M. L. SENDERLING.

BOTTOM DUMPING WAGON.

APPLICATION FILED AUG. 31, 1907. RENEWED APR. 23, 1909.

997,861.

Patented July 11, 1911.

3 SHEETS—SHEET 1.

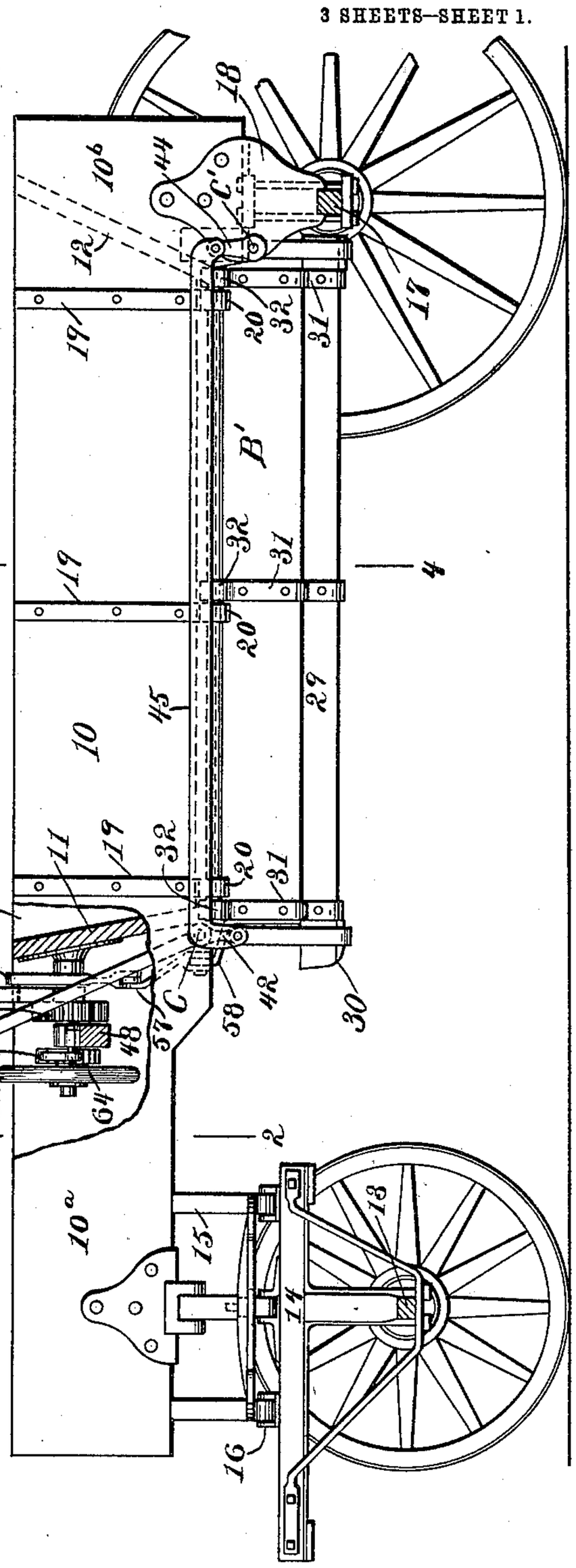

FIG. 1.

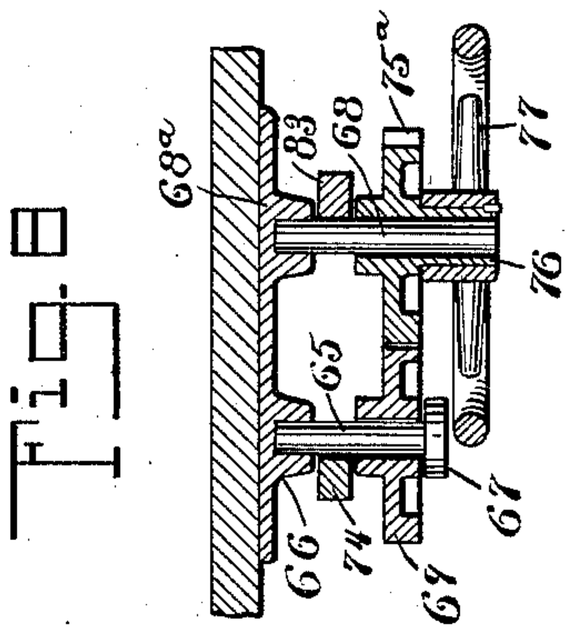

FIG. 8.

