(No Model.) 2 Sheets—Sheet 1.

J. FLEMING.

ROAD GRADER.

No. 433,780. Patented Aug. 5, 1890.

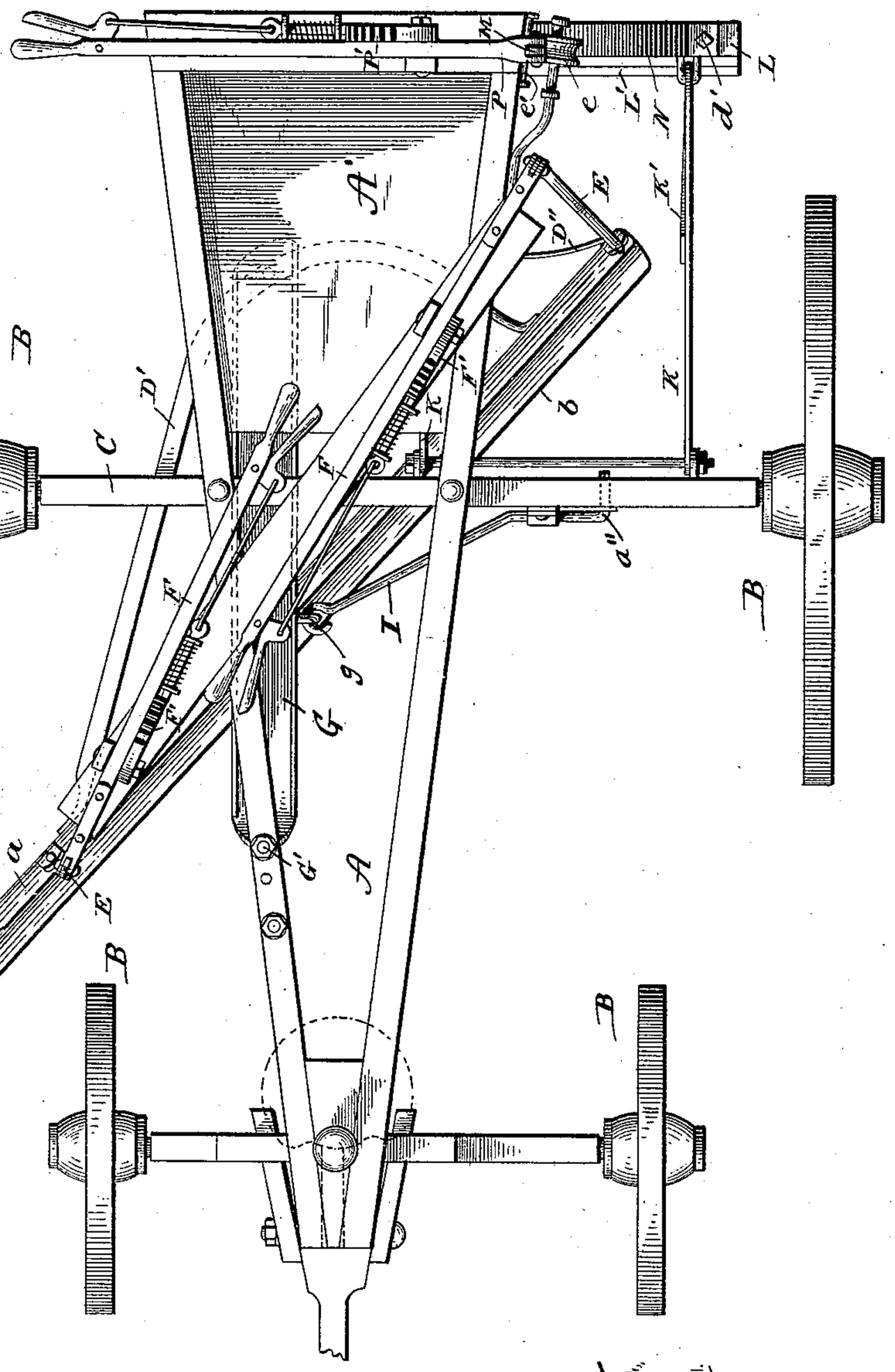

Fig. 1.

