

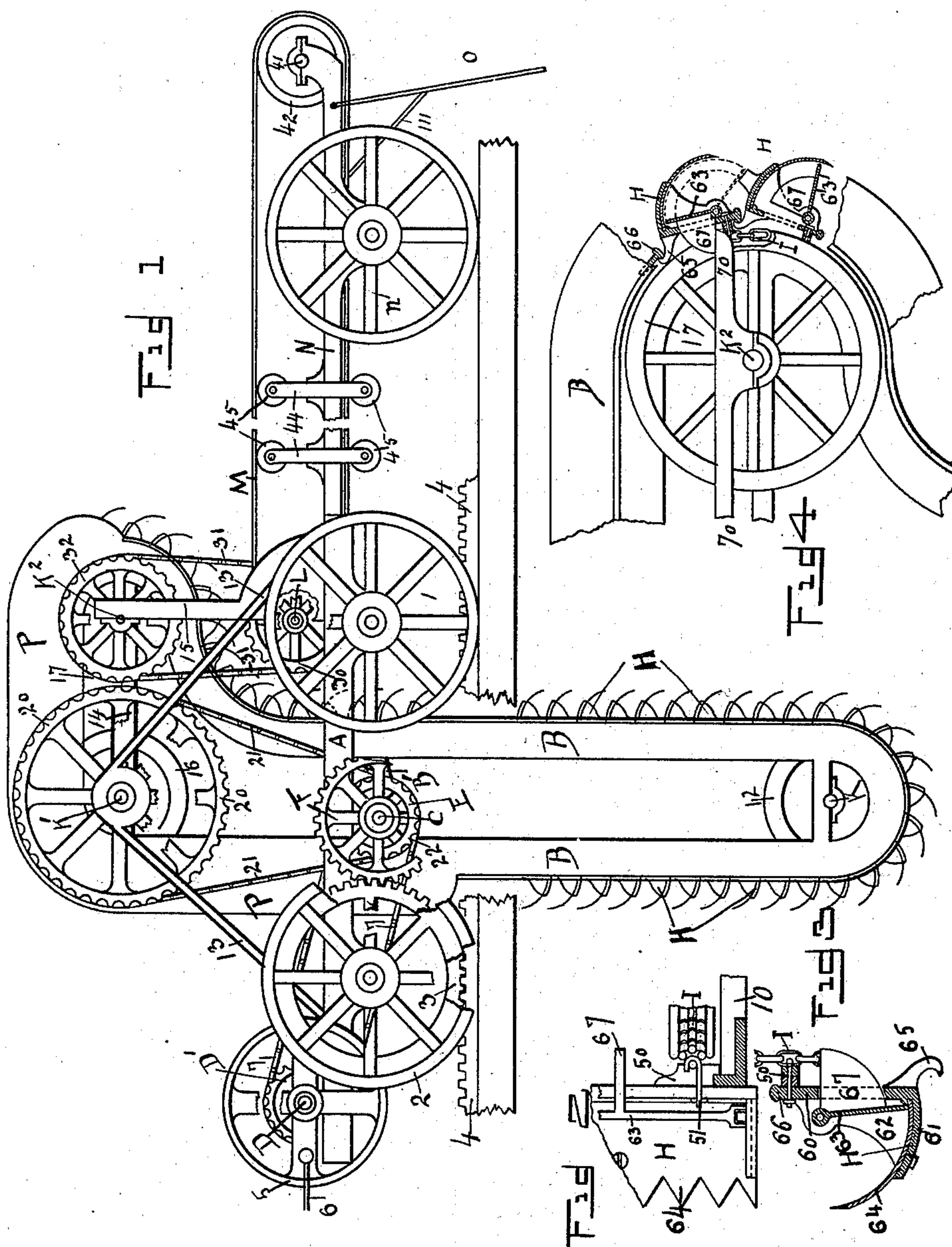
(No Model.)

3 Sheets—Sheet 1.

P. J. CREEDON.
GRADING AND DITCHING MACHINE.

No. 559,026.

Patented Apr. 28, 1896.