FIG. 7.

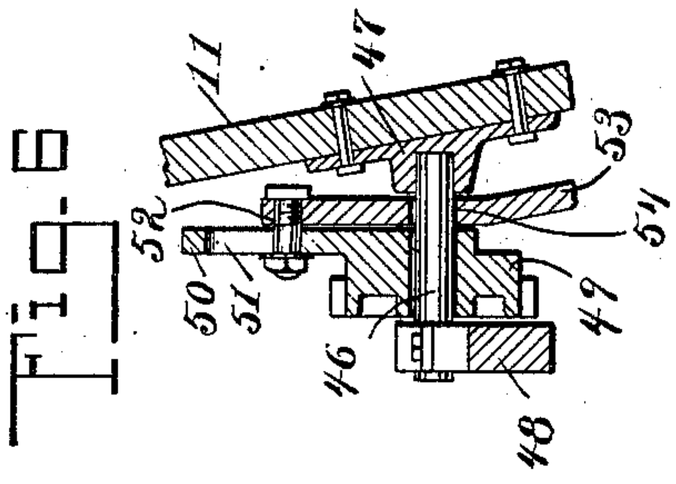

FIG. 6.

WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2

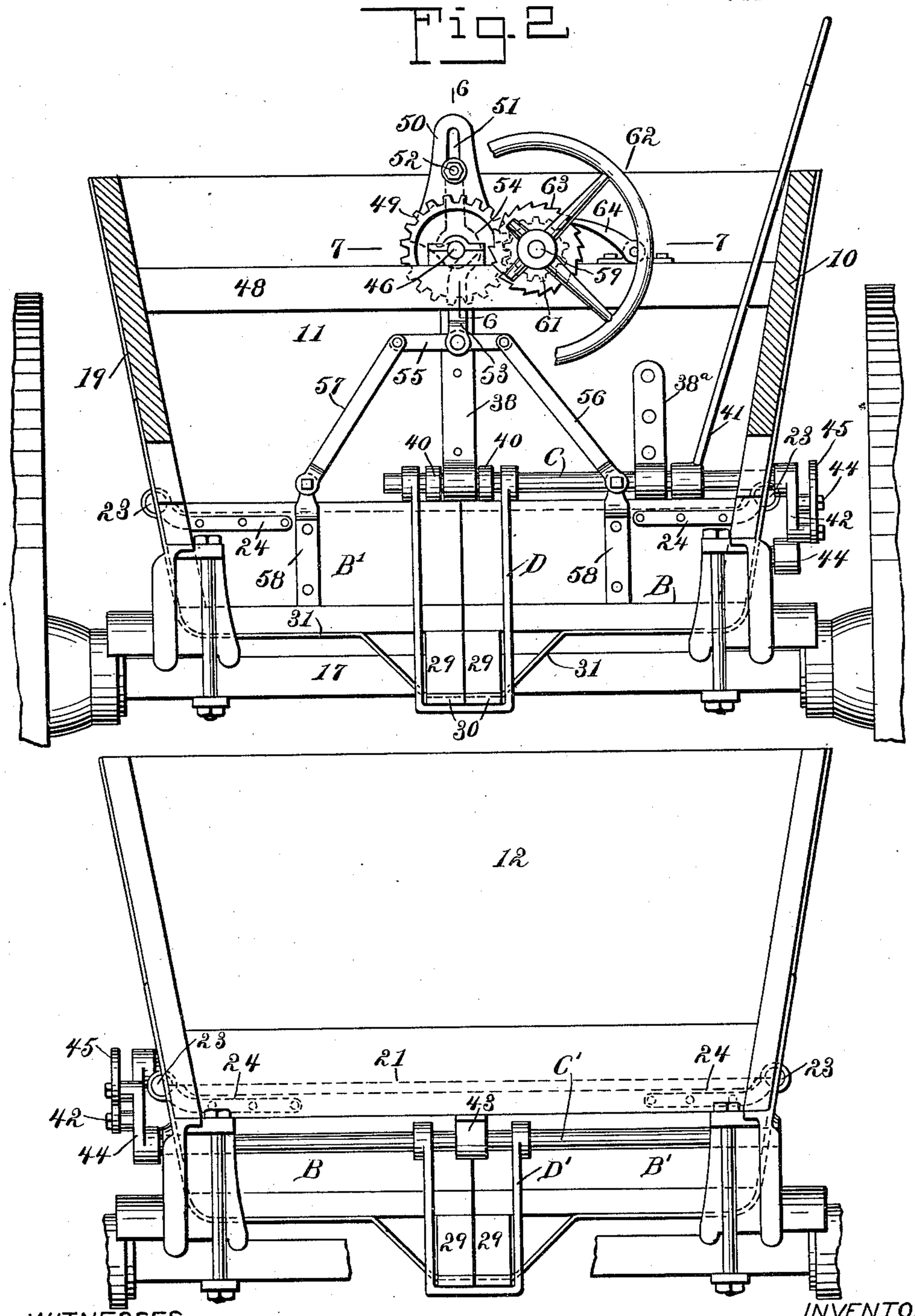

Fig. 3

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3 SHEETS—SHEET 3.

