

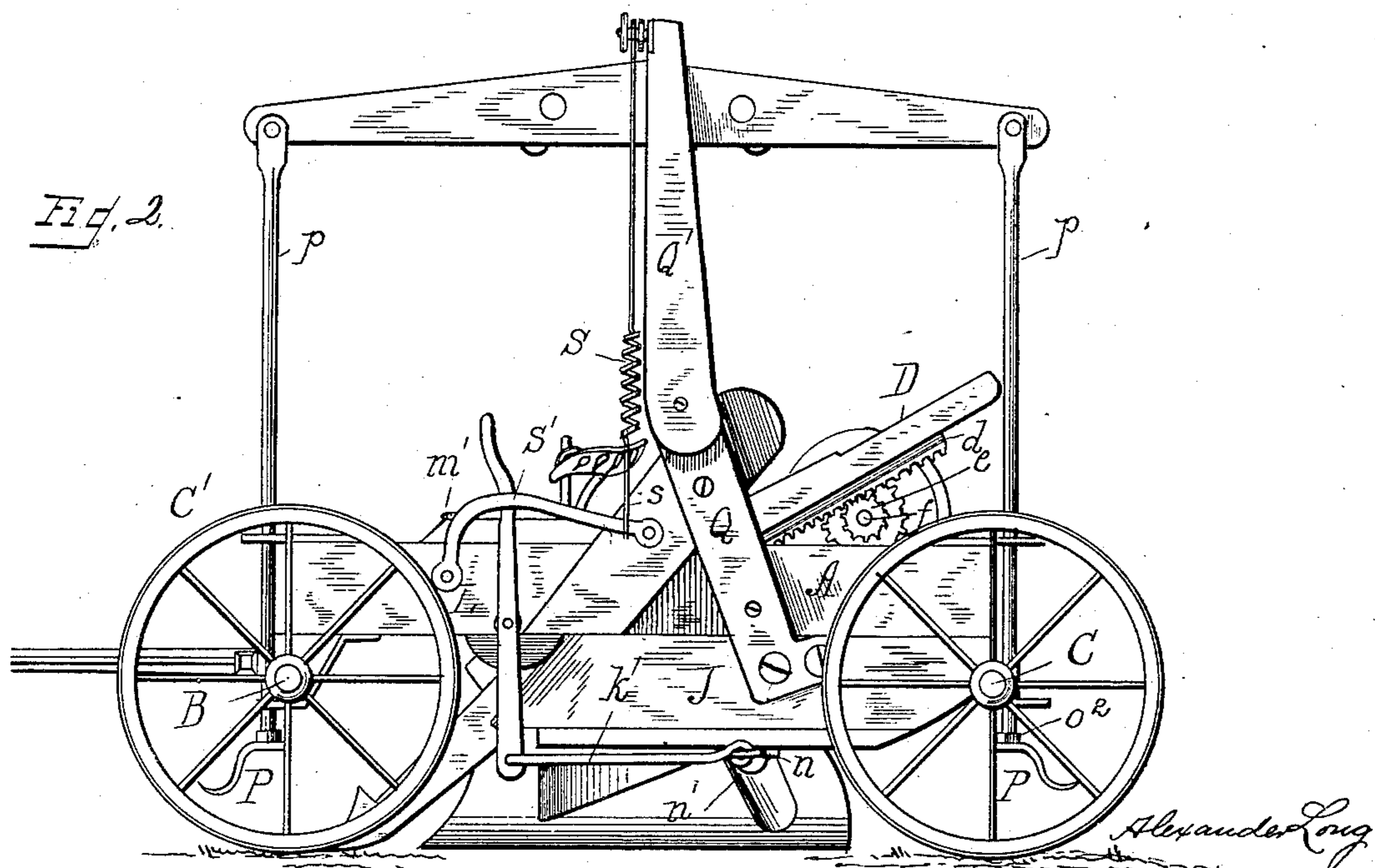
