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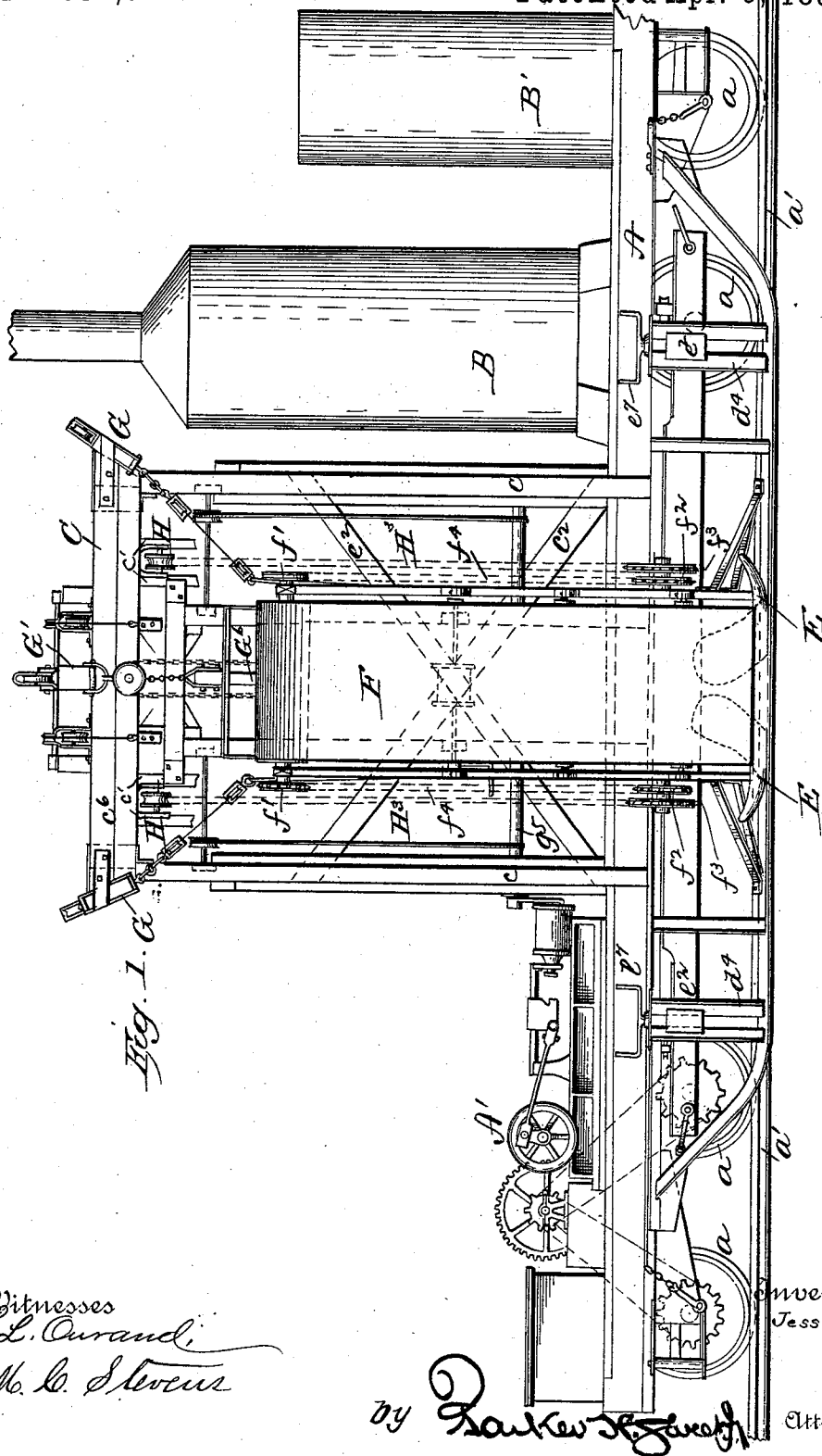
4 Sheets—Sheet 1.

J. STUBBS.

FEEDING MACHINE FOR MAKING BALLAST.

No. 537,319.

Patented Apr. 9, 1895.



Witnesses

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(No Model.)

