Oct. 23, 1923. 1,471,887

W. DORNEY ET AL

EXCAVATOR

Filed June 3, 1922 3 Sheets-Sheet 1

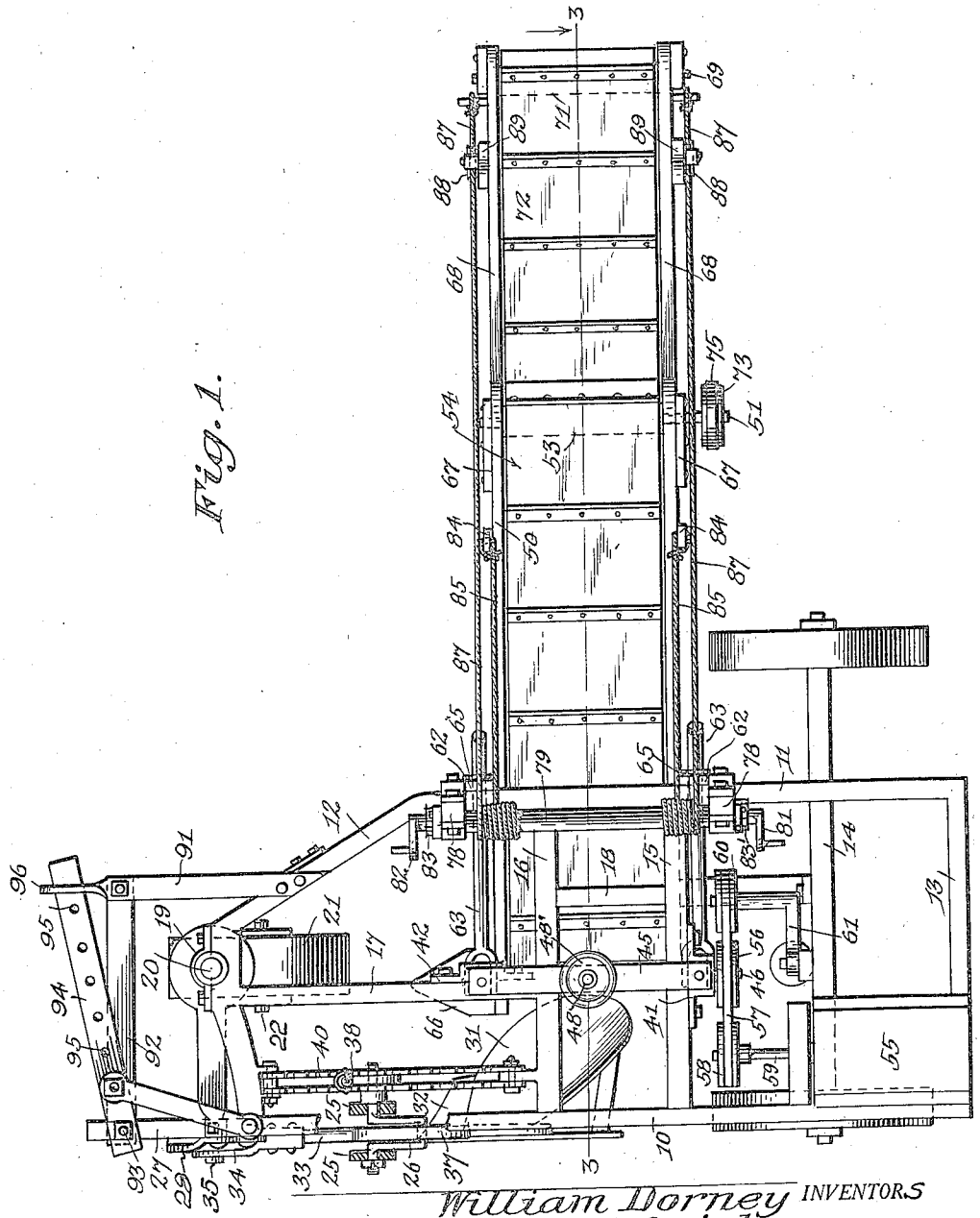


Fig. 1.

William Dorney INVENTORS
Michael Quint,

BY

Geo. P. Kimmel. ATTORNEY.