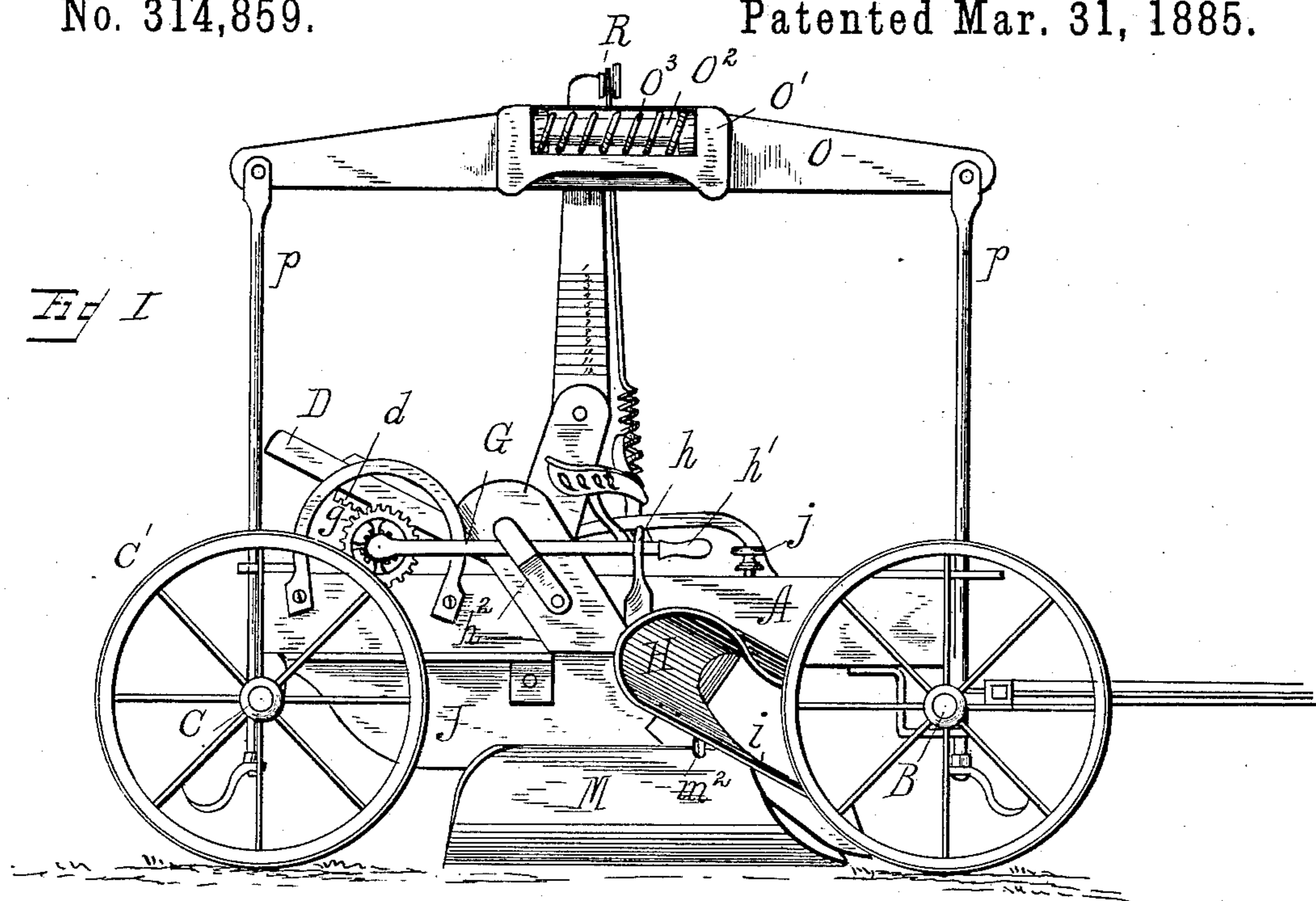
(No Model.)

