

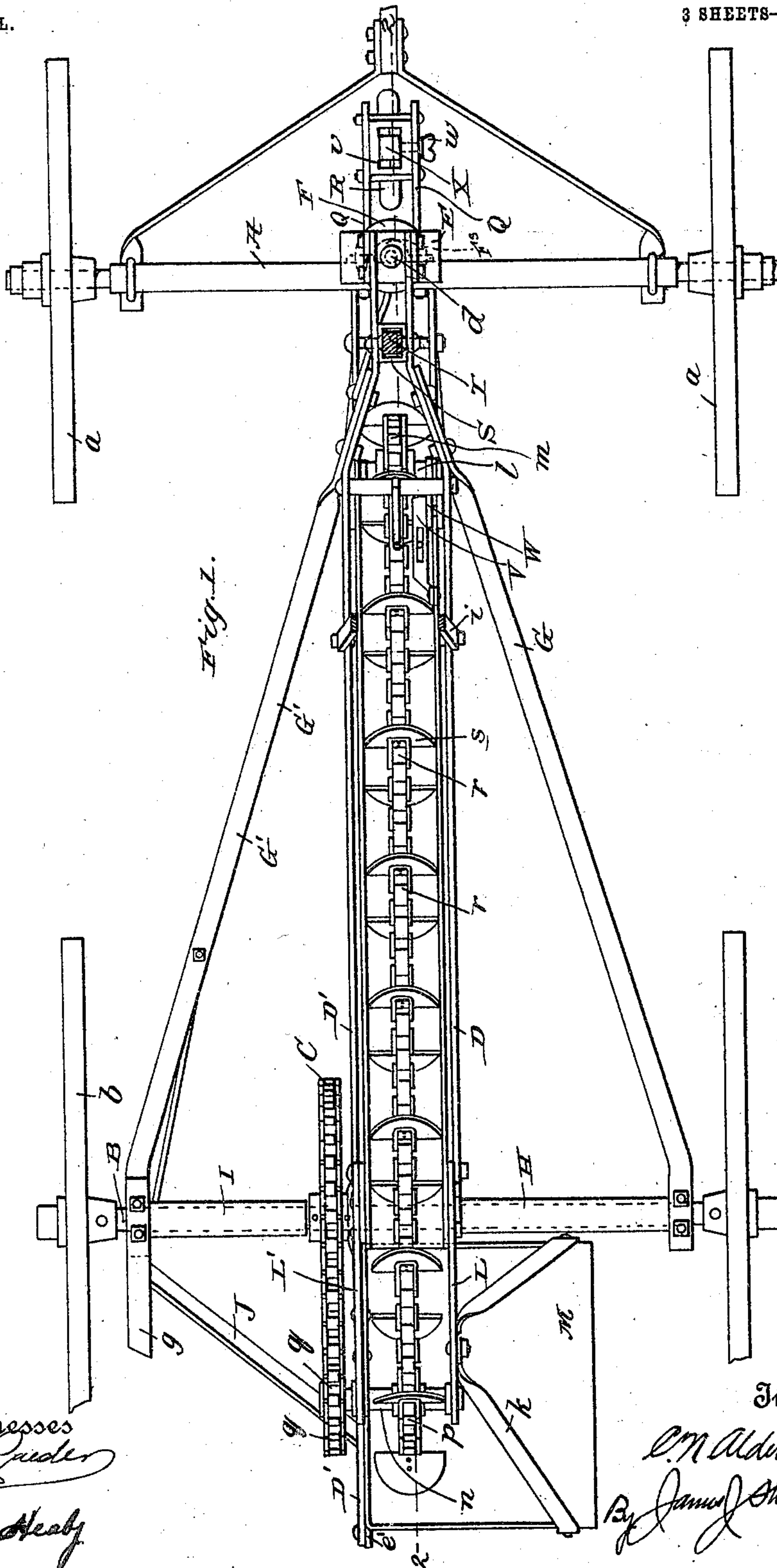
No. 719,408.

PATENTED JAN. 27, 1903.

