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PATENTED JULY 24, 1906.

H. W. BLAISDELL.
SYSTEM OF HANDLING MATERIAL.

APPLICATION FILED NOV. 21, 1902.

4 SHEETS—SHEET 1.

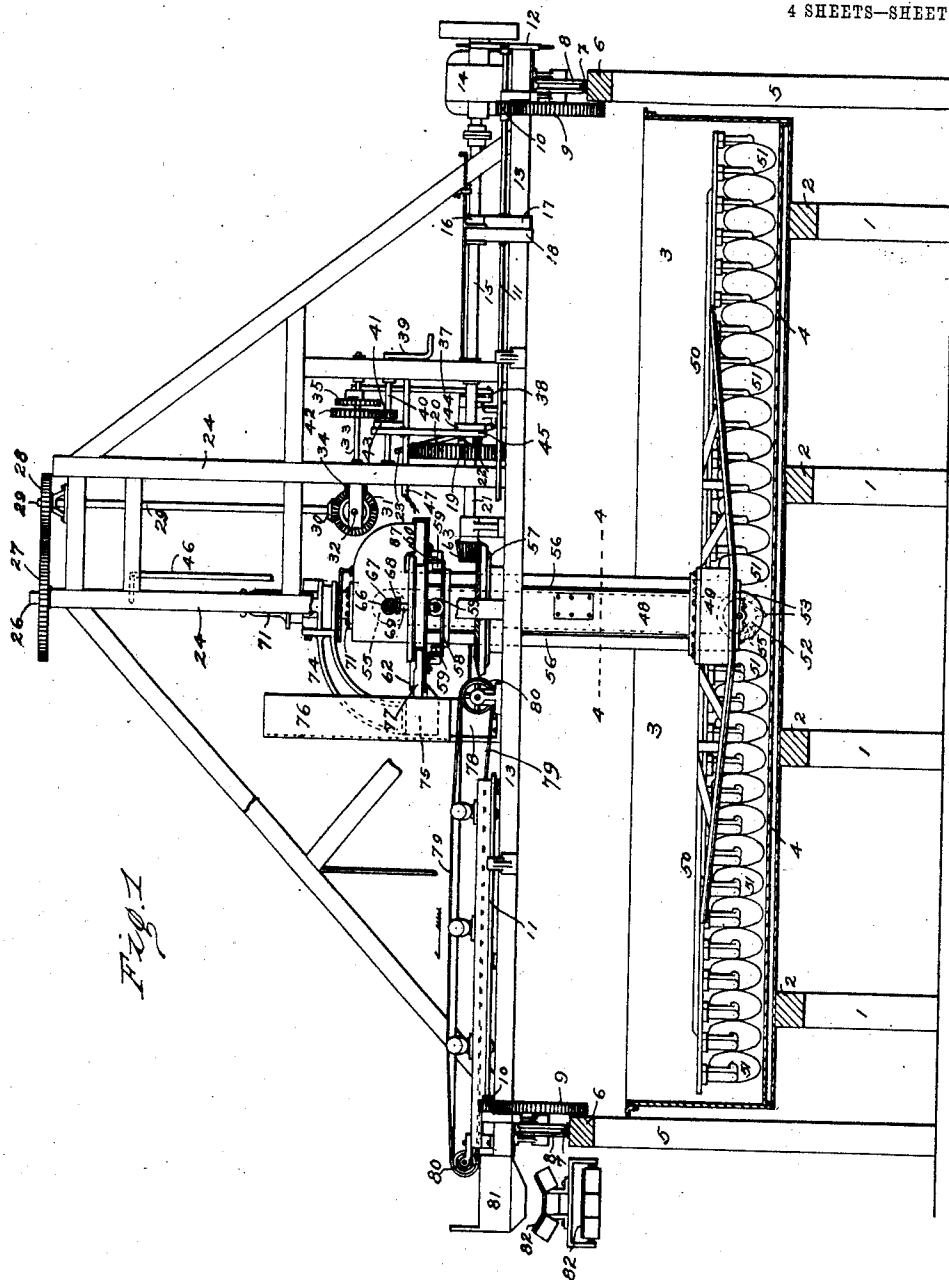


Fig. 1

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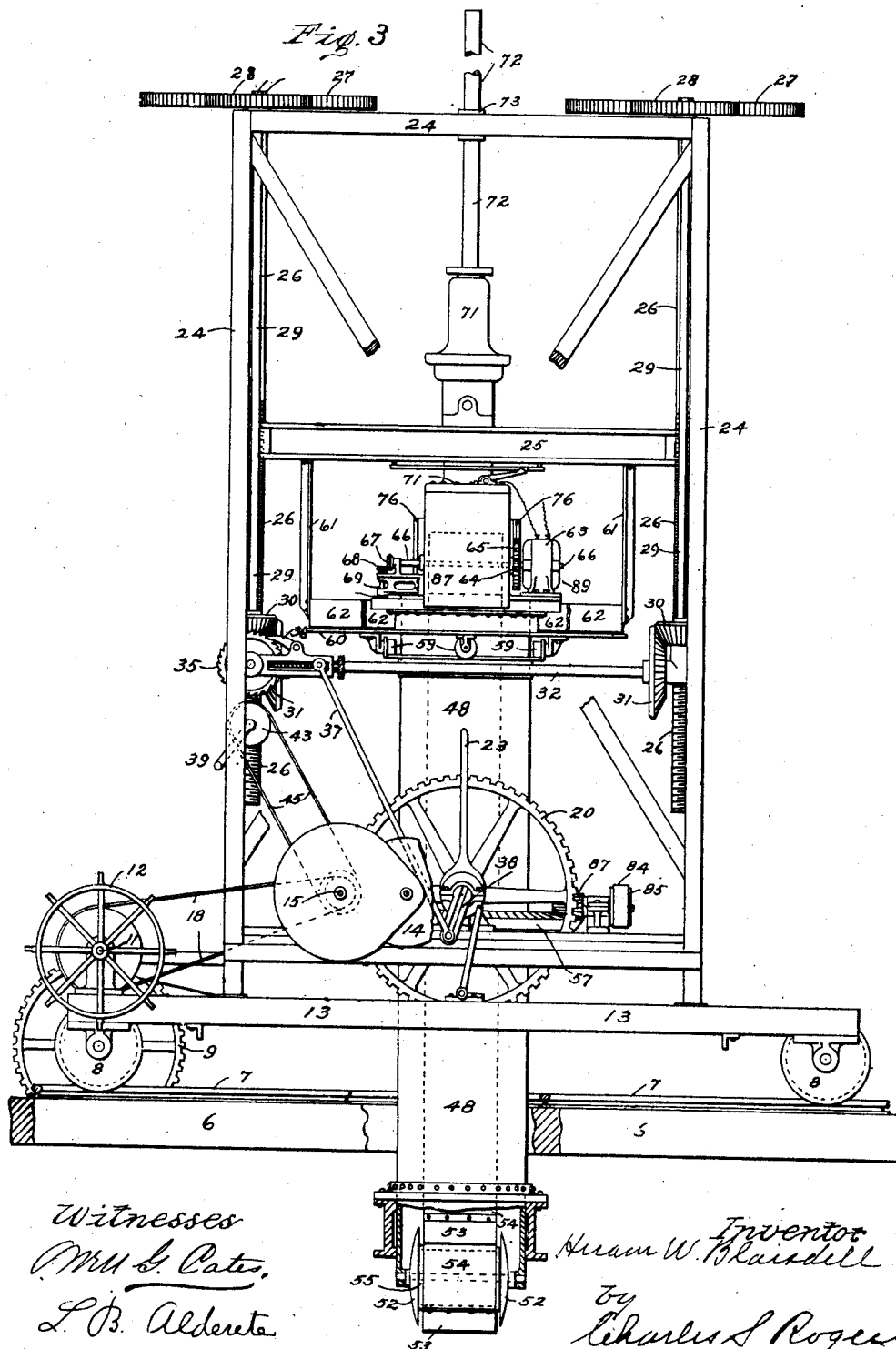
