

J. Mc GAVIN.
Grading Apparatus.

No. 159,594

Patented Feb. 9, 1875.

Fig. 1.

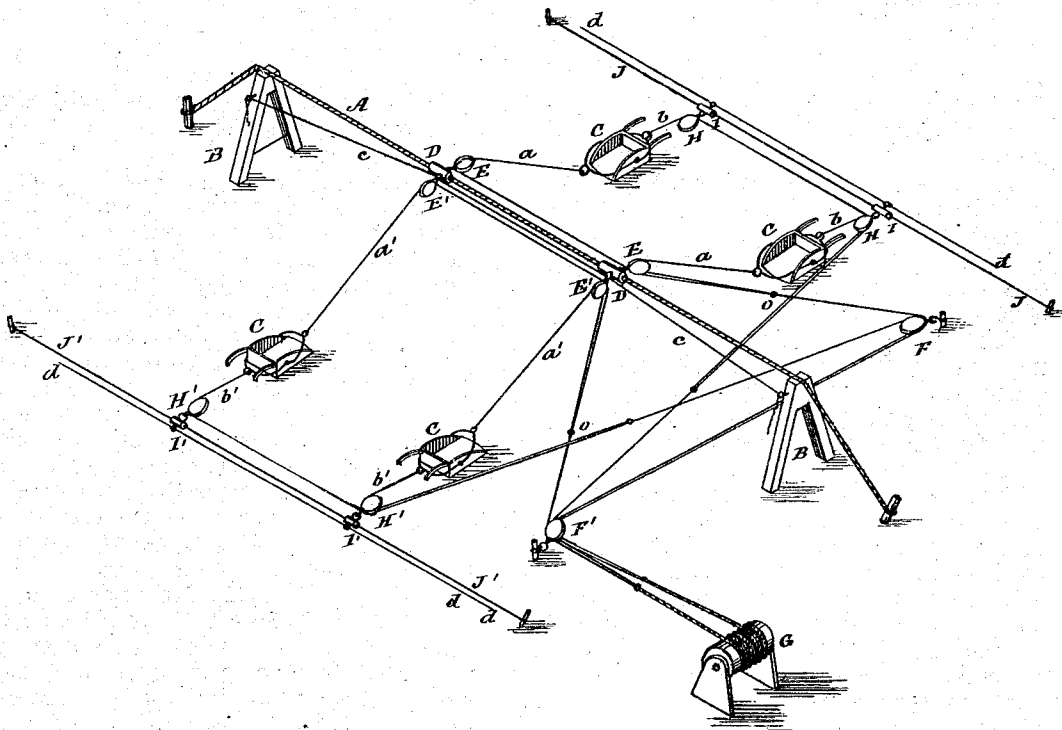
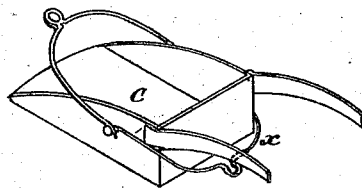


Fig. 2.



Witnesses:

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IMPROVEMENT IN GRADING APPARATUS.

Specification forming part of Letters Patent No. 159,594, dated February 9, 1875; application filed December 15, 1874.

To all whom it may concern:

Be it known that I, JOHN MCGAVIN, of the city of New York, county and State of New York, have invented an Improved Apparatus for Excavating and Grading; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification.

The object of my invention is to provide improved means for economically operating a series of shovels or scrapers, in excavating and grading and in forming embankments, by steam-power, so as to dispense with the use of horses for these purposes, which is attended with much inconvenience and great expense, especially when the earth has to be conveyed up steep ascents. My invention consists in a novel arrangement of pulley-blocks and ropes in connection with guys and derricks, as hereinafter described, whereby the shovels or scrapers are alternately drawn back and forth to receive and deliver their loads, and are easily shifted from place to place as the work advances, the said shovels or scrapers being operated by steam-power.

In order that my invention may be fully understood I will proceed to a particular description thereof, referring for that purpose to the accompanying drawing, in which—

Figure 1 is a general view of my improved apparatus, in isometrical perspective, and Fig. 2 a view of the shovel or scraper which I use in connection therewith.

