

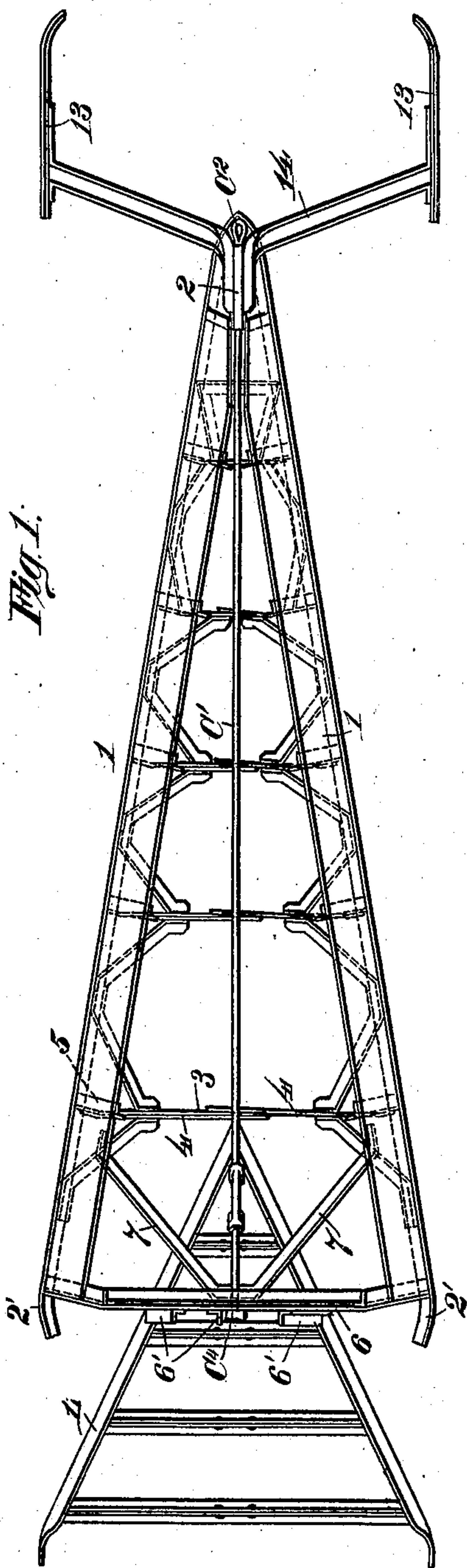
No. 847,480.

PATENTED MAR. 19, 1907.

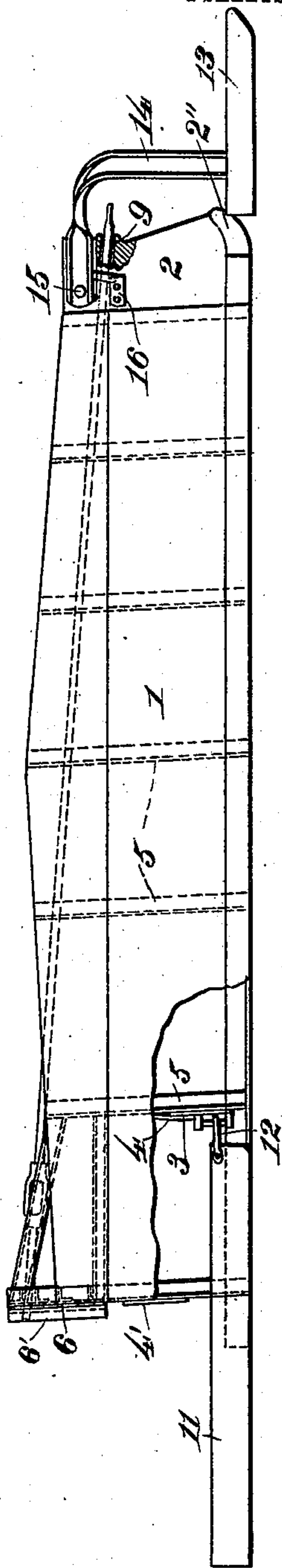
O. F. JORDAN.  
UNLOADING DEVICE.

APPLICATION FILED JUNE 18, 1906.