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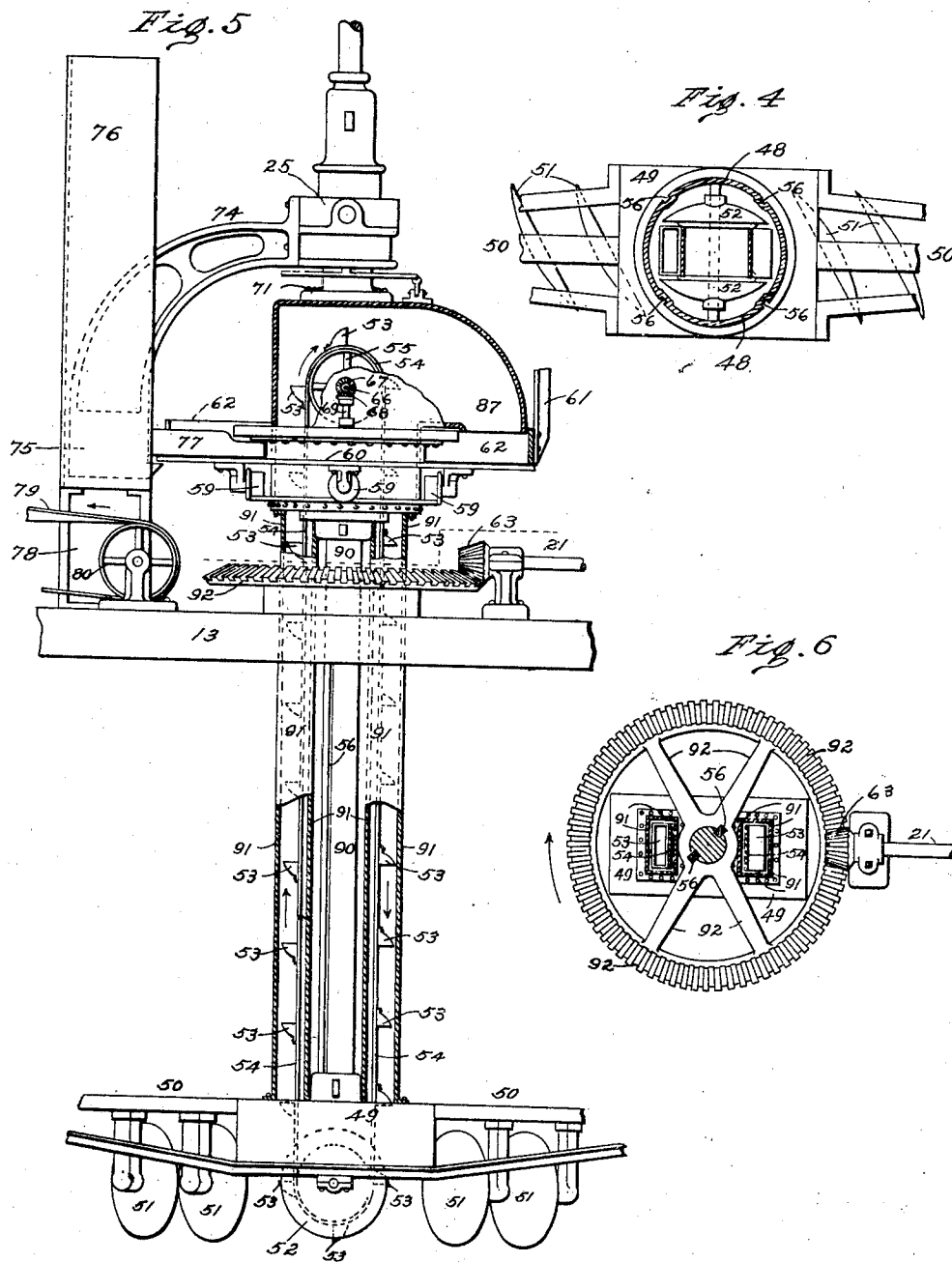
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UNITED STATES PATENT OFFICE.

