

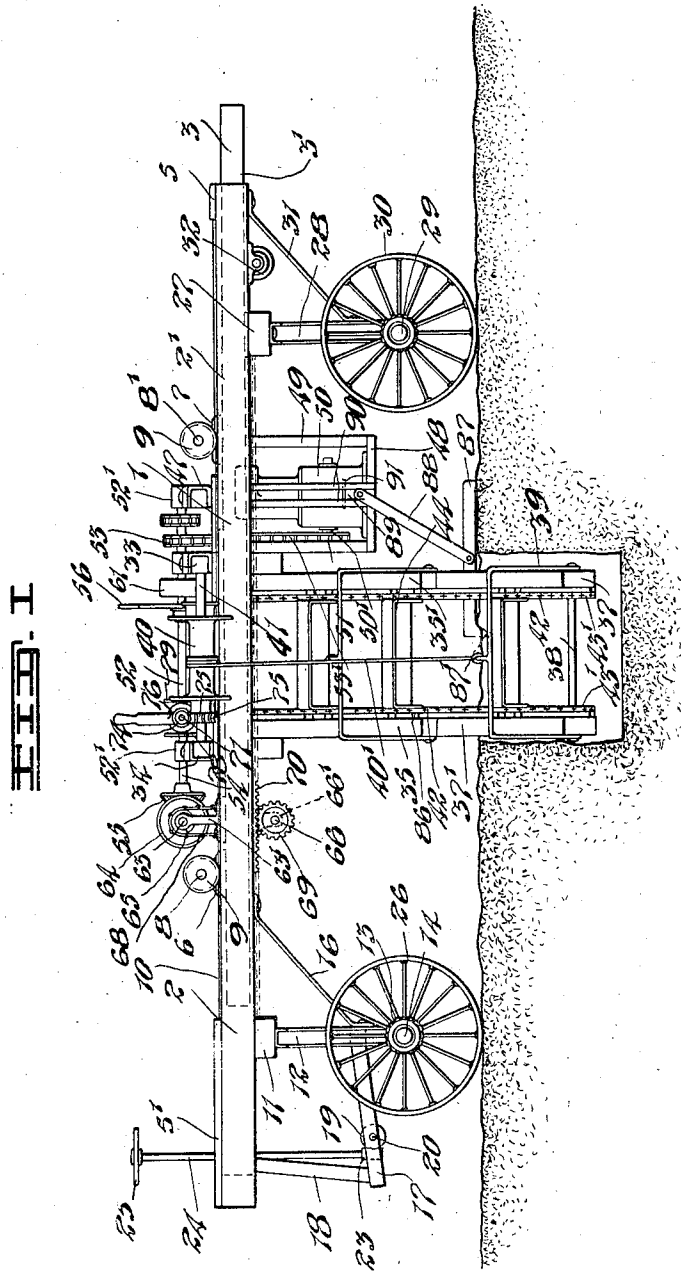
O. FRECHETTE.
DITCHING MACHINE.

APPLICATION FILED MAY 14, 1910.

1,019,242.

Patented Mar. 5, 1912.