A is a strong rope of wire or other suitable material, stretched on and supported by the derricks or shears B B over the ground where the earth is to be deposited as it is removed by the scrapers C, any suitable number of which may be employed. Placed upon this rope A and moving freely thereon are thimbles D D, one for each pair of scrapers, and attached to these thimbles are the pulley-blocks E E E' E', one for each scraper, over which said blocks the ropes *a a a' a'* are passed. These ropes *a a'* are attached to the bows of the scrapers C, and, after being passed over the said pulley-blocks, are carried over other pulley-blocks F F', and from thence to a drum, G, which is, in ordinary cases, driven by steam-power, although horse-power may be

used, if desired, in which case the drum G may be used or not, as may be found convenient.

The scrapers C may be of the ordinary construction, excepting that I make them with two bows, to one of which is attached the rope *a*, as above mentioned, by which the scraper is drawn to the place where its load is to be deposited, while to the additional bow *x*—which I add in order to adapt it for being operated in connection with my apparatus—is attached a rope, *b* or *b'*, as the case may be, by which it is drawn back to receive another load. These ropes *b* and *b'* are also carried over pulley-blocks H H' H', secured to thimbles I I I' I', which are placed upon the ropes J J', stretched and secured over that portion of the ground from which the earth is to be removed, and the said ropes, after being passed over the said pulley-blocks H or H', are likewise carried over the pulley-blocks F F', and from thence to the drum G on the side of the latter opposite to that to which the ropes *a a'* are attached, so that while the ropes *a a'* are being drawn forward with their loads by the rotation of the drum, the ropes *b b'* will be slacked off, and vice versa. *c* is an adjusting-rope attached to the thimbles D and secured at its ends in any suitable manner to the derricks or shears B for the purpose of shifting the blocks E E, so that the line of motion of the scrapers may be advanced as the work progresses, and *d* is an adjusting-rope attached to the thimbles I or I' and secured in any suitable manner, for the purpose of making a correspondent adjustment of the blocks H H'. The pulley-blocks F F' are anchored in any suitable position on the ground for guiding the several ropes to the drum G, and the several ropes may be united for convenience, as, for instance, the ropes *a a'* may be united at *o* and *o'* before passing over the pulleys F F', respectively, and the ropes *b b'* at *p* and *p'*; and the ropes to which *a a'* are attached may be united at *r*, between the pulley F and the drum, while those attached to *b b* and *b' b'* may be similarly united at *s*, so that one rope on one side of the drum will operate all the ropes *a a a' a'*, and another, on the other side of the drum, will likewise operate all the ropes *b b b' b'* in the reverse di-

rection. By this arrangement, when the drum is rotated in one direction the scrapers C will be simultaneously drawn forward to the points where their loads are to be deposited, and when the drum is rotated in the reverse direction the scrapers will be simultaneously drawn back to receive another load.

Each scraper is attended by one man, and a series of scrapers, consisting of any suitable number, may be operated as above described. The scrapers are advanced toward the fresh earth, as the work progresses, by moving the thimbles D D and H H' along the ropes by means of the adjusting-ropes *c* and *d*, respectively. The pulley-blocks E E, being attached to opposite sides of the thimbles D, there is but little lateral strain on the rope A; but, in some instances, as in forming river-embankments, the scrapers may all be placed on one side of the said rope A, in which case it may be stayed by guys secured in any suitable position on the opposite side.

By means of this apparatus a number of

scrapers can be operated simultaneously, with great economy in the expenditure of power; and when one area has been worked over, the whole apparatus can be readily and easily removed to another.

Having thus described my improved apparatus, what I claim as my invention is—

1. The combination of the thimbles D D, pulley-blocks E E, ropes *a a*, pulley-block F, rope A, derricks B B, and scrapers C, as herein shown and described, for the purpose set forth.

2. The combination of thimbles I I, pulley-blocks H H and F, ropes *b b* and J, and scrapers C, as herein shown and described, for the purpose set forth.

3. The combination and arrangement, herein shown and described, of the thimbles D D and I I, and adjusting-ropes *c* and *d*, for the purpose set forth.

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Witnesses:

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