Fig. 4

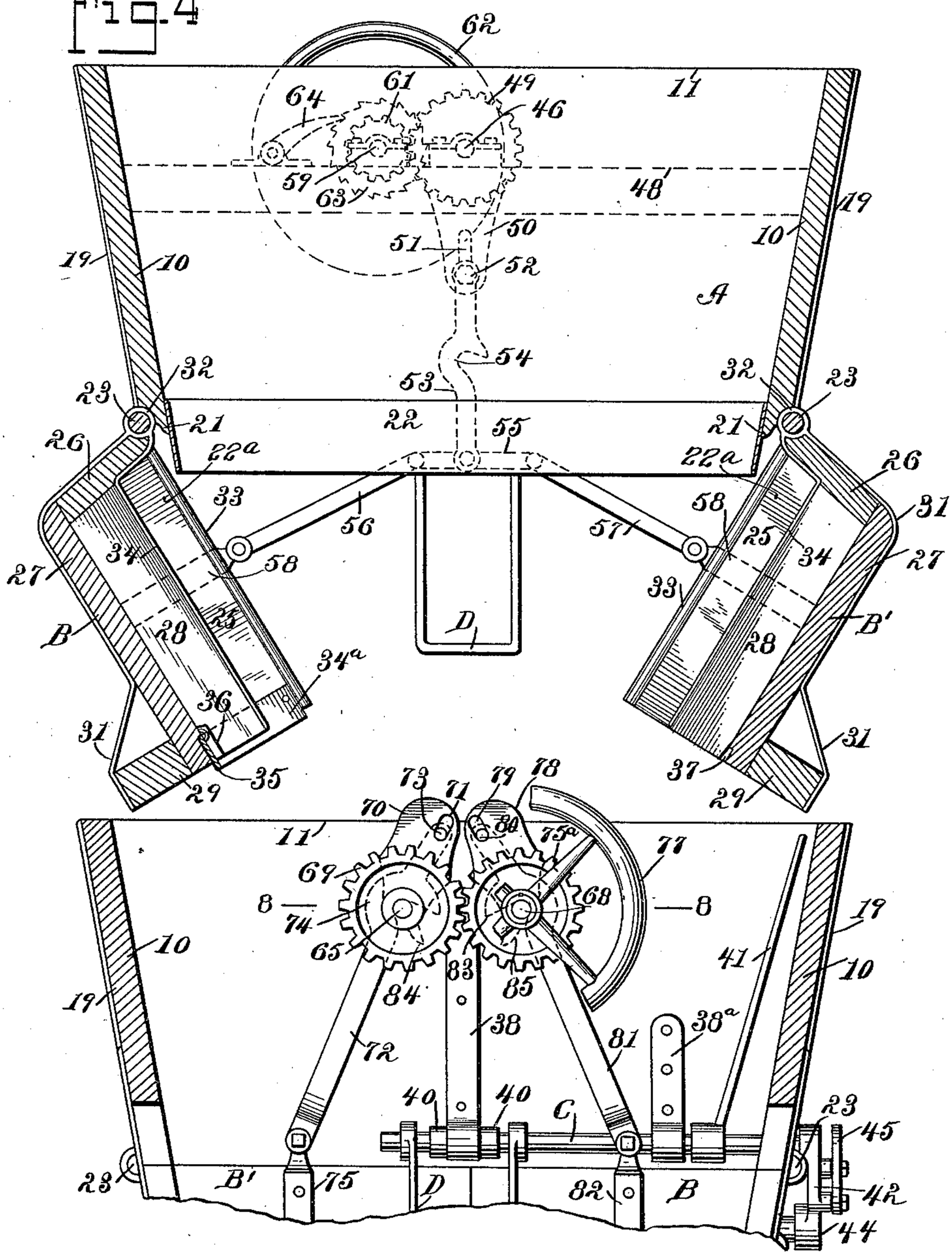

Fig. 5

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BOTTOM-DUMPING WAGON.

997,861. Specification of Letters Patent. Patented July 11, 1911.

Application filed August 31, 1907, Serial No. 390,935. Renewed April 23, 1909. Serial No. 491,851.

To all whom it may concern:

Be it known that I, MARTIN L. SENDERLING, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Bottom-Dumping Wagon, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a vehicle for carrying various kinds of material in bulk, and which is adapted to dump from beneath, and to provide what may be termed a dumping scow bottom, since the bottom, which is in two hinged sections opening sidewise in opposite directions, not only constitutes a bottom for the body but also has a carrying capacity of its own.

It is also a purpose of the invention to so construct the sections of the bottom that they will have individual maximum strength, and whereby, also, when the sections are dumped, they will occupy a position that will insure a speedy and clean delivery of the material not only from said sections but also from the body of the vehicle, and wherein, as the sections of the bottom are brought to a closed position, a sealing flap or strip carried by one section, will automatically enter the opposing section, bridging the joint, and as a close contact is also made between the sections of the bottom and the body when the bottom is closed, the said bottom section at such time is closed tight.

It is also a purpose of the invention to provide stirrups for supporting the bottom sections in closed position instead of chains commonly employed for said purpose, and, further, to provide means for conveniently, quickly and positively bringing the stirrups to supporting position relative to the bottom, and for removing them from the bottom when a dump is to be made, which mechanism is very simple and readily operated.

