No. 785,302. PATENTED MAR. 21, 1905.

W. FULLARD.

EXCAVATING AND DREDGING MACHINE.

APPLICATION FILED OCT. 14, 1904.

3 SHEETS—SHEET 1.

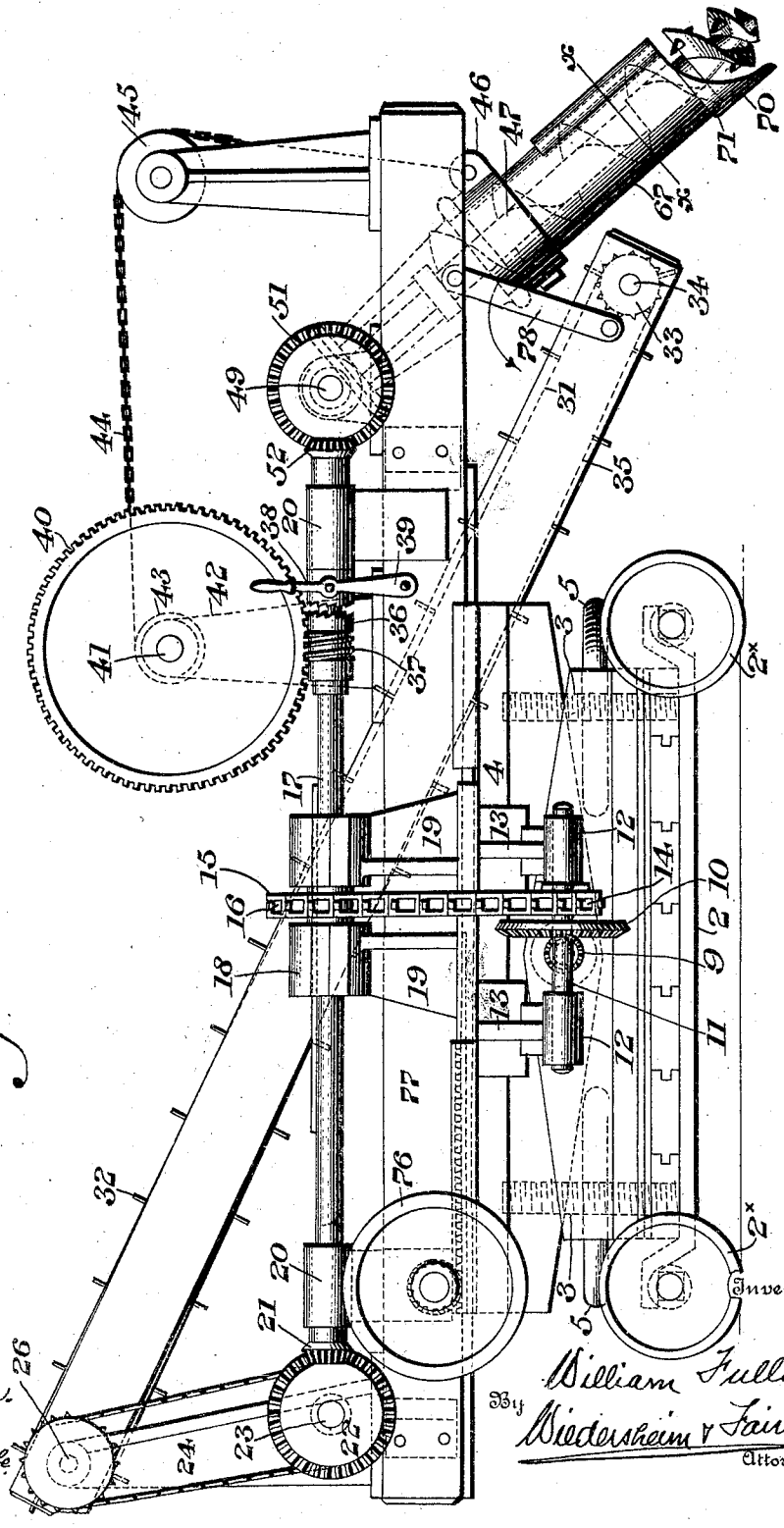


Fig. 1.

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Fig. 3.