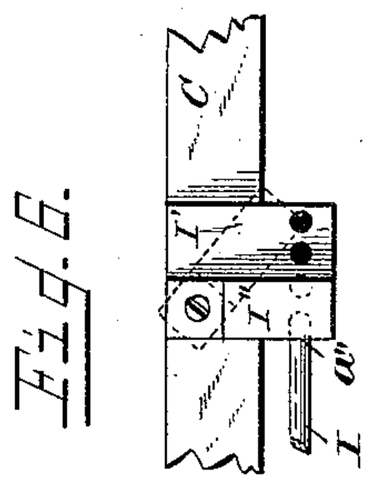

Fig. 6.

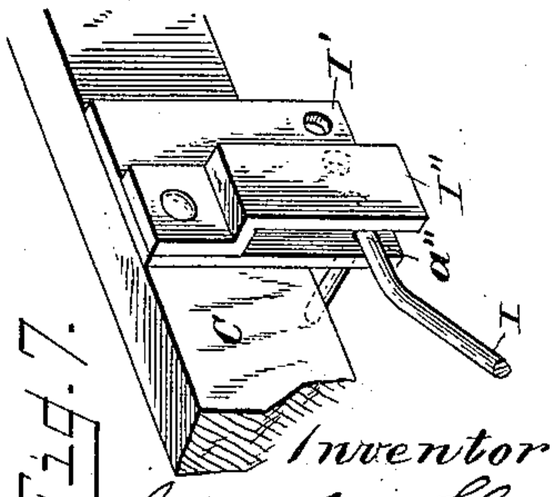

Fig. 7.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

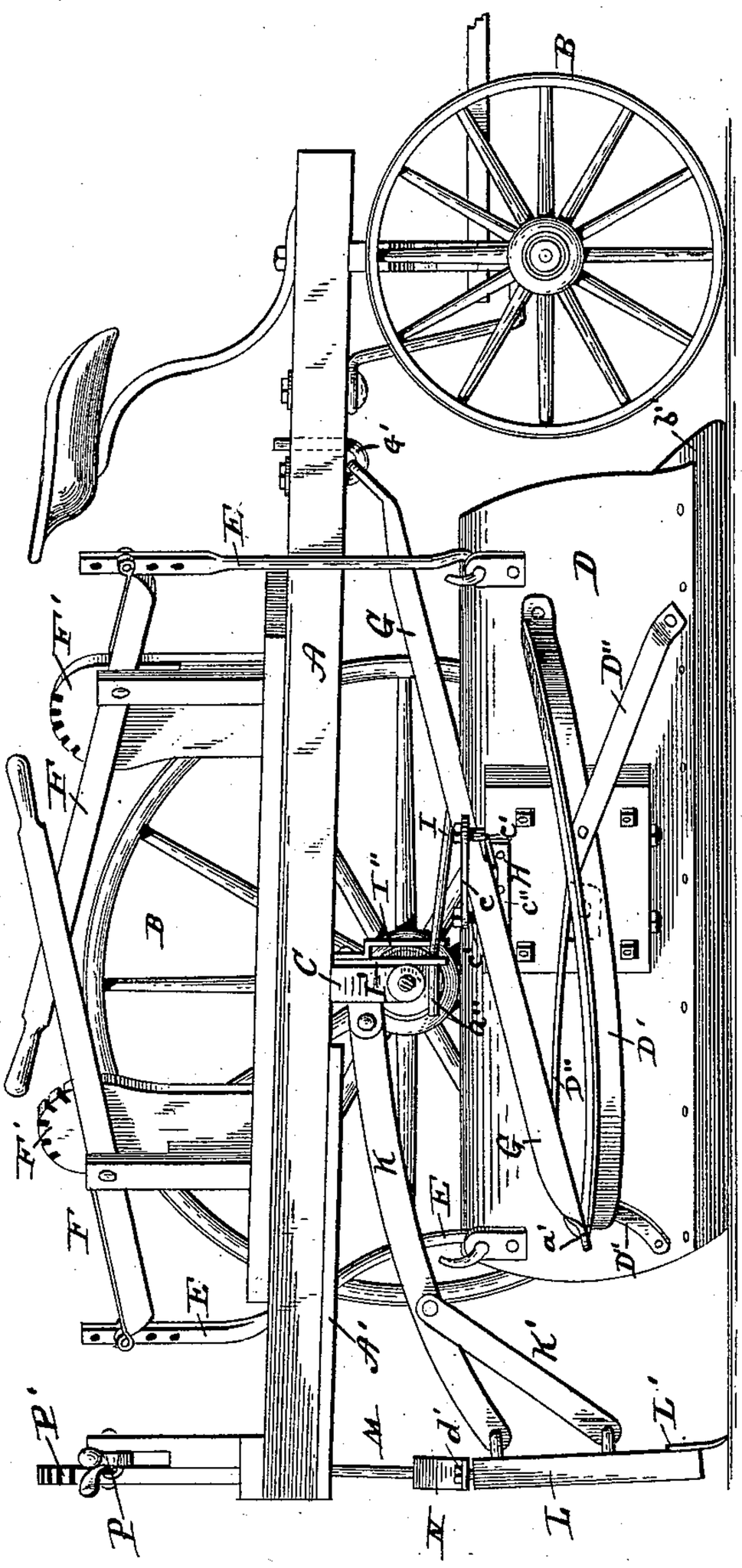