Another purpose of the invention is to carry the body high above the axles, enabling the sections of the bottom to have great depth, and preventing their interference with the wheels while being operated.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the vehicle, a portion of the body being broken away, and one axle being in section; Fig. 2 is an enlarged transverse section looking rearward, the bottom being closed, the section being taken on the line 2—2 of Fig. 1; Fig. 3 is a rear end view drawn upon an enlarged scale, the bottom being also closed; Fig. 4 is an enlarged transverse section taken practically on the line 4—4 of Fig. 1, looking forward, the bottom being in dumping position; Fig. 5 is a section similar to that shown in Fig. 2, but illustrating a slightly modified form of mechanism for raising the bottom sections; Fig. 6 is a vertical section taken practically on the line 6—6 of Fig. 2; Fig. 7 is a horizontal section taken practically on the line 7—7 of Fig. 2; and Fig. 8 is a horizontal section taken substantially on the line 8—8 of Fig. 5.

The body of the vehicle consists of side pieces 10 that are generally inclined from the top downward in the direction of each other, and the carrying chamber or section A of the body is formed by placing a front board 11 and a rear board 12 between the side pieces 10, and securing them properly thereto. These front and rear boards incline downward in the direction of each other, as is shown in Fig. 1. The side boards 10 extend quite a distance beyond the front board 11, as is shown at 10^a in Fig. 1, while the said side boards 10 extend but a slight distance beyond the rear board 12, as is shown at 10^b in Fig. 1; and it may be here remarked that the carrying chamber A only is provided with a bottom section.