3 SHEETS—SHEET 1.



WITNESSES

Jas. M. Gaffey
 J. D. Gaffey

INVENTOR

O. FRECHETTE

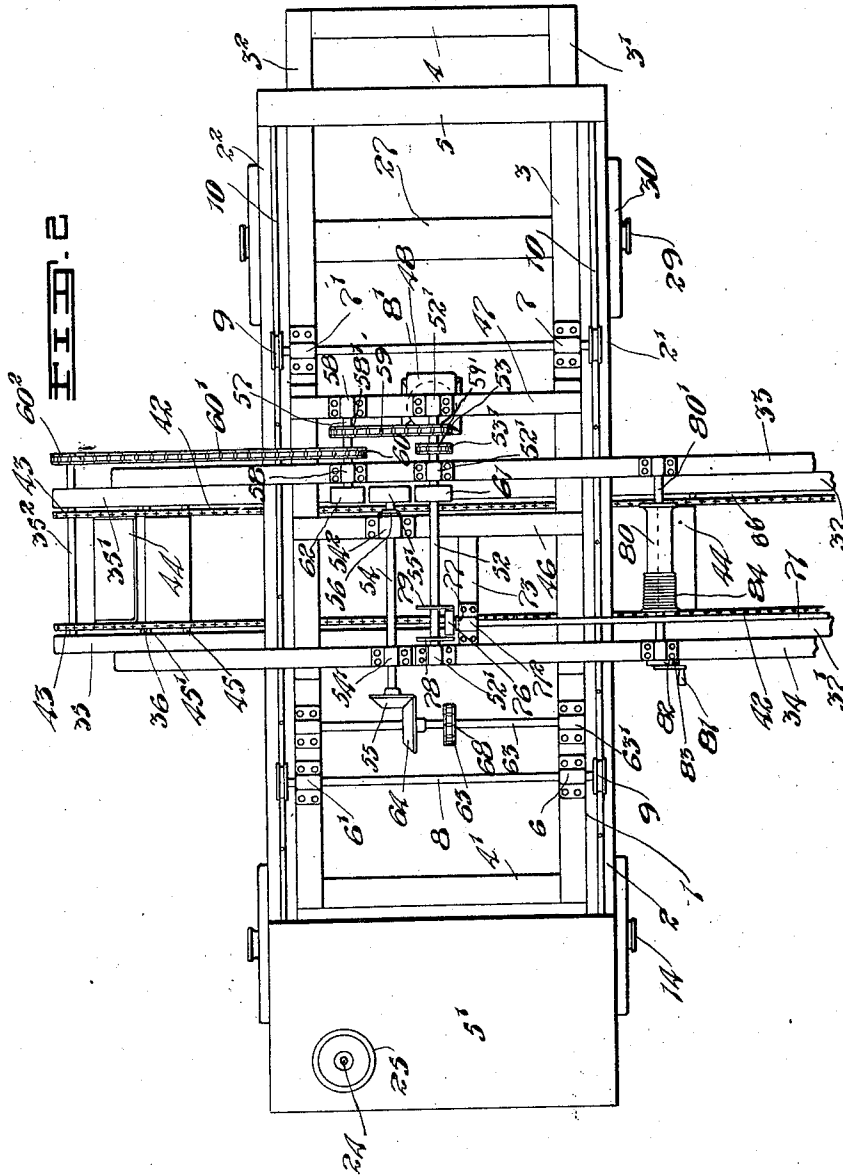
By *J. D. Gaffey* Atty

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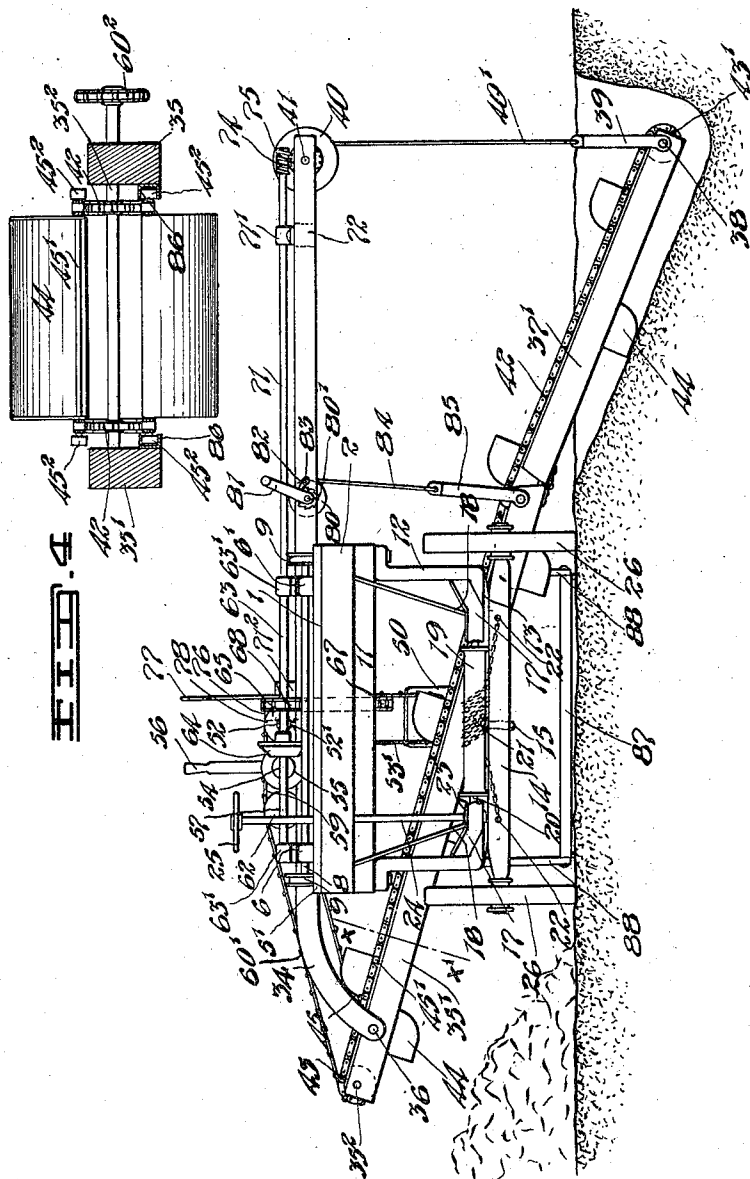
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3 SHEETS—SHEET 3.



