

J. T. JOHNSON & W. M. RAY.
LOAD TRIMMER.
APPLICATION FILED JAN. 9, 1908.

899,538.

Patented Sept. 29, 1908.
3 SHEETS—SHEET 1.

Fig. 1

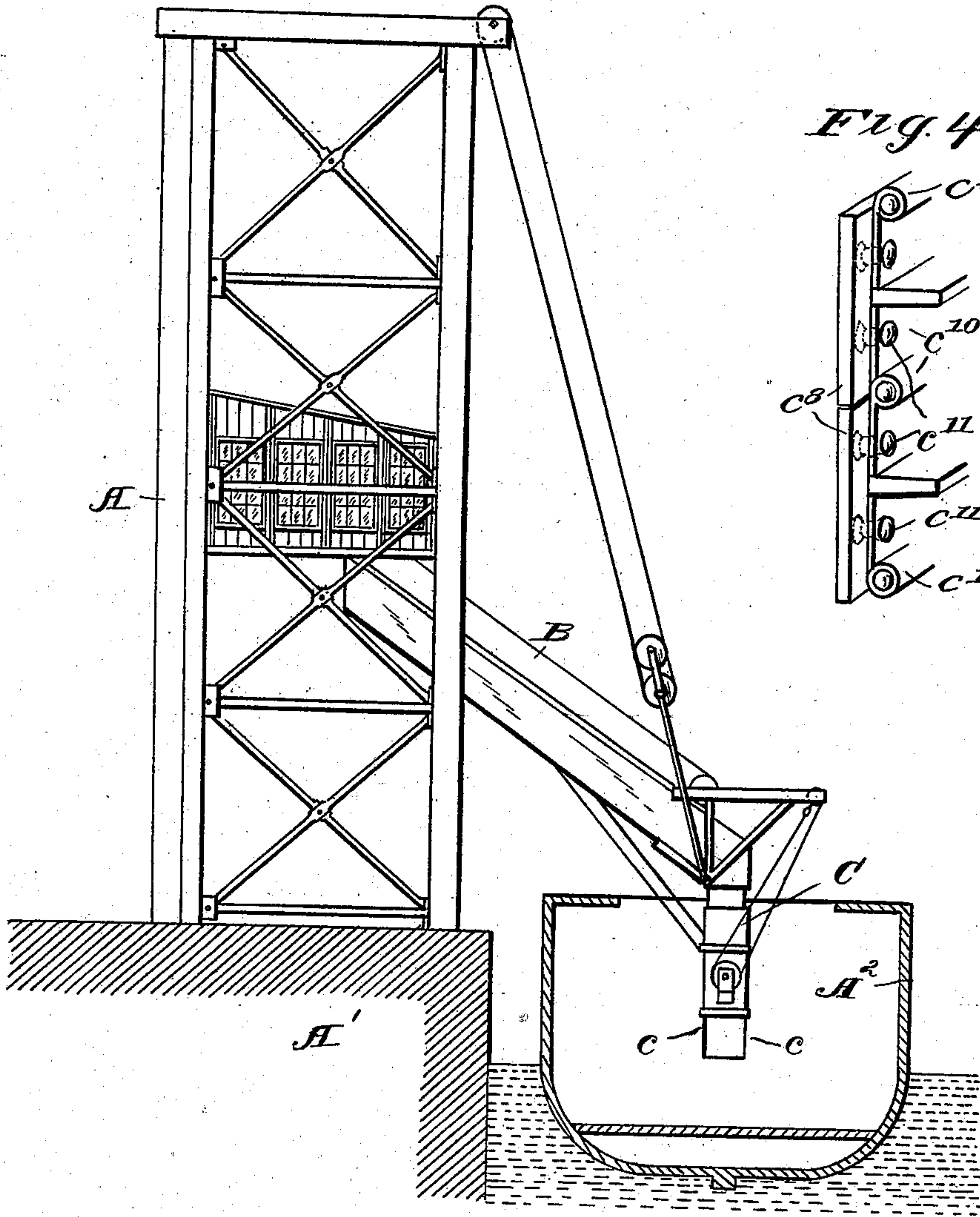
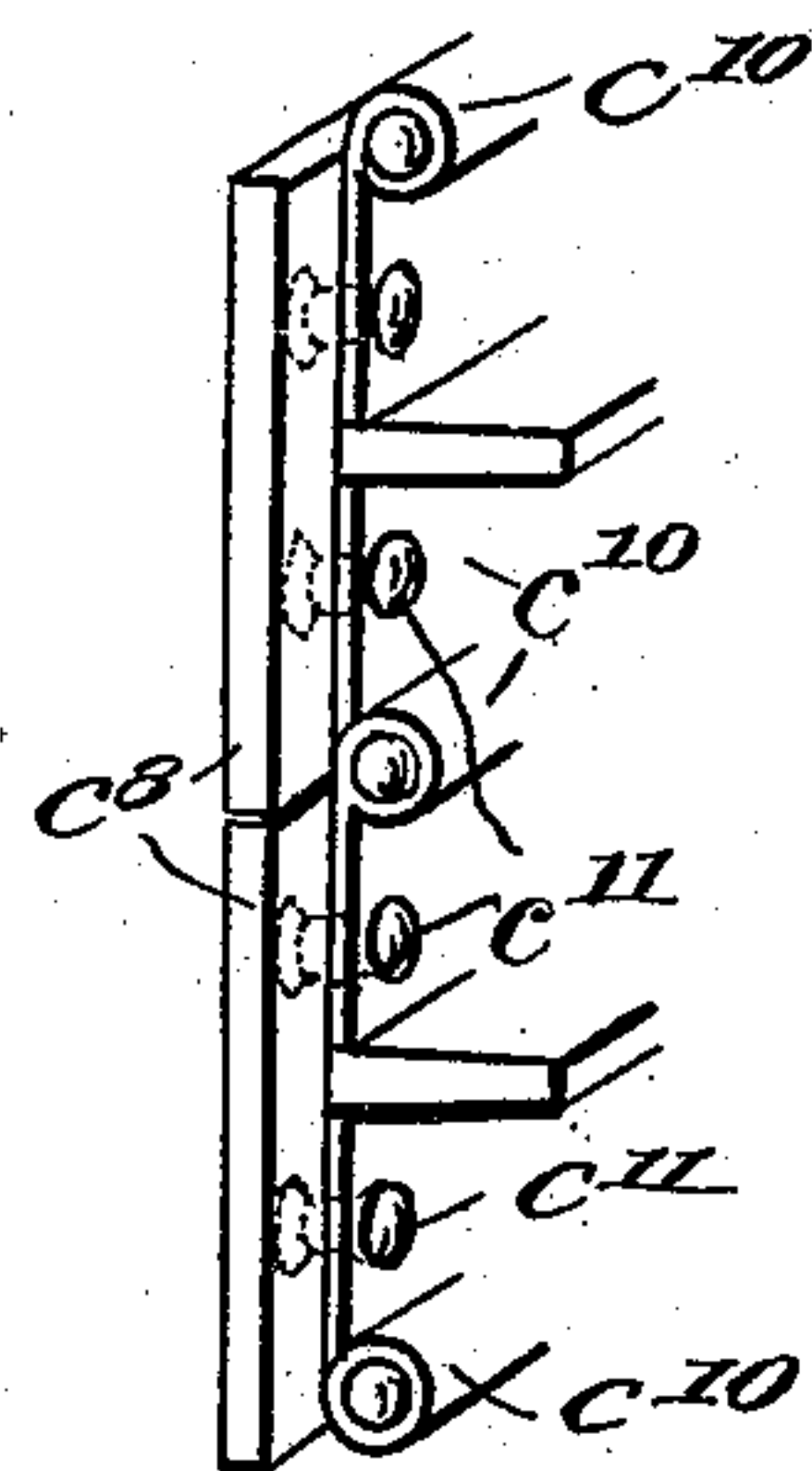


