

No. 849,477.

PATENTED APR. 9, 1907.

T. IRWIN.  
LOAD TRIMMER.

APPLICATION FILED MAY 3, 1906.

2 SHEETS—SHEET 1..

Fig. 1.

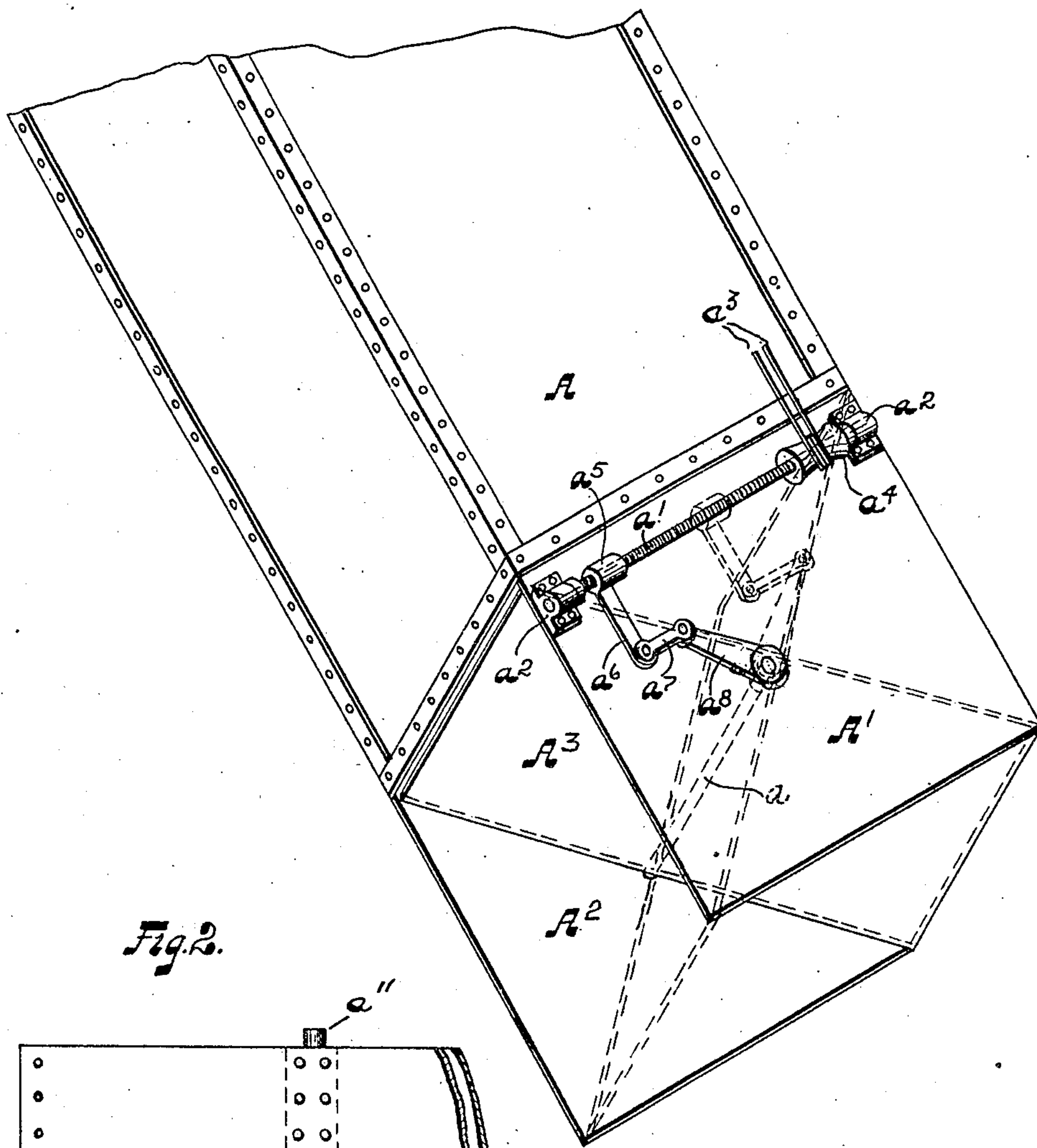
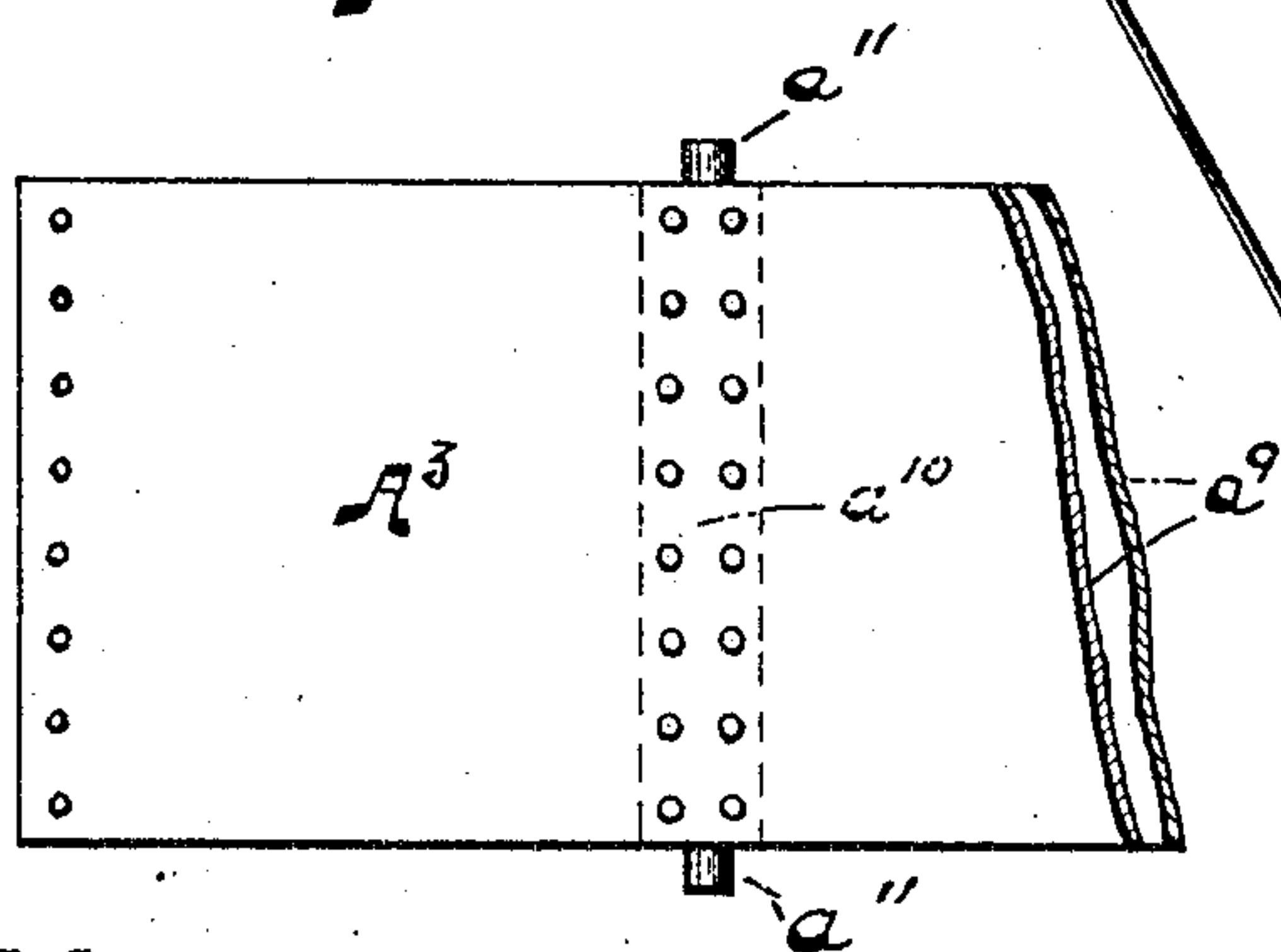


Fig. 2.