WITNESSES
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UNITED STATES PATENT OFFICE.

ONESIME FRECHETTE, OF ST. PIERRE, MANITOBA, CANADA, ASSIGNOR TO JAMES FORSTALL, OF ST. PIERRE, CANADA.

DITCHING-MACHINE.

1,019,242.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed May 14, 1910. Serial No. 561,450.

To all whom it may concern:

Be it known that I, ONESIME FRECHETTE, of the village of St. Pierre, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Ditching-Machines, of which the following is a specification.

My invention relates to ditching machines, and the object of the invention is to provide a machine which will excavate by means of a series of shovels or scoops which will lift the earth and deposit it on the side of a ditch.

A further object of the invention is to devise an easily operated and portable machine which can be advanced or receded according to the requirements and which will dispense with a great deal of the labor now involved in operations of this class.

The machine is particularly adapted for road making.

The invention consists essentially in a frame formed from forward and rearward interconnected members movably secured the one to the other, supporting wheels for the frame, an engine platform carried by the rear member of the frame, means for advancing or retracting the members of the frame, cross girders secured permanently to the rear members of the frame, opposing cross beams swingably secured to the girders, a set of endless chains, carried by the beams, scoops or shovels on the chains, adjusting means for the beams, and means for operating the chains, the parts being arranged and constructed as hereinafter more particularly described.

Figure 1 is a side elevation of the complete machine as it appears when in operation. Fig. 2 is a plan view of the machine, portions of the girders and chains being removed. Fig. 3 is a front view of the machine. Fig. 4 is an enlarged detailed sectional view through the scoop carrying beams, the section being taken in the plane denoted by the line X X', Fig. 3.

In the drawings like characters of reference indicate corresponding parts in each figure.

1 represents the frame of a machine which is formed from a forward or outer member 2 and a rear or inner member 3, such members being movably secured the one to the

other as shortly to be explained. The inner member 3 is formed from longitudinally extending beams 3' 3² and cross beams 4 and 4'. The outer member is constructed from longitudinally extending beams 2' and 2² united rearwardly by a cross board 5 and forwardly by a platform 5', such parts being secured to the upper side of the longitudinal members and being adapted to clear the inner members of the frame when the parts are adjusted.

6 6' and 7 7' are opposing sets of bearings secured permanently to the beams 3' and 3² of the inner frame said bearings receiving cross shafts 8 and 8' fitted at their ends with rollers 9 which operate on tracks 10 located on the upper sides of the beams 2' and 2² of the outer member of the frame.

11 is a forward cross beam secured permanently to the beams 2 and 2² of the forward member of the frame and 12 is a yoke-shaped channel iron bar having its extremities secured to the ends of the beam and supported centrally on a beam 13 which rests on the forward axle 14 such latter parts being connected by the ordinary king bolt 15. The yoke bar is strengthened by braces 16 passing from the frame.

17 is a U-shaped bar passing forwardly from the yoke bar to which it is secured, such U-bar being supported from the forward member of the frame by braces 18 at either side.

19 is a drum secured to a cross shaft 20 having its ends received within bearings formed in the U-bar 17. The drum has a cable 21 fastened thereto, the extremity of the cable being secured at 22 to the axle 14. The drum is rotated by a worm 23 located at the end of the post, 24 having a steering wheel 25 at its upper end, the post passing through the platform 5. The worm meshes with any suitable form of worm wheel located on the shaft. The axle is supported by carriage wheels 26.

27 is a rear cross beam supporting the frame such beam being securely fastened to the rear end of the outer frame. The beam has a U-shaped channel iron bar 28 fastened thereto at its ends, such bar resting on the rear axle 29 which is carried by the wheels 30. Braces 31 pass between the axle and the rear end of the beams 2 and 2². Opposing

rollers 32 are secured to the rear end of the forward member of the frame such rollers supporting the inner member thereof.

33 and 34 are girders secured permanently to the beams 3' and 3² and extending to either side of the frame.

