

A. RAY.
CHUTE WAGON.

(Application filed Aug. 1, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

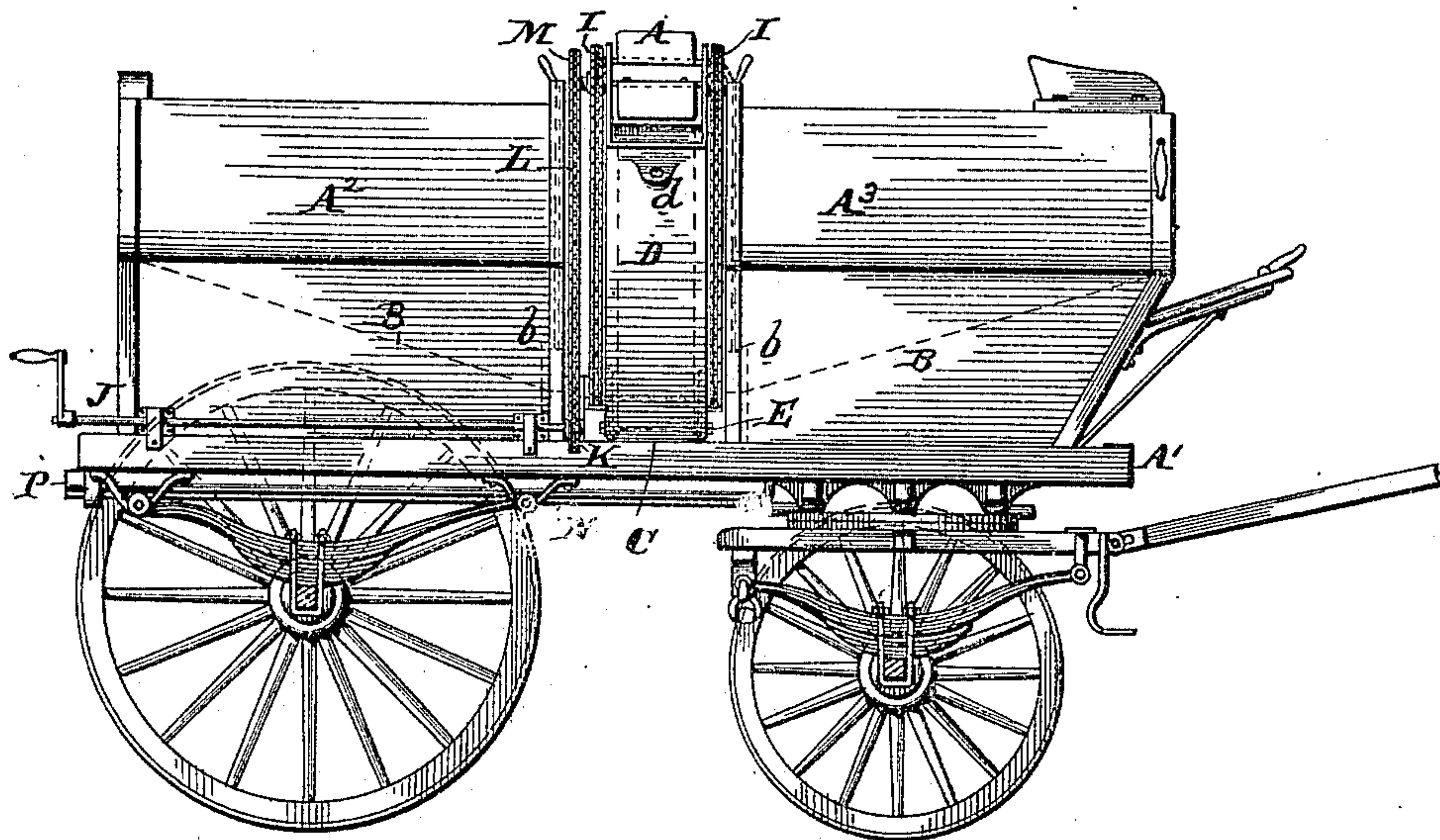
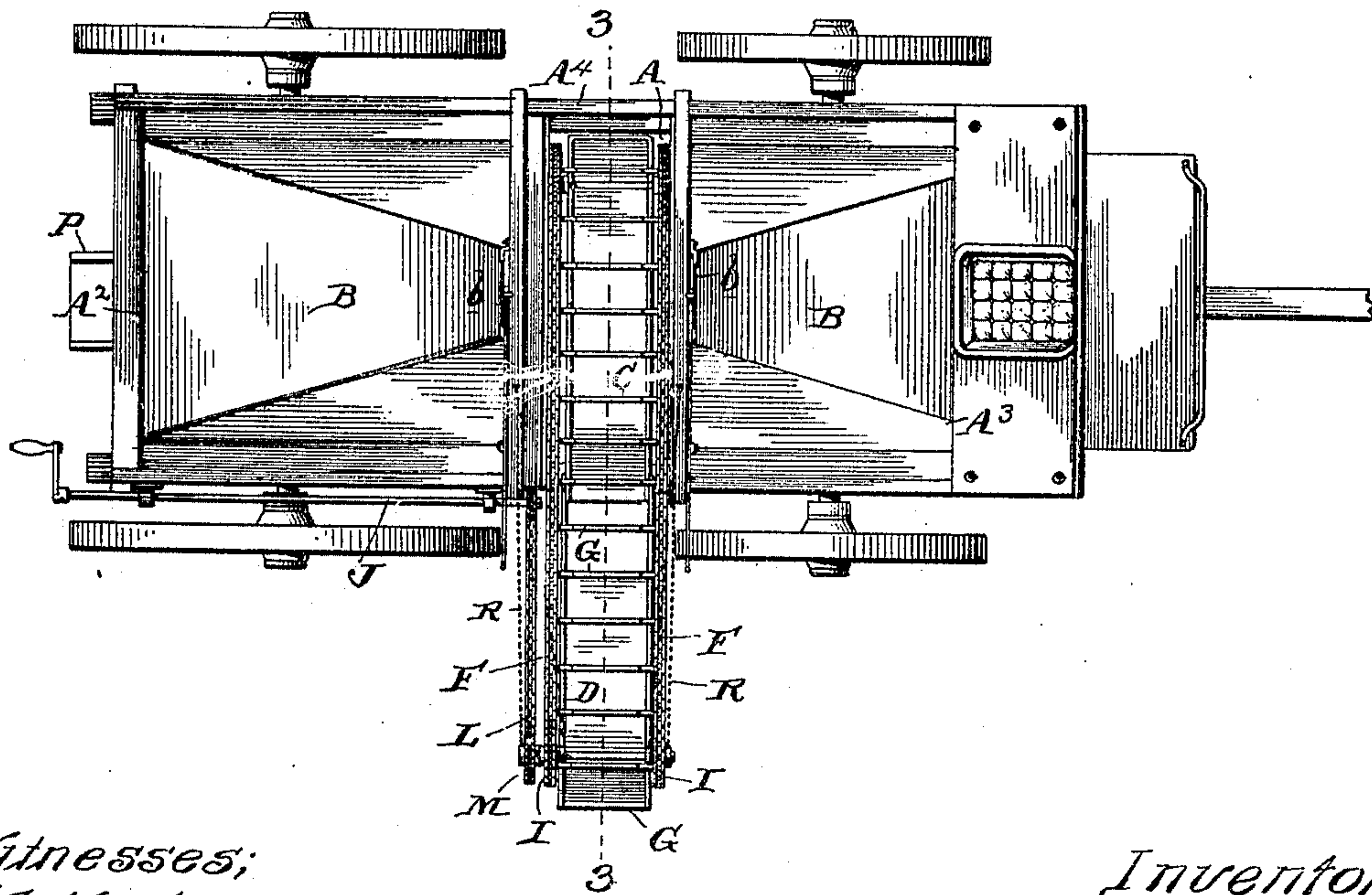


