2 Sheets--Sheet 1.

E. G. GRAVES.

Snow-Plow.

No. 165,563. Patented July 13, 1875.

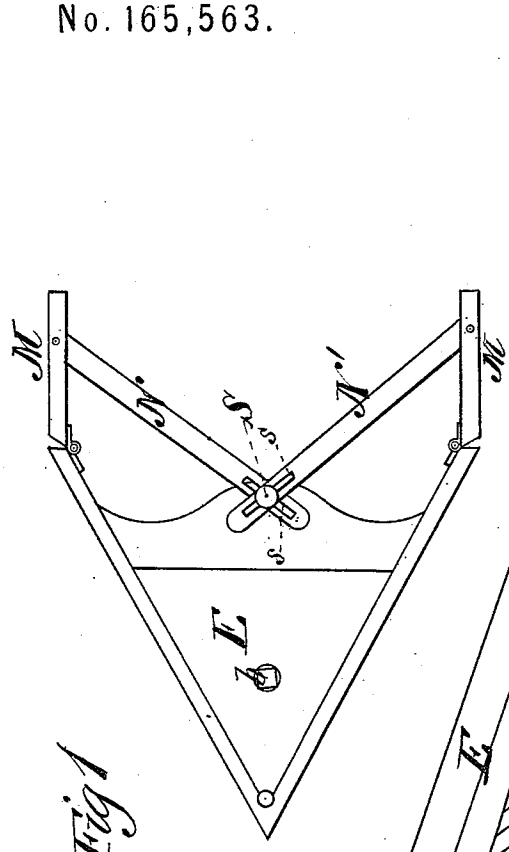

Fig 1

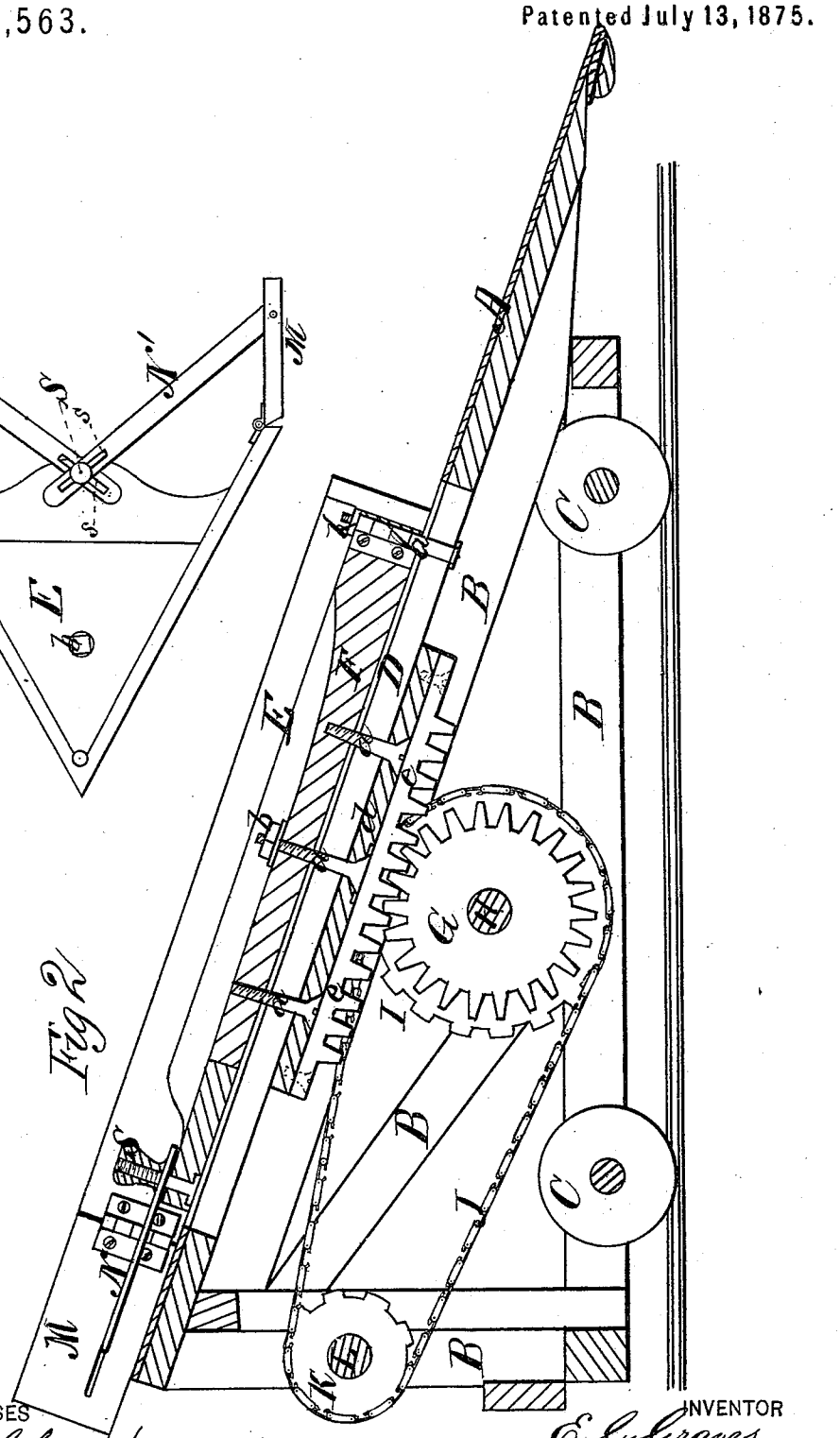

Fig 2

WITNESSES

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Francis J. Clasi