C. N. ALDERMAN.
EXCAVATING MACHINE.
APPLICATION FILED OCT. 27, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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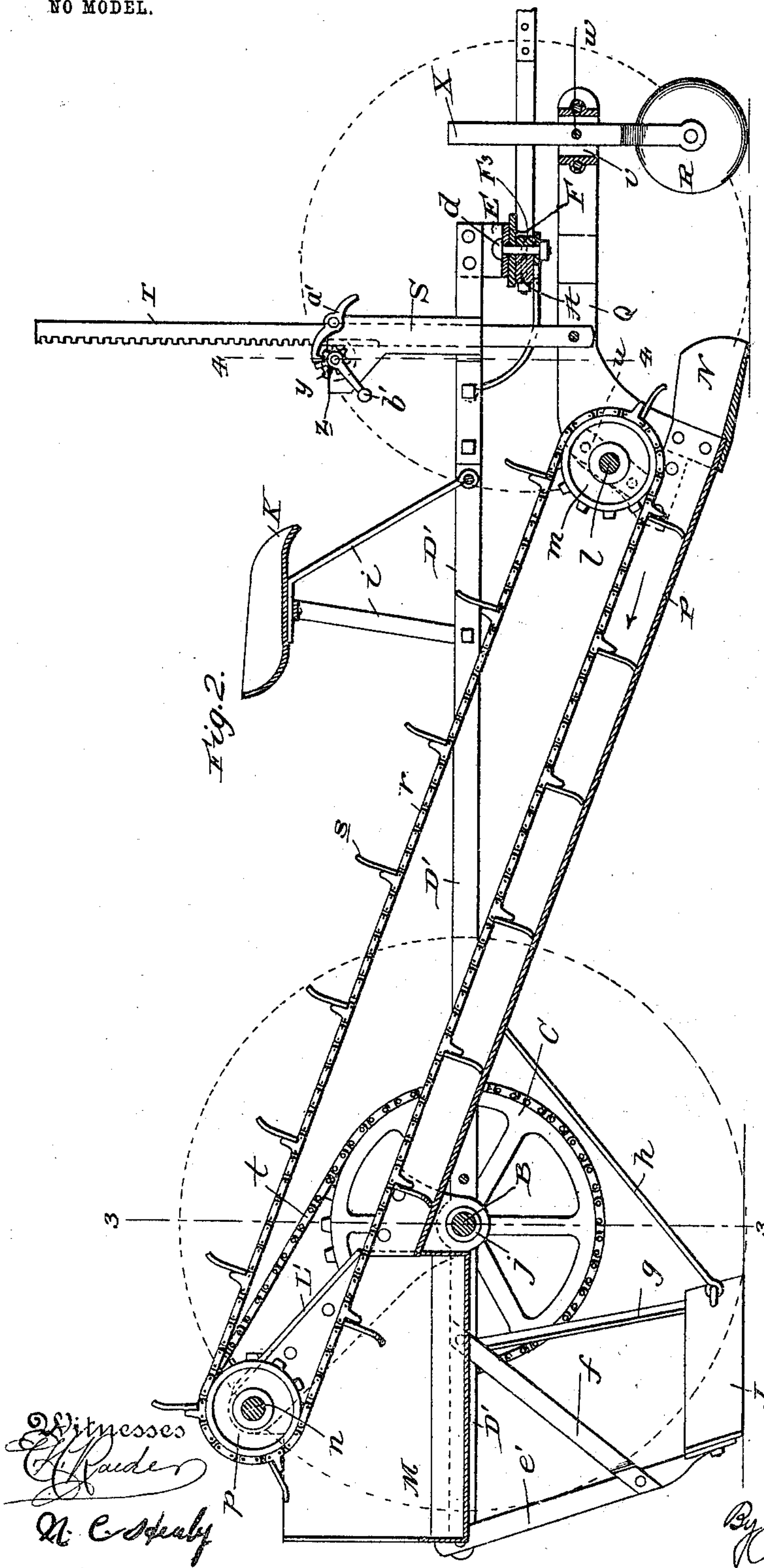
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3 SHEETS—SHEET 2.