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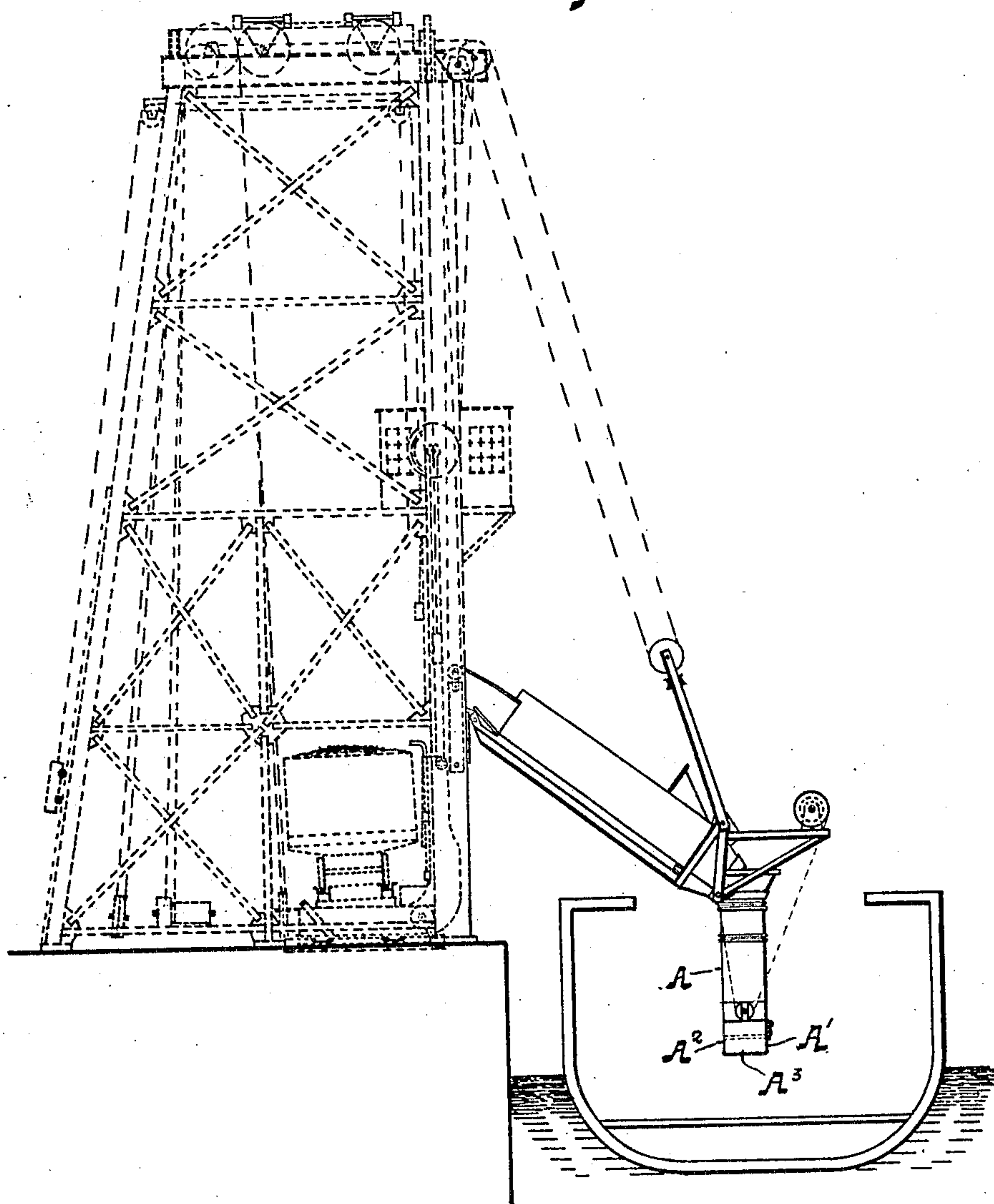
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2 SHEETS—SHEET 2.

Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## LOAD-TRIMMER.

No. 849,477.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed May 3, 1906. Serial No. 314,914.

*To all whom it may concern:*

Be it known that I, THOMAS IRWIN, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Load-Trimmers, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to improvements in loading devices, and particularly in devices of the kind now generally employed for loading coal from cars onto boats in the principal harbors of the Great Lakes. As is well known, the method at present there in vogue consists in elevating the car containing the coal to a suitable height above the dock beside which the vessel is moored and in then tilting it bodily in the proper direction to discharge its contents into an inclined pan or apron of inverted triangular form terminating in a straight chute, usually of telescopic construction, that conducts the material into the hatchway of the boat. When the portion of the vessel's hold below such hatchway has been filled to the desired level, the vessel is advanced sufficiently to bring the next hatchway beneath the chute referred to, and it in turn is filled. Such chute is pivotally attached at its upper end to the pan from which it depends, so as to be oscillatory in a vertical plane at right angles to the axis of the vessel. It is thus evident that by means of it the vessel can be completely filled from side to side and lengthwise for the width of the several hatchways. However, the space lying beneath those portions of the deck intermediate of the hatchways cannot be thus filled, as also that in the extreme ends of the vessel's hold, the bow being generally covered over by the cabin structure and the stern by the boilers.

The object, then, of my present invention is to provide an arrangement whereby this space can be utilized without the necessity of employing manual labor and actually shoveling the material over.

To the accomplishment of this end said invention consists of means hereinafter fully described, and specifically set forth in the claims.

The annexed drawings and the following description set forth in detail certain mech-

anism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure 1 represents in perspective the discharge end of the chute above referred to with my invention attached. Fig. 2 represents in broken side elevation a gate forming an element of such invention, while in Fig. 3 is shown in dotted outline an unloading-tower of the kind in connection with which the discharge-chute above described and my invention are adapted to be employed, such tower forming, however, no part of such invention.

It is obvious that for the purpose in hand a flexible chute, such as might be employed in connection with lighter materials than coal, would be absolutely impracticable, this for the reason that the tremendous impact of heavy lumps of coal or the like descending from a considerable height would quickly pound such a structure to pieces; nor is it practicable to swing the chute longitudinally of the vessel, for in addition to the mechanical difficulties of mounting the chute to make possible this second movement the hatchways are so narrow as to render the slight swinging that would be possible quite ineffective to accomplish the end sought.

As will appear from an inspection of Fig. 1, my invention utilizes quite simple means. The chute A, of which a portion only here appears, is of the usual rectangular cross-section, its length depending upon the height above the boat from which the coal-car is discharged. Such chute is of course constructed of steel plates solidly riveted together. To form the trimmer proper, I prolong the upper and lower sides of such chute some distance beyond the discharge end of the same in the form of plates A' A<sup>2</sup>. The lower projecting portion of the chute thus provided is obviously open in front and on both sides. Pivotally mounted on an axis in the form of a shaft a, centrally disposed within the space inclosed by top and bottom plates A' A<sup>2</sup> and at right angles to the latter, is a gate A<sup>3</sup>. The length of this gate A<sup>3</sup> is substantially equal to the diagonal of the space referred to and when diagonally disposed will leave but one side of such space open. Thus in the position indicated in full lines in Fig. 1 all material will be directed to the right as it comes down the chute. Similarly, when the gate is