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2 Sheets--Sheet 2.

E. G. GRAVES.

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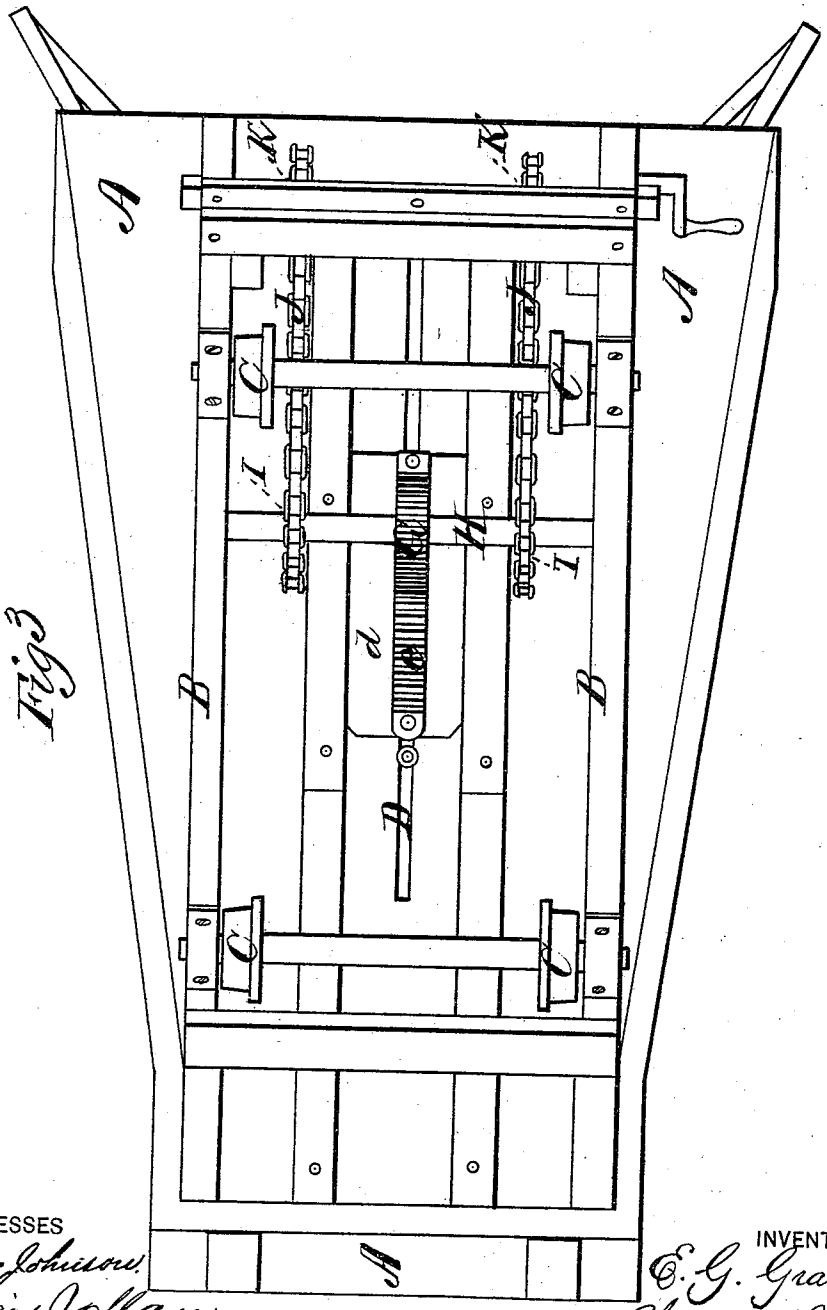

Fig 3

WITNESSES

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UNITED STATES PATENT OFFICE.

ERASTUS G. GRAVES, OF ROME, NEW YORK.