Fig. 4.

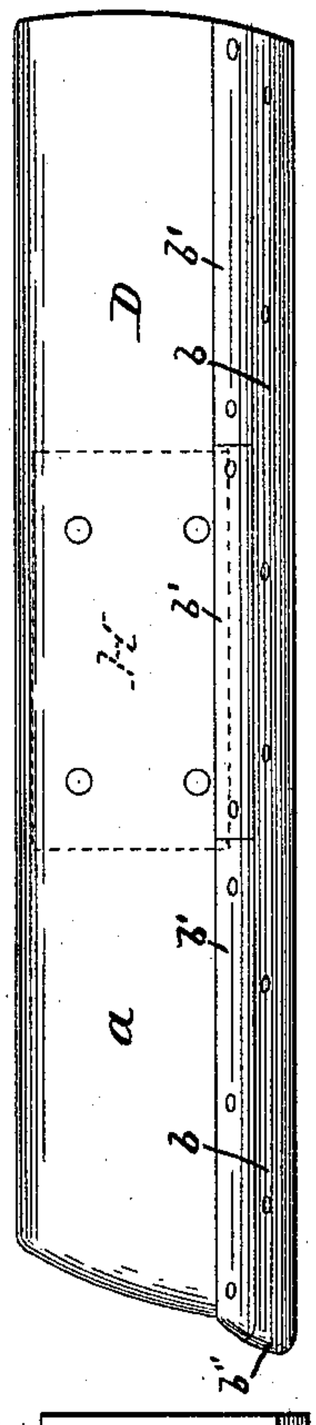
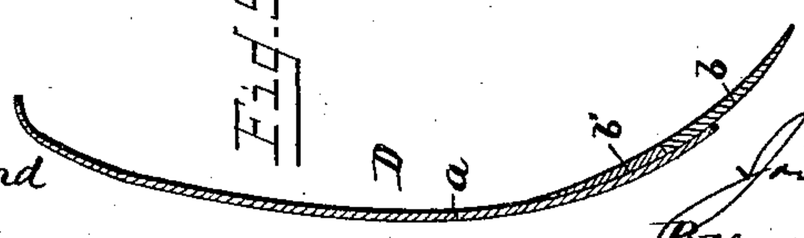


Fig. 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

JONATHAN FLEMING, OF DECATUR, INDIANA.

ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 433,780, dated August 5, 1890.

Application filed March 19, 1890. Serial No. 344,512. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN FLEMING, a citizen of the United States, residing at Decatur, in the county of Adams and State of Indiana, have invented certain new and useful Improvements in Road-Graders, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 represents a plan view of my improved machine complete; Fig. 2, a side elevation of the same, one of the rear wheels being removed; Fig. 3, a detail of the supplemental leveler or scraper; Fig. 4, a detail front view of the main scraper-blade; Fig. 5, a cross-section thereof enlarged; Figs. 6 and 7, detail views of the devices employed to vary the angle of the main scraper.

In the drawings annexed, the letter A designates the horizontal main frame, which is preferably V-shaped, and which rests upon and is transported by means of suitable wheels B, the front axle being pivotally arranged as usual. Hung under the rear axle C is the main scraper D, which is held at an oblique angle to the line of draft and connected at its ends to vertical pivotal rods E, the upper ends of which are adjustably connected to pivoted levers F, mounted on the frame and provided with the usual spring-actuated bolts, which latter engage suitable segments F′ upon the frame and hold the parts in their adjusted positions. By means of these levers and rods the scraper D may be raised and lowered at will and held in any desired position, as is obvious.

The scraper is constructed of a main plate *a*, the upper edge of which is turned slightly forward to prevent the gathered material in front of it from passing over its top, and its lower edge is also turned or curved forward slightly and has riveted upon its front concave face the scraper or cutter portion *b*, the lower edge of which is sharpened and extended below the main plate. The forward end of the cutting portion *b* is extended beyond the end of the main plate, as at *b*″ in Figs. 2 and 4, and slightly curved or bent forward. Riveted or bolted to the face of the main plate *a* and abutting against the upper longitudinal edge of the cutter *b* is a supplemental plate or strip *b*′, which comes flush with the face of the plate *b* and is tapered off or drawn to an edge along its upper edge, as shown. In this manner a very strong scraper is produced, which will withstand a heavy strain and present no obstructions whatever for the lodgment or retardation of the material.

Bolted upon the rear side of the scraper D is a board H, which is preferably about one-third the length of the scraper, and which serves to brace and strengthen it. The main draw-bar G is preferably made of channel-iron and is pivotally secured to the under side of the main frame at its forward end by an eyebolt G′, said bar resting on top of the scraper and clamped down firmly upon the upper edge of the board H by means of a plate *c* and vertical bolts *c*′ *c*′.

The rear end of the draw-bar is bolted to a curved bow-brace D′, bolted to the rear side of the scraper and braced by suitable metallic brace-bars D″. In addition to the clamp *c* employed to secure the draw-bar G to the board H, I may bolt or rivet in the angle formed by these parts an angle-iron *c*″, as shown in Fig. 2. This manner of mounting the scraper and draw-bar renders the machine very strong and yet light and simple in construction.

A rod I is connected pivotally at *g* to the left side of the draw-bar and is provided with a pin or hook *a*″ at its free end. The pin *a*″ engages one of a horizontal series of holes formed in a plate I′, bolted to the front of the axle and is held in any one of these holes by a swinging plate I″, pivoted on the perforated plate. This plate I″ normally hangs down in front of the rod I and prevents it from being dislodged from its engagement with the plate, and when it is desired to disengage the rod from its perforated plate, this plate I″ is swung up out of the way, as shown in Fig. 6 in dotted lines. The object of this adjusting device is to vary the angle of the scraper, which can be done by moving the rod from one hole to another and locking it therein by means of the swinging plate. This adjusting feature is advantageous in that it is necessary that the angle of the scraper be varied according to the nature and condi-

tion of the road-bed, hard ground requiring a greater angle than softer or looser material, as is evident.