2 Sheets—Sheet 1.

A. LONG.
DITCHING MACHINE.

No. 314,859.

Patented Mar. 31, 1885.



WITNESSES
F. L. Ourand
E. M. Johnson

INVENTOR

INVENTOR
[Signature]
Attorney

(No Model.)

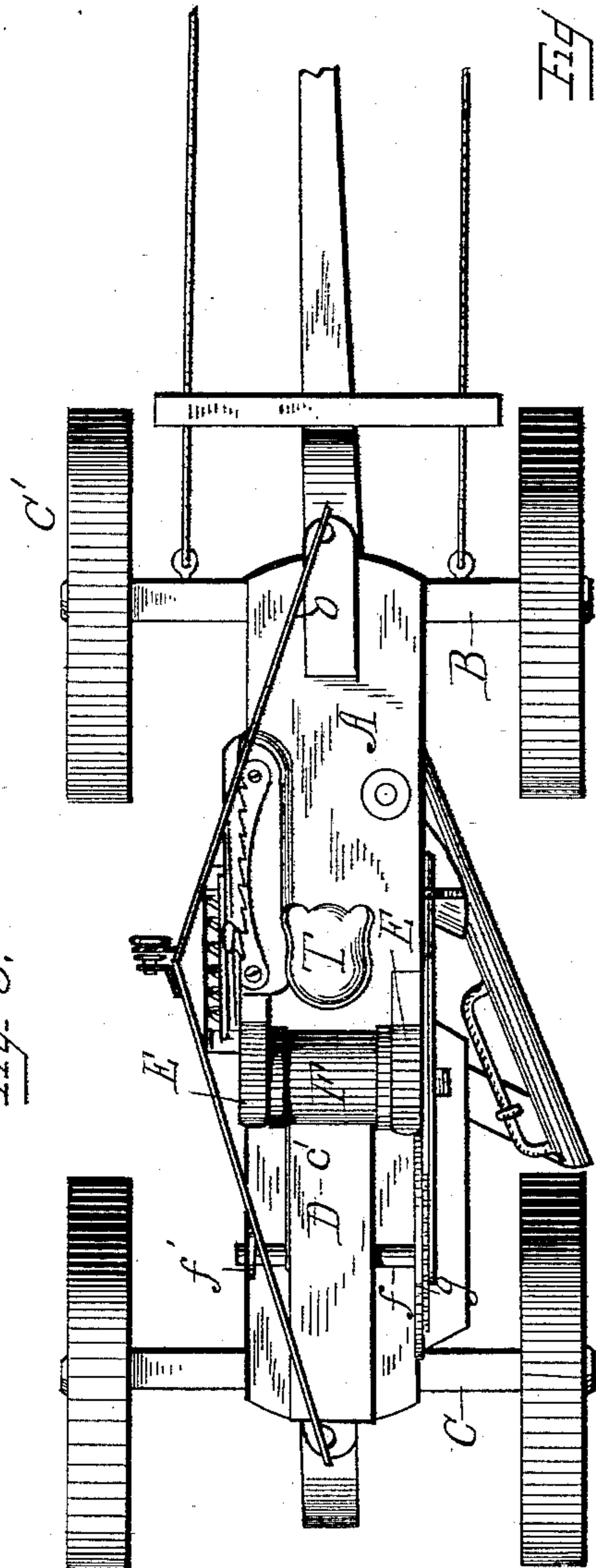
2 Sheets—Sheet 2.

A. LONG.
DITCHING MACHINE.

No. 314,859.

Patented Mar. 31, 1885.

Fig. 3.



WITNESSES
H. L. Curran

E. M. Johnson

Fig. 5.