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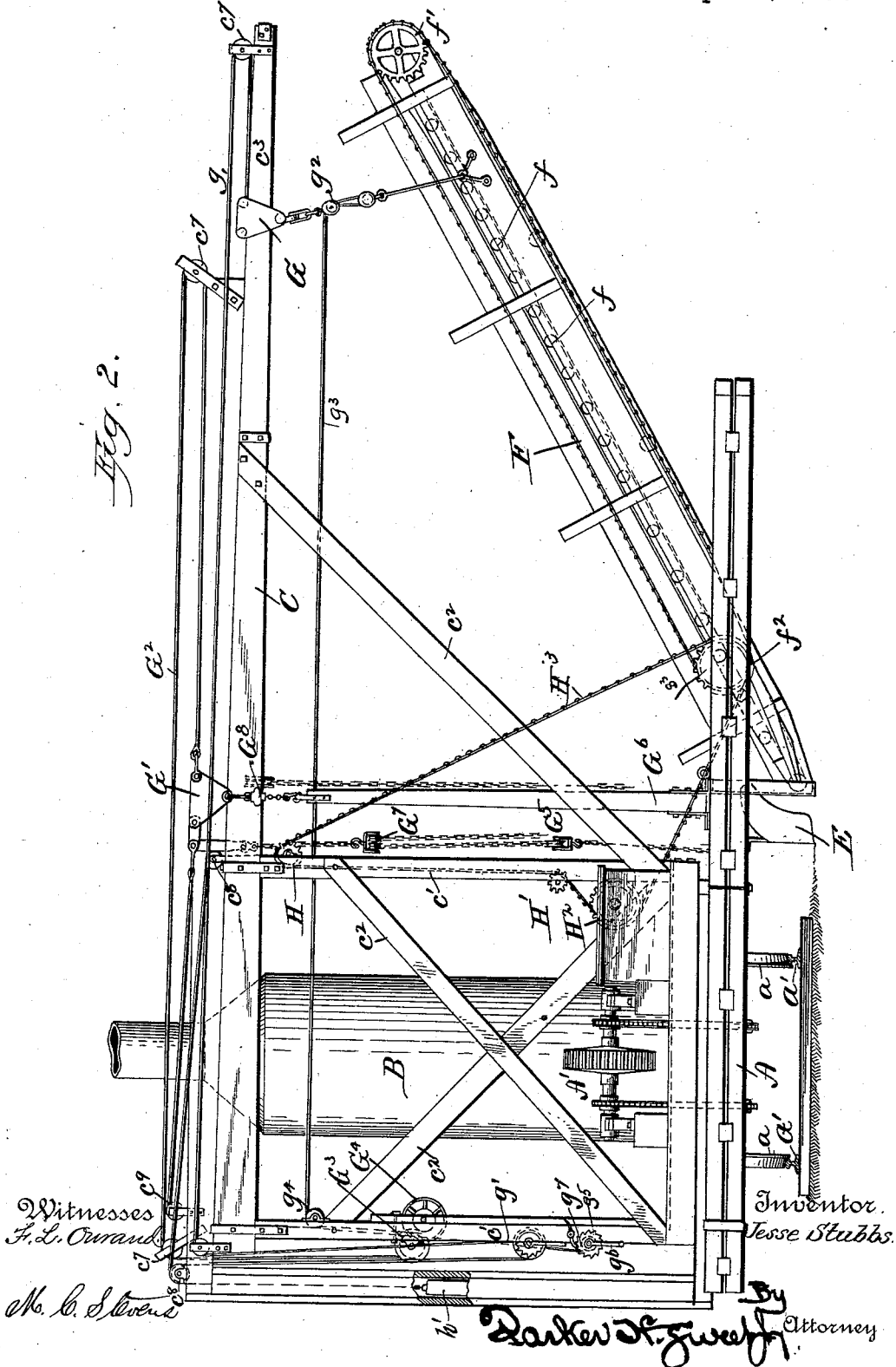
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Fig. 2.



(No Model.)