Oct. 23, 1923. 1,471,887

W. DORNEY ET AL

EXCAVATOR

Filed June 3, 1922 3 Sheets-Sheet 2

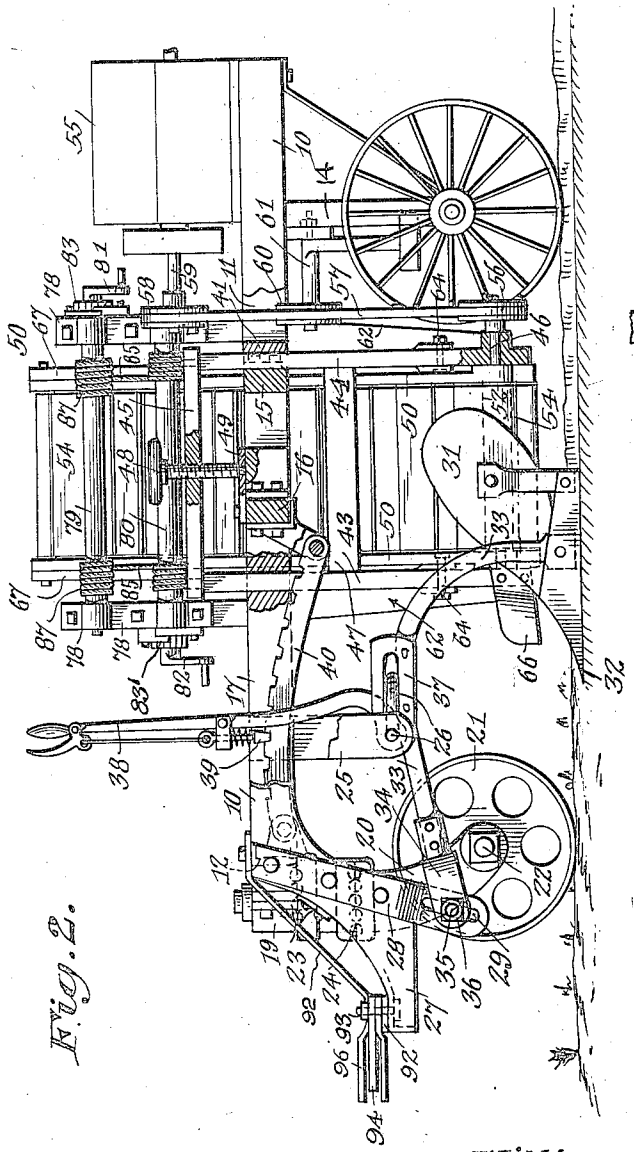


Fig. 2.

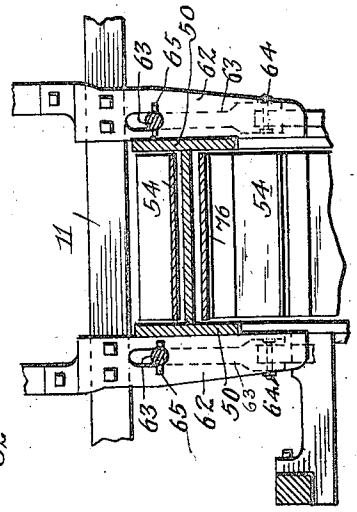


Fig. 5.

William Dorney
Michael Quint INVENTORS

BY

Geo. L. Kimmel ATTORNEY.

Oct. 23, 1923. 1,471,887

W. DORNEY ET AL

EXCAVATOR

Filed June 3, 1922 3 Sheets-Sheet 3

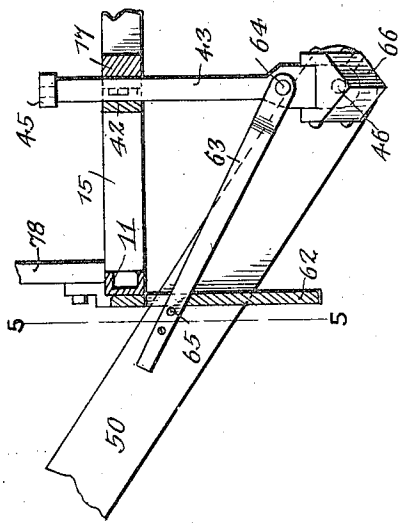


Fig. 4.