Fig. 4



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Inventors:
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LOAD TRIMMER.

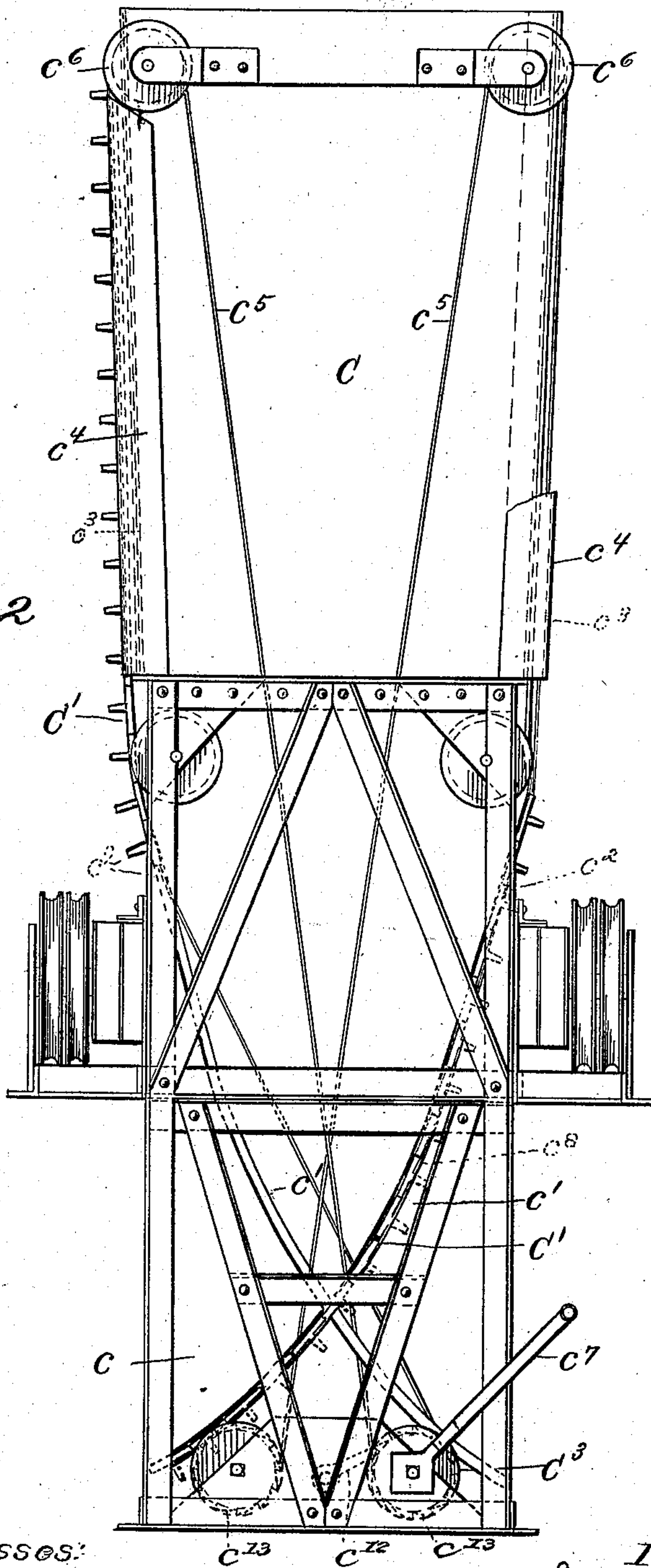
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3 SHEETS—SHEET 2.

Fig. 2



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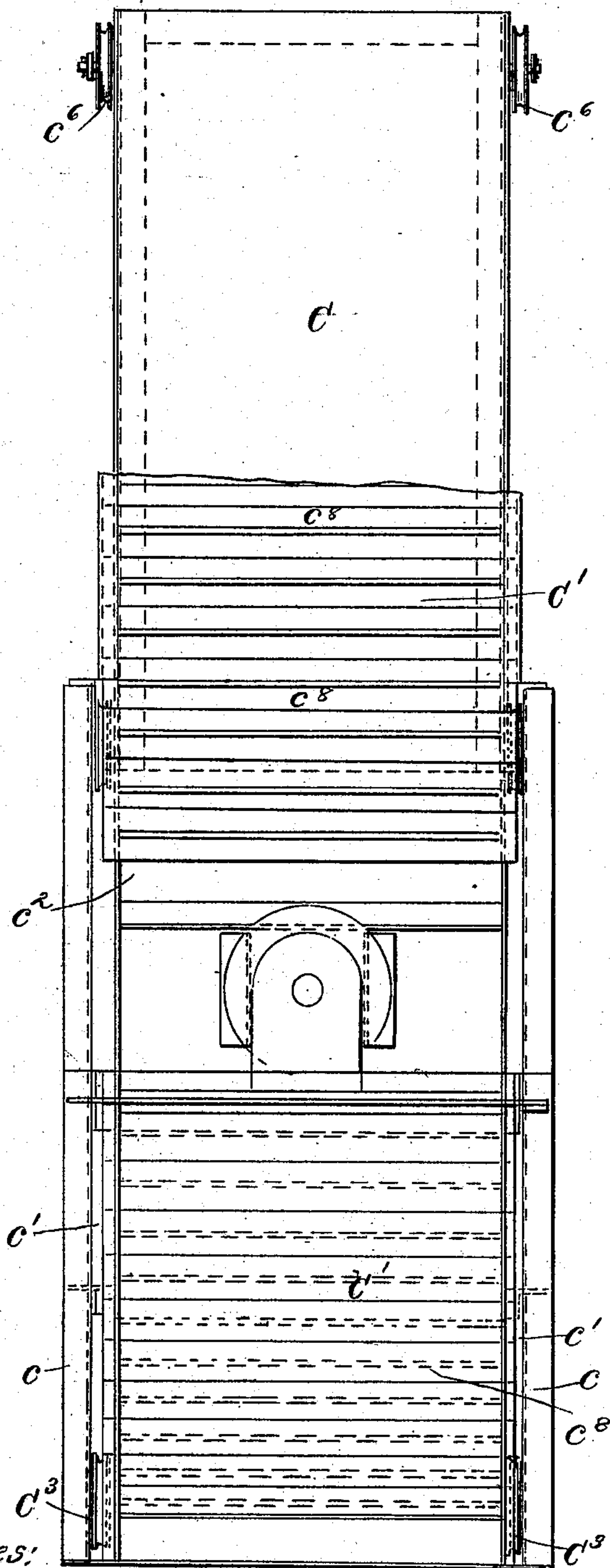
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3 SHEETS—SHEET 3.