35 and 35' are cross beams swingably secured to the girders by means of a cross shaft 36. To the beams 35 and 35' I have secured by hinges further beams 37 and 37' which are united at their extremities by a cross shaft 38 and are supported by a bail bar 39 carried at the end of a cable 40' which passes from the drum 40 mounted on the shaft 41 located in the ends of the girders already referred to. The beams 35 and 35' carry a cross shaft 35², and endless chains 42 unite sets of chain wheels 43 and 43' mounted on the respective shafts 35² and 38.

44 are scoops or scrapers firmly secured to the chains and between them by cross rods 45 and 45'. The buckets are all arranged in the same direction and are adapted to pick up the earth as the chains are operated.

46 and 47 are cross beams firmly secured to the inner member of the frame and utilized for supporting bearings shortly to be described.

48 is an engine platform carried by brackets 49 extending downwardly from the inner member of the frame.

50 represents an engine of any approved type of which 50' is the shaft carrying the drive gear 51.

52 is the main shaft of the machine mounted in bearings 52' carried by the girders 34 and 33, and the beam 47. The main shaft carries a chain gear 53 which is connected through the chain 53' with the gear 51 of the engine shaft.

54 is a counter shaft mounted in a stationary bearing 54', and a movable bearing 54² located on the girder 34 and the beam 46. The shaft carries at one end a bevel pinion 55 and at the opposite end a friction pulley 55'. A lever 56 controls the movement of the shaft and allows the pulley 55' to be thrown either to the right or left as desired.

57 is a short shaft mounted in bearings 58 carried by the beam 47 and the girder 33, such shaft having fixed thereon a chain wheel 58', which is connected by means of a chain 59 to a chain wheel 59' keyed on the shaft 52. 60 is a second chain wheel on the shaft 57 such wheel being connected through a chain 60' with a chain wheel 60² located on the extending end of the shaft 35². Pulleys 61 and 62 are fixed on the shafts 52 and 57, respectively, directly opposite the pulley 51', which pulley is adapted when shifted by the lever to engage with either one or the other of the pulleys 61 and 62.

63 is a cross shaft mounted in suitable bearings 63' located on the beams 3 and 3²

of the inner member 3. The shaft is provided with a bevel gear 64 and a chain wheel 65 the bevel gear meshing with the bevel pinion 55', already referred to. Directly beneath the shaft 63 is a cross shaft 66 carried by suitable bearings 66' dependent from the beams 3' and 3² of the inner member 3. The shaft has a chain wheel 67 fixed thereon which is connected through a chain 68 with a chain wheel 65. Pinions 69 are secured to the ends of the shaft 66 and operate on racks 70 fixed on the under side of the beams 2' and 2² of the outer member of the frame.

71 is a shaft mounted in a fixed bearing 71' and a movable bearing 71² located on the transverse beams 72 and 73, respectively, the beam 72 passing between the extremities of the girders 33 and 34 adjoining the drum 40, and the beam 73 between the girder 34 and the cross beam 46. A worm 74 is formed on the extending end of the shaft, such worm meshing with a worm wheel 75 placed on the shaft 41. The inner end of the shaft 71 carries a friction pulley 76 the position of which is controlled by the lever 77 which shifts the end of the shaft from side to side as desired.

78 and 79 are disks on the shaft 52. The pulley 76 is adapted to engage with either of the disks in its shifted position thereby imparting to the shaft 71 either a forward or reverse rotation.

80 is a drum mounted on the shaft 80' which is carried in suitable bearings located on the girders 33 and 34. The shaft is provided with a crank 81 and a ratchet wheel 82 over which operates a ratchet 83. A cable 84 passes from the drum downwardly to the bail bar 85 which has its extremities fastened to the lower ends of the beams 35 and 35'. The shafts 45 and 45' extend beyond the chains and are provided with rollers 45² which rollers are adapted to pass into the channel iron bars 86 fastened on the inner sides of the beams 35 35' and 36 36', respectively.

87 is a foot piece having suitable claws 87' thereon and carrying upwardly directed arms 88 which are pivoted to blocks 89 operating between guide bars 90 passing between the platform 48 and the beams 3' and 3². Adjustable pins 91 are fitted in the guide bars so that the blocks can be prevented from rising between the guide bars higher than is desired. It will of course be understood that the arms are pivotally secured to the foot piece.

