

No. 774,102.

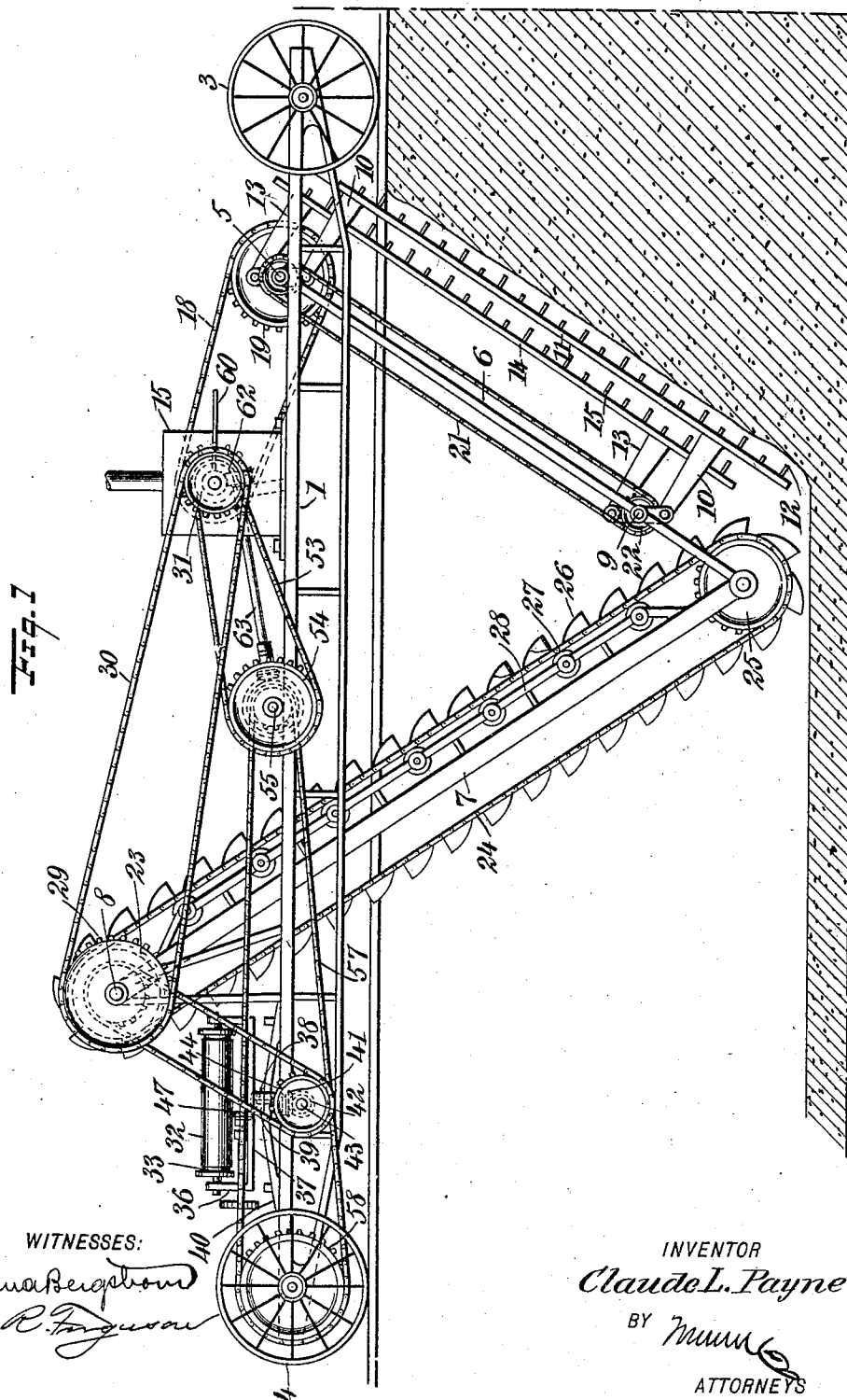
PATENTED NOV. 1, 1904.