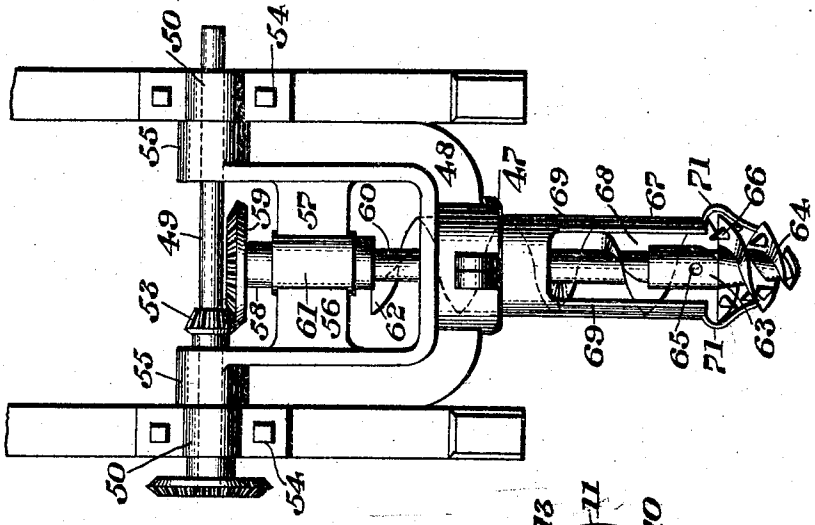
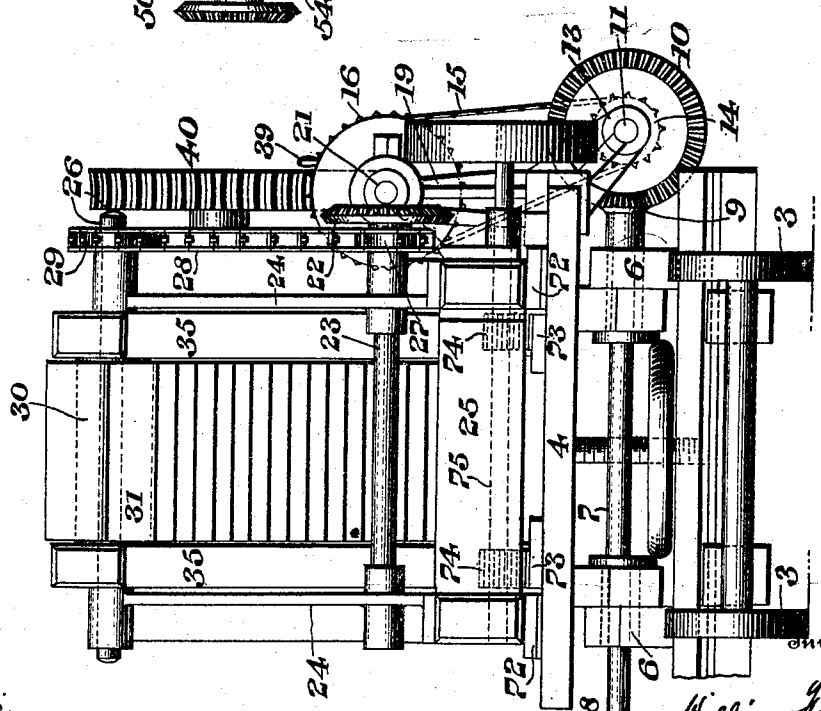


Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 5.

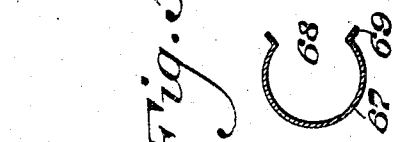


Fig. 6.