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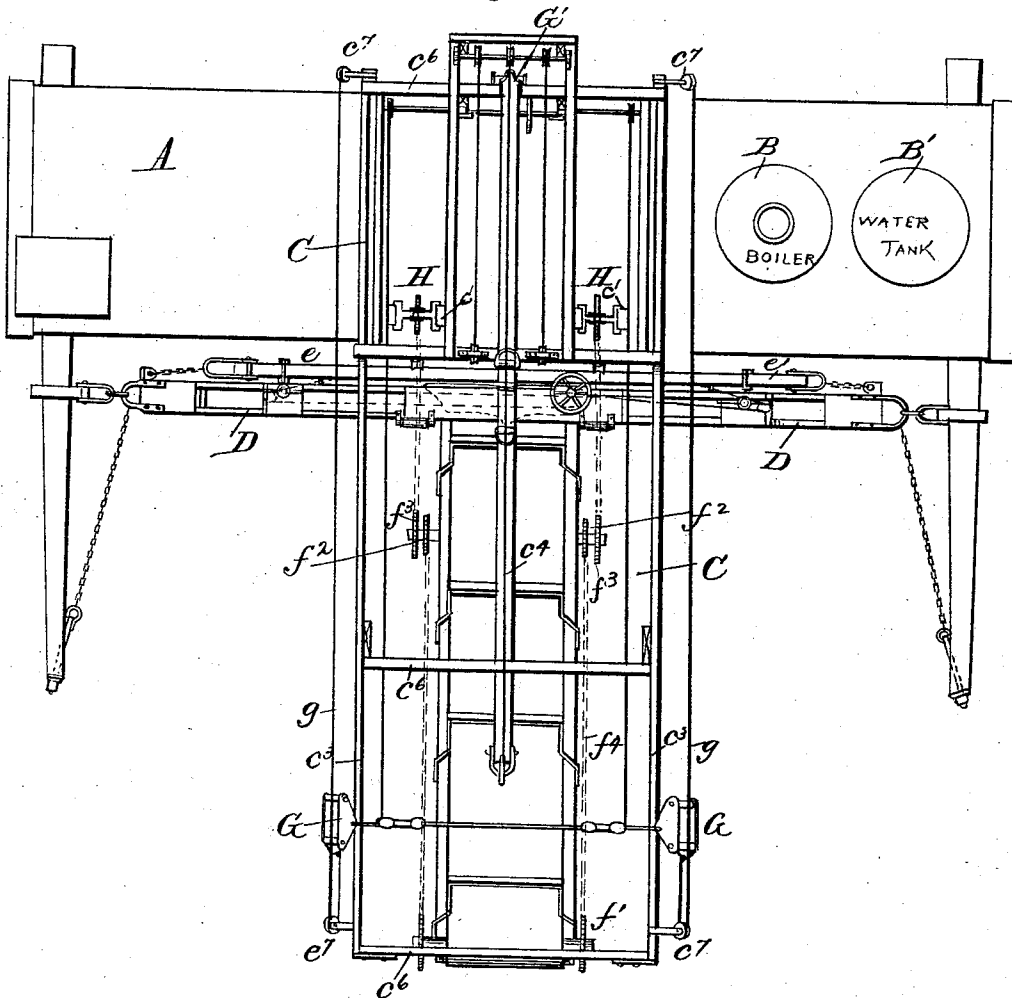
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Fig. 3.



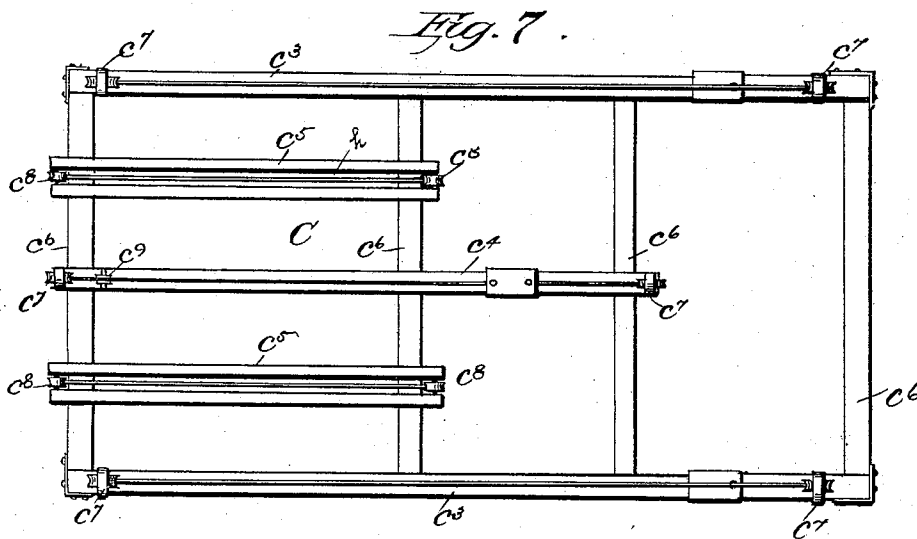
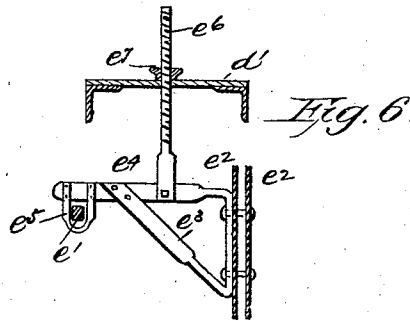
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4 Sheets—Sheet 4.

