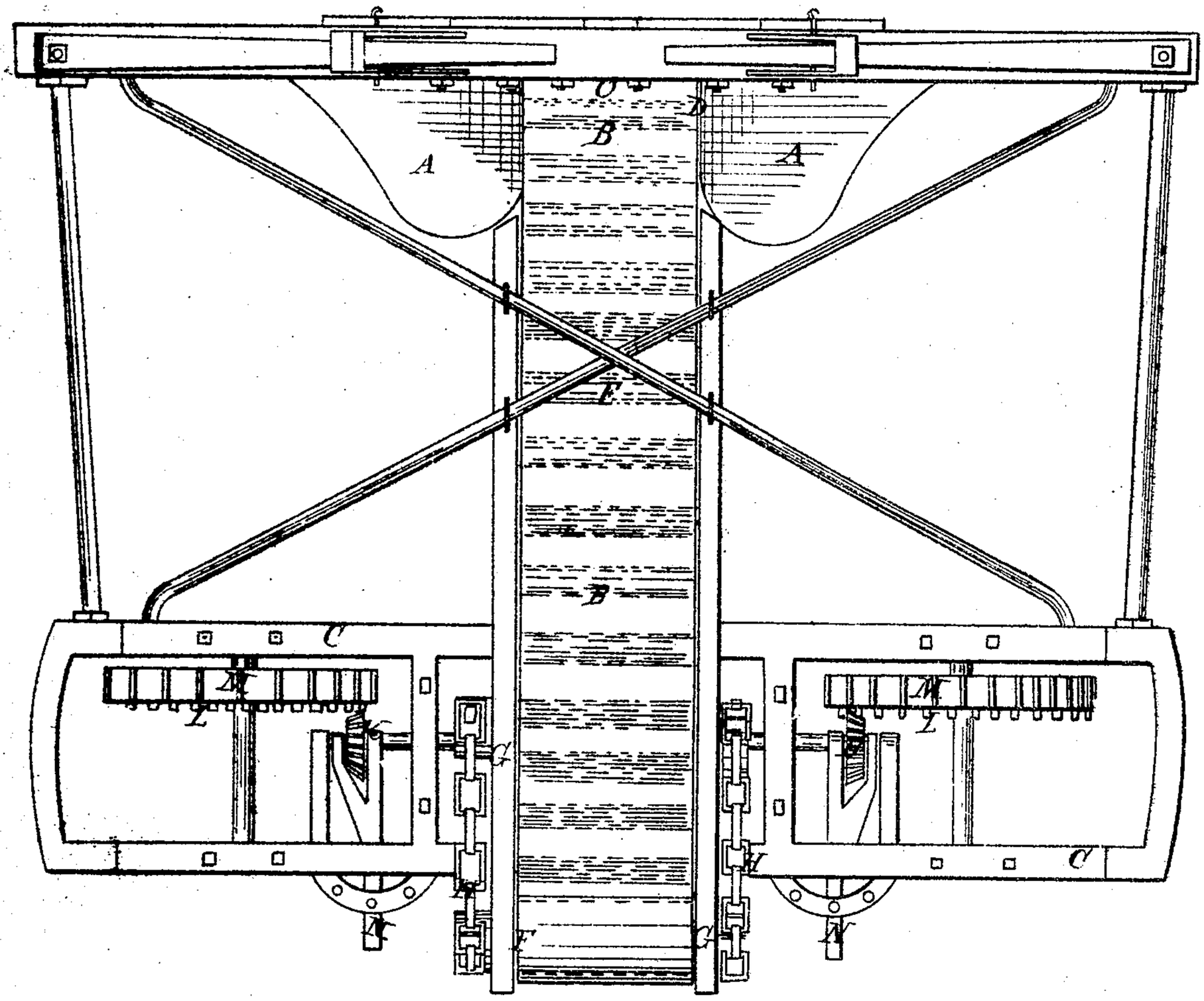
Sheet 1. 2 Sheets.

T. C. Hammond.

Grading & Excavating Machine.

No. 71747 Patented Dec. 3, 1867

Fig. 1.