WITNESSES:

M. J. Schmitt
C. F. Gouron

Patrick J. Credon

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BY Wm. Sues

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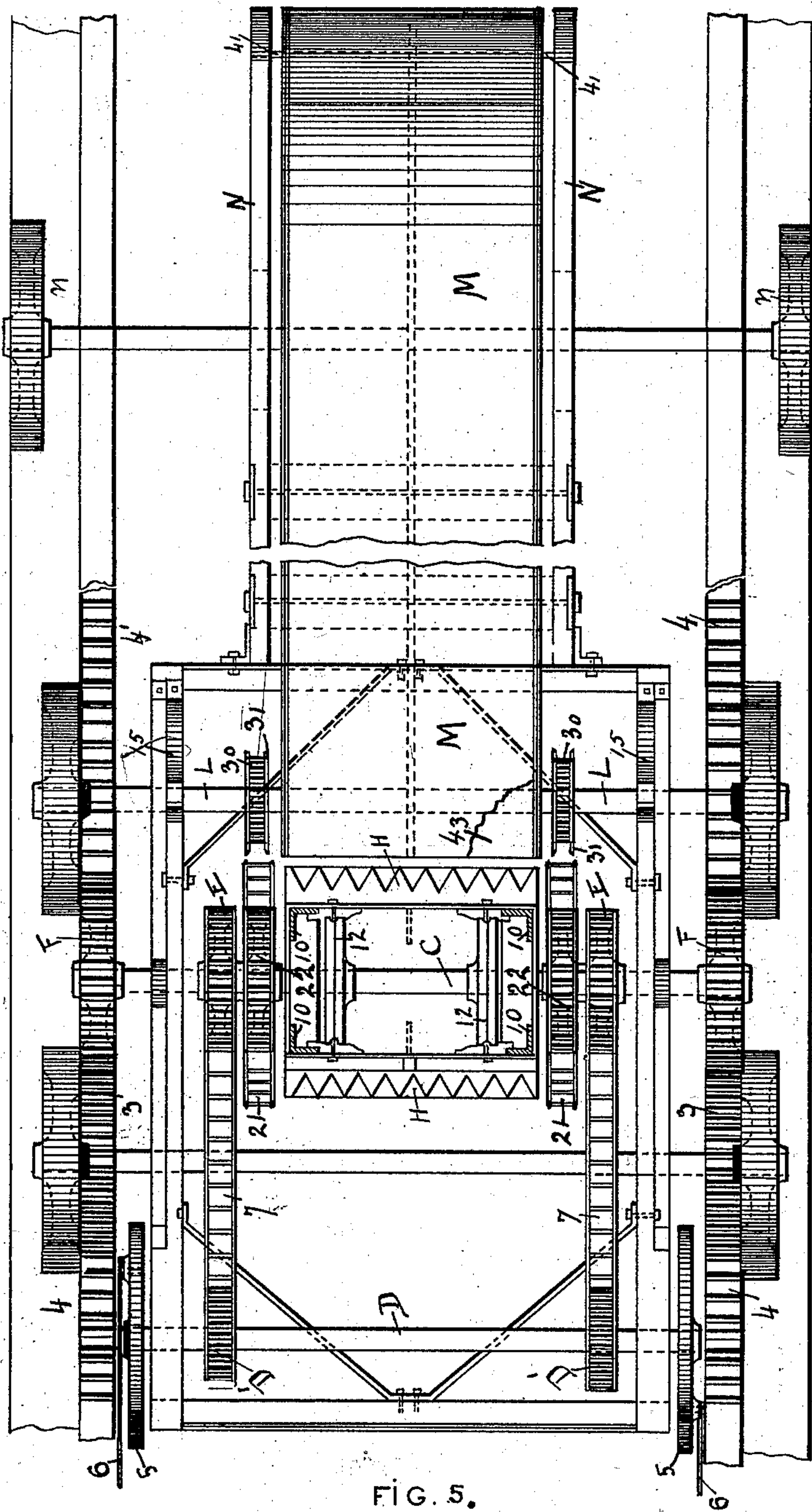


FIG. 5.

