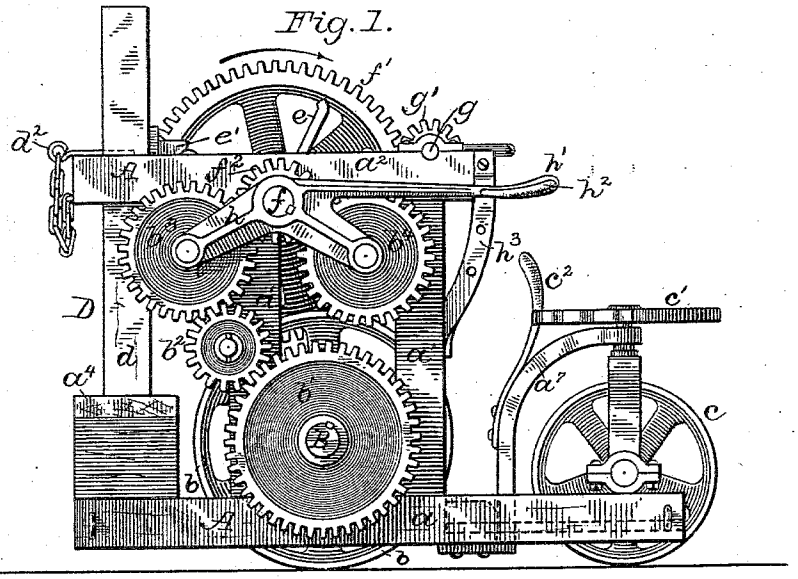
(No Model.) 2 Sheets—Sheet 1.

L. McMURRAY.

MACHINE FOR PACKING ENSILAGE, &c.

No. 296,863. Patented Apr. 15, 1884.

Fig. 1.