Fig. 3



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UNITED STATES PATENT OFFICE.

JOHN T. JOHNSON, OF AKRON, AND WILLIAM M. RAY, OF CLEVELAND, OHIO.

LOAD-TRIMMER.

No. 899,538.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed January 9, 1908. Serial No. 409,937.

To all whom it may concern:

Be it known that we, JOHN T. JOHNSON and WILLIAM M. RAY, both citizens of the United States, and residents of Akron, county of Summit, and State of Ohio, and Cleveland, county of Cuyahoga, and State of Ohio, respectively, have jointly 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 we have contemplated applying that principle, so as to distinguish it from other inventions.

Our invention relates, as indicated, to loading apparatus and has particular regard to apparatus of this character such as is used in loading vessels from elevators or the like, particularly in loading vessels with coal.

The object of the present invention is the provision of a discharge chute for use with such apparatus whereby the necessity of manually "trimming" the load may be avoided thereby effecting a large saving in the cost of the loading by the elimination of labor in the carrying on of this operation.

To the accomplishment of this and related objects, said invention consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings: Figure 1 shows in outline an unloading tower for handling railway cars in connection with a loading apparatus of the kind in hand, the relation of the latter to the vessel to be loaded being thus shown; Fig. 2 is a front elevation on a larger scale of the discharge chute of such apparatus, in which chute has been incorporated our several improvements; Fig. 3 is a side elevation of the same; and Fig. 4 is a view showing the construction of one of the details entering into the aforesaid chute.

Referring, first of all, to Fig. 1, the unloading tower A which in itself forms no part of the present invention, will be seen to be disposed at the edge of the dock A', alongside

of which the vessel A² to be loaded is moored. Such tower is provided with an inclined pan or apron B terminating in a straight chute C that conducts the material into the hatchway 55 of the boat, such chute being supported so as to be oscillatory in a vertical plane transversely of the vessel's hold. Suitable means that do not here require to be described in detail, are adapted to elevate railway cars 60 and tilt the same so as to discharge their contents into the pan, while other means are adapted to adjust the position of the pan and of the chute vertically so as to deposit the material being unloaded at any desired 65 point in the plane of the latter's oscillation. Thence flowing laterally such material will more or less completely fill up the hold. Owing, however, to the fact that the hatchways do not provide a continuous opening in 70 the vessel deck it is obvious there will be spaces left between such hatchways unless the material is scattered laterally by other means than those thus far described. As it is with means for automatically effecting this 75 result that our present invention is concerned, the description of such means will now be more fully taken up.