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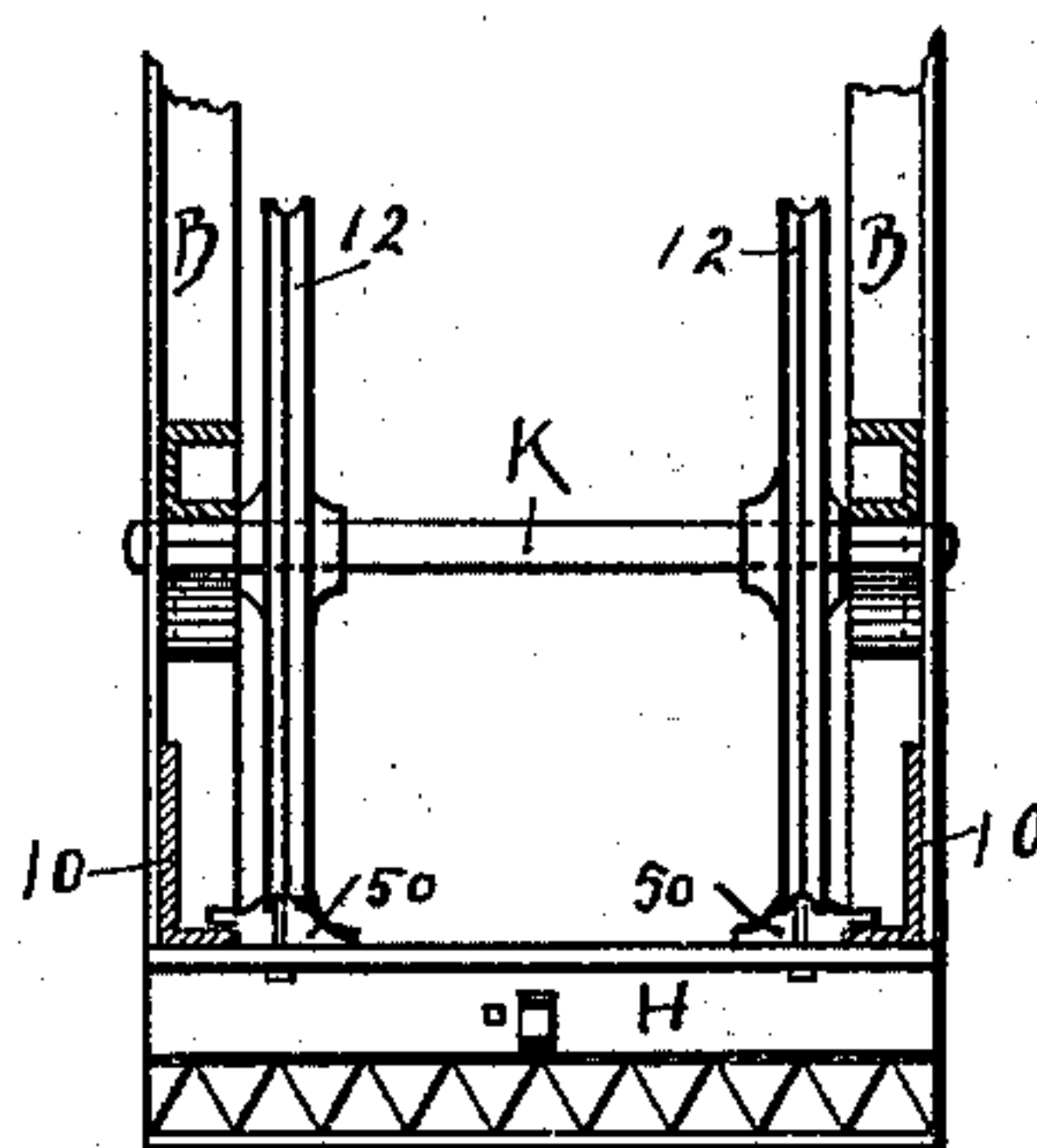