FEEDING MACHINE FOR MAKING BALLAST.

Patented Apr. 9, 1895.



Inventor
Tesse Stubbs
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UNITED STATES PATENT OFFICE.

JESSE STUBBS, OF MOUNT PLEASANT, IOWA.

FEEDING-MACHINE FOR MAKING BALLAST.

SPECIFICATION forming part of Letters Patent No. 537,319, dated April 9, 1895.

Application filed October 18, 1894. Serial No. 526,333. (No model.)

To all whom it may concern:

Be it known that I, JESSE STUBBS, a citizen of the United States, and a resident of Mount Pleasant, in the county of Henry and State of Iowa, have invented new and useful Improvements in Feeding-Machines for Making Ballast; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in that class of machines designed particularly to afford means for saving labor by automatically feeding to a fire or kiln burning clay in the open air to make ballast, and the like, for rail and other roads, the clay to be dug from the ground along the fire or kiln, thereby forming longitudinally of the kiln a trench, and conveying the clay thus dug to and depositing it upon the kiln.

The objects of my invention are, first, to provide a shoe to which is attached the plow or plows, and an elevator, and to suspend such shoe from a car body in such manner that the same may be adjusted vertically and laterally and independently from said car body; second, to attach the plow to the shoe by means of a plow beam, so that it (the plow) may be adjusted vertically and laterally independently of the shoe; third, to so attach the plow supporting beam to said shoe as to permit it to be elevated or lowered, or thrown forward or backward, and retained in such position; fourth, to provide a shoe to which the plow is attached, consisting of a skeleton frame provided with guide-plates for conveying the clay to the elevator; fifth, to provide gearings, take-ups, trolleys, &c., for transmitting power from the motor seated on a car, for the purpose of conveying the clay to the kiln; and such other objects as will be hereinafter set forth and specifically claimed. I accomplish these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a flat car, with my device thereon, as also the engines for running the car and the boiler and water tank in side elevation. Fig. 2 is an end view in which the engines and water tank are

omitted. Fig. 3 is a plan view of the car, a plan view of my device, a plan view of the engines for running the car and the engines for operating the elevator, and the water tank all arranged on the car. Fig. 4 is a side view of the shoe with a portion broken away to show the plow. Fig. 5 is a front view of one of the idlers, showing the tracks upon which it runs, in section. Fig. 6 is a side elevation of the yoke carrying the plow beam, with the beam and shoe in section; and Fig. 7 is a top plan view of the frame-work, consisting of tracks and rails upon which the trolleys run. Similar letters denote similar parts throughout the several views.

A represents an ordinary flat car, a, a , the wheels, and a', a' , the tracks on which the car runs. A', A' , are the engines that propel the car. A^2, A^2 , are the engines that drive the gearing to transmit motion to the endless belt on the elevator. B is the boiler and B' the water tank. As these features are of the ordinary form and constitute no part of my invention, it is not necessary to enter into a more detailed description thereof.

C is the frame, upon which are mounted the trolleys, gear wheels, pulleys, drums, &c. This frame consists of the uprights c, c , the vertical tracks c', c' , the braces c^2, c^2 , the overhead tracks c^3, c^3 and c^4 , the tracks c^3, c^3 being the two outer ones. The tracks, c^3, c^3 , stand at an angle to the track, c^4 , and in a lower horizontal plane and c^4 , the middle track, this latter one being somewhat shorter than the outer ones. On each side of the middle track, between it and the outer track, and in the same plane, is a beam c^5 . The cross beams c^6, c^6, c^6, c^6 , connect the tracks and beams. At each end of the tracks c^3, c^3, c^4 , are pulleys c^7 , and on the track c^4 , near its rear end, is an additional pulley c^8 . Likewise, at each end of the beams c^5 are pulleys c^8 , all for purposes hereinafter specified.