oppositely swung, so as to occupy the position shown in dotted outline, the direction of discharge will be to the left. When disposed intermediately of these two extreme positions, so as to lie parallel with the direction of length of the chute, the material will descend practically unobstructed and will continue straight on without being deflected at all. A preferred construction of the gate is clearly shown in Fig. 2. As there appears, it comprises two similar plates  $a^9$ , riveted together, so as to inclose a smaller centrally-disposed plate  $a^{10}$ , whose projecting ends  $a^{11}$  are rounded to form the pivots on which the gate swings. It is thus seen that the gate offers a practically smooth surface to the stream of coal, and so minimizes the tendency to clog. It is of course understood that the gate need not be necessarily centrally pivoted, for it may be found desirable to prolong the outer end of the same, so as to project beyond the plates  $A' A^2$  even when in the diagonal position.

The gate as thus described may be swung by hand to occupy the various positions indicated and be there secured by any approved means, such as an arm attached to the upper end of shaft  $a$  and a pin mounted therein and adapted to engage any one of a series of apertures properly disposed in plate  $A'$ . It is desirable, however, to provide means for effecting the operation of the gate from some station removed from the discharge end of the chute, preferably the same one from which the swinging of the telescoping chute as a whole is directed. This station is usually located on a platform provided above the point of the inclined pan. The means which I have devised, then, for positioning gate  $A^3$  of the load-trimmer comprise a screw-threaded shaft  $a'$ , transversely mounted in suitable bearings  $a^2$  upon the upper face of the chute  $A$  and near its discharge end. Rotation of shaft  $a'$  is effected by means of a cable  $a^3$ , that passes around a pulley or "nigger-head"  $a^4$ , rotatively mounted upon the same near one end, such cable being driven by either a hand or motor operated drum at the operating-station, to which reference has just been made. Threaded upon shaft  $a'$  is a nut  $a^5$ , provided with a lateral projection or arm  $a^6$ , that is connected, through an intermediate link  $a^7$ , with a lever-arm  $a^8$ , mounted upon the upper projecting end of the shaft  $a$ , to which the gate is affixed. Rotation of the threaded shaft  $a'$  produced in the manner explained will accordingly effect a movement of nut  $a^5$  therealong and a concomitant swinging of the gate. The latter is thus readily made to occupy any position to divert the material discharged from the chute as desired.

The operation of my improved load-trimmer has been indicated with sufficient fullness along with the foregoing description of its construction. By means of it I am en-

abled from any convenient station about the unloading-machine to properly direct the stream of coal into the spaces intermediate of the hatchways. I find in practice that the force of the discharge is sufficient to carry the material even farther than is needed to satisfactorily effect this result. The resultant economy in the general operation of vessel-loading is greatly increased, inasmuch as the large number of laborers is entirely eliminated and the operator in the tower practically controls the whole operation.

It should be stated in conclusion that while my invention has been here described as applied to a particular situation, I am well aware that a number of analogous applications thereof to devices for handling other materials and loading the same on carriers other than vessels might be suggested. It is generally adaptable, in other words, to trimming loads on railway-cars as well as on boats and may be used in distributing material in bins just as effectively.

Having thus described my invention in detail, that which I particularly point out and distinctly claim is—

1. In a load-trimmer, the combination with a chute having two opposite wall portions extended beyond its discharge end, of a gate pivotally mounted between such extended portions.

2. In a load-trimmer, the combination with a chute having two opposite wall portions extended beyond its discharge end, of a gate pivotally mounted between such extended portions on an axis at substantially right angles to the same.

3. In a load-trimmer, the combination with a chute having two opposite wall portions extended beyond its discharge end, of a gate pivotally mounted between such extended portions on an axis located intermediately of their sides.

4. In a load-trimmer, the combination with a chute having two opposite wall portions extended beyond its discharge end, of a gate pivotally mounted between such extended portions on an axis at substantially right angles thereto and located intermediately of their sides.

5. In a load-trimmer, the combination with a chute having its top and bottom portions extended beyond its discharge end, of a gate pivotally mounted between such extended portions.

