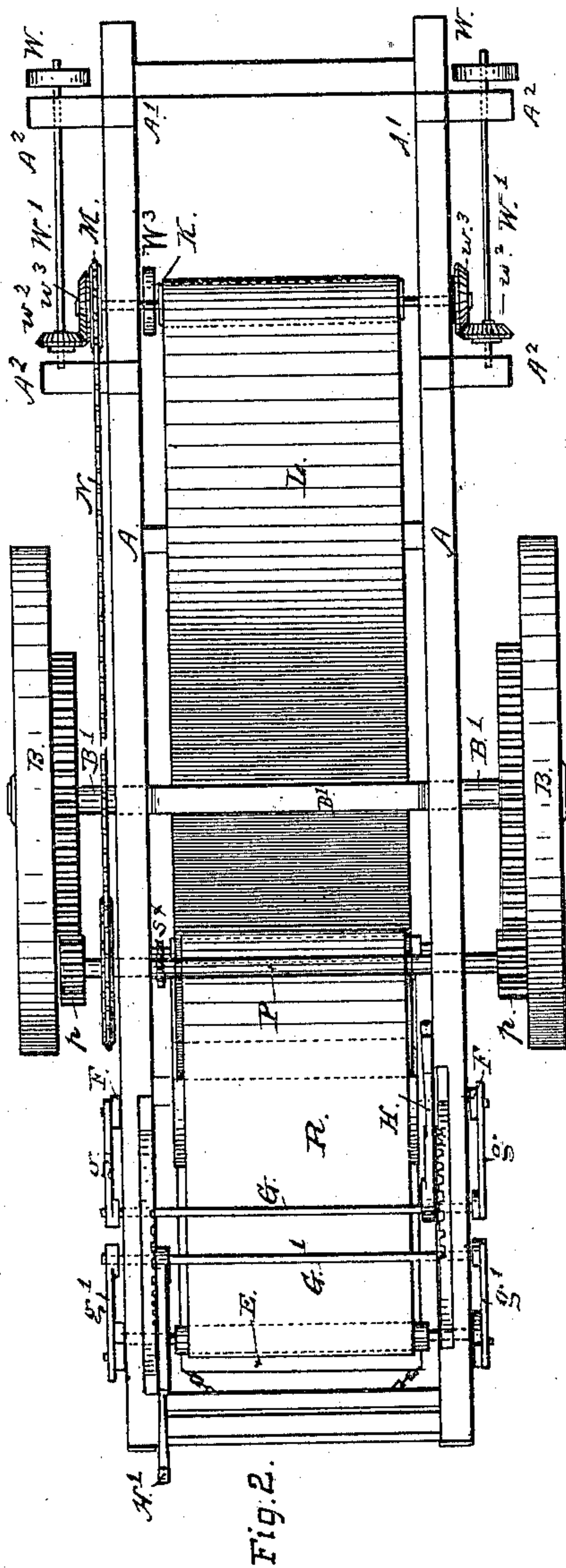


2 Sheets—Sheet 1.

No. 369,824.

Patented Sept. 13, 1887.



Witnesses
Joseph E. Ford
E. Patten

Inventor
John Traskeway Jr.