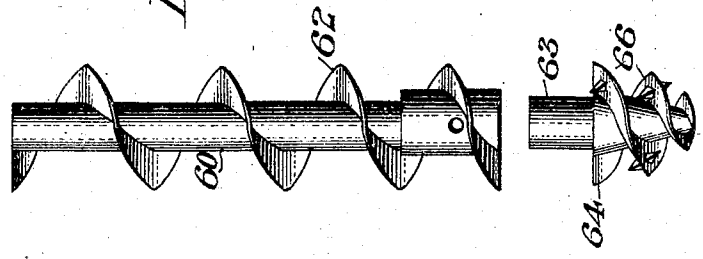
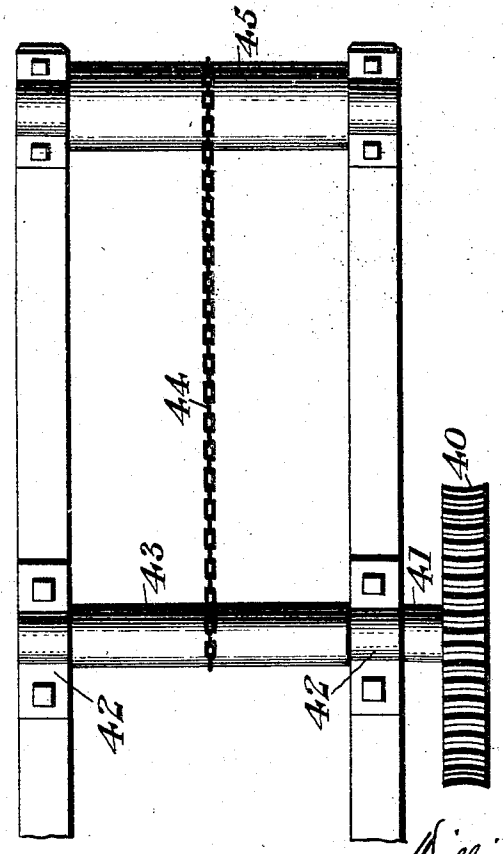


Fig. 4.



Witnesses

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No. 785,302. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

WILLIAM FULLARD, OF PLAINFIELD, NEW JERSEY.

EXCAVATING AND DREDGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 785,302, dated March 21, 1905.

Application filed October 14, 1904. Serial No. 228,382.

To all whom it may concern:

Be it known that I, WILLIAM FULLARD, a citizen of the United States, residing at Plainfield, Union county, State of New Jersey, have invented a new and useful Excavating and Dredging Machine, of which the following is a specification.

My invention consists of an improvement in excavating-machines having an improved boring-tool provided with means for varying the position of the same with respect to the machine and with respect to the work.

It further consists of an improved construction in the boring-tool, whereby clogging of the same is prevented.

It further consists of novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a side elevation of an excavating-machine embodying my invention. Fig. 2 represents an end elevation thereof. Figs. 3 and 4 represent top plan views of a portion of the machine in detached position. Fig. 5 represents a sectional view on line $x\,x$, Fig. 1. Fig. 6 represents an elevation of a portion of the boring-tool.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates an excavating-machine embodying my invention, which is provided with the truck 2 for the wheels $2^{\times}$, whereby the machine can be moved from place to place or can be adapted to be run on a track, if desired. Suitably supported by and rising from the truck 2 are screws 3, which support the bed-plate 4, said screws being provided with hand-wheels 5, whereby the said screws may be rotated either by hand or power so as to raise and lower the bed-plate or tilt the front or back thereof, as desired. Suitably journaled in the frame 6, carried by the truck 2, is a shaft 7, carrying the pulley 8, to which power is imparted from any suitable source of supply. On the opposite end of said shaft is a bevel-gear 9, which meshes with the gear 10, which is mounted on the shaft 11, the same being journaled in suitable supports 12, carried on the bed-plate 4, in any suitable manner—as, for example, by the frames 13. On said shaft 11 is a sprocket-wheel 14, around which passes the endless chain 15, which also passes around the sprocket 16, the latter being mounted upon the shaft 17, which is supported and movable in the journals 18, which are carried by the uprights 19, mounted on the bed-plate 4, the ends of said shaft 17 being journaled in suitable supports 20.

21 designates a beveled gear, carried by said shaft 17, which is in mesh with a gear 22, the latter being carried on the shaft 23, which is journaled in the supports 24, the said supports rising from a carriage 25 and carrying at their upper ends the shaft 26. 27 designates a sprocket-wheel on said shaft 23, around which passes the endless chain 28, which also passes around the sprocket 29, carried by said shaft 26. Carried on the shaft 26 is a drum 30, which is provided with suitable teeth to engage with and carry the endless apron 31, which is provided with suitable cleats or bars 32, and which apron passes around the sprocket 33, carried by a suitable shaft 34, mounted in a frame 35, one end of which is carried by the said shaft 26, said frame 35 extending on each side of said endless belt 31, as will be best understood from Fig. 1.