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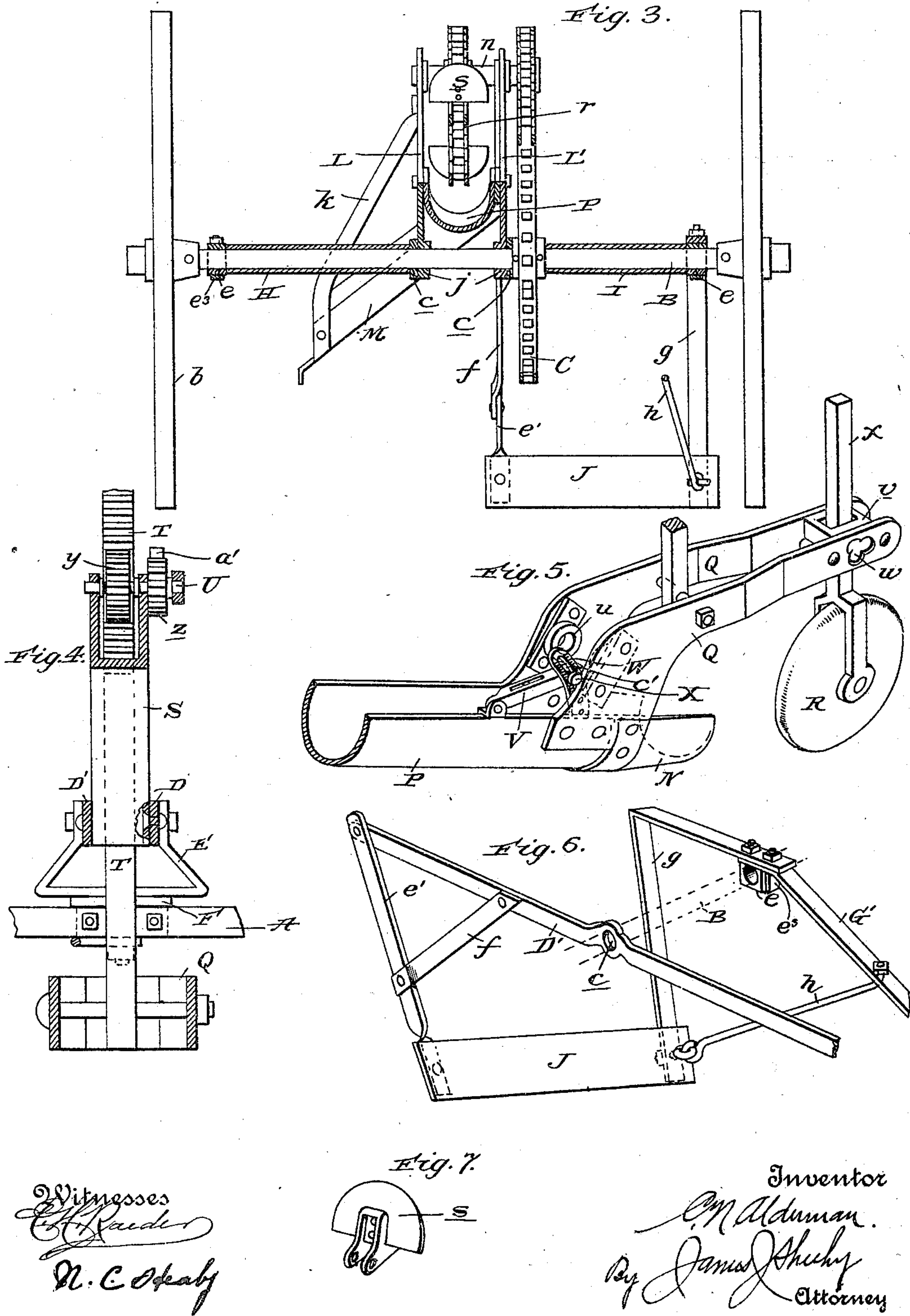
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

CHARLES N. ALDERMAN, OF STREATOR, ILLINOIS.

EXCAVATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 719,408, dated January 27, 1903.

Application filed October 27, 1902. Serial No. 129,008. (No model.)

To all whom it may concern:

Be it known that I, CHARLES N. ALDERMAN, a citizen of the United States, residing at Streator, in the county of Lasalle and State of Illinois, have invented new and useful Improvements in Excavating-Machines, of which the following is a specification.

My invention relates to excavating-machines, and more especially to machines for excavating ditches for all purposes; and it has for its general object to provide a simple, inexpensive, and easily-controlled machine adapted to expeditiously excavate ditches and also adapted to quickly refill ditches subsequent to the placing of drain-tiles or other devices thereon.

With the foregoing in mind the invention will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a plan view of the machine constituting the preferred embodiment of my invention; Fig. 2, a longitudinal vertical section of the same, taken in the plane indicated by the broken line 2 2 of Fig. 1; Fig. 3, a transverse section taken in the plane indicated by the broken line 3 3 of Fig. 2 with some of the parts in elevation; Fig. 4, an enlarged detail section, taken in the plane indicated by the broken line 4 4 of Fig. 2; Fig. 5, an enlarged detail perspective view illustrating the parts at the forward end of the elevator-trough; Fig. 6, a perspective view illustrating the scraper and its frame, and Fig. 7 a perspective view of one of the blades of elevator-belt removed.