The forward axle 13 is provided with a suitable running gear 14, and is pivotally located with regard to the front of the body, and the front portion of the body is held at quite an elevation above the forward running gear 14, by top blocking 15 by which the upper rim of the fifth wheel is mounted upon carriers 16. The rear axle 17 is also located some distance below the bottom of the body of the vehicle, and is connected with it, usually by means of pedestals 18 which form its support, and which are otherwise additionally secured to the side portions of the said body and having a bearing

upon the axle, as shown in Fig. 1. That portion of the body in which the carrying chamber A is located is provided at its side portions with exterior straps 19, usually three in number, located one near each end of said chamber, and one near the center. These straps extend from top to bottom of the side pieces 10, as is best shown in Fig. 1, and terminate at their lower ends in eyes or knuckles 20, which may be fully closed or partially closed, as desired; and the lower edges of the side portions of the body at the carrying chamber A are shown in Fig. 4 inclined from the outside downward and inward, but such inclination may be omitted, and at the lower portion of the carrying chamber A a sealing member 22 is located, which member is in the nature of a fixed sleeve or curtain. This sealing sleeve or curtain 22 is made of a flexible or yielding material, and is fitted to the inner contour of the said chamber A, as is best shown in Fig. 4. The sleeve 22 has the same downward inclination as has the upper wall of the chamber A, and projects some distance beyond the lower beveled edges 21, as is shown in Fig. 4 where it is designed to project into the inner rabbeted edge 22^a of the bottom when the bottom is closed. It may be here remarked that the knuckles or eyes 20 at the ends of the straps 19 are carried somewhat inward along the inclined side surfaces 21. The eyes or knuckles 20 which are at both sides of the body chamber A are adapted to loosely receive shafts 23 which are pendant thereupon, and the shafts 23 extend the length of the chamber A, and at their ends are supported in suitably located bearings 24, as shown in Fig. 2. The shafts 23 carry the sections at the bottom of the said chamber A, by means of suitable strap bearings as shown by 31, 33 and 34 in Fig. 4, and at 31 in Fig. 1, which sections are two in number and are designated respectively as B and B′, as is best shown in Fig. 4. The sections B and B′ are practically of the same formation and are very deep, being what I term scow sections or bottoms, since they contain considerable material and add materially to the cubic contents of the body of the vehicle. When the scow bottoms or sections are in closed position, their upper edges are practically on a line with the central line of the shafts 23, which insures a free drop of the sections to dump the load. It is also to be noted that the chief function of the shafts 23 is to prevent transverse twisting of the sections in operating them.

Each bottom section consists of end boards 25 of suitable thickness, an outer side board 26 that is preferably given a downward and an inward inclination, and a bottom board 27 tightly secured in any suitable or approved manner to the end boards 25 and the side board 26. The end boards 25 of the bottom sections correspond to the end boards or walls 11 and 12 of the body chamber. In the further construction of a bottom section, a central partition 28 is provided, which is of less height than the height of the side and end walls of the section, as shown in Fig. 4. These partitions serve as additional supports for the bottom sections and give them such rigidity that they can be bodily operated from one end; and at the bottom of each section at its inner edge, a sill 29 is firmly secured, and the lower face portions of the sills are beveled or rounded off, as is shown at 30 in Figs. 1 and 2, to permit the ready passage of supporting stirrups beneath them, which stirrups will be hereinafter described.

When the sections B and B′ of the bottom are closed tightly against the body, the sills 29 are brought close together, as is shown in Fig. 2, and when the said sections are so closed, the sealing sleeve 22 effectually prevents any material from entering the space between the inclined lower edges of the body and the mating or engaging edges of the said bottom sections, and also when the bottom sections are open or brought to dumping position as is shown in Fig. 4. The arrangement of the means by which the joints between the upper and lower portion of the body of the wagon are sealed against leakage is such that there is no point for lodgment of the material conveyed, by which the sealing device can become clogged and thereby lose its efficiency.