Fig. 2.



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No. 709,723.

Patented Sept. 23, 1902.

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2 Sheets—Sheet 2.

Fig. 3.

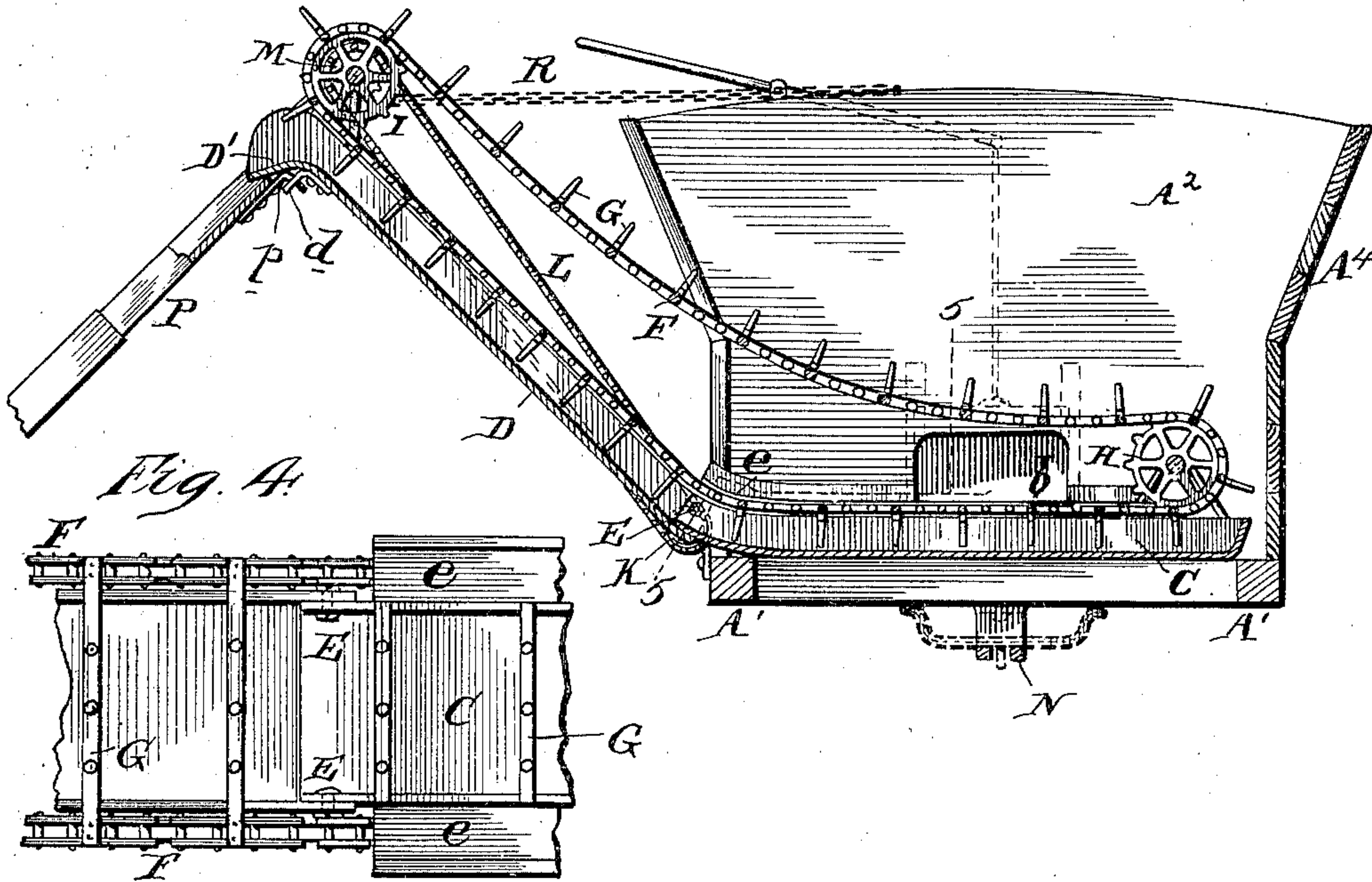


Fig. 4.