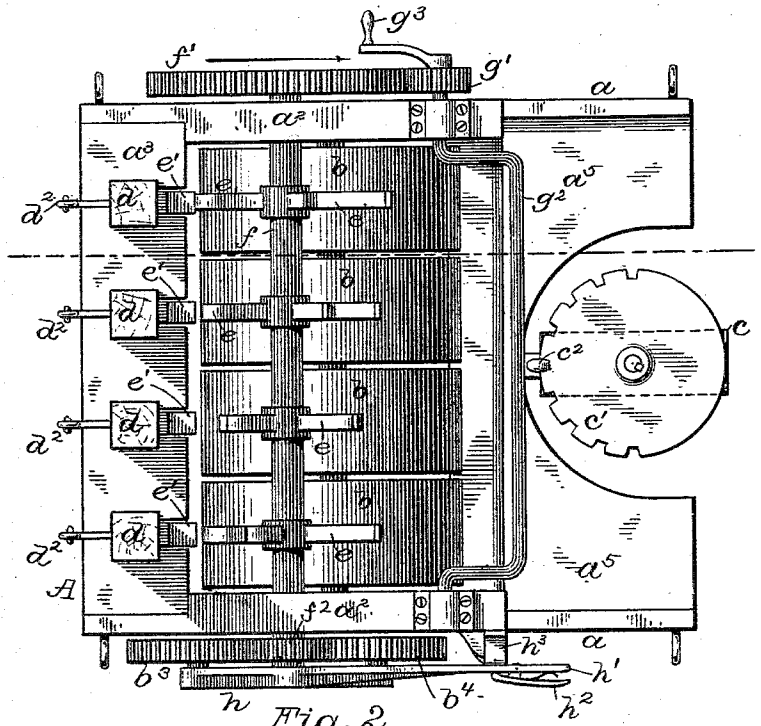


Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

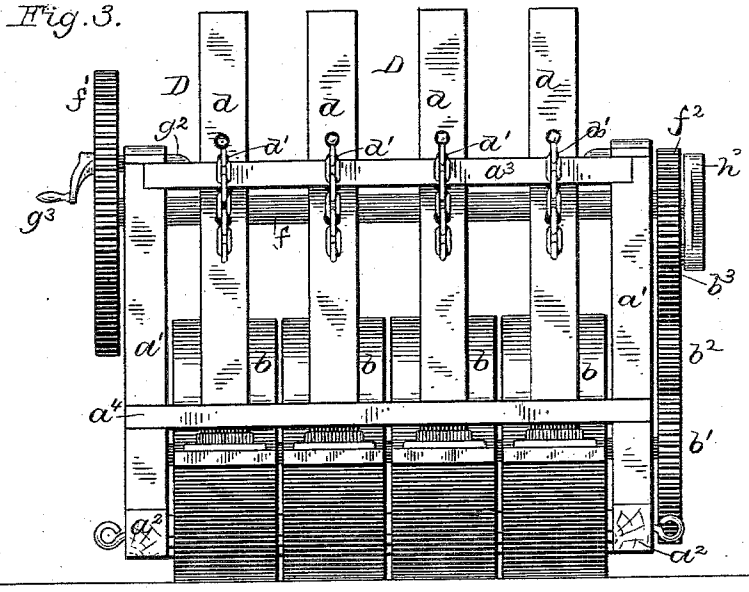
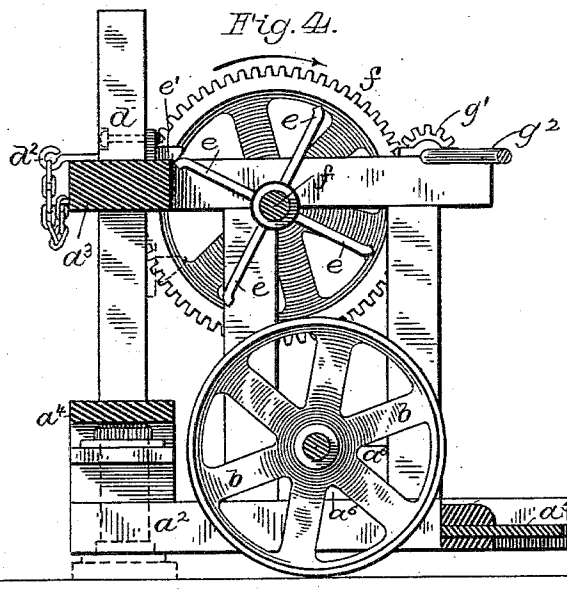


Fig. 4.



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UNITED STATES PATENT OFFICE.

LOUIS McMURRAY, OF BALTIMORE, MARYLAND.

MACHINE FOR PACKING ENSILAGE, &c.

SPECIFICATION forming part of Letters Patent No. 296,863, dated April 15, 1884.

Application filed February 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, LOUIS MCMURRAY, of the city and county of Baltimore and State of Maryland, have invented a certain new and useful Machine for Packing Ensilage, &c.; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

My said machine embodies a supporting or carrying roller which operates after the manner of a garden-roller for compressing, and a series of vertically-reciprocating stamps which are lifted and dropped during the movement of the machine, so that on causing said machine to be moved over and upon a mass of ensilage within a silo the stamps will co-operate with the roller by closely stamping the ensilage. In the machine as illustrated the stamps are operated by means of a hand-crank, and with the operator standing on and moving with the machine; but the hand-crank may be also turned by the operator while walking beside the machine. I have also so organized said machine that on turning said crank for operating the stamps the machine is also propelled; but without applying power to said crank one or more of the stamps can be lifted and dropped by merely trundling the machine. I have also so organized said machine that its operator can cause the machine to travel forward or backward while operating the stamps; but, if desired, the stamps can be arranged to be operated only while the machine is moving forward or backward, or without moving it in either direction.

After a full description of a machine embodying my invention, the novel features will be specified in the several claims hereunto annexed.

To more particularly describe my invention, I will refer to the accompanying drawings, in which Figure 1 is a side elevation of a machine embodying the several features of my invention. Figs. 2 and 3 are respectively a plan view and a front elevation of said machine. Fig. 4 is a vertical longitudinal section of the same on line *y*, Fig. 2.

The frame A may be of wood or metal, and is varied in its construction according to the particular arrangement of the mechanism. As here shown, the frame is composed of two end pieces, each composed of a sill, *a*, two vertical standards, a', and a top, a^2, and these end pieces are joined at their front ends by transverse upper and lower bars or beams, a^3 a^4, and a rear platform, a^5, connects their rear ends. On each sill *a* there is a raised bearing-block, a^6, for the main supporting-axle, and at the rear of the frame a goose-neck, a^7, serves as a bearing for a pivoted guide-wheel. The lower front cross-beam, a^4, is elevated above the top of the sills *a* by means of interposed blocks, and the several parts of the frame are firmly bolted together.