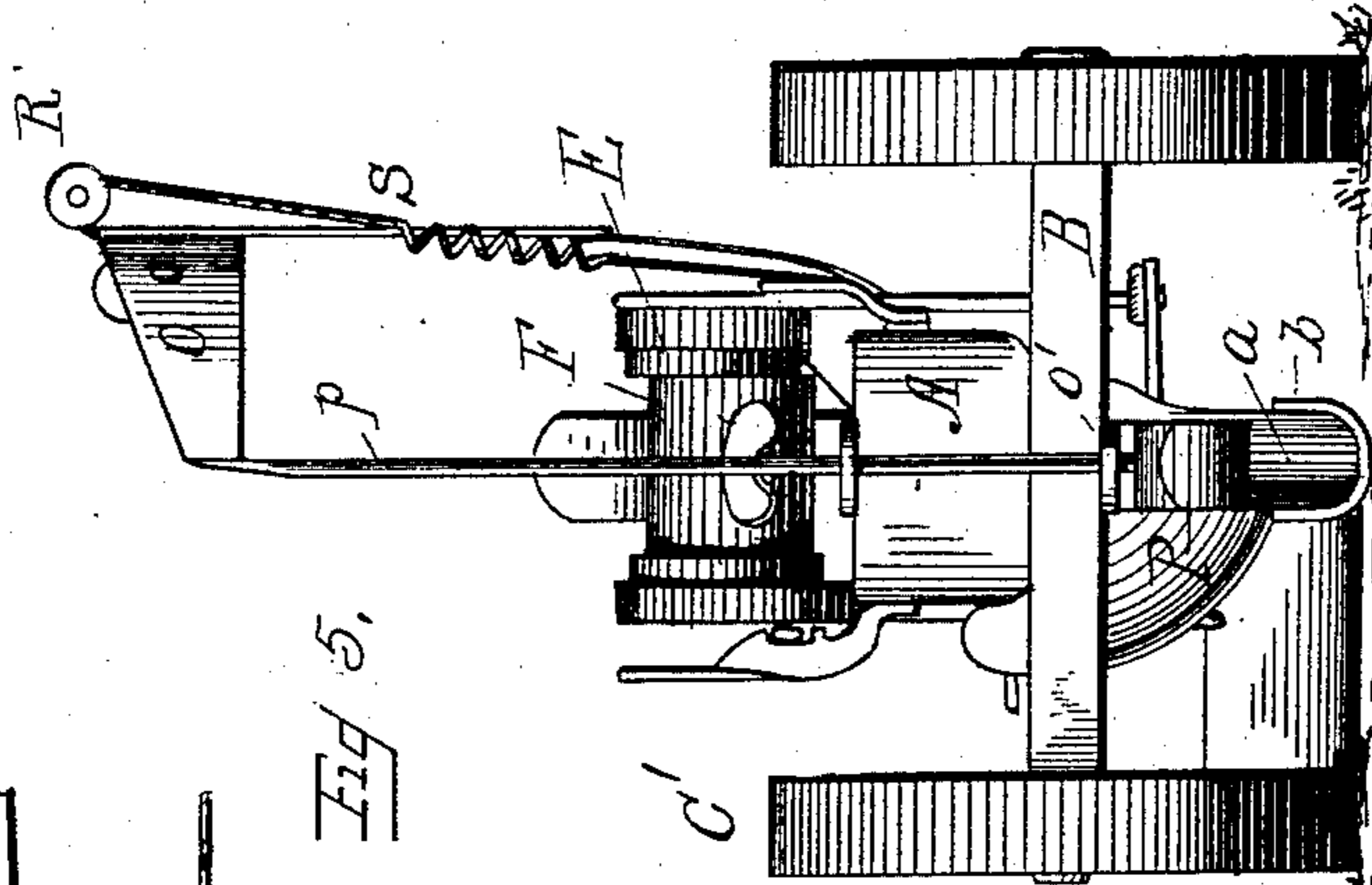