36 designates one member of a clutch, which is mounted freely upon the shaft 17 and which is provided with the worm 37. The other member, 38, of the clutch is keyed to the shaft 17 and is suitably connected with a pivotally-mounted lever 39 for operating the same in order to engage and disengage the said clutch members. 40 designates a gear in mesh with said worm 37, said gear being carried on the shaft 41, journaled in suitable supports 42 and carrying a drum 43, with which is connected a cable 44, which is adapted to be wound and unwound from said drum, said cable 44 passing over pulley 45, and the free end thereof is connected with lug 46, which latter is connected with or forms part of a thimble 47, which is part of or carried by the yoke 48, which is carried by a shaft 49, which is suitably supported or journaled in the boxes 50, secured to the frame by the screw 54, said shaft carrying the bosses 55 of the yoke 48. Said shaft 49 is provided with a gear 51, which meshes with the gear 52, carried by the shaft 17, through which

motion is imparted to said gear 51. On said shaft 49 is a second gear 53, which meshes with gear 59, (best seen in Fig. 3,) which latter is carried by a shaft 58, which is suitably journaled, as at 61, in the frame or yoke 48, which has the webs 56 and 57, carrying the journal 61, said shaft 58 having a rod 60 suitably connected therewith and projecting through the thimble 47, said rod 60 having threads 62 thereon, which serve as a conveyer to the sand or clay when the device is in operation, as will be hereinafter described, the pitch of said threads increasing toward the upper end of said rod 60. Suitably secured to said rod 60 is a removable cap 63, which is likewise provided with threads 64, which increase in pitch from the point of the cap to the upper end of the same in order to correspond to the size of the threads on the rod 60, said cap being adapted to be secured by suitable means, as a set-screw 65, to the rod 60.

66 designates pins or lugs carried by the threads of the cap, said pins being adapted to break up the clay or sand and to eject stones or other large objects therefrom in the upward passage of the material.

Suitably secured to the thimble 47 is a tube 67, which is provided with the opening 68 in its upper face and with the lugs 69 running the length thereof, said tube having a pointed extension 70 thereon, it being noted that said extension is swelled outwardly, as at 71, beyond the tube for reasons hereinafter to be set forth, it being further noted that the threads of the cap 63 extend therefrom to a point equal to the width of the tube 67, as best seen in Fig. 1.

72 designates tracks mounted upon the bed-plate 4 and upon which the upper portion of the machine is adapted to move, said bed-plate also having racks 73 connected therewith with which mesh the pinions 74, carried by the shaft 75, which is suitably journaled in the upper frame of the machine.

76 designates a pulley in the present instance, to which motion can be imparted in any suitable manner to rotate the shaft 75 and turns the pinion to cause the machine to move on the bed-plate 4, it being noted that the side bar 77 of the upper frame or carriage 25 carries the parts desired to be moved.

78 designates a link, which is connected at any suitable point with the yoke 48 and also with the side bars 35 of the movable apron 31 in order to support the lower end, it being noted that the said apron is situated beneath the upper end of the thimble 47, which is open in order that the material is discharged through said thimble upon said apron.

The operation is as follows: Motion is imparted to the pulley 8 and through the shaft 7 to the gear 10, which rotates the shaft 11 and the sprocket 14 thereon, which moves the chain 15 and the sprocket 16, thus imparting motion to the shaft 17. This in turn rotates the gear 21 and the latter the gear 22, which imparts motion to the chain 28, which rotates the shaft 26 and causes the endless apron 31 to move. At the same time the gear 52, carried by the shaft 17, operates the gear 51, which rotates the shaft 49 and the gear 53, which in turn rotates the gear 59 and the rod 60, carrying the threads 62 and the cap 63. It will be understood that the rod, threads, and tube constitute the boring-tool proper, and when in place and suitably actuated the screw-threads elevate the material and carry the same up through the tube 67 and discharge the same from the thimble 47 upon the apron 31, from whence it is carried to any suitable point. If it is necessary to change the elevation of the boring-tool, by operating the lever 39 the clutch member 38 is engaged with clutch member 36, which carries the worm 37 to rotate the gear 40, which imparts motion to the drum 43 and thence to the cable 44 to wind or unwind the same, so that the boring-tool can be elevated or depressed and carries with it the free end of the endless apron 31. It will be understood, of course, that by proper movement of the whole device the machine can be moved toward or away from the work; but if it is so situated that it is not considered desirable to move the entire machine by imparting power to the pulley 76 the pinions 74 are rotated, and as they are in engagement with the rack 73 the side pieces 77 are moved backwardly or forwardly and carry the rest of the mechanism excepting the standards 19 and the journals 18, it being noted that the shaft 17 can move longitudinally therein. It will be further noted that if it is found necessary to raise the operating part the hand-wheels 5 can be rotated, and thus elevate or lower the parts, or if it is desirous to raise or lower one end of the machine—that is, tilt the same by operating one or the other of said hand-wheels 5—the screw 3 will raise or elevate that end.