However my machine may be organized, it must have the supporting-axle B, which is also the compressing-roller axle, there being mounted thereon and keyed thereto, side by side, several pulleys, *b*, which make up the compressing-roller. In some cases the peripheries of the supporting-wheels or compressing-roller are roughened or scored, instead of being smooth, as shown. The guide-wheel *c* has a broad, flat face, is mounted in a yoke pivoted in a bearing in the goose-neck a^7, and to its pivot there is fastened a hand-wheel, c', notched at its periphery, so that said guide-wheel may be readily turned in any direction and locked in position by a spring-pawl, c^2. Eyebolts in the sills, near both ends thereof, enable the attachment of a team whenever desired.

The stamps D may be varied in number; but as here shown there are four, each having a straight helve, *d*, fitted to slide in vertical guide-bearings provided therefor in the two front cross-beams, a^3 and a^4. Each helve is provided with a hole, d', and with a pin, d^2, loosely secured by a strap or chain to the upper cross-beam, a^3, so that when said stamps are fully elevated they can be supported by the pins—as, for instance, when the machine is to be moved from place to place. The stamps are lifted and dropped by means of a series of tappet-arms, *e*, on the shaft *f*, which is coupled to a hand-crank shaft, *g*, by means of a large gear, f', and a pinion, g'. The crank-shaft extends across the machine, has suitable bearings at each end, and is bent between the bearings to afford a long hand-bar, g^2, so that

the crank may be turned by one or two men standing on the platform a^5, or by operating the end crank, g^3, which can be operated by a man walking beside the machine. Each stamp-helve has a curved-face tappet-lug, e', with which each set of the tappet-arms e successively engage as they revolve, thus lifting the stamps and permitting them to drop. The number of tappet-arms in each set may be varied according to particular requirements; but I have found that four will serve a good purpose. The tappet-lugs e' are adjustably mounted on the helves, so that by varying their vertical position the height of lift may be varied, and thus vary the stamping force of the machine.

As thus far described, it will be seen that however the machine may be made to move on its wheels—*i. e.*, whether pulled along by hand or by a horse—the stamps can be operated by the hand-crank and the stamping blows delivered regularly and progressively upon whatever surface the machine may be caused to pass over. It is, however, desirable that the action of the stamps should be always proportioned to the speed at which the machine is trundled, and therefore I have organized propelling-gearing, which is also operated by the hand-crank. As seen in Fig. 1, the tappet-arm shaft f has at one end the large gear f' and at the other end the small gear f^2, and that this latter engages with the gear b' on the main supporting-axle B by way of two intermediate gears, b^2 and b^3, so that when the crank-shaft g is rotated for operating the stamps the machine will also be propelled forwardly, or so that when the stamps are held up by their pins the machine will be propelled. As thus organized, it will be seen that if a team be attached and the machine dragged slowly forward the stamps will be lifted and dragged, even if power be not applied to the hand-crank, especially if the surface with which the supporting wheels or roller is in bearing-contact is one which will afford a sufficient degree of friction with the periphery of the supporting-roller to thus cause one or more of the stamps to be operated.

The stamps, as shown, are provided with vertically-sliding helves, so as to enable the machine to be compactly built; but in cases where compactness is of little consequence the stamps may be in the form of hammers with pivoted helves and operated by tappet-arms, like the well-known fulling-stocks in fulling-mills. The weight of the stamps should be varied according to circumstances; but I find that about fifty pounds in the stamp-shoes is ample for good results, with a fall of from ten to twelve inches.

When the machine is constructed to operate the stamps only during its forward movement, the gears b^3 and b^4 are mounted on fixed studs, and when the machine is to be moved rearwardly the stamps are first fully elevated and confined, so as to not interfere with the tappet-arms during their backward rotation; but if the gear b^3 be mounted upon a movable arm, h, as shown, then the tappet arm-shaft may be stationary during the rearward movement of the machine, when the latter is to be pulled along instead of being propelled by power applied to the crank; but if said gears be not disconnected, and the stamps be so elevated as to not interfere with the backward rotation of the tappet-arms, the machine can be moved rearwardly by backwardly rotating the crank-shaft.