6. In a load-trimmer, the combination with a chute having its top and bottom portions extended beyond its discharge end, of a gate pivotally mounted between such extended portions on an axis at substantially right angles to the same.

7. In a load-trimmer, the combination with a chute of substantially rectangular cross-section having two opposite wall portions extended beyond its discharge end, of a



gate pivotally mounted between such extended portions on an axis at substantially right angles to the same.

8. In a load-trimmer, the combination  
5 with a chute of substantially rectangular cross-section having two opposite wall portions extended beyond its discharge end, of a gate pivotally mounted between such extended portions on an axis at substantially  
10 right angles to the same, said gate being equal in length to the diagonal of such portions.

9. In a load-trimmer, the combination with a chute of substantially rectangular cross-section having its top and bottom portions extended beyond its discharge end, of a  
15 deflecting-plate mounted between such extended portions on a pivotal axis midway between the sides of such portions at substantially right angles to the same.

20 10. In a load-trimmer, the combination with a chute of substantially rectangular cross-section having its top and bottom portions extended beyond its discharge end, of a deflecting-plate centrally mounted between  
25 such extended portions on a pivotal axis at substantially right angles to the same, said plate being substantially equal in length to the diagonal of such portions.

30 11. In a load-trimmer, the combination with a chute oscillatory in a vertical plane and having its walls on the sides transversely disposed to such plane extended beyond its discharge end, of a gate pivotally mounted between such extended wall portions.

35 12. In a load-trimmer, the combination with a chute oscillatory in a vertical plane and having its walls on the sides transversely disposed to such plane extended beyond its discharge end, on an axis at substantially  
40 right angles to the same.

45 13. In a load-trimmer, the combination with a chute oscillatory in a vertical plane and having its walls on the sides transversely disposed to such plane extended beyond its discharge end, of a deflecting-plate mounted between such extended wall portions on a pivotal axis located intermediately of the sides of such portions and at substantially right angles thereto.

50 14. In a load-trimmer, the combination with a chute oscillatory in a vertical plane and having its walls on the sides transversely disposed to such plane extended beyond its discharge end, of a deflecting-plate mounted

between such extended wall portions on a 55 pivotal axis located midway between the sides of such portions and at substantially right angles thereto.

15. In a load-trimmer, the combination with a chute having two opposite wall portions extended beyond its discharge end, of a gate centrally mounted between such extended portions on a pivotal axis at substantially right angles to the same, and means adapted to angularly position said gate upon 65 such axis.

16. In a load-trimmer, the combination with a chute, having its top and bottom portions extended beyond its discharge end, of a gate centrally mounted between such extended portions on a pivotal axis at substantially right angles to the same, said gate being equal in length to the diagonal of such portions, and means adapted to angularly position said gate upon such axis. 75

17. In a load-trimmer, the combination with a chute of substantially rectangular cross-section having two opposite wall portions extended beyond its discharge end, of a deflecting-plate centrally mounted between 80 said extended portions on a pivotal axis at substantially right angles to the same, and means adapted to angularly position said plate upon its axis, such means comprising a screw rotatably mounted upon said chute, a 85 nut threaded on said screw, an arm rigidly connected with said plate and a link connecting said arm with said nut.

18. In a load-trimmer, the combination with a chute of substantially rectangular 90 cross-section having its top and bottom portions extended beyond its discharge end, of a deflecting-plate centrally mounted between said extended portions on a pivotal axis at substantially right angles to the same, said 95 plate being equal in length to the diagonal of such portions, and means adapted to angularly position such plate upon its axis, such means comprising a screw rotatably mounted upon said chute, means for rotating said 100 screw, a nut threaded upon the same, an arm rigidly connected with said plate, and a link connecting said arm with said nut.

Signed by me this 26th day of April, 1906.

THOMAS IRWIN.

Attest:

D. T. DAVIES,  
JNO. F. OBERLIN.