The letter L designates a supplemental leveler or scraper provided with a cutting or scraping plate L′ at its lower edge. This leveler is located directly to the rear of the rear or discharge end of the main scraper, and is pivotally connected to the rear side of the rear axle by means of draw-bars K, braces K′ being employed to strengthen and brace the leveler. A vertical rod M is connected at *d* to the upper edge of the leveler-board L and passes up between two rollers *e e′*, mounted on the frame, and is connected adjustably at its upper end to a pivoted lever P, supported on the frame. This lever is provided with a spring-actuated bolt, which, in connection with a rack or segment P′, serves to hold the lever in any desired position. By means of the lever and rod the leveler or scraper may be raised or lowered and set at any desired point, the grooved rollers *e e′* serving to prevent vibration of the rod M, as is evident.

A bowed bar N is secured to the upper edge of the leveler for the purpose of keeping the same in a horizontal position and relieving the draft-bars K from a twisting or lateral strain. Midway between its ends the bar is provided with two holes, through one of which passes the main rod M, and through the other one passes an upward extension M′, as shown. The ends of the bar are loosely secured by bolts *d′* to the upper edge of the board, the holes through which these bolts pass being slightly enlarged transversely to permit the bar to oscillate during the act of raising and lowering the leveler. The object of this leveler attachment is to level and grade the material thrown off the rear end of the main scraper and remove the surplus material to low points where it is needed. It also serves to remove earth from culverts and bridges when deposited by the main scraper or otherwise. An essential point in its construction is the bar N, which serves to effectually maintain the leveler-board in a horizontal position under all conditions.

Having thus fully described my invention, what I claim is—

1. A scraper-blade consisting of a main plate *a*, a cutting plate or strip *b*, riveted to the lower edge of the said main plate, and an abutting-strip *b′*, riveted to the said main plate above the plate *b* and abutting against its upper edge, the upper longitudinal edge of this strip *b′* being reduced to an edge and terminating below the upper edge of the main plate, as and for the purpose described.

2. The combination, with a frame mounted on wheels, a main scraper arranged obliquely thereto and pivotally connected to the same, and means for adjusting the scraper vertically, of a rigid bar or rod I, pivotally connected to the scraper-bar and adjustably connected at its end to a stationary portion of the frame, and means for holding this bar in its adjusted positions, substantially as described.

3. The combination, with a carriage and a pivotally-hung scraper, of a bar I, pivotally connected to the scraper-bar and adjustably connected to a plate fixed upon a stationary portion of the machine, substantially as described.

4. The combination, with a frame and a scraper adjustably and pivotally hung thereto, of a bar I, connected to the scraper-bar and provided with a pin *a″*, a plate fixed to a stationary portion of the machine and provided with a series of holes for the reception of the said pin *a″*, and means for retaining the said pin in the said holes, substantially as described.

5. The combination of a frame, a scraper, a re-enforcing board H on the back of the scraper, a draw-bar G, pivotally connected to the frame at its forward end and secured to the upper edge of board H, a bar or frame D′, secured to the back of the scraper and to the end of the said draw-bar, and rods and levers for vertically adjusting the said scraper, substantially as described.

6. The combination, with a frame and a scraper, of a leveler arranged behind the scraper and pivotally connected to the rear axle of the frame, a vertical rod M, connected to the leveler, a lever for adjusting this rod, and rollers *e e′*, for guiding the said rod and preventing its swaying, substantially as described.

7. The combination of a frame, a leveler pivotally connected thereto, a rod M, pivotally connected to the lever, means for adjusting the rod M, and a bar N, connected to the said rod M about midway its length and at its ends loosely to the upper edge of the leveler, substantially as described.

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

JONATHAN FLEMING.

Witnesses:
W. H. REED,
JOHN SCHURGER.