2 SHEETS—SHEET 1.



*Fig. 2.*



Witnesses:

*H. S. Austin*  
*A. W. Nelson*

Inventor

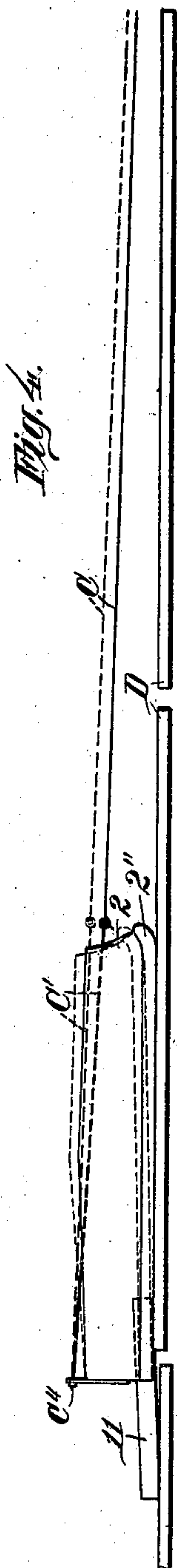
*Oswald F. Jordan*

By

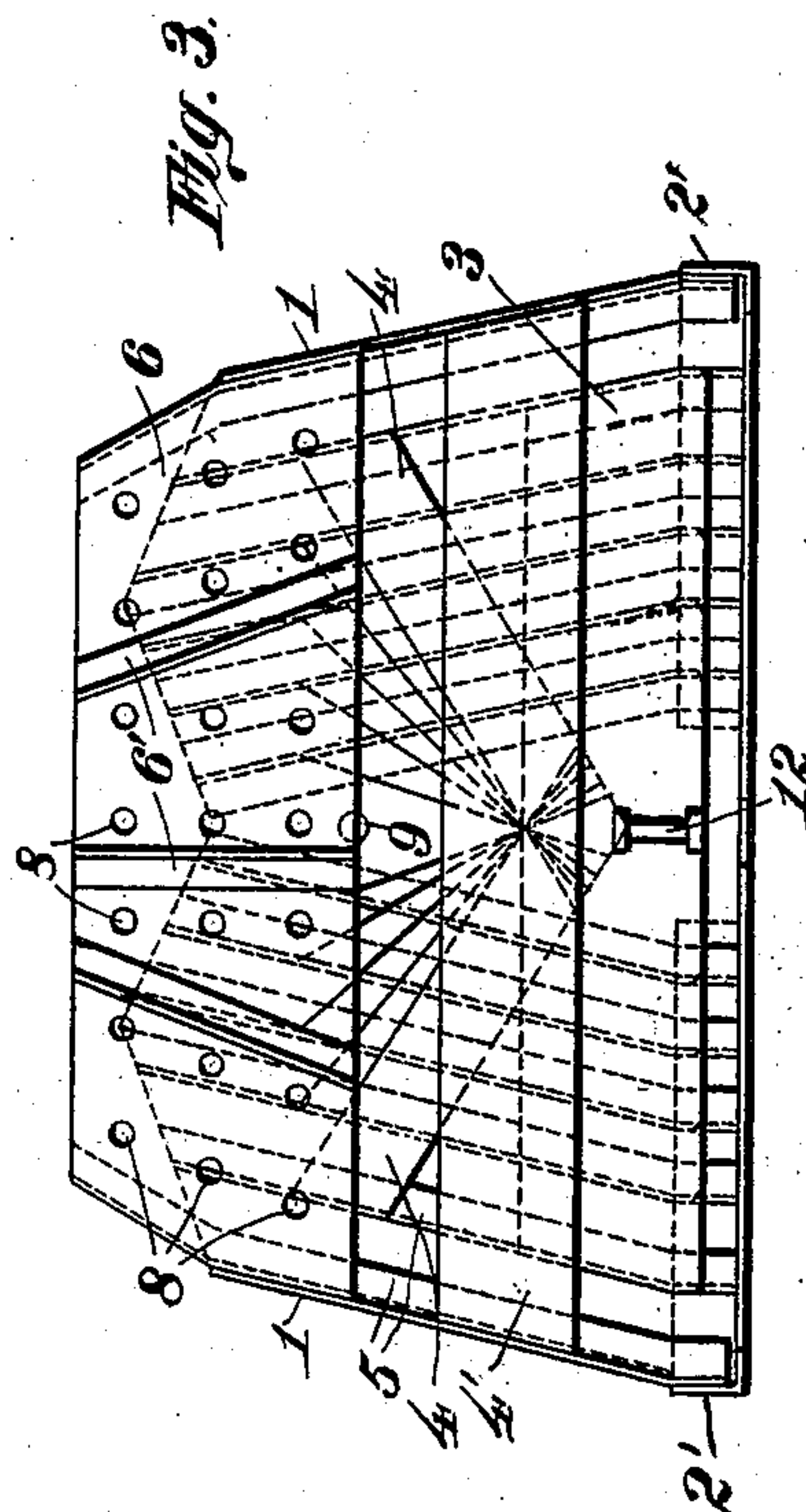
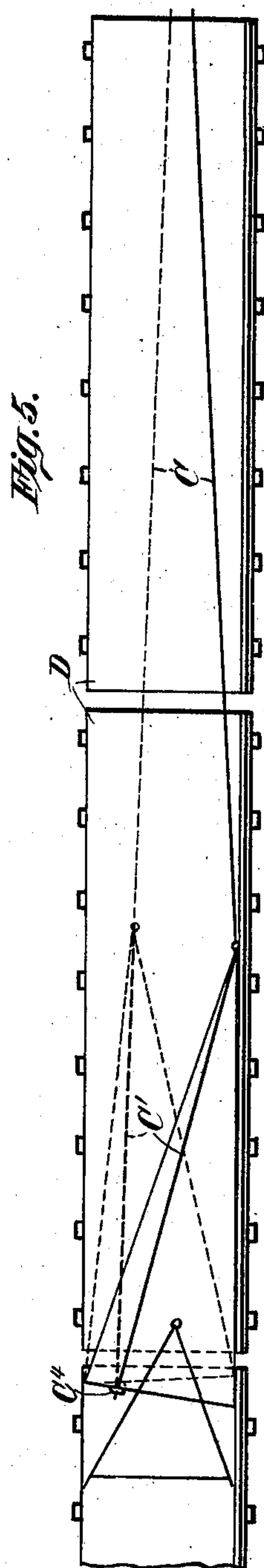
*Charles M. W. Wainwright*  
Attorney