In order to better understand the machine I will now describe its operation assuming that the engine is operating and the parts are set in the position as shown in the drawing. The shaft 36 is rotated by the chain 60' operated by the engine, as will readily be understood, this being a direct drive. The scoops are moved by the chains and excavate

the earth according to the adjustment of the cables 40' and 85, the earth being dumped to the left hand side of the machine as soon as the scoops pass to the upper side of the chain wheels 43. If it is desired to progress in the cut it is only necessary for the operator to throw the lever 56 to a position which will bring the pulleys 55' and 61 into engagement and have the attendant withdraw the pin 91 which allows the blocks to slide in the guides and nullifies the effect of the foot piece on the machine. This will cause the inner frame to pass forwardly as the pinions will operate on the racks, which will remain stationary. However it will be seen that it will be only possible to advance the cut a limited distance in this manner, such depending on the length of the racks, the machine remaining stationary in respect to the ground. In order to avoid this difficulty and to provide a machine that can advance and recede as desired I have utilized the foot piece 87 which if placed in the position shown in the drawing will cause the inner frame to remain stationary and consequently prevent the pinions from changing their position relatively to the ground. Accordingly depending upon the rotation given the shaft 54 the outer frame will move either forwardly or backwardly, the racks passing over the pinions, which is the opposite to the motion already described wherein the pinion is moved forwardly and the racks remain stationary. It will of course be understood that the pins 91 are inserted at this time in the guide bars to prevent the blocks from rising. If it be desired to adjust the outer end of the beams 37 and 37' it can be done quickly and easily by throwing the lever 77 to bring the clutch 76 into engagement, with either one of the disks 78 and 79. This will cause the cable to loosen or tighten on the drum and consequently raise or lower the beams. The lower ends of the beams 35 and 35' are adjusted by the cable 85 and drum 80. A hand operation is used on the drum 80 as it does not need to be adjusted very often while the machine is running.

What I claim as my invention is:

1. A ditching machine, comprising a forward and a rear member forming a frame, the forward member being supported by suitable wheels, means for moving the rear member in respect to the other member forwardly or backwardly, girders secured to the rear member of the frame and extending beyond the forward member, an opposing set of beams hingedly secured to the girders at one end, further beams hingedly secured to the latter beams, a set of adjustable drums mounted in bearings carried by the girders, one of said drums being united through a suitable cable with the latter beams, and the other through a suitable cable with the former beams, cross shafts carried by the

beams, chain wheels on the shafts, endless chains uniting the chain wheels, scoops secured at intervals to the chains, and reversible means for rotating one of the drums, as and for the purpose specified.

2. A ditching machine, comprising a forward and a rear member forming a frame, the forward member being supported by suitable carriage wheels, tracks located on the upper side of the forward member, cross shafts mounted forwardly and rearwardly on the rear member, such shaft carrying rollers adapted to operate on the tracks, longitudinally extending racks fixed on the under side of the forward member, a cross shaft dependent from the rear member said shaft carrying pinions operating on the racks, an engine platform dependent from the rear member of the frame, an engine mounted on the platform, girders mounted on the rear member and extending transversely across and beyond the outer member, suitable adjustable transversely extending ditching means carried by the girders, a main shaft mounted in bearings fixed on the girders, such shaft being connected to the engine shaft, a rotatable counter shaft carried by the inner member and adjoining the main shaft, a short shaft mounted in bearings carried by the inner frame and connected with the main shaft by a suitable chain and chain wheels, said short shaft, main shaft, and counter shaft being supplied with engageable pulleys whereby a forward or reverse motion can be given to the counter shaft, a bevel pinion secured to the free end of the counter shaft and meshing with a bevel wheel fixed on a cross shaft carried by the rear member of the frame, chain wheels secured to the latter shaft and to the shaft aforesaid carrying the pinions engageable with the tracks, and a chain uniting such chain wheels, as and for the purpose specified.

3. In a ditching machine, the combination with a forward and a rear member forming a frame, the forward member being supported by suitable carriage wheels, such members being adjustable longitudinally the one in respect to the other, of a platform dependent from the rear member of the frame, vertically directed guide bars passing between the platform and the rear member, guide blocks slidable between the guide bars, arms pivotally secured to the guide blocks, a foot piece swingably secured to the arms, and adjustable pins adapted to pass between the guide bars, as and for the purpose specified.

4. In a ditching machine, the combination with a forward and a rear member forming a frame, the forward member being supported by suitable carriage wheels and the rear member supported from the forward member movably by suitable rollers, racks

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fixed on the forward member, and pinions dependent from the rear member and operating on the racks, of a platform dependent from the inner member of the frame, guide
5 bars passing between the platform and the rear member, and adjustable means operating between the guide bars and engageable with the ground over which the machine is operating adapted to prevent the rear mem-

ber from advancing when the pinions are rotated, as and for the purpose specified. 10

Signed at Winnipeg, in the Province of Manitoba, this 21st day of February 1910.

ONESIME FRECHETTE.

In the presence of—
G. S. ROXBURGH,
J. K. ELKIN.