HIRAM W. BLAISDELL, OF LOS ANGELES, CALIFORNIA.

SYSTEM OF HANDLING MATERIAL.

No. 826,646.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed November 21, 1902. Serial No. 132,326.

To all whom it may concern:

Be it known that I, HIRAM W. BLAISDELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Systems of Handling Material; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to systems of handling material, and particularly to a system for discharging receptacles; and some of the objects of the invention are to provide a system of this character which will be comparatively simple and cheap in construction, while being rapid and efficient in operation.

Another object of the invention is to provide means for emptying or discharging the contents of receptacles by elevating the contents thereof centrally and conveying the elevated material laterally.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts substantially as more fully described in the following specification and as illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is an elevational view, partly in section, illustrating the invention. Fig. 2 is a top plan view of the lower portion of the traveling structure, some of the parts whereof are broken away and the upper part whereof is removed. Fig. 3 is an enlarged elevational view, partly broken away, illustrating the actuating mechanism and the elevator. Fig. 4 is a fragmental sectional view taken on line 4 4 of Fig. 1. Fig. 5 is an elevational view, partly broken away, of a modified form of the elevator construction; and Fig. 6 is a transverse sectional view thereof on line 5 5 of Fig. 5.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, the reference character 1 designates uprights or posts supporting horizontal beams or timbers 2, whereon rests a receptacle or vat 3, preferably having a double bottom 4, and on each side of the receptacle or vat 3 are located posts or supports 5, carrying horizontal parallel plates or timbers 6, on which are secured track-rails 7, whereon travel wheels 8, the shaft or spin-

dle whereof carry large gear-wheels 9, meshing with pinions 10 on a propelling-shaft 11, provided with a hand-wheel 12, said shaft being supported upon a traveling structure or bridge 13, supported upon the wheels 8, substantially as shown.

Mounted upon the traveling structure or bridge 13 is a motor 14 or other actuating apparatus having a drive-shaft 15, carrying fixed and loose band-wheels or pulleys 16, respectively connected to similar wheels 17 upon the propelling-shaft 11 by a belt or band 18, by means of which the wheels 8 may be rotated when it is desired to progress the traveling structure by machinery; but the hand-wheel 12 may be used for this purpose when desired. The drive-shaft 15 may also be provided with a pinion 19, meshing with a large gear-wheel 20, loose upon a counter-shaft 21, provided with a clutch 22, operated by a clutch-lever 23 to throw the counter-shaft into engagement with the gear-wheel 20, as subsequently explained. Formed on or connected with the traveling structure or bridge is a rectangular frame 24, wherein is slidably mounted a cross-head 25, engaging threaded elevating-rods 26, carrying gear-wheels 27, meshing with gear-wheels 28 upon vertical shafts 29, carrying beveled pinions 30, engaging similar pinions 31 on a horizontal shaft 32, and a driven shaft 33 carries a beveled pinion 34, meshing with one of the pinions 31, and also carries a ratchet-wheel 35, with which engages a pawl or dog 36, adjustably connected with a link or pull-rod 37, adjustably attached to a crank 38 on the counter-shaft 21, before mentioned. By means of this construction the cross-head 25 can be lowered automatically by means of the threaded rods 26 engaging the ends of said cross-head and carrying gears 27, meshing with the gears 28 upon the vertical shafts 29, also carrying the beveled pinions 30, engaging the pinion 31 on the horizontal shaft 32, rotated by the pinions on the driven shaft 33, which is actuated by the ratchet-and-pawl device operated by the counter-shaft 21 when the clutch 22 thereon is in engagement with the gear-wheel 20, meshing with the pinion 19 on the drive or motor shaft 15, as before stated.

If it is desired to elevate or lower the cross-head 25 by hand, this may be done by means of the crank-handle 39 upon the shaft 40, carrying the pinion 41, meshing with a large gear-wheel 42 on the driven shaft 33, before

mentioned, and loose and fast pulleys 43 on the shaft 40 may be respectively connected with similar pulleys 44 upon the motor or drive shaft 15 by a belt 45, so that when the shaft 40 is rotated by hand (the belt 45 being on the loose pulleys 43 and 44) the driven shaft 33 will be rotated by means of the pinion 41 on the shaft 40 and the gear-wheel 42 on the shaft 33, as will be readily understood: but when the belt 45 is on the fast pulleys 43 and 44 the cross-head 25 can be quickly and positively raised or lowered from the power generated by the motor 14, transmitted through the motor-shaft 15, fast pulley 44 thereon, belt 45, fast pulley 43 on the shaft 40, carrying a pinion 41, meshing with the gear-wheel 42 on a driven shaft 33 and parts before mentioned.