The oscillatory chute C, whereby the material is conducted from the pan to the vessel 80 hold, has the walls of its discharge end *c c* on the sides transversely disposed to such plane of oscillation prolonged, Figs. 2 and 3. In such prolonged wall portions provided two 85 two sets of curved slots *c' c'* which act as guides, and respectively incline toward opposite sides of the chute, terminating in the lower corners of such prolonged portions. At the points where they would intersect the walls, openings *c² c²* are provided, and a con- 90 tinuation *c³ c³* of the guides *c' c'* carried on the inner faces of plates *c⁴ c⁴* projecting laterally of the chute for practically the remainder of its length. Slidably mounted in such sets of guides, respectively, are flexible 95 deflecting plates, *C' C'*, that in their raised positions are adapted to be supported exteriorly of the chute in the upper portions *c³ c³* of the guide-ways referred to, but in their lower positions are adapted to lie diagonally 100 of the lower discharge end being held in the curved portions *c' c'* of the guide-ways

formed in the prolonged wall portions. These deflecting plates may be variously constructed, but, as shown, are formed of bars c^8 (specifically T-bars) disposed so as to present
 5 their flat faces towards the inside of the chute and their ribbed faces toward the outside thereof, the ribs thus serving to reinforce the sheet. These bars are pivotally connected together by means of hinges Fig. 4,
 10 attached to such rear sides by rivets c^{11} , and the T-ribs are cut back a short distance from either side of the sheet to permit the latter to slidably engage the slots c' c' . To raise and maintain the respective deflecting
 15 plates thus constructed in their upper positions a windlass consisting specifically of a drum C^3 and a cable c^5 connected therewith and passing over a pulley c^6 , is provided for each plate. The weight of the plate it will
 20 be understood is adapted to cause the same to descend upon release of the drum of the windlass, which is normally held against rotation by a pawl c^{12} , ratchet c^{13} , or equivalent means. Rotation of either drum to wind up
 25 the cable and raise the corresponding plate C' is effected by means of a crank c^7 in the usual way.

The operation of our load trimmer should be fairly obvious from the preceding description of the construction of its component
 30 parts. Normally both deflecting plates will be held in their raised positions leaving the lower end of the chute perfectly free and open. In this condition the material is dis-
 35 charged directly into the hold in the regular manner and this condition will moreover obtain during most of the loading operation. It will be observed that when the chute is thus employed the slots constituting
 40 guides c' offer no impediment to the passage of the material through the chute. When, however, that portion of the hold beneath any particular hatchway is nearly full and it is desired to fill the covered space between
 45 such hatchway and the one next adjoining, one or the other of the deflecting plates is lowered into its operative position. The stream of coal descending the chute is there-
 50 upon diverted from its straight path to one side or the other, depending upon which plate is thus lowered. By giving a proper curvature to the guides wherein the deflecting plates are held, it will be obvious that such deflection can be effected without sub-
 55 jecting the coal to severe pounding such as would be apt to break the lumps and produce an undue amount of slack, which is objectionable.

It is of course understood that our trimming device while described as specifically
 60 adapted to the loading of coal, will be equally effective in the handling of any other material, particularly any material of like heavy

nature, in the handling of which a flexible spout, such as is used in loading grain or the
 65 like, cannot be employed for the reason that such spout would be knocked to pieces by the impact of the material descending the chute. It will be equally obvious that the device is susceptible of equally advantageous
 70 use in other connections than in the loading of vessels, for the trimming of a load is an essential incident to the proper loading of cars and the filling of bins as well.

Other modes of applying the principle of
 75 our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any one of the following claims or the equivalent of such
 80 stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. In a device of the character described, the combination with a chute having an open
 85 discharge end and two opposite wall portions of such discharge end being prolonged, of a deflecting plate bodily movable between such prolonged portions.

2. In a device of the character described,
 90 the combination with a chute having two opposite wall portions of its discharge end prolonged, of a flexible deflecting plate bodily movable between such prolonged portions.

3. In a device of the character described,
 95 the combination with a chute having an open discharge end and two opposite wall portions of such discharge end being prolonged, of a deflecting plate secured laterally of said chute above such prolonged portions but
 100 adapted to be inserted between the same.

4. In a device of the character described, the combination with a chute having an open
 105 discharge end and two opposite wall portions of such discharge end being prolonged, of a deflecting plate secured laterally of said chute and adapted to be slidably inserted between such prolonged portions.

5. In a device of the character described, the combination with a chute having two op-
 110 posite wall portions of its discharge end prolonged, of a flexible deflecting plate secured laterally of said chute and adapted to be slidably inserted between such prolonged portions.
 115

6. In a device of the character described, the combination of a chute having an open
 120 discharge end and two opposite wall portions of such discharge end being prolonged, guides formed in such prolonged portions, and a bodily movable deflecting plate slidably held by said guides.

7. In a device of the character described, the combination of a chute having two op-
 125 posite wall portions of its discharge end prolonged, curved guides formed in such pro-

longed portions, and a bodily movable flexible deflecting plate slidably held by said guides.