Similar letters of reference designate corresponding parts in all of the views of the drawings, referring to which—

A is the front axle of the machine, having traveling and supporting wheels *a* loosely mounted on spindles at its ends; B, the rear axle, having traveling and supporting wheels *b* fixed on its ends; C, a sprocket-wheel fixed on the axle B at an intermediate point in the length thereof; D D', longitudinal bars arranged side by side and having bearings *c*, Figs. 2 and 3, receiving the axle B; E, a fifth-wheel member interposed between and connecting the forward ends of the bars D D'; F, a complementary fifth-wheel member ar-

ranged on the axle A below the member E; F³, a clip disposed, by preference, in front of the axle and connected thereto by suitable bolts; *d*, a king-bolt which extends through the fifth-wheel members and between the clip F³ and the axle A, this to save all strength of axle, which permits of the employment of a light axle and contributes to the lightness of the machine as a whole; G G', braces connected at their forward ends to the forward portions of the bars D D' and having bearings *e*, receiving the axle B; H, a spacing-tube surrounding the axle B and interposed between the bar D and the brace G, and I a spacing-tube interposed between the brace G' and the sprocket-wheel C and also surrounding the axle B.

The parts thus far described are preferably, although not essentially, formed of metal, and with the exception of the sprocket-wheel C they constitute the running-gear of my improved machine. The bearings *e*, in which axle B turns, are cast-iron boxes held by clips or straps *e*³ to the frame.

J is a scraper disposed obliquely in rear of the axle B and at one side of the longitudinal median line of the machine. This scraper is connected by a hanger *e'* and a brace *f*, Figs. 2 and 6, with the portion of the bar D' which extends in rear of the axle B, and it is also connected by an angle-hanger *g* with the rear end of the brace G' and the axle B and by a brace-rod *h* with the brace alone.

K is a driver's seat arranged on a suitable support *i*, connected to and rising from the bars D D' of the running-gear frame.

L L', Figs. 1, 2, and 3, are bracket-plates having bearings *j*, which receive the axle B; M, an inclined discharge-chute arranged transversely of the machine in rear of the axle B and connected directly to the bracket-plate L' and by a hanger or hangers *k*, Fig. 1, with the bracket-plate L; N, an excavating gouge or shovel, which is preferably of steel and of concavo-convex form in cross-section, and P an elevator-trough, which is preferably of sheet metal and is connected at its forward end to the shovel N, preferably through the medium of countersunk rivets, and has its rear end arranged between and connected to the bracket-plates L L', so as to discharge into the chute M. In addition to the trough

P the elevator comprises a forward transverse shaft *l*, bearing a sprocket-wheel *m*, a rear transverse shaft *n*, journaled in suitable bearings in the bracket-plates *L L'* and bearing sprocket-wheels *p q*, and a belt *r*, arranged on the sprocket-wheels *m p* and provided with blades *s*. The sprocket-wheel *q* is connected by a sprocket-belt *t*, Figs. 1 and 2, with the sprocket-wheel *C*, fast on the axle *B*, and consequently it will be seen that when the machine is in motion the belt *r* will be driven in the direction indicated by arrow in Fig. 2.

Rigidly connected to or formed integral with the forward portion of the elevator-trough *P* are forwardly-reaching arms *Q*, which are preferably of sheet metal. These arms *Q* are provided on their inner sides at points adjacent to the trough *P* with bearings *u* to receive the ends of the shaft *l*, and between their forward portions is firmly secured by transverse bolts an apertured box *v*, of cast-iron or other suitable material, in which is adjustably secured by a set-screw *w* or other suitable means the standard *x* of a guide-wheel *R*. This wheel has for its purpose to guide the gouge or shovel *N* in a ditch—i. e., hold said gouge or shovel in the center of the ditch and against lateral play.

S is a sleeve fixed to and rising from the bars *D D'* of the running-gear frame, *T* a rack-bar pivotally connected to the forwardly-reaching arms *Q* and extending loosely through said sleeve, and *U* a shaft journaled in suitable bearings in the sleeve *S* and equipped with a pinion *y*, intermeshed with the rack-bar, a toothed disk *z* for the engagement of a dog *a'*, and a crank *b'*. In virtue of this construction it will be observed that when the machine is to be moved from one point to another the shovel *N* and wheel *R* may be raised above the ground by the driver and secured in such position.

V, Figs. 1 and 5, is a spirit-level pivotally connected at its rear end to the trough *P* and adapted to be adjusted vertically, *W* a plate fixedly connected at one end to one of the forwardly-reaching arms *Q* and having a curvilinear slot *c'* and also having graduations, and *X* a set-screw arranged in the slot of the plate *W* and connected to the level *V* and having for its purpose to adjustably fix the level with respect to said plate.