C. L. PAYNE.
EXCAVATOR.

APPLICATION FILED APR. 2, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

John Berglund
C. R. Ferguson

INVENTOR

Claude L. Payne

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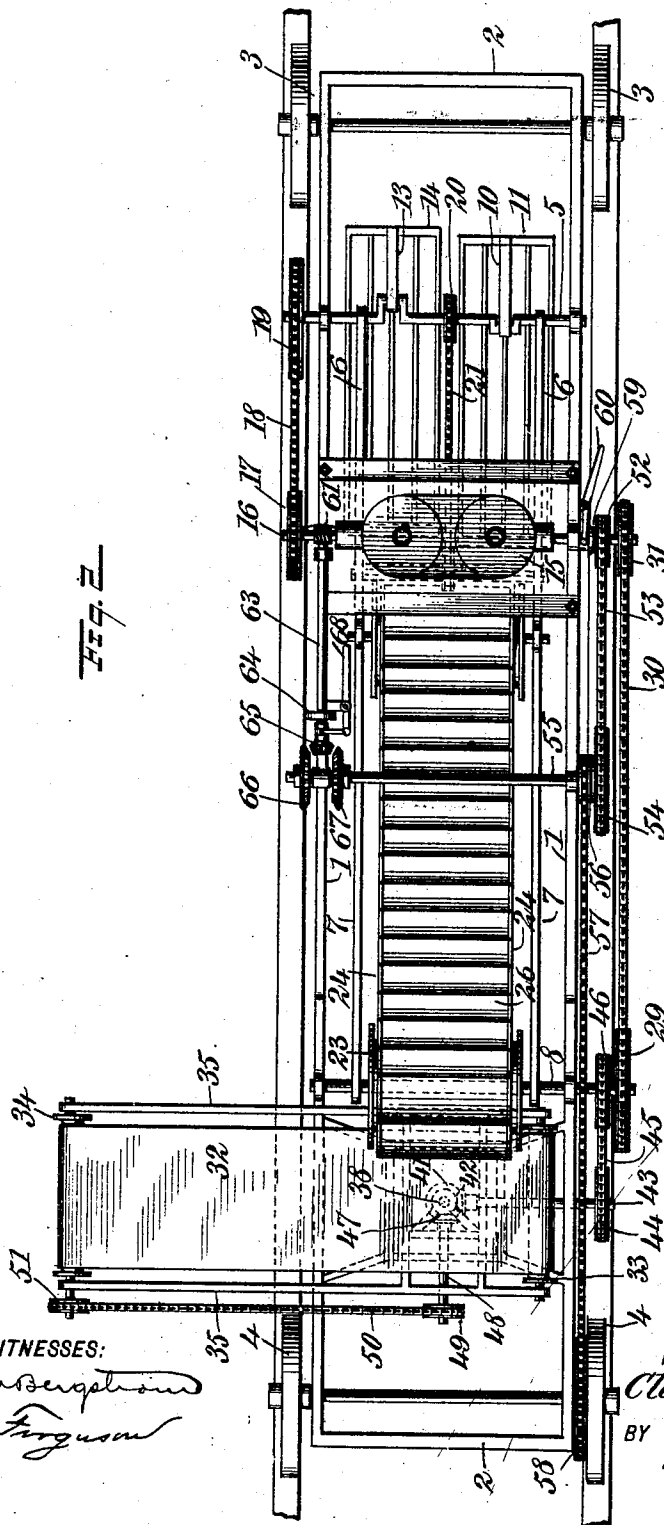
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NO MODEL.

28 SHEETS—SHEET 2.



WITNESSES:

John A. Bergstrom
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UNITED STATES PATENT OFFICE.

CLAUDE L. PAYNE, OF SALEM, INDIANA.

EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 774,102, dated November 1, 1904.

Application filed April 2, 1904. Serial No. 201,214. (No model.)