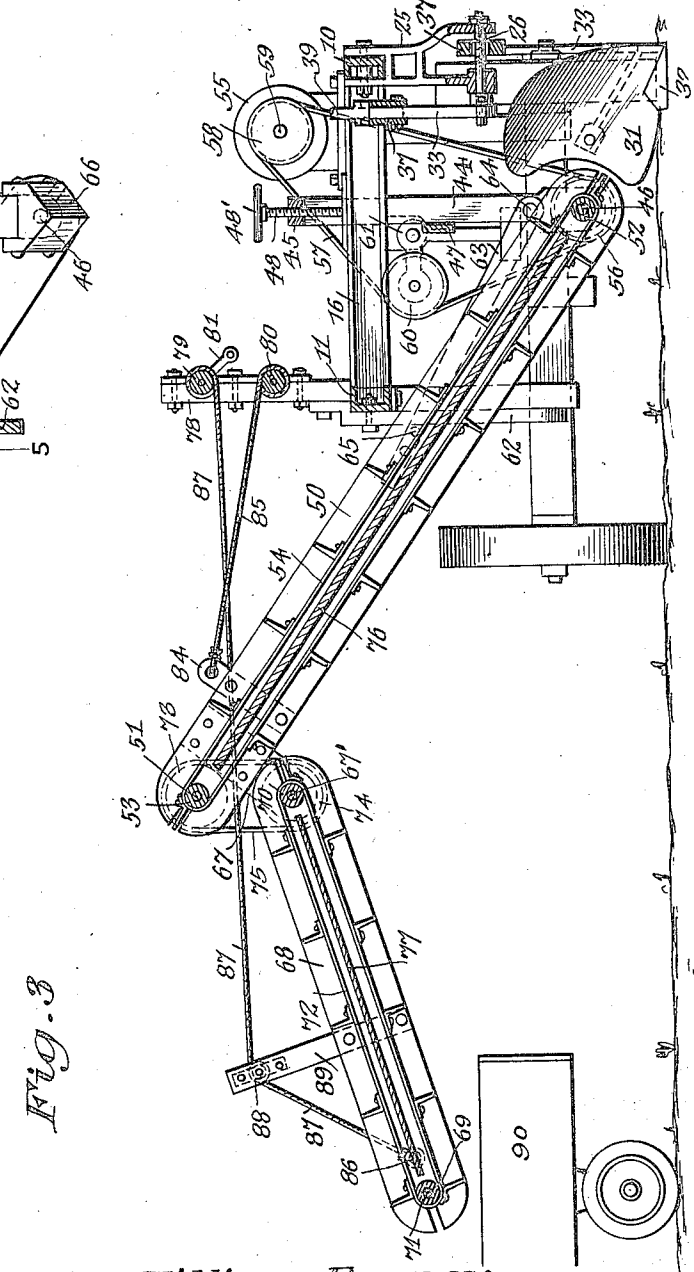


Fig. 3

William Dorney
Michael Quint,
INVENTORS

BY

Geo. P. Kimmel
ATTORNEY.

Patented Oct. 23, 1923. 1,471,887

UNITED STATES PATENT OFFICE.

WILLIAM DORNEY AND MICHAEL QUINT, OF HAYS, KANSAS.

EXCAVATOR.

Application filed June 3, 1922. Serial No. 565,533.

To all whom it may concern:

Be it known that we, WILLIAM DORNEY and MICHAEL QUINT, citizens of the United States, residing at Hays, in the county of Ellis and State of Kansas, have invented certain new and useful Improvements in Excavators, of which the following is a specification.

This invention relates to an excavating apparatus, and has for one of its objects to provide a device of this character of increased efficiency and utility.

Another object of the invention is to provide a device of this character, having means, whereby the various adjustments may be made from the main supporting frame and without stopping the forward movement and the operation of the apparatus.

With these and other objects in view, the invention consists in certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims, and in the drawings illustrative of the preferred embodiment of the invention:—

Figure 1 is a plan view of the improved apparatus complete,

Fig. 2 is a side elevation, partly in section,

Fig. 3 is a section on the line 3—3 of Fig. 1, looking in the direction of an arrow,

Fig. 4 is a detail illustrating the construction of the elevator holding mechanism,

Fig. 5 is a section on the line 5—5 of Fig. 4.

The improved apparatus includes an oblong frame preferably constructed of channel steel and formed of spaced side members 10 and 11, a transverse forward member 12, the latter directed obliquely to the longitudinal axis of the frame, a transverse rear member 13 and transverse intermediate members 14, 15 and 16. An intermediate longitudinal frame stay member 17 extends between the oblique frame member 12 and the forward transverse member 16, while an intermediate stay member 18 extends between the transverse members 15 and 16. At its rear end the frame is supported by carrier wheels as shown.

A bearing 19 is formed in the frame member 12, and supports a standard 20, to the lower end of which a caster wheel 21 is pivoted at 22. The standard 20 is provided with ball bearings 23 and 24 where it is coupled to the frame member 12, to reduce the friction.