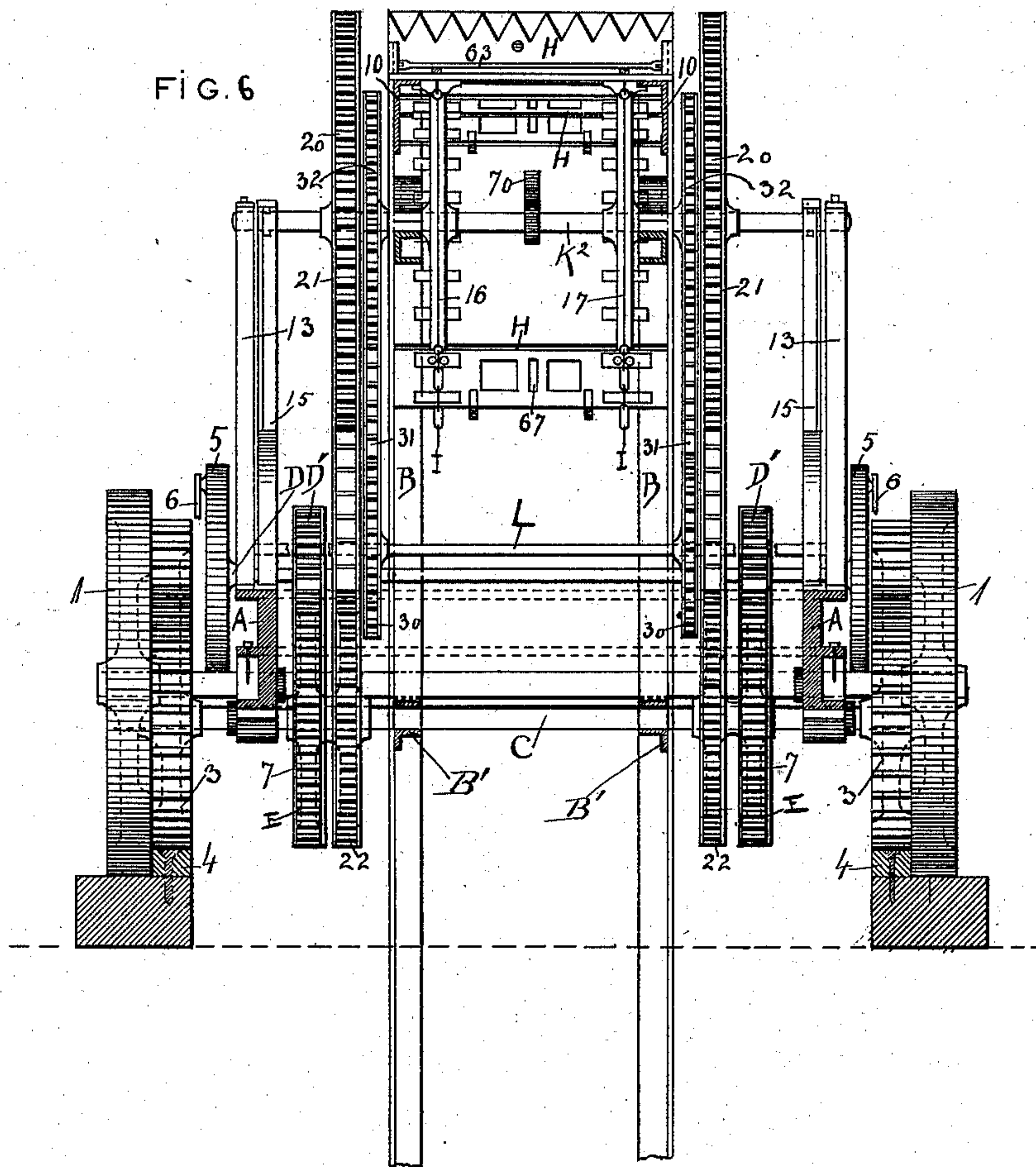
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UNITED STATES PATENT OFFICE.