In order to prevent the cross-head from being elevated too far when being raised mechanically, as last before explained, a bell-crank lever 46 may be mounted above the cross-head 25, so as to be engaged thereby when the latter is elevated to its highest position, and the long arm of said lever is flexibly connected with a belt-shift 47, constructed to shift the belt 45 from the fast to the loose pulleys 43 and 44 and stop the elevating mechanism when the cross-head is elevated.

Suitably supported from the cross-head 25 is a hollow shaft or casing 48, carrying at the lower end thereof a collar 49, supporting radial arms 50, carrying revoluble concavo-convex disks 51, constructed when the arms 50 are rotated by the revolution of said casing to progress or turn over the material in the receptacle or vat 3 toward the center thereof, where it is taken up by the buckets 53 upon the endless elevator 54, passing over rollers 55 in the opposite ends of said casing or hollow shaft 48, which latter is preferably provided with grooves 56, engaging longitudinal feathers in the hollow gear-wheel 57, meshing with the pinion 63 on the counter-shaft 21 and surrounding said casing upon said traveling structure or bridge, whereby said casing can be elevated by said cross-head.

Revoluble disks 52 are preferably mounted on the shaft of the lower roller 55 to facilitate the action of the buckets 53 and are constructed to travel around with the revolution of the casing, as will be understood.

Upon the casing or hollow shaft 48 is a flanged collar 58 to support wheels or rollers 59, carrying a rotatable receiving ring or platform 60, above and in contact with which is supported by depending hangers 61 a ring or band 62 to prevent the accidental discharge from said platform 60 of the material discharged thereon.

The receiving ring or platform 60 is preferably rotated by means of an electric motor 89 or other driving apparatus, on the shaft

whereof is mounted a pinion 64, meshing with a gear-wheel 65 on a cross-shaft 66, preferably constituting the shaft of the upper elevator-roller 55 and carrying a beveled pinion 67, engaging a similar pinion 68 on a vertical shaft 69, carrying a pinion engaging an internal gear 70, connected with said platform 60 around the hollow shaft or casing 48, substantially as illustrated particularly in Figs. 2 and 3 of the drawings.

Formed on or connected with the upper portion of the hollow shaft or casing 48 is a cap or solid end 71, carrying a cylindrical extension 72, movably mounted in a bearing 73 in the upper portion of the supporting-frame 24, Fig. 3, and connected with said cap is a curved arm 74, having a flaring end or plate 75, adapted to travel in a vertical guide or trough 76, constructed to receive the material discharged therein from the rotating platform 60 by the action of the scraper 77, preferably attached to said ring 62, as will be readily understood.

The lower portion of the guide or trough 76 is preferably cut away, as at 78, to receive an endless cross-conveyer 79, (which may discharge at one or both ends of the bridge,) passing over end pulleys or rollers 80, mounted upon the traveling structure or bridge, the shaft of one of which rollers is extended and provided with a pulley 83, connected by a belt 84 with a pulley 85 on the shaft carrying a pinion 87, meshing with and driven by the gear wheel or ring 57 to drive the conveyer 79, substantially as shown.

It will be understood that the cross-conveyer 79 is constructed to discharge the material received from said rotary platform 60 into a hopper 81, mounted upon the end of said structure, which hopper directs the material upon an endless discharging-conveyer 82, suitably mounted to travel adjacent to the tracks whereon the traveling structure or bridge is mounted.

The operation of this invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following explanation thereof. After the receptacle or vat has been filled with material the traveling structure or bridge is progressed thereover either by means of the hand-wheel 12, propelling-shaft 11, pinion 10 thereon, and gear-wheels 9 on the shafts of the supporting-wheels 8 of the bridge or by machinery through the mediation of the motor-shaft 15, pulleys 16 and 17, and propelling-shaft 11, as before stated. Then the excavating apparatus is lowered into the receptacle in either of the ways before mentioned—that is to say, by the shaft 40, pinion 41 thereon, gear-wheel 42 on the driven shaft 33, pinion 34 on said shaft, beveled pinions 31 on the shaft 32, pinions 30 on the vertical shafts 29, gear-wheels 28 on said shaft, gear-wheels 27 on the