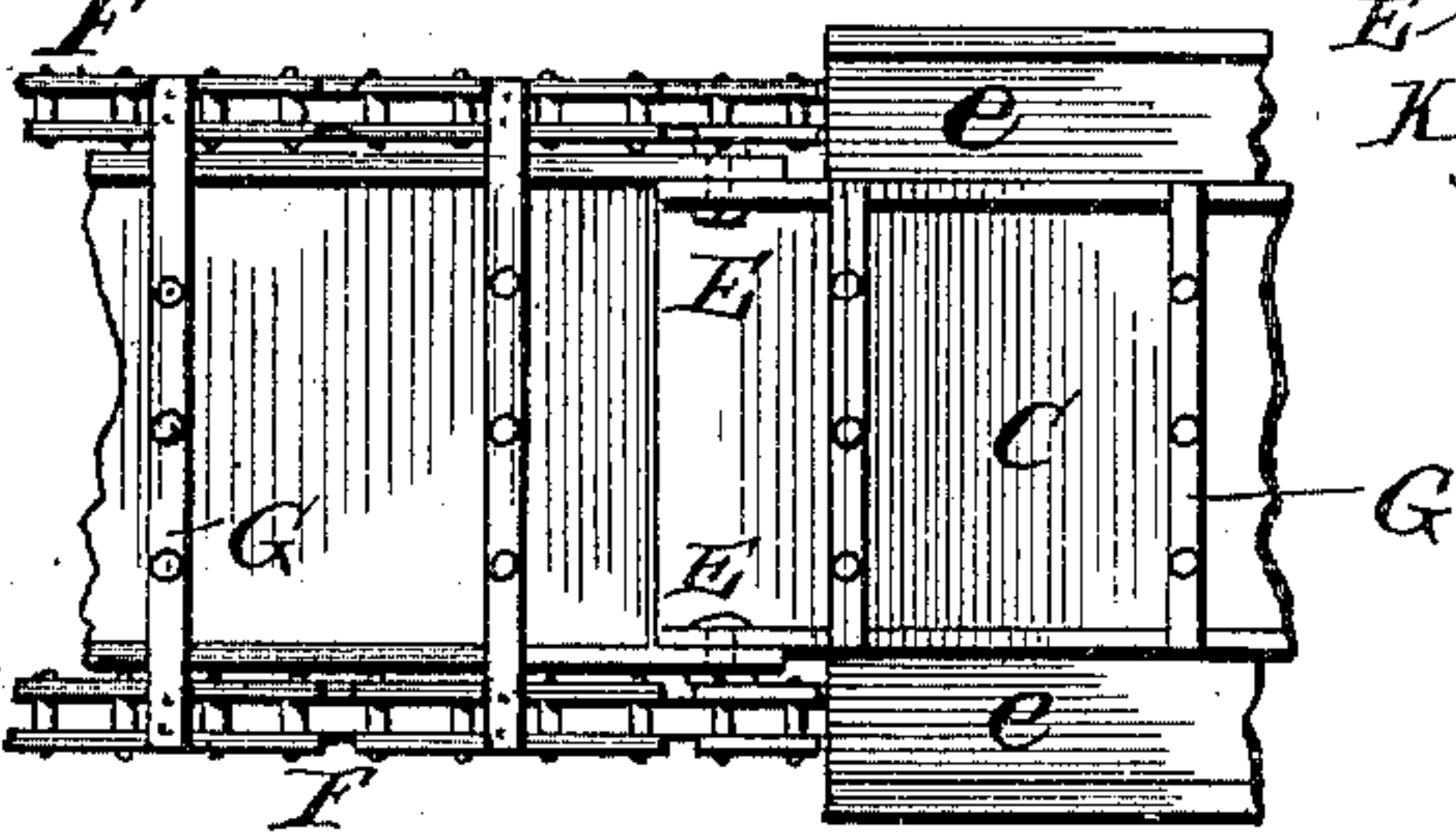


Fig. 5.