PATRICK J. CREEDON, OF OMAHA, NEBRASKA.

GRADING AND DITCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,026, dated April 28, 1896.

Application filed February 6, 1894. Serial No. 499,309. (No model.)

To all whom it may concern:

Be it known that I, PATRICK J. CREEDON, of Omaha, in the county of Douglas and State of Nebraska, have invented certain useful Improvements in Grading and Ditching Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention has relation to a new and novel improvement in ditching or grading machines.

In the accompanying drawings, Figure 1 shows a side elevation, with portions broken away, of a machine embodying my invention. Fig. 2 is a top view, with portions removed, of one of the elevator-buckets, showing the method of securing the same to the elevator-chain. Fig. 3 is a sectional end elevation thereof. Fig. 4 shows a detail of the buckets. Fig. 5 is a top view of my invention with portions removed. Fig. 6 is a broken end elevation, partly in section.

A represents a suitable platform, which is mounted upon four main supporting-wheels. (Marked 1 1 and 2 2.) These wheels are secured to and support the platform A. The forward wheels 2 2 are further provided with an ordinary gear 3, adapted to mesh with the rack 4, by means of which the machine is propelled. Centrally the platform A is provided with a suitable opening, through which the approximately inverted-L-shaped elevator-frame B is held. This frame B can be made in one piece or in sections, as desired. Centrally this frame is provided with a transverse brace portion B', through which the central shaft C passes and by means of which this frame B is held and supported. In front the platform A is further provided with the shaft D, which forms the driving-shaft for the platform. This shaft D has suitable pulleys 5, which are in pitman connection 6 with the engine or any other motive power. At two suitable points the shaft D is provided with the chain-gears D' D', which are connected, by means of the chains 7 7, to the gears E E, mounted upon the shaft C. As the power is applied to pitman 6 the pulleys 5 are revolved

and carry with them the axle D and the chain-pulleys D', driving the chain 7, which in turn revolve the chain-pulleys E and the central shaft C, provided with the driving-gears F, which mesh with the wheel-gears 3, so that the machine is slowly fed forward, being propelled by means of the wheel-gears 3, meshing within the rack 4.

Mounted within the movable elevator-frame B, which comprises the L-shaped irons 10 10, is the endless series of elevator-buckets H. These buckets H are secured to the endless chain I, as shown in Fig. 3. Below, the frame B is provided with a shaft K, having the two grooved pulleys 12 12, over which the endless chain I is made to pass. Above, these chains pass over the shaft K' K'. The shaft K' passes transversely through the frame B and is given additional support by means of the braces 13 13, which below are secured to the platform A. Above, these shafts K' K' are supported within the brace 14, which forms part of the elevator-frame B. The shaft K' is, however, given further support by means of the upright supports 15. These shafts K' K' are, in addition, provided with the grooved chain-pulleys 16 and 17, over which, together with the pulley 12, the endless chain I is carried.

The shaft K' is provided with two chain-gears 20, which are in chain connection, by means of the chain 21, with the corresponding chain-pulley 22, mounted upon the transverse central shaft C, so that as this shaft C revolves it imparts a rotary motion to this chain-gear 20, by means of which gear this endless system of buckets is actuated.

By substituting the gears 20 and 22 it is, of course, understood that any desired speed could be imparted to the elevator-bucket system.

Transversely positioned below the rear upper shaft K' is the shaft L, which has suitable bearings within the braces 15 and is provided with the chain-gears 30 30, connected by means of the chain 31 to the chain-gears 32 32, which latter gears are mounted upon the shaft K', as is more clearly illustrated in Fig. 1. This transverse shaft L is further provided with a drum, over which the endless apron M is made to pass.

Detachably secured to the platform A is an apron-carriage comprising the frame N, which

is given suitable support by means of the wheels *n*. This frame *N* is provided at the rear with a suitable shaft 41 and drum 42, over which, together with the drum 43 of the shaft *L*, the apron *M* passes. In Fig. 5 I have shown a portion of the drum 43. To further give stability and support to this endless apron *M*, I provide the bars 44 44, which are provided at the end with the drums 45 45, which support this endless apron *M*. Movement is imparted to this apron *M* directly by means of the shaft *K*, which in revolving carries its two grooved pulleys 16, which in turn actuate the chain *I*, passing over the grooved pulleys 17 of the shaft *K*² to actuate this shaft. The chain-pulley 32, being mounted upon the shaft *K*² and connected to the chain-pulley 30 upon the shaft *L*, revolves this shaft *L* and the connected drum to actuate the endless apron *M*.

The frame *B*, as stated before, is composed of an L-shaped frame, preferably of iron, over the outer edge of which the buckets *H* are carried by means of the endless chain *I*. These buckets *H* are provided in the rear with the lug 50, secured thereto, through which lug a hook 51 passes, secured to one of the links of the chain *I*. This hook 51 may be secured by means of a nut or by any other means.

The buckets *H* comprise the open back section 60 and the lower, preferably curved, section 61, as shown in detail in Fig. 3. At each end these buckets are provided with the side portions 62 and are provided above with a suitable opening through which the projecting ends of the false back 63 are permitted to pass. Secured to the lower portion 61 are the shovel-blades 64, which are either serrated or provided with a straight edge, as desired. At the rear the shovel-back 60 is provided with the outwardly-extending lug 65, and above I provide each of the shovel-backs with a knob 66 in line with the projecting hook 65, as shown in Fig. 3. These hooks 65 are each adapted to receive the knobs 66 of the bucket to the rear of it. This is necessary, as, in turning about the grooved pulleys 17, as shown in Fig. 4, the buckets *H* would completely upset were it not for the hooks and knobs 65 and 66. In the rear each of the screen-backs 63 is provided with a segmental-shaped projection 67, which extends through a suitable opening 68 within the rear of the buckets.