Depending from the frame member 10 is a hanger device 25 having a crank shaft 26 journalled therein. At its forward end the side member 10 of the frame is downturned as shown at 27, and attached to this downturned portion is another hanger member 28 having a longitudinally directed slot 29 therethrough. An excavating plow is employed to excavate the earth, and comprises a mold board 31, share 32, and combined standard and beam 33. At its forward end the beam 33 is provided with a forked coupling device 34 engaging opposite sides of the standard 28, and adjustably secured thereto by a clamp bolt 35 operating through the spaced portions of the member 34 and the slot 29, the bolt having the usual clamp nut 36.

By this means the forward end of the beam 33 may be adjusted vertically to the limit of the slot 29 and locked in its adjusted position.

Attached to the beam 33 is a longitudinal slotted plate 37 in which the crank of the shaft 26 operates, and extending from the crank shaft is an operating lever 38 having a pawl device 39 coacting with a notched segment 40. By this means the plow and its attachments may be elevated bodily above the ground when not in use, or when the machine is being transported or moved from place to place.

The crank shaft and its lever device in coaction with the adjustment of the crank shaft enables the depth of the cut of the plow to be controlled, and the lower line of the share 32 retained in a horizontal position.

Attached to the transverse frame member 15 is a guide keeper 41, and attached to the intermediate frame member 17 is a like guide keeper 42, and slidable through the keepers are adjusting bars 43 and 44 coupled at their upper ends above the frame by a horizontal bar 45. A shaft 46 is journalled through the lower ends of the adjusting bars 43 and 44.

The members 43 and 44 are coupled intermediate their ends by a stay member 47. An adjusting screw 48 is tapped through the member 45 and bears at its lower end on a plate 49 carried by the transverse

frame member 16. The screw 48 is provided with a turning wheel 48′ at the upper end, by which means the screw may be rotated.

By this means the shaft 46 and its attachments may be adjusted vertically, the object to be hereafter described.

Mounted to swing on the shaft 46 are the side members 50 of an elevating device, and journalled in the outer ends of the side members 50 is another shaft 51, the shaft 51, the shafts 46 and 51 respectively carrying rollers 52 and 53 to receive an endless slatted belt 54.

The shaft 46 is so located with relation to the plow 31 that the excavated earth turned over by the mold board will be deposited on the slatted belt, and adjusting the lower or receiving end of the belt to correspond with the vertical adjustment of the plow, the plow and the elevating belt will be retained in co-operating relation at all stages of the adjustment.

The shaft 46 will be rotated by any suitable power, preferably by an internal combustion motor, represented conventionally at 55, and mounted on the frame work, the shaft 46 having a chain pulley 56 over which an endless chain 57 operates from a chain pulley 58 on the drive shaft 59 of the motor. A combined idler and tension pulley 60 is mounted on a weighted hanger 61. By this means the "slack" of the drive chain 57 will be automatically taken up when the shaft 46 is vertically adjusted, as will be obvious.

Attached to the frame member 11 and depending below the same are guide members 62, between which the side members 50 are vertically movable, to prevent lateral displacement of the elevating mechanism under the severe strain to which it will be subjected when in use.

Each of the guide members 62 is longitudinally slotted, and movable through each slot is a stay bar 63, forked at the lower ends to embrace the lower portions of the members 43 and 44 and pivoted thereto as shown at 64.

The bars 63 are each provided with a plurality of transverse apertures to receive a stop pin 65, to limit the longitudinal movement of the bars, and thus prevent longitudinal thrust of the elevating device and preventing the lower portion of the device from coming in conact with the mold board 31.

Attached to the lower end of the adjusting member 43 is a "colter" or dividing member 66, to turn aside or divide any weeds or other material and prevent them from coming in contact with the lower portion of the elevating mechanism.

Attached to the side members 50 of the elevating device are hangers 67 carrying a shaft 67′ through their lower ends.

Swinging upon the shaft 67′ are spaced side members 68 of a material discharge device, the latter having a shaft 69 through their lower ends, the shafts 67′ and 69 being provided respectively with drums 70 and 71 over which an endless slatted belt 72 operates.

The shafts 51 and 67′ are extended at one end to respectively receive chain pulleys 73 and 74 over which en endless chain 75 operates, to transmit the motion of the belt 54 to the belt 72, and at the same speed and in the same direction.

Extending between the side members 50 of the main elevating device is a supporting plate 76, while a similar supporting plate 77 extends between the side members 68, and operates to prevent abnormal sagging of the slatted belts.