8. In a device of the character described, the combination of a chute having two opposite wall portions of its discharge end prolonged, curved guides formed in such prolonged portions, said guides extending without the chute and thence along the sides thereof, and a flexible deflecting plate slidably held by said guides.

9. In a device of the character described, the combination with a chute having an open discharge end and two opposite wall portions of such discharge end being prolonged, of two deflecting plates slidably held between such prolonged portions, and respectively adapted in their operative positions to direct material from said chute in opposite lateral directions.

10. In a device of the character described, the combination with a chute having two opposite wall portions of its discharge end prolonged, of two flexible deflecting plates slidably held between such prolonged portions, and respectively adapted in their operative positions to direct material from said chute in opposite lateral directions.

11. In a device of the character described, the combination of a chute having two opposite wall portions of its discharge end prolonged, two sets of curved guides formed in such prolonged portions, said sets of guides respectively inclining towards opposite sides of said chute, and flexible deflecting plates slidably held by said sets of guides, respectively, and adapted when in their operative positions to direct material from said chute in opposite lateral directions.

12. In a device of the character described, the combination of a chute having two opposite wall portions of its discharge end prolonged, two sets of curved guides formed in such prolonged portions, said sets of guides respectively inclining towards opposite sides of said chute and extending upwardly without the chute and thence along the respective sides thereof, and flexible deflecting plates slidably held by said sets of guides, respectively, and adapted when in their operative positions to direct material from said chute in opposite lateral directions.

13. In a device of the character described, the combination of a chute having an open discharge end and two opposite wall portions of such discharge end being prolonged, a bodily movable deflecting plate slidably held between such prolonged portions, and means for moving said plate.

14. In a device of the character described, the combination of a chute having two opposite wall portions of its discharge end prolonged, curved guides formed in such pro-

longed portions, a bodily movable flexible deflecting plate slidably held by said guides, and means for moving said plate along said guides.

15. In a device of the character described, the combination of a chute having two opposite wall portions of its discharge end prolonged, two sets of curved guides formed in such prolonged portions, said sets of guides respectively inclining towards opposite sides of said chute, flexible deflecting plates slidably held by said sets of guides, respectively, and adapted when in their operative positions to direct material from said chute in opposite lateral directions, and means adapted to position each of said plates on its guides, as desired, said means including a windlass having its cables connected with the corresponding plate.

16. In loading mechanism, the combination with a chute supported so as to be oscillatory in a vertical plane, said chute having an open discharge end and the walls of such discharge end on the sides transversely disposed to such plane being prolonged, of a deflecting plate slidably held between such prolonged wall-portions.

17. In loading mechanism, the combination with a chute supported so as to be oscillatory in a vertical plane, said chute having an open discharge end and the walls of such discharge end on the sides transversely disposed to such plane being prolonged, of two deflecting plates slidably held between such prolonged portions, and respectively adapted in their operative positions to direct material from said chute in opposite directions.

18. In loading mechanism, the combination of a chute supported so as to be oscillatory in a vertical plane and having the walls of its discharge end on the sides transversely disposed to such plane prolonged, two sets of curved guides formed in such prolonged wall-portions, said sets of guides respectively inclining towards opposite sides of said chute, and flexible deflecting plates slidably held by said sets of guides, respectively, and adapted when in their operative positions to direct material from said chute in opposite lateral directions.

19. In loading mechanism; the combination with a chute supported so as to be oscillatory in a vertical plane, said chute having an open discharge end and the walls of such discharge end on the sides transversely disposed to such plane being prolonged, of a deflecting plate slidably held between such prolonged wall-portions, and means adapted to position each of said plates on its guides as desired.

20. In a device of the character described, a flexible deflecting plate comprising a plurality of pivotally connected plate elements,

each of said elements being formed on one side with a reinforcing rib.

21. In a device of the character described, a flexible deflecting plate comprising a plurality of ribbed bars pivotally connected together so as to present their flat faces on one side and their ribbed faces on the other.

22. In a device of the character described, a flexible deflecting plate comprising a plurality of T-bars disposed so as to present

their flat faces on one side and their ribbed faces on the other, and hinges pivotally connecting said bars.

Signed this 26th day of December, 1907.

JOHN T. JOHNSON.
WILLIAM M. RAY.

Attested by—

MARY ISRAEL,
JNO. F. OBERLIN.