I desire to call particular attention to the boring-tool, since by the construction of the same I can quickly remove the cap 63 with the threads in order to replace the same if broken or damaged, and that by the construction shown the tube is prevented from being choked by reason of the fact that the threads on the cap are of the same size and prevent too rapid filling of the said tube. In addition by having the opening at the top excess of material will be forced therethrough.

It will be evident that various changes may be made by those skilled in the art which may come within the scope of my invention, and I do not, therefore, desire to be limited in every instance to the exact construction herein shown and described.

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

1. In a device of the character described, a

frame or carriage, a boring-tool, an endless belt or conveyer, means for raising or lowering said frame and means for raising or lowering said boring-tool and conveyer independently of said frame.

2. In a device of the character described, a truck, a frame or carriage carried thereby, means for moving said carriage on said frame, a boring-tool carried by said carriage, a belt or conveyer carried by said carriage, means for supporting one end of said belt in conjunction with said boring-tool and means for elevating or lowering said boring-tool and with it one end of said belt.

3. In a device of the character described, a boring-tool, means for imparting motion thereto, said boring-tool consisting of a rod having screw-threads thereon, a movable cap for said rod having screw-threads thereon and a tube surrounding said threads and having an enlarged extension.

4. In a device of the character described, a boring-tool consisting of a thimble suitably supported, a rod projecting through said thimble, threads on said rod, the pitch of which increases from point to rear end, a movable cap for said rod provided with threads, pins projecting from said threads and a tube suitably connected with said thimble, the threads on said cap extending outwardly therefrom equal to the diameter of said tube.

5. In a device of the character described, a truck, a frame carried thereby and movable on tracks, a rack on said truck, pinions on said frame, means for operating said pinions, a boring-tool carried by said frame, an endless belt carried by said frame one end of which is suitably connected with said boring-tool.

6. In a device of the character described, a truck, a frame carried thereby, means for raising and lowering said frame or either end thereof, a boring-tool carried by said frame, an endless belt carried by said frame, means for imparting motion thereto and a connection between one end of said belt and said boring-tool.

7. In a device of the character described, an endless belt or carrier, means for imparting motion thereto, a boring-tool suitably supported, means for imparting motion thereto, a connection between said boring-tool and one end of said apron and means connected with said boring-tool adapted to be thrown into or out of operation and having a connection with said boring means for raising or lowering said boring-tool and with it one end of said apron.

8. In a device of the character described, an apron suitably supported, means for imparting motion thereto, a boring-tool suitably supported, means for imparting motion thereto, a cable connected with said boring-tool, a drum carrying said cable which latter is adapted to be wound and unwound thereon and means for imparting motion to said drum for raising or lowering said boring-tool.

9. In a device of the character described, a truck, a frame carried by said truck, means for raising or lowering said frame, or either end thereof, a rack carried by said truck, a pinion meshing with said rack to which motion is adapted to be imparted to move said frame on said truck, longitudinally, an endless apron carried by said frame, means for imparting motion thereto, a boring-tool carried by said frame and having a connection with one end of said apron, means for imparting motion to said boring-tool, a cable connected with said boring-tool having one end connected with a drum, a gear connected with the shaft carrying said drum and a clutch adapted to cause said gear to rotate if desired, in order to raise or lower said boring-tool.

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