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Sheet 2. 2 Sheets.

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Grading & Excavating Machine.

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Fig: 2.

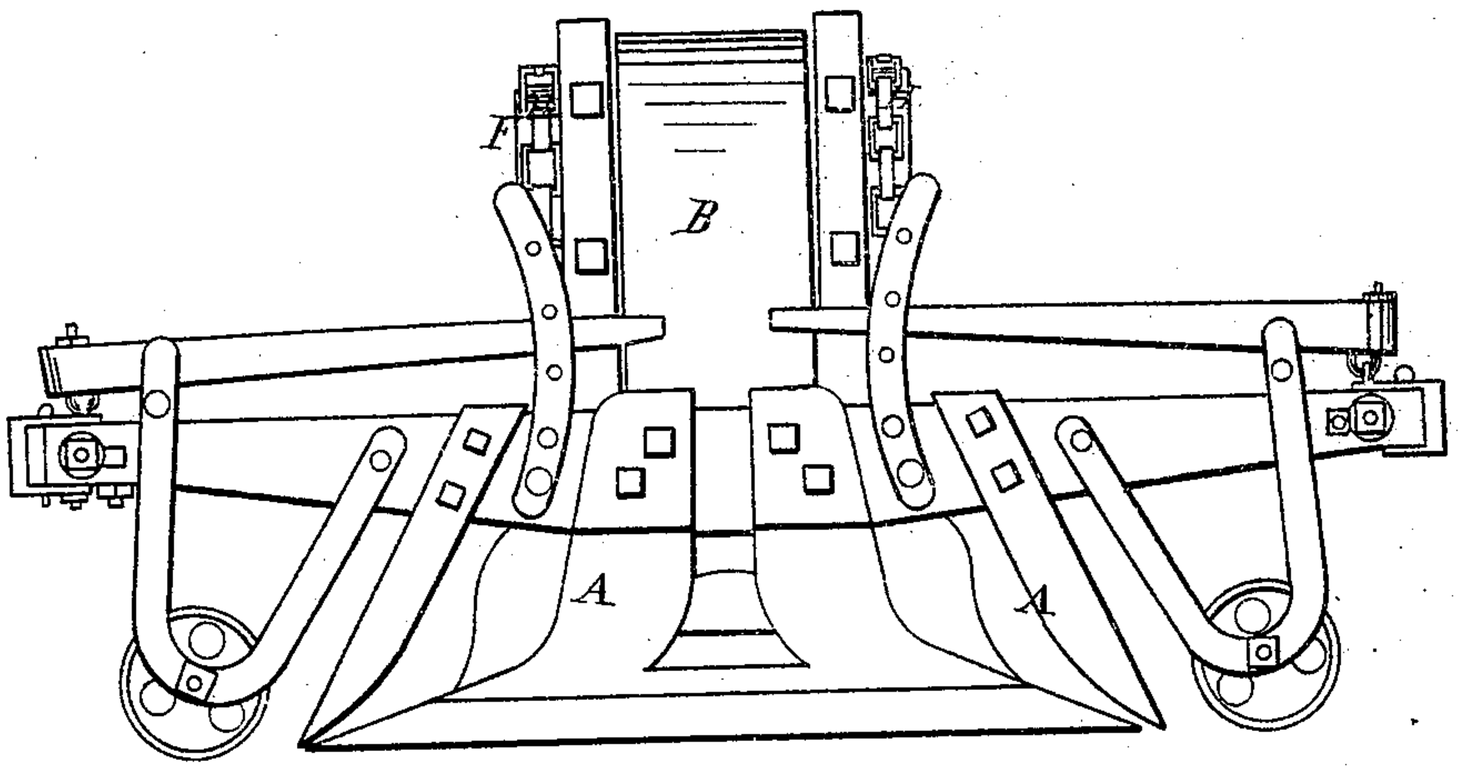
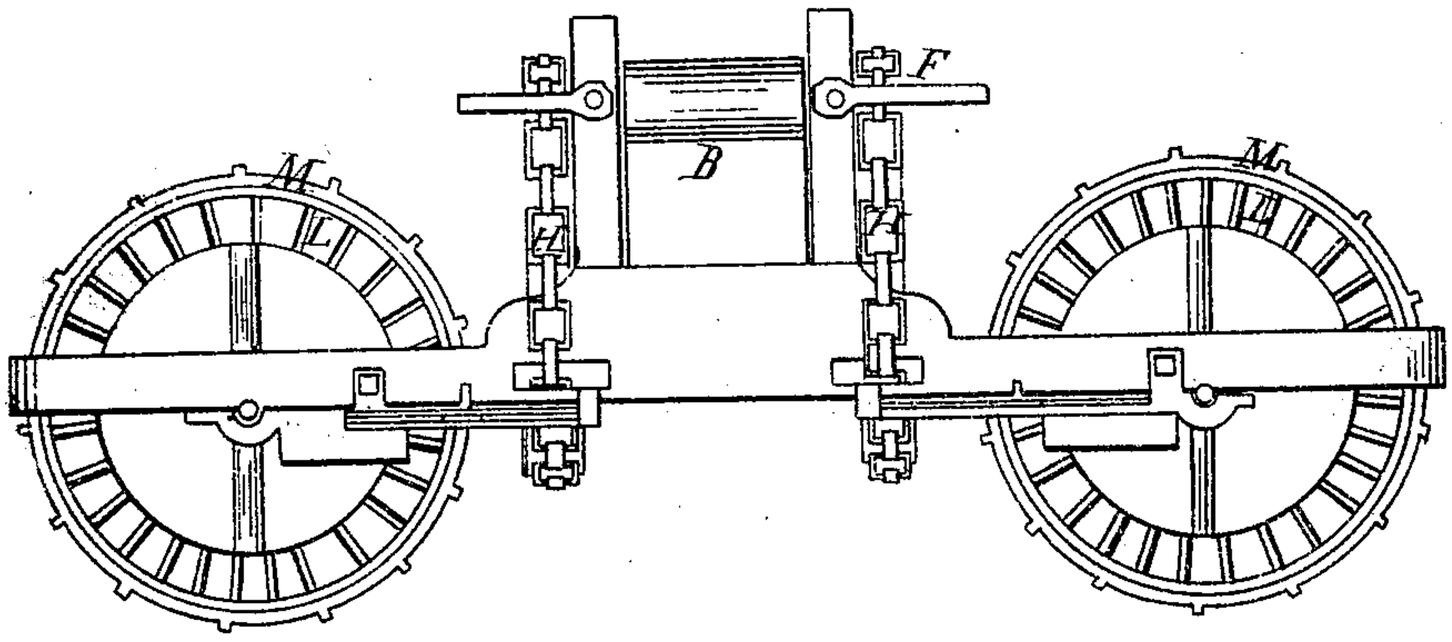