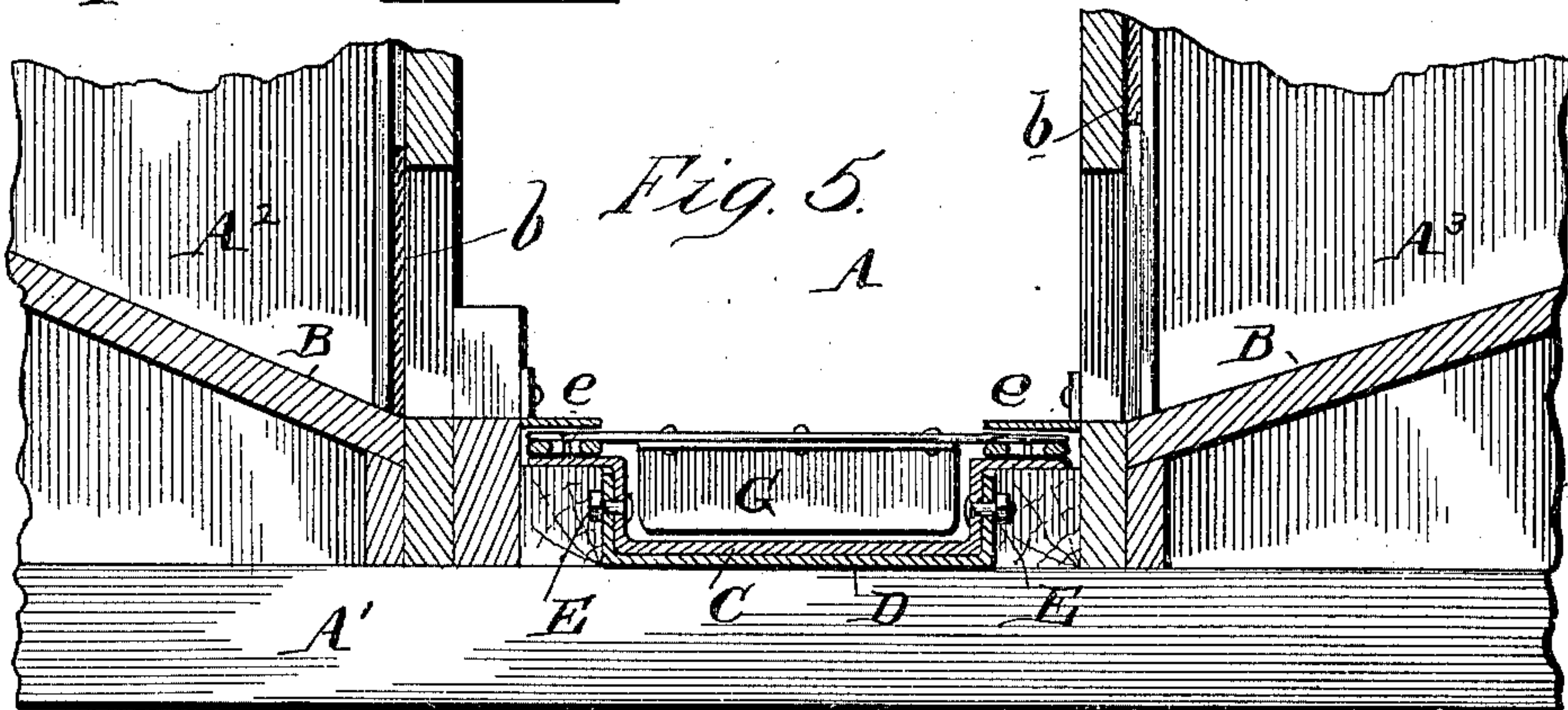
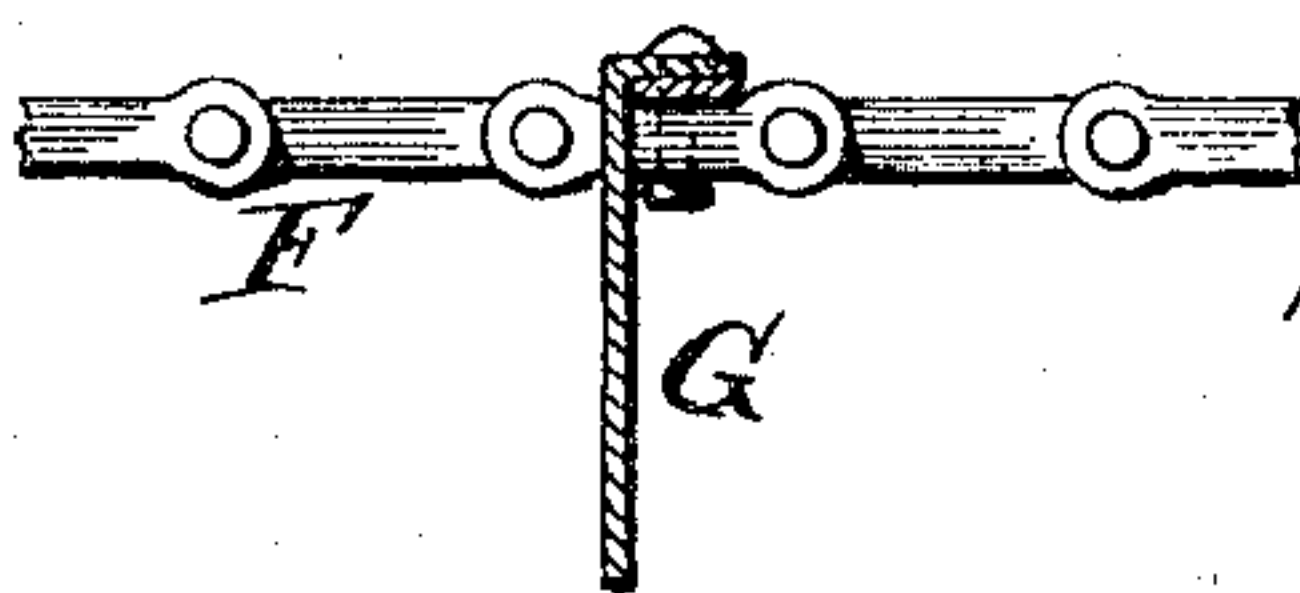


