboard guide for the load-swinging rope, and means whereby said outboard and inboard guides may be moved transversely of the line between the two and in opposite directions.

11. In a hoisting device in combination, a hoisting-rope, a fixed elevated guide therefor, a load-swinging rope engaging the hoisting-rope, an outboard and an inboard guide for the load-swinging rope, and independent means for shifting said outboard and inboard guides transversely of the line between the two.

12. In a hoisting apparatus, in combination, a hoisting-rope, an elevated guide therefor, a swinging rope engaging said hoisting-rope and extending inboard at an angle with the run of said hoisting-rope above said point of engagement and means whereby said ropes are operated.

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Witnesses:

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