By his Attorneys

Smith & Osborn

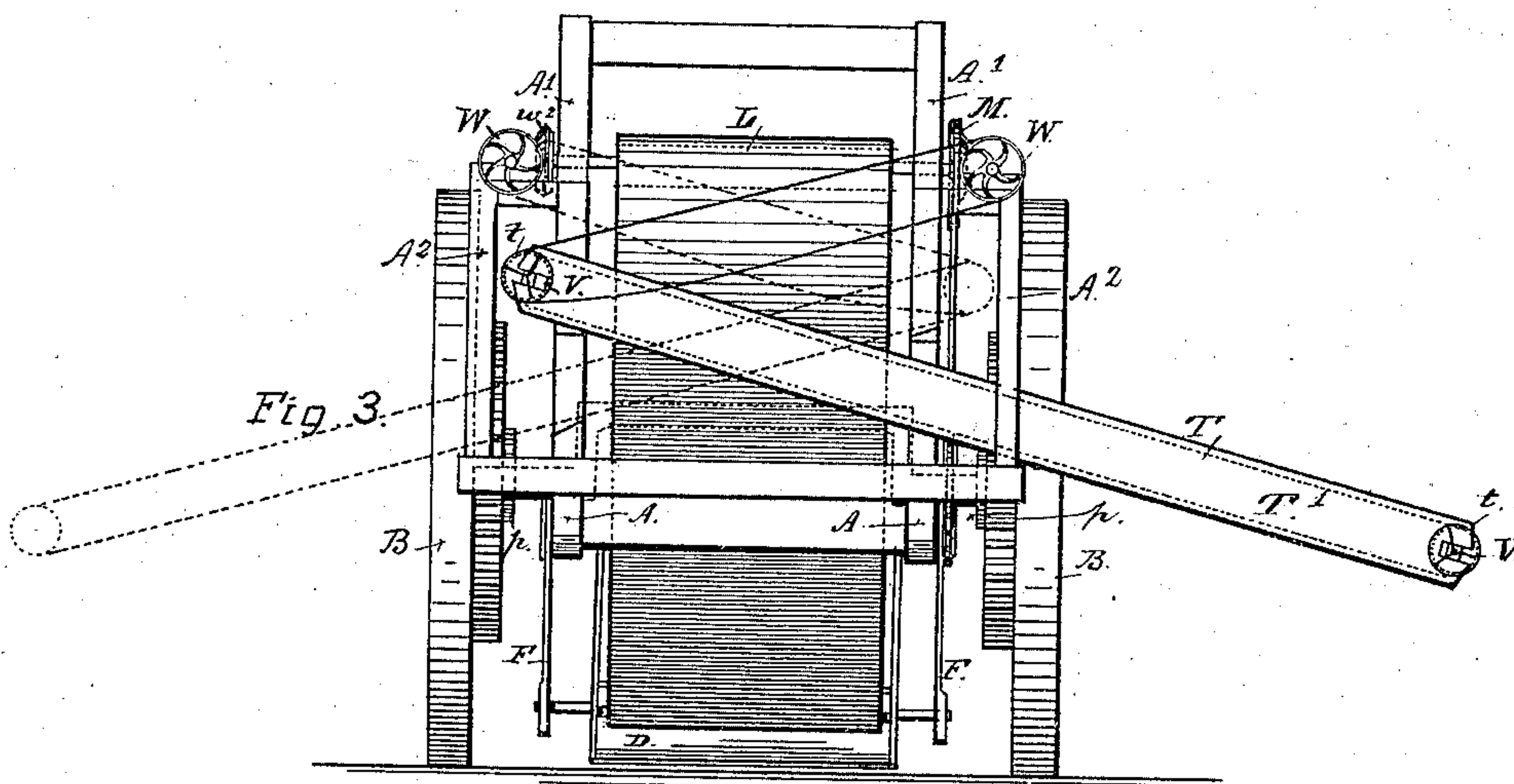
(No Model.)

2 Sheets—Sheet 2.

J. TRETHEWAY, Jr.
EARTH SCRAPING AND GRADING MACHINE.

No. 369,824.

Patented Sept. 13, 1887.



Witnesses

Joseph E. Ford
E. Patten.

Inventor

John Tacheway Jr.

By His Attorneys

Smith & Osborn.

UNITED STATES PATENT OFFICE.

JOHN TRETHEWAY, JR., OF STOCKTON, CALIFORNIA.

EARTH SCRAPING AND GRADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 369,824, dated September 13, 1887.

Application filed April 7, 1887. Serial No. 234,084. (No model.)

To all whom it may concern:

Be it known that I, JOHN TRETHEWAY, Jr., a citizen of the United States, residing at Stockton, in the county of San Joaquin, State of California, have invented certain new and useful Improvements in Earth Scraping and Grading Machines; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form a part of this specification.

My invention relates to improvements in machines for roadways and for use in similar engineering operations where earth is to be leveled or removed from one place and deposited or distributed on another place, as in leveling land.

The nature of these improvements consist in certain novel construction and combination of scraping element, endless traveling aprons or carriers, and means whereby adjustment of the same is produced to change and adapt the machine to different conditions of work, these parts being mounted and arranged in a wheeled frame or truck, for operation as hereinafter set forth.

The following description fully explains the manner in which I produce, construct, and operate a machine in accordance with said invention, the accompanying drawings, in three sheets, being referred to by figures and letters.

Figure 1 of the drawings represents a side view of the machine with the last endless discharging apron or carrier omitted. Fig. 2 is a plan of Fig. 1. Fig. 3 is a view taken from the rear and showing more particularly the removable apron or carrier by which the material—as sand or earth—is discharged and deposited to one side or the other.

A A represent horizontal timbers and A' A² uprights, that form the frame of the machine. The main axle and wheels, on which the frame is carried, are seen at B and B', respectively, about midway in the length of the truck. The front is carried by a pair of wheels and an axle, B² B³, to which a draft-pole, C, is attached. This axle is connected to the frame by a goose-neck, B⁴.

D is a suspended frame attached by a hinged joint at D' to the under side of the longitudinal timbers, and on these points as centers capable of being raised up or down to take a posi-

tion more or less inclined, or to be raised high enough to clear the surface of the ground at the forward or leading end.

E is a scraper in the form of a flat plate about equal in width to the hinged frame or part D and attached by a joint, E', to the leading end of this part in such manner that it can be raised or depressed to bring the front edge up or down and regulate the depth of its penetration into the surface as the machine is moved forward.

The front end of the part D is attached at the sides to hangers or suspension-bars F F, that are pivoted at the upper ends to the arms g of a rock-shaft, G, and a hand-lever, H, is fixed on this shaft in position with respect to a notched segment, h', on the truck-frame to furnish a means for turning and holding the rock-shaft.