threaded rods 26, engaging the cross-head 25, carrying the casing 48, supporting the excavator, as before stated—or the excavator can be lowered or elevated by means of the motor-shaft 15, fast pulley thereon connected by the belt 45 to the fast pulley 43 on the shaft 40, carrying the pinion 41, meshing with the gear-wheel 42 on the driven shaft 33 and, through the mediation of the parts, driven thereby, as just described. The excavator can be lowered slowly and automatically by means of the motor-shaft 15, pinion 19 thereon driving the gear-wheel 20, (fast on a counter-shaft 21 when the clutch 22 is in engagement therewith,) the crank 38, pull-rod 37, pawl 36, ratchet-wheel 35, and beveled pinion on the driven shaft 33, driving the pinions 31 on the shaft 32, meshing with the pinions 30 on the vertical shafts 29, driving the threaded rods 26. The excavator is rotated by the revolution of the casing 48, revolved by the gear-wheel 57, driven by the pinion 63 on the motor-shaft 15, as before stated, and when the excavator is so rotated it progresses or turns over the material toward the center of the receptacle, where it is taken up by the elevator 54 and discharged upon the rotating platform 60, preferably traveling in the same direction to that of the casing 48, as indicated by arrows in Fig. 3, from which platform the material is scraped off by the scraper 77 into the trough 76, through which it falls upon the upper curved lead of the cross endless conveyor 79, that discharges the material upon the discharging-conveyor 82 to be conveyed thereby to the place of deposit or for further treatment.

Referring now particularly to Figs. 5 and 6 of the drawings, there is illustrated a modified form of the elevator construction hereinbefore described and shown, wherein there is employed a solid shaft 90, carrying the excavator-arms 50 and having mounted parallel thereto pipes or conduits 91, adapted to receive the endless elevator 54, which passes over wheels or rollers 55, adjacent to each end of said shaft, substantially as before stated, and a large gear-wheel 92 is feathered upon said shaft and incloses the tubes or conduits 91, substantially as illustrated in Fig. 6 of the drawings, and a gear-wheel 92 is driven by the pinion 63 upon the counter-shaft 21, essentially as hereinbefore explained. By means of this construction the elevator may be arranged either inside or outside of the support for the excavator, as may be found most desirable in practice.

The operation of the modified construction just described will be substantially similar to that hereinbefore explained, and further description thereof will not be required.

It is not desired to confine this invention to the specific construction, combination, and arrangement of parts herein shown and de-

scribed, and the right is reserved to make all such changes in and modifications of the same as come within the spirit and scope of this invention.

I claim—

1. A system for handling material having a rotary hollow shaft, an elevator therein, a frame attached to said hollow shaft and a plurality of rotating disks carried by said frame to deliver material to said elevator. 70

2. A system of handling material having a traveling structure, a hollow shaft supported thereby, an elevator supported in said shaft, a frame attached to said hollow shaft, and a plurality of rotating disks carried by said frame to deliver material to said elevator. 75

3. A system for handling material having a traveling structure, a rotary member supported by said structure, an elevator situated in the central part of said rotary member, and a plurality of rotary disks carried by said member. 80

4. A system of handling material having a traveling structure, a rotary member supported thereby, an elevator situated in the central part of said member, a plurality of rotary disks carried by said member and means for moving said member vertically. 85

5. A system for handling material having a traveling structure, a rotary member supported thereby, an elevator supported in the central part of said rotary member, a plurality of disks carried by said member and a conveyer on said traveling structure to receive material from said elevator. 90

6. A system of handling material comprising a series of vats, a traveling structure, a rotary member supported thereby, an elevator situated in the central part of said member, and a plurality of disks carried by said member to deliver material to said elevator. 95

7. A system of handling material comprising a series of vats, a traveling structure, a rotary member, an elevator situated in the central part of said member, a plurality of disks carried by said member, and a conveyer to receive material from said elevator. 100

8. A system of handling material comprising a series of vats, a traveling structure, a rotary member, an elevator in said member, a plurality of disks carried by said member, a conveyer on said traveling structure to receive material from said elevator and a conveyer adjacent to the vats to receive material from the first-mentioned conveyer. 105

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 14th day of November, 1902. 120

HIRAM W. BLAISDELL.

Witnesses:

HUBERT T. MORROW,
L. B. ALDERETE.