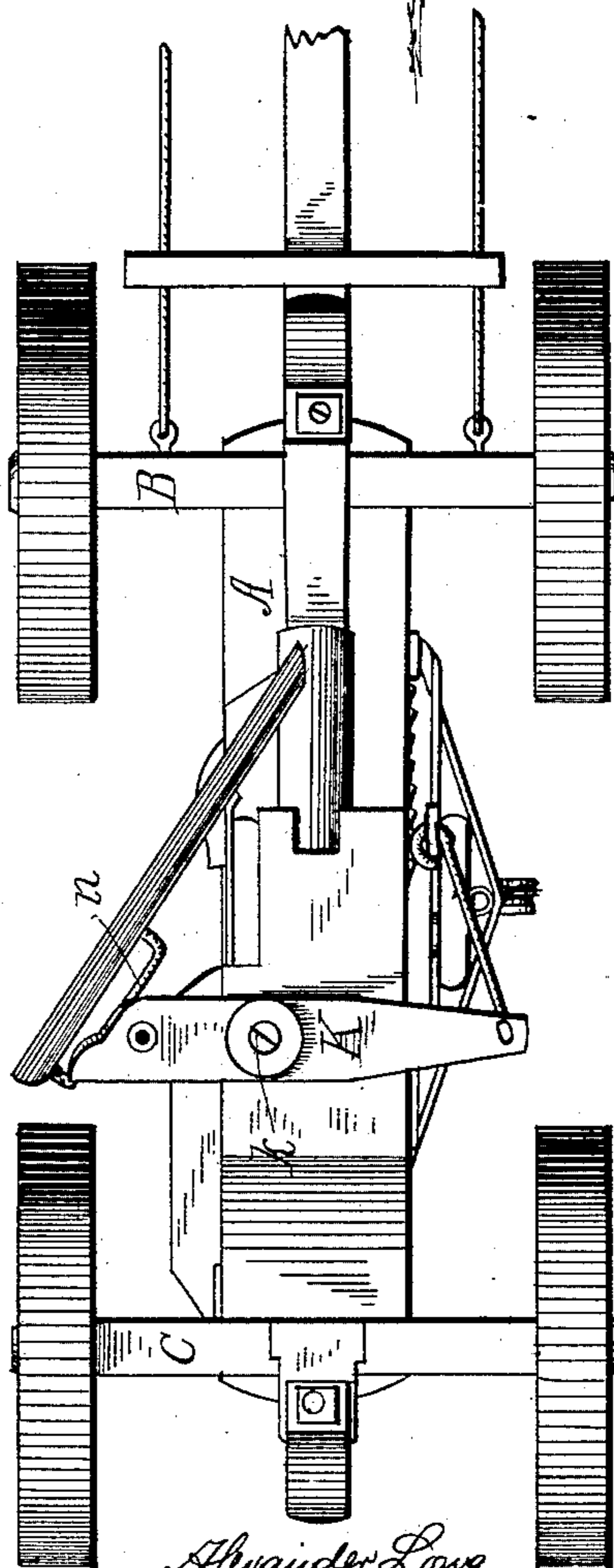