The straps 31 are attached to the bottom sections B, B′, and are located centrally and at opposite ends of the sections as is shown in Fig. 1, and the straps 31 are provided with eyes or knuckles 32 at the upper edges of the side boards 26 that receive the said shafts 23, as is illustrated particularly in Fig. 4, and these knuckles or eyes 32 are usually keyed or otherwise fastened to the shafts 23. The end straps are usually carried along the upper edge of the end members 25 of the bottom sections B and B′ to strengthen them, as is shown at 33 in Fig. 4, and the central straps 31 are continued from their knuckles down along the outer faces of the side members 26 of the sections, and along the upper edges of the partitions 28, as shown at 34 in Fig. 4, strengthening the latter and giving a maximum of strength to each completed section; and it may be here remarked that the sills 29 extend beyond the ends of the sections B and B′ a desired distance, for a purpose to be stated, and that the straps 31 are continued along the bottom of the sections and are carried and secured to the bottom portions of the aforesaid sills 29, as is shown in Figs. 2 and 4. A sealing strip 34^a is attached to the end members 25 at the open portion of the section B, for example, which sealing strip pro-

jects beyond the said open edge of the section B, and at the bottom of the same section sealing flaps 35 are pivoted or hinged at their inner edges so that their opposite edges are free, which latter side portions extend out beyond the inner open edge portion of the section B, proportionately to the projecting parts of the sealing strip 34ª; and the opposing section B′ is provided in its bottom portion at its open edge, with a recess 37, that is adapted to receive the projecting edge of the sealing flap 35 when the sections B and B′ are closed, so as to cover or bridge the joint between the sections and prevent the escape of material, and at the same time the sealing strip 34ª enters the section B′ and engages with the inner faces of its side members for the same purpose.

With reference to the means for holding the sections of the bottom located in closed position, and releasing them to permit their assuming a dumping position, such construction is as follows: At the front face of the forward end board 11 of the chamber A, a central strap 38 is secured, and a second strap 38ª to the left of the strap 38, as is shown in Fig. 2. These straps have knuckles formed at their lower ends, which knuckles are at the lower edge portion of the board 11, and form bearings for a shaft C, which shaft is illustrated as extended out beyond the left-hand side of the vehicle, but may extend beyond the right-hand side of the same. The shaft C has secured to it the members of a stirrup D, the members being located at the opposite sides of the central strap 38, and the stirrup D is of sufficient length, when the bottom sections are closed, to fit over the forward projecting ends of the bottom sills 29. Collars 40 are secured to the shaft C at opposite sides of the bearing 38, and between the bearing afforded by the strap 38ª and the adjacent side wall of the vehicle. This shaft is provided with a lever 41 by which the shaft may be rocked.

At the outer end of the shaft C a downwardly extending crank arm 42 is secured, and at the rear end of the vehicle a shaft C′ is located, parallel to the front shaft C. This shaft C′ is shown as extending the width of the vehicle, but it may be made shorter if so desired. The shaft C′ is mounted to turn in bearings 43 that are secured near to the bottom portion of the rear board 12 of the carrying chamber A, and at the outer end of this shaft C′ that extends out beyond either side of the vehicle, an upwardly extending crank arm 44 is formed or is secured, and the two crank arms 42 and 44 are connected by a link 45, the ends whereof are suitably formed, as is shown best in Fig. 1, and this link 45 is parallel with and adjacent to the left-hand shaft 23, as is also indicated in Fig. 1.

The rear shaft C′ has secured to its central portion a stirrup D′, and this stirrup D′ is of sufficient length to fit over the rear ends of the bottom sills 29 when the bottom sections are closed, as indicated in Fig. 3. It will be observed that by reason of the connection described between the two shafts C and C′, when the lever 41 is moved in one direction, the shafts will be rocked in opposite directions, and at one time the two stirrups D and D′ will be simultaneously brought to a vertical position in engagement with the bottom sills 29, and when the lever 41 occupies another position, the said stirrups will be simultaneously carried outward and away from the sills 29, thus permitting the sections of the bottom to drop downward to dumping position, as shown in Fig. 4. The form of both stirrups D and D′ is such as to permit of frictional bearings employed to more easily envelop the ends of the sills 29.