D is the shoe to which the plow is attached. This is of the following construction, viz:

d is the bottom of the shoe and is in the form of a runner turned up at both ends. Across the top of the shoe and to each end of the runner is attached a plate d' , about sixteen inches wide, and upon which a workman can stand to operate certain features, as will be hereinafter described.

d^2 is a cross beam connecting the two ends of the runner.

d^3, d^3 , are two vertical supports or braces arranged near the center of the shoe and extending from the runner to the cross beam d^2 . Near the ends of the shoe are two tracks or angle irons d^4, d^4 , which also serve as braces for the shoe. I have shown four of these tracks or angle irons, two at each end of the shoe, when only one plow is used, as is the case at present (although I have made provision for two), but two of the angle irons are used of course.

d^5, d^5 are two plates attached to the outside of the shoe and serve as guides to prevent a portion of the earth turned up by the plow from falling back in rear of the shoe.

E is the plow which is attached to one end of a plow beam e^1 . The other end of the beam is connected to the shoe by the mechanism illustrated in Fig. 6, and which is of the following construction, viz:

e^2, e^2 are two plates connected together at or near their centers by two rivets. Attached to the back of one of these plates by the same rivets is an arm e^3 , bent upon itself as at e^4 . At or near the outer end of this arm is attached a yoke e^5 of substantially U-shape, in which yoke is loosely housed the front end of the plow beam. The two plates e^2, e^2 , are arranged on the angle irons or tracks d^4, d^4 , in such manner that they be moved up and down on the tracks, thereby raising or lowering the outer end of the plow beam. The plates are adjusted up and down by means of a screw bolt e^6 which extends up from the arm e^3 through the plate d^4 , and is provided with a thumb nut e^7 , that rests on the plate. Near the forward end of the plow beam I attach one end of a cord or rope e^8 . This rope is then carried up and around a spring drum e^9 , journaled in the upper cross beam of the shoe. It is then carried forward and around a pulley e^{10} , also journaled in the cross beam; then down, and attached to the plow beam near the rear end thereof. Extending up from the drum e^9 , and through and above the plate d^4 , is a rod e^{11} , provided on its upper end with a wheel e^{12} for turning the drum. On the rod e^{11} and adjacent to the plate d^4 , is a pawl and ratchet e^{13} for controlling the action of the drum. It will be obvious, by reference to the drawings, that by turning the drum in one direction or the other by means of the wheel e^{12} , the plow may be moved forward or backward as desired. It is to be understood, of course, that where two plows are to be used, the parts above described are simply duplicated.

F is the elevator, which is attached to the shoe D, and extends at right angles thereto, and which is used for conveying the clay from the plow to the kiln. This elevator consists in a frame in which are mounted a series of small rollers f , over which an endless belt travels. At the upper end of the frame is a shaft carrying a roller and upon each end of the shaft

is a sprocket wheel f', f' . Near the lower end of the frame is another shaft carrying a roller and mounted upon each end of the shaft are two sprocket wheels f^2, f^2 , and f^3, f^3 .

f^4, f^4 , are two endless sprocket chains that extend from the sprocket wheels f^2, f^2 , to the sprocket wheels f', f' . One of these chains is upon each side of the elevator and serves to communicate motion to the endless belt by the means hereinafter indicated.

G, G, are two trolleys provided with small rollers that permit them to travel on the tracks c^3, c^3 . Attached to each of the trolleys is a rope g which passes over the pulleys c^7, c^7 , on each end of the tracks c^3 , and down to a hook g' on one of the upright beams c' . Also attached to the trolleys G is a block and fall g^2 , which is connected to the elevator on each side near its upper end. A rope g^3 extends from the trolley G around the block and fall to and over a pulley g^4 journaled in one of the uprights c' of the rear end of the frame C, down to a drum g^5 journaled in the upright beams c' at the rear of the frame. This drum is provided with a crank or handle g^6 and a pawl and ratchet g^7 . By pulling on the ropes g , the trolleys G are moved along the tracks c^3 , and the elevator is thrown out a desired distance, and by pulling on the rope g^3 , the outer end of the elevator is raised or lowered as desired.

G' is also a trolley provided with rollers similar to G, G. This trolley travels on the track c^4 . Attached to one portion of the trolley is a rope G^2 for operating the trolley to control the distance at which the plow works from the car track, by means of intermediate devices to be hereinafter described. This rope G^2 extends from the trolley to and over the pulley c^7 on the rear end of the track c^4 , and thence to and over the other pulley c^7 on the rear end of the track, thence down around a drum G^3 and up again to and over the pulley c^3 back to the trolley G'.

The drum G^3 is geared to a pinion G^4 which is rotated, thereby rotating the drum, which winds or unwinds the rope G^2 and moves the trolley G' forward or backward, as desired. Also attached to the trolley G', and suspended therefrom, is a pulley and block G^5 , that is connected with the plow, and a hanger G^6 that is connected with the shoe D. This is the connecting mechanism for controlling the distance at which the plow works from the car track above referred to.