Fig. 4.

C'



Alexander Long.
INVENTOR

[Signature]
Attorney

UNITED STATES PATENT OFFICE.

ALEXANDER LONG, OF LEIPSIC, OHIO.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 314,859, dated March 31, 1885.

Application filed May 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER LONG, a citizen of the United States of America, residing at Leipsic, in the county of Putnam and State of Ohio, have invented certain new and useful Improvements in Ditching Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, 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, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to ditching machines; and it consists in the improvements hereinafter fully described, whereby ditches of various depths may be cut, the cut soil promptly removed, and the relative level of the ditch-bottom readily discerned and controlled by the operator.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of one side of my improved machine; Fig. 2, a like elevation of the opposite side; Fig. 3, a plan; Fig. 4, an inverted plan, and Fig. 5 a front view.

The main or supporting frame of the machine consists of a longitudinal beam, A, which is supported at its ends by front and rear axles, B C, the rear axle, C, being rigid, while the connection of the front axle, B, with the said beam is of a pivotal character, to permit the lateral play of said axle with respect to said beam. The ends of the front and rear axles, B C, are reduced to form spindles for the reception of carrying-wheels C', which turn on said spindles. The longitudinal beam A is obliquely perforated for the reception and passage of an inclined bar, D, Figs. 1, 2, and 3, which extends beneath the beam, and is faced at such lower portion with a metallic plate, a, terminating in a cutting-edge, and provided with vertical side extensions, b, Fig. 5, adapted to form side cutters for the lower portion of the bar. Two standards, E E, located at the upper side of the central portion of the beam A, support the journals of a drum, F, which is grooved at one side to receive a rib, c, projecting above the upper face and at one side of the beam D. The peripheral surface of the

drum bears frictionally in contact with the upper face of the said beam D. A longitudinal rack-bar, d, is secured centrally on the under side of the beam D, and the said rack-bar is engaged by a pinion, e, keyed on a shaft, f, Fig. 3, journaled in side bearings, f', and carrying at one end a gear-wheel, g. A lever, G, is loosely fulcrumed on the end of the shaft f adjacent to the gear-wheel g, and carries a pawl, g', adapted to engage said gear-wheel upon the forward movement of said lever. A spring-catch, h, is adapted to engage the said lever near its handle h', to prevent the rearward movement of said lever when undesired, while a shoulder-bracket, h'', secured on the side of one of the standards E, is adapted to limit the forward movement of the said lever. A curved mold-board, H, Fig. 1, is interposed between the upper face of the lower portion of the bar D and the under side of the beam A, the latter being cut away to a slight extent to accommodate the curved upper portion of the said mold-board H. The mold-board is retained in position by means of bolts which pass through the same at or about its center, thus permitting its lower extended end, i, to bear with a spring-pressure upon the upper face of the bar D, thereby practically converting the said mold-board into a continuation of the metallic facing a of said bar. A threaded rod, j, passes through the beam A, so as to bear upon the upper portion of the mold-board H, the said rod j by its rotation operating to spring the ends i into contact with the facing a of the bar D. A section, J, is bolted on the rear under portion of the beam A, as illustrated in Figs. 1 and 2. A lever, K, Fig. 4, is centrally pivoted on the under side of said section J by means of a pivot-bolt, k, one end of said lever being connected by a link, k', with the lower end of a lever, L, centrally pivoted on the side of the beam A, and having an ear, m, to engage a rack-bar, m'. A guard, M, is secured by a loop, m'', to the front portion of the section J, beneath the mold-board H. The said mold-board is provided on its rear inner face with an elongated loop-rod, n, Figs. 2 and 4, which is embraced by a loop, n', on the other end of the pivoted lever K. Plates o are secured on the upper face of the beam A, so as to project therefrom, and

are perforated, plates o' being likewise secured at the under side of the front and rear axles, and perforated so as to vertically register with the said plates o . A horizontal beam, O , is supported above the beam A by means of vertical rods p , the upper ends of which are attached to the ends of the beam O , while the said rods pass through the perforations in the said plates o and are secured by means of clamp-nuts o'' , which engage the lower threaded ends of said rods. Curved fingers P , Figs. 1 and 2, are likewise secured at the lower ends of the rods p , and the said fingers extend, respectively, in the direction of the front and rear of the machine. The beam O is bent at its center to receive a case, O' , longitudinally recessed to receive a spirit-level, O'' , the glass of which level rests in said recess and is embraced by a spiral metallic guard, O''' . An arm, Q , is secured at one side of the beam A , and has pivotally secured to its upper end the lower portion of a second arm, Q' , which is graduated on its inner face and provided with a series of figures readily seen from the operator's position. A cord or cable, R , is secured at one end to the center of the beam O , and passes over a pulley journaled at the upper end of the arm Q' , and is attached at its other end to a contracting spring-section S , which terminates in a hook, s , adapted to engage the curved rod s' , secured to the side of the beam A and standard E .