In the practical use of my improved machine the dog *a'* is used in conjunction with the rack-bar *T* to hold the gouge or shovel *N* above the ground when the machine is being turned or moved from place to place. When a ditch is to be dug, the dog *a'* is disengaged from the rack-bar, so that the forward end of the frame is supported by the wheel *R*, which may be adjusted to adapt the shovel to cut one or more inches of dirt incident to each passage of the machine, as desirable. Precedent to commencing the digging of a ditch the driver of the machine first adjusts and adjustably fixes the spirit-level *V*, the gradu-

ations on plate *W* assisting in this operation. If the ditch is to have a horizontal bottom, the level is set in a horizontal position; but if the bottom is to have a fall the level is set in an inclined position. After setting the level the driver seats himself on the machine and drives the same over the course of the ditch. Incident to this first passage of the machine the driver uses the crank *b'* to hold the level in the position it is set, and thus guides the shovel *N*, which is sometimes in the ground and sometimes out, until the surface has been cut smooth and the grade of the ditch formed. With this done the driver adjustably fixes the wheel *R*, so as to adapt the shovel to cut one or more inches incident to each passage of the machine, and then drives the machine to and fro over the course of the ditch until the required depth is attained. The earth dug by the shovel *N* is carried by the elevator to the chute *M*, from whence it is discharged on the ground at the side of the ditch. From this it follows that earth will be deposited on the ground at one side of the ditch incident to the passage of the machine in one direction and at the other side of the ditch incident to the passage of the machine in the opposite direction, this being advantageous, since it obviates the formation of a large pile of earth at one side of the ditch and facilitates refilling of the same. After the ditch is excavated to the required depth drain-tiles or other devices are placed therein, after which the shovel *N* and wheel *R* are raised and secured in a position above the ground, and the machine is drawn to and fro over the ditch to enable the scraper *J* to refill the same and cover the tiles or other devices with the earth deposited at the side of the ditch.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to such specific construction and arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

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

1. An excavating-machine comprising a running-gear, a shovel, a guide-wheel arranged in advance of the shovel, a chute arranged to discharge earth laterally from the machine, an elevator arranged to receive earth from the shovel and convey the same to the chute, and a crosswise scraper disposed at one side of the longitudinal median line of the machine.

2. In an excavating-machine, the combination of a running-gear comprising front and rear axles, bars *D D'* arranged side by side,

and connected to said axles; the bar D' being extended in rear of the rear axle, and braces G G' connecting the outer portions of the rear axle and the forward portions of the bars D D', a scraper arranged obliquely in rear of the rear axle and at one side of the longitudinal median line of said gear, connections between said scraper and the rearwardly-extended portion of the bar D, the rear axle, and the brace G', a shovel, a vertically-adjustable connection between the shovel and the running-gear, a chute arranged to discharge earth laterally from the machine, and an elevator arranged to receive earth from the shovel and convey the same to the chute; said elevator comprising a trough interposed between and connected to the shovel and the chute, and fulcrumed on the rear axle of the running-gear.

3. In an excavating-machine, the combination of a running-gear comprising front and rear axles, bars D D' arranged side by side, and connected to said axles; the bar D' being extended in rear of the rear axle, and braces G G' connecting the outer portions of the rear axle and the forward portions of the bars D D', a scraper arranged obliquely in rear of the rear axle of the running-gear and at one side of the longitudinal median line of said gear, and connections between said scraper and the rearwardly-extended portion of the bar D, the rear axle and the brace G'.

4. In an excavating-machine, the combination of a running-gear, a vertically-adjustable shovel connected with the running-gear, and means comprising an adjustable spirit-level

adapted to enable an operator to ascertain when the shovel is in proper position.

5. In an excavating-machine, the combination of a running-gear, a vertically-adjustable shovel connected with the running-gear, means for raising and lowering the shovel, a guide-wheel arranged in advance of and connected with the shovel, a slotted plate fixed with respect to the shovel, a pivoted spirit-level connected with the shovel, and means for adjustably fixing the spirit-level with respect to the slotted plate.

6. In an excavating-machine, the combination of a running-gear, a vertically-movable shovel connected with the running-gear, means for moving the shovel vertically, and means comprising an adjustable spirit-level, for enabling an operator to determine when the shovel is in correct position.

7. In an excavating-machine, the combination of a running-gear, a vertically-movable shovel connected with the running-gear, means for moving the shovel vertically, means comprising an adjustable spirit-level, for enabling an operator to determine when the shovel is in correct position, a vertically-adjustable wheel, and means for adjustably fixing the same with respect to the running-gear.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES N. ALDERMAN.

Witnesses:

C. W. GANT,
JOH. ZWANZIG.