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALEXANDER RAY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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CHUTE-WAGON.

SPECIFICATION forming part of Letters Patent No. 709,723, dated September 23, 1902.

Application filed August 1, 1902. Serial No. 117,927. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER RAY, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Chute-Wagons, of which the following is a specification.

My invention has reference to chute-wagons; and it consists of improvements set forth in the following specification and as shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a suitable construction of chute-wagon especially adapted for delivering coal which shall not require the wagon to be backed up to the sidewalk and which shall also obviate the necessity of elevating the wagon-body. By obviating the above objectionable features I am enabled to overcome the difficulty which arises out of blocking the streets where the same are narrow and will not permit the wagon to stand transversely across the street and at the same time permit the cars to be run, and also I am enabled to increase the life and durability of the wagon, as there are none of the objectionable elements incident to the elevation of the body above the truck.

The object of my invention is also to lighten the weight of the wagon as a whole, so that there is less load with a given carrying capacity for the horses to pull.

In carrying out my invention I provide the wagon with a front and rear frame for carrying coal or other materials and with an intermediate compartment or space into which the contents of the other compartments are allowed to flow through suitable doors or gates and from which they are conveyed by a suitable conveyer. The conveyer consists of a stationary trough adapted to receive the coal from the gates and a movable part pivoted to the stationary part adapted to be swung back into the intermediate chamber or compartment or extended upward and at an incline, and also an endless conveyer consisting of chains provided with transverse plates or means for moving the coal or other material through the stationary trough and up the inclined trough for the purpose of discharging it at the upper end thereof. Combined with the inclined trough of the conveyer is a chute,

preferably of the extensible type such as commonly used in coal-wagons, the said chute being intended to extend on a downward incline to a place of deposit. The conveyer is provided with suitable hand-power devices with which to operate it, whereby the materials may be elevated and then allowed to travel by gravity through the extended chute to a place of reception.

My invention also comprehends minor details of construction, which, together with the above features, will be better understood by reference to the drawings, in which—

Figure 1 is a side elevation of my improved wagon with the gravity-chute shown as arranged under the wagon. Fig. 2 is a plan view of same. Fig. 3 is a transverse section of same on line 3 3 of Fig. 2 and with the gravity-chute shown in position. Fig. 4 is a plan view of a portion of the conveyer and its trough. Fig. 5 is a longitudinal section on line 5 5 of Fig. 3, and Fig. 6 is a longitudinal section of a portion of the conveyer.

A' represents the walls of the truck-frame and upon which is built the forward body-compartment A³ and the rear body-compartment A², these being separated by a space or middle compartment A. To give solidity to the wagon structure, this compartment may be closed at one side by continuation of the side walls of the compartments A² and A³, as indicated at A⁴ in Figs. 2 and 3. The other side of the compartment A is open, as is also the top, and is intended to provide a space for the conveyer, as well for the stationary portion thereof as for the hinged or movable section, which is adapted to be folded back into said compartment when the wagon is being conveyed through the streets.