From the foregoing it will be apparent that by disengaging the hook s from the curved rod s' and lowering the beam O into the ditch until the fingers P contact with the bottom of the same the number of the figure on the section Q' beneath the bottom edge of the beam O will indicate the depth of the ditch, and any uneven cut or grading will be revealed by the spirit-level O'' , thus enabling the operator to adjust the machine to secure regularity in the ditching operation. The depth of the ditch may be readily increased by manipulating the lever G to rotate the shaft f , thereby revolving the pinion e and causing the forward descent and projection of the bar D . The facing a readily scoops up the earth and the cutters b trim the sides of the ditch. The loose earth, passing up the facing a , contacts with the mold-board H , which discharges said earth in front of the guard M , by which it is deflected to one side of the ditch beyond the travel of the machine. The extent to which the earth is deflected may be readily adjusted by operating the lever L and moving the lever K on its pivot, which movement serves to move the guard M to either an inclined or right-angle position, as desired. The driver's seat T is secured on the upper side of the beam A in advance of the drum F .

I claim—

1. The combination, in a ditching-machine, of a supporting frame or carriage, an inclined bar playing obliquely therein and provided at its upper side with a rib, a drum journaled about midway in the supporting-frame con-

tacting with said bar, and grooved to receive said rib, and devices for moving said bar in a downward or upward direction, substantially as set forth.

2. The combination, in a ditching-machine, of a supporting-frame, an inclined bar playing obliquely therein and provided at its lower portion with a facing having cutting-edges, a mold-board secured on the under side of the frame and contacting with said facing, and devices for moving said bar in a forward or rearward direction, substantially as set forth.

3. The combination, in a ditching-machine, of a supporting-frame, an inclined bar playing obliquely therein and provided at its lower portion with a facing having cutting-edges, a guard, M , pivotally attached at its front end to the frame adjacent to said facing, and devices for laterally moving said guard M , substantially as set forth.

4. The combination, in a ditching-machine, of a supporting-frame, an inclined bar playing therein and provided at its lower portion with a facing having cutting-edges, a mold-board secured on the under side of the frame and contacting with said facing, a guard, M , pivotally attached, as described, and devices for operating said inclined bar and guard M , substantially as set forth.

5. The combination, in a ditching-machine, of a supporting-frame carrying ditching devices, a beam, O , provided with a level and having the vertical rods p playing through bearings in the frame, and carrying the fingers P at their ends, substantially as set forth.

6. The combination, in a ditching-machine, of a supporting-frame carrying ditching devices, a beam, O , provided with a case containing a spirit-level embraced by a metallic guard, vertical rods p , connected to said beam O , playing through bearings in the frame, and carrying the fingers P at their lower ends, substantially as set forth.

7. The combination, in a ditching-machine, of a supporting-frame carrying ditching devices, a spirit-level connected to devices extending into the ditch, and a graduated arm, with respect to which said spirit-level plays, substantially as set forth.

8. The combination, in a ditching-machine, of a supporting-frame carrying ditching devices, a graduated arm mounted on said frame, a spirit-level and connections extending into the ditch, and a cord or cable for elevating said level, substantially as set forth.

9. The combination, in a ditching-machine constructed and arranged substantially as described, of the guard M , having loop n on its inner side, a lever, K , centrally pivoted and engaging said loop, and devices for operating said lever, as and for the purpose set forth.

10. The combination, in a ditching-machine arranged and constructed substantially as described, of a graduated arm mounted on the machine and carrying a pulley at its upper end, a level device, a cord or cable attached to said level device passing over said pulley.

and having a hook at its other end to engage a fixed portion of the machine, as set forth.

11. The combination, in a ditching-machine arranged and constructed substantially as described, of a graduated arm mounted on the machine and carrying a pulley at its upper end, a level device, a cord or cable attached to said level device passing around said pulley

and connected to a spring-hook section S, as set forth.

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

ALEXANDER LONG.

Witnesses:

S. MATTERS,
J. WERNER.