O. F. JORDAN.  
UNLOADING DEVICE.  
APPLICATION FILED JUNE 18, 1906.

2 SHEETS—SHEET 2.



Witnesses:  
W. S. Austin  
A. W. Nelson



Inventor  
Oswald F. Jordan  
By  
Charles W. Hawley  
Attorney



# UNITED STATES PATENT OFFICE.

OSWALD F. JORDAN, OF CHICAGO, ILLINOIS.

## UNLOADING DEVICE.

No. 847,480.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed June 18, 1906. Serial No. 322,227.

*To all whom it may concern:*

Be it known that I, OSWALD F. JORDAN, a resident of the city of Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Improvement in Unloading Devices, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in ballast-unloaders—in other words, car-plows—which are used for discharging bulk material—such as sand, gravel, and crushed stone—from cars. Such a plow being placed upon the rear car of a construction train is drawn forward and according to its form or shape operates to throw off the material on one side or the other of the train, or in some cases on both sides thereof. The cars that are used for this work are either flat-cars or such as are provided with hinged side boards, which being unlocked at the bottom permit the discharge of sand or gravel as the plow is drawn forward.

The plow is wedge-shaped in form, and the point entering the material piled upon the car displaces the same laterally. It will be obvious that as the greatest cross-section of the load to be moved is always found at the point of the plow it is at the point that the greatest resistance is offered to the movement of the plow. This being the case, the counter effort of the load is to drive the plow to one side or the other, according to the direction in which the load is displaced thereby. The plow is drawn forward by a cable, and as there is nothing which tends to pull the plow away from the side of the car practically the whole lateral displacing effort of the load is thrown upon the forward end of the plow, the rear end being but little affected by the small quantity of the load remaining upon the deck or floor of the car at that point. The result is that the plow, being wedged between the side of the car and the load, is pressed against the side, so hard as to frequently break off the side stakes or tear away the side of the car. What has been said with reference to the transverse effort or resistance of the load is likewise true of its vertical effort upon the plow, and it is well known that such plows because of the great pressure of the point of nose soon destroy the decks of the cars on which they are used.