The floors B' of each of the compartments A² and A³ are made inclined, so as to discharge toward the middle compartment A, and the discharge of the contents of said compartments may be regulated by means of gates or doors b of the usual type used in coal-wagons. Arranged between the said gates and at the bottom of the compartment is a fixed trough C, to the end of which adjacent to the open side of the compartment A is hinged a pivoted trough D as an extension thereof, the pivots between the two parts be-

ing indicated at E. The upper end of the trough D is curved downward into a mouth, as indicated at D', Fig. 3, and the trough is adapted to be held at an incline by retaining-chains R, connected at one end to the free end of the trough and at the other end with the walls of the compartments A² A³.

F represents conveyer-chains, and these are guided over sprocket-wheels H and I, the former being journaled at the inner end of the trough C and the latter being secured to a shaft *i*, journaled at the outer end of the pivoted trough D. The endless chains are connected by transverse partitions or conveyer-plates G, the particular shape of which is immaterial so long as they properly propel the contents within the troughs. I have found in practice that flat plates, as shown, are excellently adapted for the purpose. The conveyer-chains F where they pass under the stationary trough C are held down in place by guides *e*, as shown in Figs. 3, 4, and 5, this being specially important at the end adjacent to the pivot E or the hinged section of trough D. At this part the guides *e* are preferably curved slightly upward, so as to provide a curved guideway for the chains. In this way the active part of the conveyer-chains and their propelling-plates are caused to properly travel over the troughs C and D, so as to positively propel the contents thereof. As shown, I prefer that the mouth D' of the trough D shall permit the discharge of the coal or other material at a time not later than when the plates G are in line with the transverse driving-shaft *i*, so that there shall be no possibility of the plates G attempting to lift or throw the coal or other material, but, on the other hand, the construction being such that as soon as the plates G have ended their rectilinear movement the materials propelled shall fall away by gravity. When the material leaves the mouth D' of the trough D, it is received upon an extensible chute P, having at its upper end a pin *p*, adapted to be received in a ring or aperture *d*, secured to the under side of the trough D, as shown in Fig. 3. With this connection the chute P may be set at any angle desired; but usually it will not be necessary for the alinement of the chute P to be out of the plane of the troughs C, D, and E. Capacity for such adjustment, however, is provided to obviate the necessity of being too exact in bringing the wagon to proper position or to overcome the possibility of obstructions in the roadway which would prevent the desired position of the wagon directly in front of the place for reception of the material. The shaft *i* is provided with a sprocket-wheel M, which is driven by a chain L from the sprocket-pinion K, in turn driven by a crank-shaft J, extending to the rear of the wagon. The location of the sprocket-pinion K is adjacent to the hinges or pivots E, for the reason that when the trough D, together with the shaft *i* and the chains, is turned back-

ward into the compartment A about the pivots E as centers the same may be permitted without disconnecting the drive-chain L from the pinion K. By this construction the elevating of the wagon-body above the truck is obviated, and consequently there is far greater stability to the wagon and less danger of derangement. Moreover, as no massive structures for elevating the body are necessary the total weight of the wagon is greatly reduced in practice. The wagon illustrated in the drawings is of a character such as employed to carry two or more tons of coal; but it is obvious that it may be made of any carrying capacity desired. By employing the upwardly-inclined conveyer-trough D and the downwardly-inclined gravity-chute P an archway is provided from the street under which pedestrians may easily walk, so that the pavement is not obstructed, as is the case with ordinary chute-wagons which dump from the elevated body.

When the wagon is in condition for transportation, the chute P is removed from its connection with the trough D and is pushed under the wagon-body in a manner very similar to that customary with ordinary chute-wagons. As illustrated, it is supported upon a longitudinal runway N, as indicated in dotted lines in Fig. 3 and in full lines in Figs. 1 and 2. As before explained, the conveyer-trough D, together with the conveyer and the drive-chain L, are turned backward into the compartment A, so as to permit no lateral projection from the side of the wagon.