To all whom it may concern:

Be it known that I, CLAUDE L. PAYNE, a citizen of the United States, and a resident of Salem, in the county of Washington and State of Indiana, have invented a new and Improved Excavator, of which the following is a full, clear, and exact description.

This invention relates to improvements in machines for excavating ground for irrigation, laying pipe-lines, and the like, an object being to provide an excavator of comparatively simple construction and by means of which the work may be rapidly carried on.

I will describe an excavator embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a side elevation of an excavator embodying my invention, and Fig. 2 is a plan view thereof.

The main frame of the excavator comprises side rails 1 and end rails 2, mounted on front wheels 3 and rear wheels 4, the said wheels being fixed to their axles, which have suitable bearings in the main frame. Supported on the front frame near the forward end is a crank-shaft 5, from which arms 6 extend downward at a rearward inclination, and from the lower ends of these arms or members 6 side members 7 extend upward and connect with a counter-shaft 8, supported near the rear end of the frame. The said side members 7 are arranged at a rearward and upward inclination.

Near the lower portion of the side members 6 is a crank-shaft 9. Each of the crank-shafts 5 and 9 has two cranks. From the opposite crank of the upper and lower crank-shafts arms 10 extend and connect with a frame 11, provided with digging-tines 12, designed to break the ground. From the other crank of the crank-shafts, arms 13 extend to a frame 14, also carrying digging-tines 15. The cranks are arranged in opposite directions, so that

when one set of tines is breaking the ground the other set will be in position for passing into the ground—that is, these two sets of digging-tines operate alternately.

Supported on the vehicle is a motor 15, of any desirable type, designed to operate the digging devices and elevator and to move the vehicle backward and forward. On the shaft 16 of the motor is a sprocket-wheel 17, from which a chain 18 passes to a sprocket-wheel 19 on the crank-shaft 5, and from a sprocket-wheel 20 on the crank-shaft a chain 21 extends downward to a sprocket-wheel 22 on the shaft 9. On the shaft 8 are sprocket-wheels 23, from which endless chains 24 extend around sprocket-wheels 25, supported by a shaft having bearings at the meeting ends of the parts 6 7, and engaging with these endless chains are elevator-buckets 26. The upper stretch of buckets is supported by rollers 27, having bearings in bars 28, attached to the members 7.

From a sprocket-wheel 29 on the shaft 8 a driving-chain 30 extends to a sprocket-pinion 31, attached to the motor-shaft, and therefore the buckets will be operated from said motor. Rearward of the upper end of the elevator is a carrier comprising an endless apron 32, extended around rollers 33 34, having shaft-bearings in side members 35, and attached to these side members is a frame 36, the cross member 37 of which is mounted to rotate on a stud 38 on the upper end of a shaft 39, having bearings in a frame member 40, attached to the main frame. By this arrangement the carrier 32 may be swung to any desired angle in order to discharge material at either side of the machine.

On the lower end of the shaft 39 is a bevel-pinion 41, engaging with a bevel-pinion 42 on a counter-shaft 43, on which is a sprocket-wheel 44, from which a chain 45 extends to a sprocket-pinion 46 on the shaft 8. Also engaging with the bevel-pinion 41 is a bevel-pinion 47 on a laterally-extended shaft 48, carrying a sprocket-pinion 49, having a chain connection 50, with a sprocket-pinion 51 on the shaft of the roller 34. By this means it

is obvious that the carrier 32 will be operated to discharge the dirt placed thereon from the elevator.

Mounted loosely on the motor-shaft 16 is a sprocket-pinion 52, having a chain connection 53 with a sprocket-wheel 54 on a cross-shaft 55, and also on this shaft 55 is a sprocket-pinion 56, from which a chain 57 extends to a sprocket-wheel 58, attached to one of the rear wheels 4. The pinion 52 is designed to be placed in operative connection with the motor-shaft by means of a clutch member 59, mounted to slide on the shaft, but rotating therewith and operated by means of a lever 60. Obviously by moving the clutch member into connection with the pinion 52 and while the motor is operating the vehicle will be moved forward—that is, from place to place.