The object of this invention is to provide means for exerting lateral pressure in vertical or transverse, or both, directions to overcome the excessive counter effort or thrust of the load resting on the car-deck to the end that the pressure of the plow upon the car sides or decks may be distributed equally throughout the length of the plow and being distributed shall prevent undue wear and tear upon the sides and decks of ballast-cars.

With this object in view my invention consists in a ballast-unloader or plow of wedge form in combination with a draft attachment which is characterized and distinguished from others by being attached to the rear end of the plow and to the point of the plow in such manner that when draft or pull is exerted thereon to draw the plow forward it will also tend to move the point laterally, and thereby minimize the effect of the load thrust thereon.

Hitherto it has been the practice to provide three plows for ballast or construction trains—a right-hand plow, a left-hand plow, and a center plow—these requiring to be used separately, according to the direction in which it is desired to discharge the load. I deem this to be unnecessary and objectionable by reason of cost and inconvenience in use; and a special object of my invention is to provide a single plow which may be used in place of the three plows before employed. In this connection I necessarily use the peculiar draft system and mechanisms above outlined and also equip my plow with guides that are adapted to hold the point in proper position when the device is being used as a center plow.

An objection frequently made to the older plows is that they do not entirely clear the cars on which they are used, although some of the same are equipped with auxiliary plows or trailers intended to discharge the small quantity of material which trails over the rear end of the main plow.

One of the objects of this invention is to improve the arrangement or relation of the main or auxiliary plows in such manner as to insure the clearing of the cars. It has been customary to attach the trailer to the rear end of the plow; but in carrying out my invention I attach the trailer to an intermediate point, so that the forward end of the trailer is actually within the rear end of the



main plow in position to catch the material which sometimes escapes the main plow through the lifting of the rear end thereof from the deck of one car as the plow passes upon the next car.

In addition to the principal features and structures which distinguish my novel plow from others, as above indicated, my invention consists in various details of construction and in combinations of parts, all as hereinafter described, and also particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a plow or a ballast-unloader embodying my invention. Fig. 2 is a side elevation thereof, a portion of the rear end of the main plow being broken away to disclose the connection between the same and the auxiliary plow or trailer. Fig. 3 is a somewhat-enlarged rear end elevation of the plow. Fig. 4 is a diagrammatic representation of the plow, illustrating the tendency and effect of my novel draft system and mechanism; and Fig. 5 is a plan diagrammatic view showing the action of the draft mechanism in a transverse direction.

As shown in the drawings, the plow is wedge-shaped in form and comprises the side plates or shares 1 1, connected at their forward ends by a V-shaped connecting-share or plow-point 2, there being a suitable internal framework which rigidly connects the side plates. As shown, the side plates are inclined, the purpose of this inclination being that the plow shall carry enough of the load to hold it down to its work. The internal framework may be of any desired form or construction; but I prefer the simple horizontal and angularly-arranged transverse bars or beams 3 and 4, attached to the stiffening-ribs 5 on the inner sides of plates 1 1. The rear end of the plow corresponds in width to the inside width of the cars upon which it is to be used, and I prefer that the rear ends of the runners or shoes 2' shall be bent inwardly, as shown in Fig. 1, to permit the plow to be laid along either side of the car. The runner-nose 2'' of the plow is turned up, as shown, to enable the plow to mount from one car to another having a higher deck. It is also drawn in or made blunt at the point, so that the plow may pass from one car to another not exactly in line therewith.

The details of construction I regard as new and of great practical importance. Across the rear end of the plow I arrange a strong transverse plate or beam 6, strengthened by numerous ribs or flanges 6' and by braces 7. This plate or girder contains either a large number of holes 8 or a like number of eyes or staples adapted to receive the end of the