Fig: 3.



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T. C. HAMMOND, OF NICOLAUS, CALIFORNIA.

Letters Patent No. 71,747, *dated December* 3, 1867.

IMPROVEMENT IN GRADING AND EXCAVATING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, T. C. HAMMOND, of Nicolaus, in the county of Sutter, and State of California, have invented new and useful Improvements in Grading and Excavating-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to an improved grading and excavating-machine, and is intended for the grading of road-beds for wagon and railroads, and for embankments to be used as dykes or levees for the reclamation of overflowed lands; it is also adapted to the excavation of open cuts for road-beds, and to the excavation of canals and ditches for drainage, irrigation, and navigation purposes.

Its mode of operating as an excavator is to take the dirt from the centre of the working line and convey it to the sides, where it is deposited on the bank of the excavation, or in carts, to be hauled to any desirable place of deposit; and, as a grader, the operations of the machine are to take the dirt from the sides and convey it to the centre, until an embankment of sufficient height and width is formed to answer the desired purpose.

The machine is operated by horses or oxen, the team being divided into two gangs, working in the same direction upon parallel lines, one of the gangs being hitched to the clevis at the end of the plough, and the other to the draught-ring at the end of the horse-power, the machine and team being controlled by two persons, which constitutes the working force necessary in its operations.