While I prefer the construction shown, I do not limit myself to the details, as these may be greatly modified without departing from the spirit of the invention. For example, it is evident that while I have shown the transversely-acting conveyer intermediate of the two ends of the wagon this location is wholly immaterial, as it may be located nearer one end than the other, and, in fact, the wagon would be equally operative if the compartment carrying the materials was located wholly on one side—just, for example, as if the compartment A² was never used or was wholly omitted. Of course in this case it would be reasonable to make the compartment A³ as long as was possible in any given wagon. However, in many cases it is important in the same wagon to have the two compartments, so as to be able to carry independent quantities of coal, each of which may be delivered to different houses.

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

1. In a wagon for delivering coal, &c., the combination of two body-compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a traveling conveyer extending into the intermediate compartment or space and directed transversely upward from

the side of the wagon for receiving and elevating the coal, &c., and delivering it at one side of the wagon.

2. In a wagon for delivering coal, &c., the combination of two body-compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a conveyer extending into the intermediate compartment or space and extending transversely and upward from the side of the wagon for receiving the coal, &c., and delivering it at one side of the wagon, and a chute detachably connected to the upper end of the conveyer for receiving the coal or other material therefrom and allowing it to travel by gravity to the place of reception.

3. In a wagon for delivering coal, &c., the combination of two body compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a conveyer extending into the intermediate compartment or space and extending transversely and upward from the side of the wagon for receiving the coal, &c., and delivering it at one side of the wagon the said conveyer being jointed and comprising a relatively fixed portion arranged between the body-compartments and a jointed portion adapted to be extended obliquely upward and away from the fixed portion or turned backward from the fixed portion and within the intermediate compartment during transportation.

4. In a wagon for delivering coal, &c., the combination of two body-compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a conveyer extending into the intermediate compartment or space and extending transversely and upward from the side of the wagon for receiving the coal, &c., and delivering it at one side of the wagon the said conveyer being jointed and comprising a relatively fixed portion arranged between the body-compartments and a jointed portion adapted to be extended obliquely upward and away from the fixed portion or turned backward from the fixed portion and within the intermediate compartment during transportation, and means carried by the wagon for driving the conveyer.

5. In a wagon for delivering coal and other material in loose form, the combination of a compartment having a discharge-opening at one end, a fixed trough arranged transversely across the end of the compartment and close

to the discharge-opening therefor, a movable trough hinged to the fixed trough at one end adjacent to the side of the wagon-body, means for holding the movable trough at an oblique angle, an endless conveyer adapted to said troughs, hand-operated means on the wagon to propel the conveyer, and an adjustable gravity-actuated chute leading from the upper end of the inclined trough.

6. In a wagon for delivering coal and other material in loose form, the combination of a compartment having a discharge-opening at one end, a fixed trough arranged transversely across the end of the compartment and close to the discharge-opening therefor, a movable trough hinged to the fixed trough at one end adjacent to the side of the wagon-body, means for holding the movable trough at an oblique angle, an endless conveyer consisting of two endless chains and transverse blades adapted to said troughs, guide-wheels at the distant ends respectively of the fixed and movable troughs for the conveyer, guides for holding the conveyer-chains down to the fixed trough adjacent to the hinged part of the movable trough, hand-operated means on the wagon to propel the conveyer, and an adjustable gravity-actuated chute leading from the upper end of the inclined trough.

7. In a wagon, the body part consisting of two body-compartments having oppositely-inclined bottoms, an intermediate chamber or space between the body-compartments, discharge-gates from the body-compartments into the intermediate compartment, and a movable endless conveyer extending transversely upward from the intermediate chamber for elevating the material and discharging it to one side of the wagon.

8. In a wagon, the body part consisting of two body-compartments having oppositely-inclined bottoms, an intermediate chamber or space between the body-compartments, and discharge-gates from the body-compartments into the intermediate compartment, the side walls on one side of the wagon being continuous over the intermediate compartment and on the other side divided and omitted at the intermediate compartment, in combination with an elevating-conveyer hinged to the lower part of the intermediate compartment and movable into or from the intermediate compartment through the open side thereof.

In testimony of which invention I have hereunto set my hand.

ALEXANDER RAY.

Witnesses:

R. M. KELLY,
E. GALL.