IMPROVEMENT IN SNOW-PLOWS.

Specification forming part of Letters Patent No. **165,563**, dated July 13, 1875; application filed June 5, 1875.

To all whom it may concern:

Be it known that I, ERASTUS G. GRAVES, of Rome, in the county of Oneida and State of New York, have invented a new and valuable Improvement in Railroad Variable Snow Scraper and Elevator; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a detail view of my snow-plow, and Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a plan view.

This invention has relation to improvements in snow-plows, which are especially well adapted for clearing the tracks of railroads; and the nature of the invention consists in combining, with an inclined shovel, increasing in width from front to rear, an adjustable double mold-board, having wings or extensions upon its rear ends, whereby the length of the mold-board may be increased in accordance with the degree of its upward adjustment for the purpose of throwing the snow clear of the shovel. It also consists in means, substantially as hereinafter described, for adjusting the mold-board farther from or nearer to the cutting-edge of the shovel, as will be fully claimed and explained in the course of this specification.

In the annexed drawings, A designates an inclined plane, which is mounted upon a suitable frame, B, and which is supported by flanged wheels C, of the usual well-known car-truck. Plane A, which constitutes the shovel of my improved plow, is, at its lower edge, of the same width as the track, but it becomes gradually wider toward its rear end, where its lateral edges overhang the track, and extend outward beyond it to a considerable extent. Its rear end also is designed to be of such a height from the track as shall be equal to the depth of the heaviest snows or drifts commonly met with in this country. D represents a slot or slots, made lengthwise in plane A, which serves to guide a double mold-board in its movements to or from the lower end of the said plane. This mold-board, which I designate by the letter E in the drawings, is connected to the inclined shovel by means of a bolt or bolts, *a*, or other like devices, which bolts pass through a shoe, *d*, having a rack-bar, *e*, upon its under side, through slot D, into a bracing platform, F, connecting the mold-boards, to which platform they are rigidly but detachably secured by means of nuts *l*. Rack-bar *e* engages with a pinion, G, keyed upon a shaft, H, having its bearings in frame B, which shaft also carries two sprocket-wheels, I, over which pass two chain-belts, J, through which motion is communicated from sprocket-wheels K, on a second shaft, L, to the double mold-board E. Shaft L is operated through the medium of a crank-arm, *f*, applied upon one of its ends, and when it is caused to rotate it will cause the said mold-board to ascend or descend, in accordance with the direction of the rotation imparted to the said shaft.

In practice, I propose to lock the mold-board at any degree of adjustment relative to the plane by setting up nut *b* forcibly against platform A, thus rigidly clamping shoe *d* against the under side of the said platform; but I may, if I so elect, use a pawl and ratchet for the purpose.

Shovel-plane A, as was above mentioned, is greatly wider at its upper than at its lower end; consequently when the mold-board is thrown upward it becomes necessary to lengthen the rear extension of the said boards to correspond. This is effected by means of wings M, which are strongly hinged to the rear ends of the said mold-board, and are extended or retracted, as the necessities of the case may require, by means of rods N N′, which are pivoted in any suitable manner to the free ends of the said wings, and extend inward and overlap each other. The overlapping ends of the rods N N′ are longitudinally slotted, and a suitable set or clamp screw, S, is passed through the said slots, designated by the letter *s*, into the platform of the mold-board, thus adjustably locking the said wings in position.

By this means the length, and consequently the width, of the rear end of the double mold-board may be increased in accordance with the degree of upward adjustment given thereto, and the snow will be thrown over upon the surface of the drift outside of the track. The

shovel being wider in the rear than in front, the walls of the trench cut in the snow thereby will be inclined, thus preventing snow upon its banks falling back into the said trench.

The under side of the front edge of platform A is provided with shoes *h*, which are rigidly secured thereto with their convex edges undermost, which shoes prevent the cutting-edge of platform A from striking against the joint of two adjoining rails, whereby the said platform would be greatly injured.

In practice platform A will be composed of a section of wood and a sheathing of metal smoothly laid thereon.

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

1. The wings M, hinged to the rear end of the double mold-board E, in combination with the pivoted and longitudinally-slotted arms N N′, and clamping-screw S, substantially as and for the purpose set forth.

2. The combination, with a tapering shovel-plane, A, and an adjustable double mold-board, E, having platform F, of the vibrating and adjustable arms or rods N N′, and set-screw S, substantially as specified.

3. The combination of an inclined shovel, A, having slot D, and the endwise-movable mold-board E, having rack-bar *e* of the pinion G, shaft H, sprocket-wheels I, endless belts J, sprocket-wheels K, and shaft L, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ERASTUS G. GRAVES.

Witnesses:
W. E. WRIGHT,
K. CARROLL.