With reference to the mechanism for raising the sections B and B′ of the body from their lower to their upper position, this mechanism is shown in Figs. 2, 4, 6 and 7. A short shaft 46 is secured in a bearing 47 at the upper central outer portion of the front board 11, and upon a suitable bearing on a transverse beam 48 that extends from side to side of the vehicle in front of said front board 11 as is shown in Fig. 7. A gear wheel 49 is loosely mounted on the said shaft 46, and a crank 50 is made integral with this wheel 49 at its rear portion, and the said crank 50 is provided with a longitudinal slot 51 of suitable length. This slot 51 receives a pin 52 that is in the nature of a bolt, and the said bolt is attached to the upper end of what may be termed a retaining link 53, which is provided about centrally between its ends with a hook formation 54 adapted in one position, that is, when the bottom sections are closed, to occupy a position over and in engagement with the shaft 46, as is shown in dotted lines in Fig. 2 and in full lines in Fig. 6, and at such time the crank 50 is in an upper vertical position. The lower end of the retaining link 53 is attached preferably to a horizontal equalizing bar 55. At suitable varying distance from each side of the center of the said bar, links 56 and 57 are pivotally attached to the ends of the equalizing bar and to the upper end portions of straps 58 that are secured about centrally to the forward end portions of the bottom sections B and B′; thus, when the retaining link 53 is carried upward to close the sections B and B′ of the bottom, one section moves slightly in advance of the other, so as to permit of their proper engagement in assuming their fully closed position.

The crank 50 is carried to its upper position by means of a shaft 59, which is journaled in suitable bearings 60 on the for-

ward beam 48, as is shown best in Fig. 7, and this shaft is free to turn in its bearings, as are the gear 49 and crank 50 free to turn on the shaft 46. At the inner or rear end of the shaft 59 a pinion 61 is secured, that meshes with the gear 49, and at the outer or forward end of the shaft 59 a hand wheel 62 is secured, having integral therewith or attached thereto, a ratchet wheel 63 that is engaged by a pawl 64 pivoted upon the front beam 48. When the bottom sections are in their dumping position, the crank assumes the downward vertical position shown in dotted lines in Fig. 4. When the sections are to be elevated, it is simply necessary to turn the hand wheel 62 until the sections have been closed, at which time the hook portion 54 of the retaining link 53 will have engaged with the shaft 46, as is shown in Figs. 2 and 6, and will serve to hold the said sections temporarily closed. Then the lever 41 is operated to bring the stirrups inward to supporting engagement with the end portions of the bottom sills 29. When the sections are to be dumped, it is first necessary to turn the hand wheel 62 a sufficient distance to rock the crank downward enough to cause the hook 54 to free itself from the shaft; that will probably be about the distance of a couple of teeth on the ratchet wheel 63, whereupon the lever 41 can be moved in an opposite direction carrying the stirrups D outward, releasing the beams 29 and permitting the said sections B and B′ to fall downward as far as their links 56 and 57 will permit. By bringing the hinged connection opposite to, or between the sections B and B′ and somewhat within the line of the outer faces of the sides of the body, a far better support for the said bottom sections is obtained, space for swinging movement is increased, and a much better closure is effected when the said bottom sections are closed.

In Fig. 5 I have illustrated a modified form of lifting mechanism, wherein a lift device is employed for each of the sections, but the two devices are operated by the same means. For example, two parallel shafts are provided. both of which extend from the forward face of the front board 11, the shafts being designated at 65 and 68; the shaft 65 being secured in a bracket 66 and terminates in a head 67. while the shaft 68 is secured in a bracket 68ª. A gear wheel 69 is loosely mounted on the shaft 65, and the said gear wheel is provided with a crank 70 that extends therefrom, having a slot 71 therein. This slot receives a pin 73 from a link 72 that is attached in any approved manner to a strap 75 secured to the forward end of the section B′. The link 72 is provided between its ends with a hook formation 74, adapted, when the section is elevated, to engage the shaft 65. A gear 75ª is mounted loosely upon the shaft 68, and said gear is provided with a forwardly extending hub 76, upon which hub a hand wheel 77 is secured, and a crank 78 extends from the gear 75ª, being provided with a slot 79 therein that receives a pin 80 from a link 81 pivotally attached to a strap 82 secured to the forward end of the section B. Thus, by operating the hand wheel 77, both gears 75ª and 69 are brought into action, and the sections can be simultaneously raised. When the sections are to be dumped, however, it is necessary to first release the hooks, one of which, 83 is also provided for the link 81, from the shafts 65 and 68. This is done by forming a projection 84 on the hub of the gear 69, and a similar projection 85 on the hub of the gear 75ª, so that by turning the gears in one direction, these projections strike the hooks in the links and lift them up.