G^7 is a differential pulley, for the purpose of raising and lowering the plow, and the hanger G^6 has attached thereto a screw-block G^8 , by means of which the shoe is raised or lowered as desired.

H, H, are two sprocket wheels which I term idlers. Each idler is journaled in a yoke that slides up and down on the two vertical tracks c' , arranged at each side of the frame C. Attached to the upper part of each yoke is a rope h . This rope extends up to and over

the pulleys c^8 , c^8 , on each end of the beam c^5 , down at the rear of the frame C, and has on its end a weight h' .

H' , H' , are two other idlers that are journaled in the vertical tracks c' , and below these idlers is the shaft of the engine, that operates the belt on the elevator, and on each end of this shaft is a sprocket wheel H^2 , which is of greater diameter than either of the idlers, and of about the same diameter as the sprocket wheel f^3 . On each side of the elevator there is an endless sprocket chain which connects the sprocket wheels H^2 and f^3 and the idlers H and H' together, and thereby motion is communicated to the elevator from the engines A^2 , A^2 on the car. As the elevator is thrown out and down, the idlers H, H' , slide down the tracks c' , thereby allowing the sprocket chain to extend out and allow the elevator to be adjusted the desired distance from the car, as also the depth. As the sprocket chains H^3 , H^3 descend, they are always kept taut by means of the ropes h , h , and weights h' , h' .

The operation of my device is as follows, viz:—The car containing the machine is placed at the forward end of the kiln, and the plow, shoe and elevator properly adjusted. The engines for driving the endless belt of the elevator are then started and the car is also started forward, and as it advances along the kiln the clay is plowed up and by means of the two guard-plates d^5 , d^5 , conveyed to the endless belt of the elevator and thence carried up over the elevator and deposited on the kiln. This operation is continued until a trench is dug the length of the kiln, when the car is run back and the plow shoe and elevator again adjusted to the proper depth and distance from the car; when the operation is repeated.

As has been previously stated, two plows can be employed; if desired, one for plowing in a forward direction and the other for plowing back, or in the reverse direction, and this can be accomplished by simply duplicating some of the present parts, as, for example, the plow, plow beam, yoke carrying plow beam, adjusting screw, &c.

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

1. In a feeding machine, the combination with the frame, substantially as described, carrying the three trolleys, the pulleys and the ropes attached to the trolleys and to the elevator, of the elevator consisting of the endless belt, the drums carrying sprocket wheels on their ends, the sprocket chains for rotating the drums, the rollers upon which the endless belt runs and mechanism for operating the

endless belt, all substantially as described and shown.

2. In a feeding machine for making ballast, the combination with the frame, substantially as described, the trolleys, pulleys and ropes, of the elevator and mechanism for operating the same, consisting of two endless sprocket chains that are supported and operated by two vertically adjustable idlers, two stationary idlers, two large sprocket wheels journaled on the shaft of the driving engines, the ropes and weights attached to the adjustable idlers, all substantially as described and shown.

3. In a feeding machine for making ballast, the combination with the elevator, of a shoe and plow attached thereto and means for raising and lowering the shoe and plow, the same consisting of an overhead trolley from which is suspended a pulley and block attached to the plow and a hanger attached to the shoe and a rope for operating the trolley and a drum to which the rope is attached, all substantially as described and shown.

4. In a feeding machine for making ballast, the combination with the elevator, of a shoe, and plow adjustably attached thereto by means of a plow beam, one end of which carries the plow, the other end loosely housed in a yoke supported by an arm bent upon itself and attached to plates that are adjusted vertically on the tracks of the shoe by means of a screw and thumb nut attached to the arm, all substantially as described and shown.

5. In a feeding machine for making ballast, the combination with the elevator and shoe, of a plow and means for adjusting the same forwardly and rearwardly, the same consisting of a drum housed in the upper beam of the shoe, the drum provided with a rod and button or wheel for rotating it and a pawl and ratchet on the rod, a rope wound on the drum and passed around a pulley journaled in the beam and attached to each end of the plow beam, substantially as described and shown.

6. In a feeding machine for making ballast, the combination with the elevator and plow, of a shoe consisting of a runner, the upper ends of which are connected by a beam upon which rests a top plate or platform, braces extending from the runner to the beam and two guide plates attached to the runner and center braces, substantially as described and shown.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

JESSE STUBBS.

Witnesses:

JOHN HOBSON,
R. W. BUCHANAN.