It may be here stated that any suitable means may be provided for raising the digging devices and carrier to a position above the level of the ground, so that the vehicle may be moved from place to place. The means above described, as before stated, is particularly designed for moving the vehicle from one place to another over the ground; but I provide means for giving it a slight back-and-forth motion while excavating, this means consisting of a worm 61 on the motor-shaft engaging with a worm-pinion 62 on a rearwardly-extended shaft 63, which has slight lateral motion in its rear bearings 64 and carries at its rear end a bevel-pinion 65, designed to be placed in engagement with either one of the oppositely-faced bevel-gears 66 67, attached to the shaft 55. Obviously by moving the pinion 65 into engagement with the gear 66 the machine will be moved in one direction, and by engaging the pinion with the gear 67 and releasing the other gear the machine will be driven in the reverse direction. This shifting of the pinion 65 may be done by means of a lever 68.

In the operation the breaking or ground-digging devices will loosen the earth and force it downward and the lower ends of said devices will throw the earth into the buckets 26. These buckets being open at the front the earth will be carried up by the buckets and dumped off onto the conveyer 32, which will discharge the material onto the ground or into a cart or vehicle at the side of the machine.

It will be noted that while one set of digging devices is moved downward through the ground the other set is moved upward free from the ground, so that a large ground-surface may be operated upon with a comparatively little expenditure of power.

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

1. An excavator comprising a wheel-mount-

ed main frame, ground-breaking devices comprising two frames having a downward and rearward angle, means for causing the said frames to move alternately in opposite directions, breaking-tines carried by the frame, and an elevator rearward of said ground-breaking devices.

2. An excavator comprising a wheel-mounted main frame, a plurality of frames carried by the main frame and reciprocating independently of each other, ground-breaking devices carried by the reciprocating frames, one set of breaking devices operating to break the ground during downward movement, while another set is moving upward free from the ground, and means for causing the movements of said reciprocating frames.

3. An excavator comprising a wheel-mounted main frame, a crank-shaft supported by the frame, members extended downward at a rearward inclination from said crank-shaft, a crank-shaft at the lower portion of said members, driving connections between the two crank-shafts, digging devices comprising frames having connections with the cranks of the crank-shafts and operating alternately, a motor having driving connection with one of the crank-shafts, said motor being supported on the vehicle, and an endless elevator operated by the motor rearward of the ground-breaking devices.

4. An excavator comprising a wheel-mounted frame, a motor supported on the frame, reciprocating digging devices operated from the motor, an elevator operated by the motor, and a carrier for receiving material from the elevator and adapted to be swung for discharging at either side.

5. An excavator comprising a wheel-mounted frame, a motor mounted on the frame, excavating devices operated by the motor at the forward portion of the frame, the said devices having a downward and rearward inclination, an elevator having an upward and rearward inclination and operated from the motor, and an endless carrier mounted to swing on the frame rearward of the elevator.

6. An excavator comprising a wheel-mounted frame, a motor on the frame, ground-breaking devices operated by the motor, an elevator rearward of the ground-breaking devices and operated by the motor, means operated from the motor for causing a traveling forward movement of the excavator, and means operated by the motor for causing either a backward or forward movement of the excavator.

7. An excavator comprising a wheel-mounted frame, a motor mounted on said frame, ground-breaking devices supported by the frame, driving connections between the motor and ground-breaking devices, an endless elevator rearward of the ground-breaking de-

vices, driving connection between said elevator and the motor, an endless apron or carrier rearward of the elevator, the said carrier being mounted to swing substantially in a horizontal plane, and driving connections between
5 said carrier and the motor.

In testimony whereof I have signed my name

to this specification in the presence of two subscribing witnesses.

CLAUDE L. PAYNE.

Witnesses:

MOSES F. DUNN,
CHARLES H. DUNIHUE.