draft-cable. The draft is exerted upon the plow through its rear plate 6, and this explains the extra weight and strength thereof, as indicated in the drawings. As shown, the rear plate 6 preferably extends a considerable distance above the top of the plow, its lower edge being substantially on the level with the top of the forward end of the plow. The point or nose of the plow contains an opening or guide 9, through which the draft rod or cable extends to a point of attachment upon the rear plate 6. It will be noted that the opening or guide 9 is lower than any of the openings or holes 8 in the rear end of the plow. If desired, the flexible draft-cable C may be passed through the opening or guide 9 and attached to the rear end of the plow; but as it is more convenient in use I prefer to employ a rigid draft rod or cable extension C'. The forward end of the draft rod or connection C' projects from the point of the plow and is provided with a hook or eye C<sup>2</sup>, in which the end of the draft-cable is secured. The rear end of the rod C' is adapted to be placed in either of the holes 8 in the cross-plate 6 and is secured in said plate by any suitable means. In constructing this part of my device I prefer to make the rod C' in two sections, joined by a turnbuckle. In such case I provide the short section of the rod C' with a head C<sup>4</sup>, adapted to draw against the rear side of plate 6. When it is desired to shift the end of the rod in plate 6, the short section is detached from the turnbuckle, placed in another hole in the plate 6, and then reconnected with the forward section of said rod. It will be observed that the middle row of holes 8 in the plate and also the hole or guide 9 in the point of the plow are all in a vertical plane which includes the principal axis of the plow. All of the other openings are at one side or the other of said plane, and all of the openings in the plate 6 are above the horizontal plane of the guide 9.

The plate 4' at the rear end of the plow, which corresponds to the plates 4 of the internal frame, is placed at a higher point, this being done to admit the point or forward end of the trailer 11. The trailer is a small wedge-shaped structure of less height than the main plow, and its forward end or point is loosely or pivotally attached to one of the cross bars or plates 4 of the main structure by a link, chain, or clevis 12, which permits relative vertical movement between the parts.

The forward end of the main plow is equipped with guide-shoes 13 13, which occupy the positions shown in Figs. 1 and 2 when the plow is used as a center plow for discharging material from both sides of a loaded car. The shoes or guides are of sufficient length to pass from side stake to side stake of a car, and their forward ends are bent upwardly and inwardly in order that they may



readily pass from one car to another. Each shoe is attached to the point of a plow by an upwardly-curved arm 14, preferably a bent channel-beam. A single bolt or pin 15 serves to attach the two shoes to the point of the plow, and the shoes or guides are movable independently. Stops 16 on the plow-point limit the downward movement of the shoes with relation to the plow; but said shoes are free to move upwardly to such extent that, if desired, they may be thrown back over and above the plow to be out of the way when the plow is used at one side of the car.

The use and operation of my invention are as follows: As stated, the plow may be used for discharging material from both sides of a car or cars, and in this case the guide-shoes 13 are attached to the plow as shown in Figs. 1 and 2. In such case the plow is held centrally by the guide-shoes at its forward end and by the shoes or runners 2' at its rear end. The trailer being of the width of the main plow, is also guided by the engagement of its rear ends with the car sides or stakes. For center-plowing the draft-rod is adjusted as shown in Figs. 1 and 2, its rear end being fastened in one of the openings 8 of the middle row in the plates 6. The elevation of the rear end of the draft-rod in said plate depends upon the nature of the material to be dislodged from the car. If the material is light, the draft-rod is adjusted in the lower hole of the middle row, while if heavy material is to be discharged the draft rod or cable is secured at a higher point. The operation of the plow as thus adjusted is represented in diagrammatic Fig. 4 of the drawings. Considering the cable as though it extended from the rear end of the plow to the locomotive or winch wherefrom the draft or pull is exerted, it will be noted that the cable is deflected downwardly at the point of the plow. In other words, it does not conform to a straight line drawn between the drawing mechanism and the rear end of the plow. In consequence the pull on the cable tends to straighten it and cause it to conform to the dotted lines shown in Fig. 4, effecting a considerable upward pull upon the nose of the plow. This force is sufficient to counteract the greater load upon the forward end of the plow and by so doing equalizes the pressure of the plow upon the car-deck and prevents the destruction of the latter thereby. When the plow is to be used on one side or the other of the car, the guides 13 are either removed or thrown back upon the plow to permit one side of the plow to engage the side of the car. In such case the elevation of the draft-cable remains the same as before described, provided the material to be moved is of the same nature; but as it is desirable to prevent the heavy pressure of the forward end of the plow against the side of the car the rear end of the cable is adjusted transversely in the end

plate of the plow, and the draft-cable exerts a lateral or transverse pull upon the plow-point. Such arrangement is shown diagrammatically in Fig. 5, wherein it will be seen that the deflection of the rear end of the cable by its adjustment toward the discharge side of the plow permits the cable to exert a lateral pull upon the point at a very considerable angle and the cable tending to straighten operates to draw the plow-point away from the closed side of the car, thereby equalizing the lateral thrust of the load upon the plow and relieving the side of the car from excessive strains. It will be understood that the plow is not actually removed from either the deck or side of the car, the only effort of the lateral draft being to partly overcome the thrust of the load.