Having described in detail the mechanism which is embodied in the preferred form of my invention, I do not limit myself to those specific details except in so far as they or their equivalents are suggested in the following claims.

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

1. In a dump wagon, a body inclosure and a dumping bottom therefor constructed in opposing sections, each section augmenting the cubical capacity of the body inclosure, means for raising the sections, including means limiting their drop, and independent means for locking the sections closed and releasing them, including stirrups moving to and from binding engagement with the combined sections.

2. In a dump vehicle, a dumping bottom in two sections, each section having an independent cubical capacity and comprising end members, an outer side member, a central strengthening partition and a sill extending below the bottom at its inner edge, a knuckle at each end and at the center of the upper edge of the side member, straps leading from the end knuckles along the upper edge of the end members, and a strap leading from the central knuckle down the inner face of the side member and along the upper edge of the partition, all of said knuckles being also provided with straps that extend down the outer face of the side member and across the sill.

3. A wagon having a body provided with a dumping bottom constructed of two sections, with the sections hinged to the opposite sides of the body, and a sealing flap arranged to overlap the joint between the two sections and hinged to permit of the sections swinging open together.

4. The combination with the upper body of a vehicle, a dump bottom therefor com-

prising opposing sections having open inner side portions and hinge connection at their outer side portions with corresponding portions of the upper body, each section being provided with a sill beneath its bottom at its inner edge extending beyond the ends of the bottom, of shafts at the ends of the body, stirrups carried by said shafts adapted to receive the ends of said sills when the sections are closed, means for turning the shafts, and connections between the shafts whereby when one shaft is turned the stirrups of both shafts are simultaneously moved either to or from said sections.

5. A wagon having a hinged bottom, a longitudinal sill rigid with the bottom and extended therebeyond, and a stirrup pivotally connected to the end of the wagon to swing outwardly therefrom, adapted to engage under the extended portion of the sill and lock the bottom in closed position.

6. A wagon having a dumping bottom, a longitudinal sill rigid with the bottom having its ends extended therebeyond, stirrups pivoted to swing outwardly from the body of the wagon at opposite ends thereof for engaging the ends of the sill when the bottom is closed, and means for simultaneously operating the stirrups.

7. A wagon having a dumping bottom composed of two sections hinged at each side, each section having a longitudinal sill rigidly secured thereto with its opposite ends projecting beyond the bottom, a stirrup for engaging the extended ends of the sills at each end of the wagon when the sections of the bottom are closed, and means for simultaneously actuating the stirrups.

8. A wagon having a dumping bottom composed of two sections hinged at opposite sides, a shaft having operating means, a slotted arm secured to the shaft, and means having a sliding connection in the slot of said arm and a connection with each section of the bottom, adapted to engage over the shaft when the sections of the bottom are moved to closed position.

9. A wagon having a dumping bottom provided with a hinged section, a shaft having operating means, a slotted crank-arm carried by the shaft, and means having a sliding connection in the slot of the crank-arm and connected to said section of the bottom, adapted to engage over the shaft when the said section of the bottom is carried to closed position.

10. A wagon having a dumping bottom composed of two sections hinged at opposite sides, each section having a member projecting beyond each end, locking means simultaneously movable to engage said projecting members at each end of the bottom when the latter is closed, and independent means for raising and lowering the sections of the bottom.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN L. SENDERLING.

Witnesses:

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