The machine has the nature of a double machine, each one of the same shape and construction, and connected together at the centre, with the parts reversed, and by this arrangement the machine can be readily adjusted to work in opposite directions without turning, as a reversed action can be obtained by changing the team from one end to the other of the machine.

The following advantages are gained by constructing the machine in this shape, viz: first, it imparts strength and steadiness of motion to the machine, the different parts supporting and bracing one another, in such a manner as to give strength and stability to it, which could not be obtained by any other method of construction; second, it enables the machine to be adjusted for a reversed action in less time than by turning it; third, the work can, if desirable, be performed altogether upon one side of the line of operations, without loss of time in travelling back to the starting-point, which would be the case in situations that do not admit of working upon both sides.

My improved machine is made and consists of three distinct parts, a plough, A, an endless apron, B, and a two-wheeled carriage, C, which I denominate a traction horse-power. Each of these three parts is provided with the necessary equipments to enable it to perform the functions required of it, and all of them are connected together, in such a manner that the combination shall form a complete and substantial implement or machine.

The construction of the plough is such as to so operate that the furrow-slice will be retained upon the surface of the mould-board D until, being deposited upon the endless apron just in the rear of the mould-board, it is, by such apron, conveyed, at right angles with the furrow, a distance equal to the length of the apron, where it falls or dumps itself from the machine. The apron is supported and runs upon a series of rolls, E, extending the entire length thereof. These rolls prevent undue sagging of the apron, which would otherwise be the case from the weight resting upon it. Motion is communicated to the apron by means of the large roll F at the upper extremity of the apron-frame G. H is a chain-band, adapted to a chain-wheel, I, upon the shaft of the driving-roll F, and leading therefrom to a similar wheel upon the pinion-shaft of the horse-power.

By the above means motion is communicated to the driving-roll of the apron. The gearing of the horse-power consists of a cogged pinion, K, interlocking with the cogged inner rim L of the large wheel M of the horse-power. The cogged pinion K is so fixed upon its appropriate shaft as to be readily thrown in or out of gear by means of the lever N connected with it.

Another feature of the machine consists in the peculiar-shaped piece of wood, O, located immediately over the lower end of the apron-frame, and extended across the apron, the ends of it extending beneath the mould-board of the plough. This piece is firmly held in its position by a tenon between the standards of the plough, and by the pressure of the standards and mould-board of the plough and the side pieces of the apron-frame. This piece, O, I denominate an extension-bridge. Its province is to prevent the dirt, as it passes from the plough,

from passing downward over the end of the apron, and to retain it in such a position that the apron can readily act upon it.

I wish it distinctly understood that I do not claim broadly, as new, the peculiar concave or scoop-shaped form of the mould-board of my plough, being aware that devices of this kind have been in use before. Neither do I claim anything in regard to the construction or manner of working the endless apron, nor do I propose to confine myself to the use of any particular material in the construction of an apron, but reserve the privilege of using such materials as may be best adapted to the purpose, among which are leather, gutta percha, and canvas, doubled or trebled, and sewed or quilted together. I also disclaim broadly any of the minor equipments used in operating my plough and horse-power.

I claim as new, and desire to secure by Letters Patent—

1. The construction of a plough with an angular upright standard, having a sole-plate or wing, and a mould-board and share, together with all the connecting parts, substantially as described for the purpose specified.

2. A double plough of the above description, all of the different parts of which are reversed and pointing and facing in opposite directions, and connected by a continuous beam and furrow-bar.

3. The peculiar circular bevelled shape of the apron-frame plate 2, by means of which the apron-frame is closely fitted to the under side of the mould-board of the plough.

4. The construction of a double-acting traction horse-power, working upon two wheels with separate reversed parts, the whole being so constructed as to work in opposite directions without turning.

5. The construction of the wooden extension-bridge, before described, for the purpose before described.

6. The different parts of said machine, when combined, as forming in whole a machine so constructed as to work in opposite directions upon the same side of a given line or embankment without turning.

T. C. HAMMOND.

Witnesses:

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