As indicated in Fig. 4, the platforms D of the cars composing the train frequently vary in height, and as the main plow moves from one car to another its end is lifted from the deck of the rear car. The arrangement of the trailer within the end of the main plow and loosely connected thereto is such that the trailer rises and falls within the main plow, and thus catches all of the material which would otherwise escape either over or under the rear end of the plow.

As various modifications will readily suggest themselves to one skilled in the art, I do not confine the invention to the specific construction herein shown and described.

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

1. In a car-unloader, the combination of a plow, having a pointed forward end, with a draft member loosely mounted in said forward end at a certain height and extending through said forward end to the rear end of the plow and fastened thereto at a higher point, whereby, draft being exerted upon said member to move the plow forward, a lateral force is exerted upon the plow-point by the draft member; as and for the purpose specified.

2. In a car-unloader, the combination of a plow, having a draft-member guide in its pointed forward end, with a draft member extending through said guide and fastened to the rear end of the plow at a point distant from the projected horizontal axis of said guide, substantially as and for the purpose specified.

3. In a car-unloader, a plow having a pointed forward end, in combination with a draft-member guide at said end, a plurality of draft-member fastenings at the rear end of said plow and a draft member secured in one of said fastenings and extending through said guide, substantially as described.

4. In a car-unloader, a wedge-shaped plow having a draft-member guide at its forward end and provided with a plurality of draft-



member fastenings at its rear end, in combination with a draft-rod held in said guide and adapted to be secured in any of said fastenings, as and for the purpose specified.

5 5. In a car-unloader, a wedge-shaped plow having a draft-member guide at its forward end, in combination with a draft member extending therethrough and attached to the rear end of the plow at a higher point, substantially as described.

10 6. In a car-unloader, a wedge-shaped plow having a draft-member guide at its forward end, in combination with a draft member extending therethrough and attached to the rear end of the plow at a higher point and guide-shoes attached to the forward end of the plow, substantially as described.

15 7. In a car-unloader, a wedge-shaped plow having a draft-member guide at its forward end, in combination with a draft member extending therethrough and attached to the rear end of the plow at a higher point and guide-shoes independently, pivotally attached to the forward end of the plow, substantially as described.

20 8. In a car-unloader, a wedge-shaped plow, in combination with two independent guide-shoes, independent-arch arms extending therefrom to the point of said plow and means pivotally attaching said arms to the plow-point, substantially as described.

25 9. In a car-unloader, the combination of a wedge-shaped plow with guide-shoes, arched arms extending from said shoes to the upper part of the plow-point, a pivot-pin and stops on said point for said arms, substantially as described.

30 10. In a car-unloader, a wedge-shaped plow, in combination with an auxiliary plow or trailer projecting within the rear end of said plow and pivotally attached thereto, substantially as described.

11. In a car-unloader, a main wedge-

shaped plow, in combination with a wedge-shaped trailer and a link joining said trailer to the main plow within the body of the main plow, as and for the purpose specified.

12. In a car-unloader, a wedge-shaped plow having a draft-member guide at its forward end, in combination with the draft-plate upon the rear end of said plow, said plate provided with a plurality of draft-member openings and a sectional draft member secured to one of said openings and extending through said guide, substantially as described.

13. In a car-unloader, a main wedge-shaped plow having an opening in its rear end, in combination with a trailer extending through said opening and a pivotal trailer attachment within said main plow and adapted to permit relative vertical movement between the main plow and trailer, substantially as described.

14. In a car-unloader, the combination of a wedge-shaped plow with a draft member extending through said plow and means for securing said draft member at various angles in said plow, substantially as described.

15. A car-unloader, comprising a wedge-shaped plow having a bluntly-pointed or upwardly-curved forward end shoe as and for the purpose specified.

16. A car-unloader, comprising a wedge-shaped plow having an upturned and bluntly pointed or curved end shoe and bottom side rails having their forward ends joined to said shoe as and for the purpose specified.

In testimony whereof I have hereunto set my hand, this 14th day of June, 1906, at Chicago, Illinois, in the presence of two witnesses.

OSWALD F. JORDAN.

Witnesses:

F. G. KNIGHT,  
JOHN R. LEFEVRE.