The operation of the scoops would be as follows: They would be carried around the peripheral edge of the frame *B*, and as they struck the bottom or the forward portion of the ditch within which the machine would be arranged to work, the blades 64 would cut and fill the scoops *H* proper, and driving the false back 63 into its farthest rearward position. They would then rise and cut within the ground. They would pass behind the fender *O*, extending around the upper portion of the frame *P* to the point where the buckets would upset upon the endless apron *M*. Where the

machine would be worked in clay or moist ground the tendency would be for the material to stick and gather within the scoops. To prevent this, I have provided the false back 63. As the buckets with their load would be carried to the upsetting-point the segmental-shaped projections 67, extending through the back of the scoops proper would encounter a bar 70, secured upon the shaft *K*² and placed within the line of these segmental sections 67, and as this bar 70 would be encountered the false back would be forced outward, as shown by the lower scoop in Fig. 4. Of course, as the scoop would arrive below and change position the false back would again be carried into the proper position to permit the filling of the scoop. To further facilitate the operation of my machine I provide the same with an auxiliary cutting mechanism and also with a tamper, as is more clearly shown in Figs. 7, 8, 9, and 10.

The device is adjustable and the means of adjustment are readily accessible. When the machine is not in use, the pivoted frame *B* is swung upon its axis until it lies below the platform *A*, the braces 13 13 being removed, of course, to permit the folding down of the machine.

Now, having thus described my said invention, what I claim as new, and desire to secure by United States Letters Patent, is—

1. In an excavator and ditching-machine, the combination, with a suitable portable main supporting-platform, of supporting-wheels secured to said supporting-platform, provided with pinions adapted to mesh within a suitable rack secured in the path of said ditching-machine; an inverted-L-shaped elevator-frame; a transverse shaft movably supporting said elevator-frame; a power-shaft upon said platform in chain connection with said transverse shaft; three bearing-axes within said elevator-frame; provided with drums; pinion upon one of said shafts adapted to receive belt transmission from said transverse shaft; said transverse shaft being provided with a pinion meshing with a pinion upon said driving-wheel so that as said transverse shaft is revolved the excavator is slowly fed forward; a series of elevator-buckets mounted upon a suitable endless chain working within said inverted-L-shaped elevator-frame and over said three bearing-axes; said elevator-frame being held by said transverse shaft, all substantially as and for the purpose set forth.

2. In an excavator, the combination with a suitable elevator-frame of supporting-drums within said frame, an endless chain carrying a system of scoops or buckets secured to said endless chain, said buckets being provided at one end with a knob, and at the remaining end with a hook-shaped receiver, said scoops or buckets being movably secured one to the other by means of said knobs and hooks, an opening within the back of said scoops, and a false back within each of said scoops provided with an extended web passing through

said opening, said web being engaged by a suitable projection, all substantially as and for the purpose set forth.

3. In an excavator and ditching-machine, the combination, with a suitable supporting-frame mounted upon driving-wheels, one of said wheels being provided with a suitable pinion, 3; the rack, 4, within the path of said excavator and working in conjunction with said pinion, 3; the inverted-L-shaped elevator-frame, B; the central supporting-shaft, C, holding said frame; the main driving-shaft, D, secured to said supporting-frame, A; said shafts, D and C, being in belt connection; said shaft, C, further being provided with the pinion, F, meshing with said pinion, 3; said elevator-frame, B, being provided with a shaft K', provided with a suitable pinion; said pinion being in belt connection with a pinion upon said shaft, C; said shaft, K', be-

ing provided with a drum; the shafts, K, K², within said elevator-frame, provided with suitable drums; an endless chain passing over said shaft-drums, K, K', K²; said chain being actuated by means of the drum-shaft K'; said frame, A, being provided with an endless apron, M, in chain connection with said shaft, K²; said endless chain being provided with a series of elevator-buckets emptying above said endless apron, M; said instrumentalities being so arranged that the supporting-frame, A, is fed forward as the elevator-buckets are actuated, all substantially as and for the purpose set forth.

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

PATRICK J. CREEDON.

Witnesses:

WM. J. WELSHANS,
ALEX. MOORE.