Rising from the frame member 11 are standards 78 carrying winding drums 79 and 80, the latter having turning cranks 81 and 82. Pawl and ratchet devices 83 and 83′ are associated respectively with the drums 79 and 80 to hold them in adjusted position.

Attached to the side member 50 near their outer ends are standards 84, and connected to the standards and to the drum 80 are pull cables 85, and attached at one end 86 to the side members 68 are other pull cables 87, the latter connected at their other ends to the drum 79 . The cables 87 are arranged to pass over guide sheaves 88 on standards 89 attached to the side members 68, so that the cables 87 will be held in position to clear the outer end of the main elevating device.

The belt 72 operates to receive the material elevated by the main apron or carrier belt 54 and deposit it in a suitable receptacle, for instance, a wagon or truck, a portion of which is indicated at 90, and movable with the excavating apparatus.

Extending from the obliquely directed portion 12 of the frame is a bracket device 91, and connected to the latter and to the portion 27 of the frame is a transverse stay bar 92.

Connected at 93 to the stay member 92 and to the portion 27 of the frame is a draft beam 94 having a plurality of spaced apertures 95 to receive a draft appliance, not shown. Extending from the member 91 is a forked guide member 96 to prevent vertical displacement of the member 94.

In starting operations the plow member 31 is adjusted to cut to the desired depth, and the lower or receiving end of the main elevating device adjusted by actuating the screw 48 to correspond therewith, so that the earth excavated by the plow will be deposited on the rotating belt 54 without loss of the material.

The stay bars 63 will also be adjusted as before described, to hold the main elevating

device in position and prevent its lower end from coming in contact with the mold board of the plow.

The outer end of the bolt 54 will also be adjusted by actuating the winding drum 80 to insure the requisite inclination of the belt being retained.

The discharge belt 72 is also adjusted by actuating the winding drum 79 to correspond with the height of the receiver 90. Then as the apparatus is drawn forwardly, the earth excavated by the plow will be delivered upon the belt 54 and discharged upon the belt 72 and thence delivered into the receiving vehicle 90.

The improved apparatus is compact in construction, its movable parts operative independently of the traction force whereby it is moved over the ground.

The improved apparatus may be constructed of any required size and of any suitable material.

The preferred embodiment of the invention is disclosed in the drawings and set forth in the specification, but it will be understood that modifications within the scope of the claimed invention may be made in the construction without departing from the principle of the invention or sacrificing any of its advantages.

Having thus described the invention, what is claimed as new, is:—

1. In an apparatus of the class described, a supporting frame mounted on carrier wheels, an excavating element including a beam member swingingly coupled at its forward end to the frame and provided with an elongated slot intermediate the ends, a crank arm mounted on said frame and operatively engaging said slot, means for oscillating said crank arm to control the depth of action of the excavating element, an elevating device in position to receive the material from said excavating element, and means for vertically adjusting the receiving end of the elevating device to correspond to the adjustment of the excavating element.

2. In an apparatus of the class described, a supporting frame mounted on carrier wheels, an excavating element carried by said frame, means for vertically adjusting said excavating element, an elevating device in position to receive the material from said excavating element, guide keepers carried by said frame, supporting bars coupled to said elevating device and slidable through said keepers, and means for vertically adjusting said bars to control the position of the receiving end of the elevating device to correspond to the adjustment of the excavating element.

3. In an apparatus of the class described, a supporting frame mounted on carrier wheels, an excavating element carried by said frame, means for vertically adjusting said excavating element, an elevating device in position to receive the material from said excavating element, guide keepers carried by said frame, supporting bars coupled to said elevating device and slidable through said keepers, a transverse head member connected to the upper ends of said supporting bars, and an adjusting screw engaging said head member and bearing at its lower end relative to the frame, to control the position of the receiving end of the excavating device and thereby enable it to be maintained in coacting relation to the excavating element.

4. In an apparatus of the class described, a supporting frame mounted on carrier wheels, an excavating element carried by said frame, means for vertically adjusting said excavating element, an elevating device in position to receive the material from said excavating element, guide keepers carried by said frame, supporting bars coupled to said elevating device and slidable through said keepers, means for vertically adjusting said bars to control the position of the receiving end of the elevating device, guide devices depending from the frame, thrust bars pivoted to said supporting bars and extending through said guide devices, and means for adjustably coupling said thrust bars to said guide devices.

In testimony whereof we affix our signatures hereto.

WILLIAM DORNEY.
MICHAEL QUINT.