The front end of the scraper is attached by bars F' F' in the same manner to a second rock-shaft, G', having its own hand-lever, H', and a locking-segment, h'', for it on the truck-frame. The hinged part D is also the support and carrier for the lower roller of an inclined apron or endless carrier, L, of which the higher end is supported on the rear of the truck-frame. This apron passes under and clears the axle B', and is provided with suitable slots or projections to hold and carry the material on its inclined traveling surface. The roller I is journaled in the sides of the frame D, and the upper roller, K, is carried in boxes on the upright frame at the rear.

M is a sprocket-wheel on the shaft of this upper roller, and N a chain connecting it with a wheel of the same character on the shaft P. This shaft is driven from both wheels of the truck by means of the spur-gears on the axle and the pinions p p on the shaft, after the manner used in harvesters and other agricultural machines to transmit and apply power from the traction-wheels to a driving-shaft. In such constructions it is the practice, also, to connect the pinions by clip-clutches to the shaft in such manner that the pinions are locked during the forward movement of the traction-wheels, but are allowed to slip and relieve the shaft and its bearings, and the mechanism connected to the shaft, when a reverse movement of the wheels takes place. This construction is employed by me also, and

the pinions are therefore set loosely on the shaft and connected by the usual spring clutches or couplings to slip when a backward movement of the machine is made, or when
 5 one wheel remains stationary, as in turning short curves. No clutches are shown in the drawings, but the mode of applying them will be readily understood by the mechanic.

R is an endless belt set directly over the
 10 plate E and armed with a number of knives or thin bars of sheet metal, *r r*. It is mounted on the rollers S S', and is driven from one of the main spur-wheels by a pinion, S^x, on the shaft of the upper roller. The lower roller is
 15 carried by the hangers F' F' and at such distance above the plate E that the edges of the blades *r* shall run close to the surface.

The parts consisting of the scraper E, the belt R, and the inclined endless carrier L act
 20 together to cut or scrape and take up the material from the surface over which the machine is being drawn, and from the higher end of this apron the material is discharged upon a second apron, T, which is mounted in a detachable and movable frame, T', (shown in Fig. 3,) to extend laterally to one side or to the other
 25 of the machine, according to adjustment. This apron T is carried by rollers *t t*, that are set in boxes at the ends of the side boards of the frame T', and each roller is provided with a pulley, V, to take a belt from the pulley W,
 30 of a counter-shaft, W', on the main frame. There is one of these counter-shafts W' at each side of the machine, receiving motion from the upper roller through bevel-gears W² W³, and
 35 the roller that is uppermost when the frame T' is set is belted to the pulley W on the opposite side by the belt Y, as shown in Fig. 3. By providing double sets of driving-pulleys in
 40 this manner I am enabled to shift and set the apron T quickly from one side to the other, as required in the work. This is done by throwing off the belt Y and pushing the frame T on its rests or supports in the upright frame from
 45 one side to the other, and then raising it to the required elevation and putting the belt onto the opposite pulleys.

In changing the apron from the right-hand side, as represented in Fig. 3, to the opposite
 50 side thereof, the roller and pulley that is outside and lowest will be the inside and highest, and will take the driving-belt from the left-hand counter-shaft pulley. It should here be observed, also, that provision is made for setting

and running this apron T out from the rear 55 end of the frame to deliver the material directly behind the machine, if desired. In such case the upper roller is driven from a pulley, W³, provided for the purpose on the roller-shaft.

In operating with my improved machine, 60 the scraper is adjusted to the conditions of the surface by means of the hand-levers H H', and the scraper and frame that carries its higher end, and also the lower end of the endless elevating-apron is raised up to clear any ob- 65 structions in the path that could not be removed or taken up by the machine.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is— 70

1. The herein-described leveling or grading machine, consisting of a suitable frame mounted on wheels, the driving-wheels B, shaft P, and pinions *p p*, the hinged frame D, supported at the outer end by hangers provided with means 75 for raising and lowering them, the scraper E, attached to the forward end of the frame and supported at its front end by hangers F' F', having means for raising and lowering them, the inclined elevating-apron L, its driving-shaft 80 K, the pulleys and belt, and the discharging-apron at the tail of the machine.

2. The combination of the main frame A A' and the inclined elevating-apron, the driving-shaft P, roller-shaft K, having a pulley, W³, and 85 counter-shafts W' W', geared to the roller-shaft and having the pulleys W W on the outer end thereof, and the shifting discharge-apron T, mounted in the movable frame and having pulleys V, substantially as described, for op- 90 eration as set forth.

3. The combination, with the short hinged frame D, and roller I carried thereby, and apron L, passing over said roller, arms F, shaft G, and lever H for raising and lowering the 95 said frame, of a scraper, E, adjustably secured upon the frame D, arms F', shaft G', and lever H' for raising and lowering the scraper, roller S, having bearings in arms F', and roller S', having bearings in the frame A, and the belt 100 R run over said rollers S S' above the scraper, as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

JOHN TRETHEWAY, JR. [L. S.]

Witnesses:

R. E. WILHOIT,

GEO. E. WILHOIT.