When the machine is constructed so as to have the stamps operated while the machine moves rearwardly, the movable arm h is provided with a stud on which another gear, b^4, is mounted, so that after throwing gears b^2 and b^3 apart and meshing gears b^4 and b' the forward rotation of the crank-shaft will not only properly operate the stamps, but also cause the machine to travel rearwardly. The movable arm h and its gears serve as a reversing gear-clutch, and it is provided with a lever, h', having a thumb-latch, h^2, which engages firmly with a stationary perforated segment, h^3, so as to enable said arm to be locked in either of its three positions of adjustment.

It is obviously desirable that during the traveling movement of the machine the stamps should be only in brief contact with the surface to be stamped, and therefore I arrange the tappet-arms so that they will commence to lift the stamps practically simultaneously, or at least with very slight intervals, and employ as many arms in each set (*i. e*, for each stamp,) as will allow the stamps to briefly occupy their lowest position.

Whenever it is desired to operate the stamps for a while in any one spot, the shifting-clutch is so set that the machine will remain stationary on its wheels or roller; and if it be desirable to drive the machine in either direction, so as to operate as a compressing-roller without the stamps, the latter are fully elevated, and power is then applied to the crank-shaft.

In the machine organized as shown the stamps and the roller co-operate as compressing devices—*i. e.*, when the machine is moving forward, the roller evens the surface previously stamped by the stamps, and when the machine is moving backwardly the stamps have a well-condensed surface on which to operate, it being obvious that in both cases the two compressing devices co-operate in performing the service intended; and it will be specially obvious, if the power for operating the stamps be derived, in whole or in part, from the supporting-axle while the machine is being moved to and fro, that the roller will then constitute an essential element in the stamp-operating mechanism; but in this case the stamps would not generally be so heavy as when the hand-crank is employed.

It is to be understood that I do not preclude myself from such obvious changes in the proportions of the several gears as will best enable

the stamps to be readily operated by power derived by way of the supporting-axle, in lieu of by the way of the hand-crank.

My machine, if used solely as an ensilage-packer, will be obviously in service only a short time during each year; but it should be observed that it is practically capable of use in other connections—as, for instance, it may be profitably employed after the manner of road-paving machines as heretofore organized, for surfacing carriage ways and walks, and especially in connection with broken stone, as the stamps will operate effectually in embedding and even crushing small stones. The machine can obviously also be employed in breaking and crushing limestone, shell, or gypsum, whether for roads or fertilizers, and for crushing roots, &c., it being only necessary to provide a suitable platform for the stamps to work upon and to disconnect the supporting-axle from the tappet-arm shaft.

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

1. The combination, substantially as hereinbefore described, of the frame mounted upon a rotating supporting-axle, the vertically-reciprocating stamps, the tappet-arm shaft, the hand-crank, and gearing for connecting the hand-crank to the tappet-arm shaft and to the rotating supporting-axle, whereby the machine is propelled and the stamps operated by power applied to the hand-crank, as set forth.

2. The combination, substantially as hereinbefore described, of a frame mounted upon a rotating supporting-axle, one or more vertically-reciprocating stamps, a tappet-arm shaft for lifting and dropping said stamps, and clutch-gearing connecting said tappet-arm shaft with the rotating supporting-axle, and for disconnecting the same.

3. The combination of the compressing-roller, its frame, and the rotating supporting-axle with gearing and a hand-crank for propelling the roller, substantially as described.

4. The combination of the frame mounted upon a rotating axle, one or more vertically-reciprocating stamps, a tappet-arm shaft for operating said stamps, reversible clutch-gearing for connecting and disconnecting said shaft and supporting-axle, and a hand-crank, substantially as described, whereby the machine can be propelled in either direction by the hand-crank with or without simultaneously operating the stamps, or the stamps operated without propelling the machine, as set forth.

LOUIS McMURRAY.

Witnesses:
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HOWELL BARTLE.