

(No Model.)

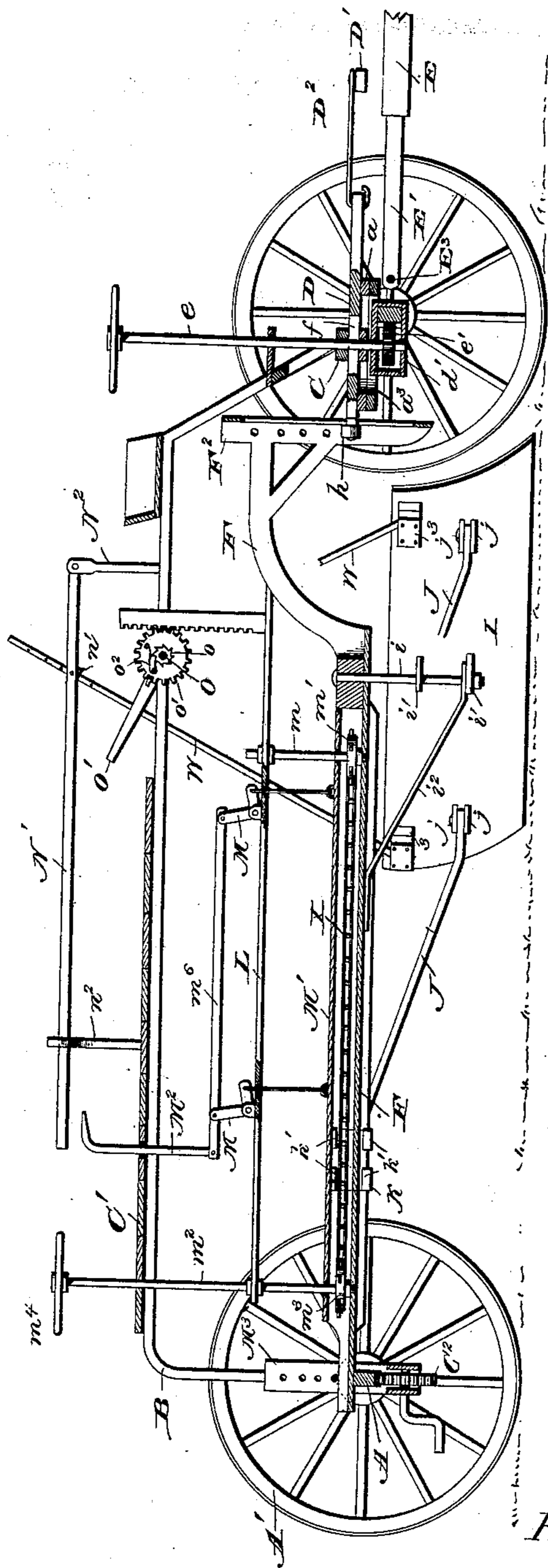
2 Sheets—Sheet 1.

H. O'HARE.
ROAD SCRAPER.

No. 435,365.

Patented Aug. 26, 1890.

Fig. 7



Hugh O'Hare.
Inventor

— by

Attorney

Witnesses

G. S. Elliott.

E. M. Johnson

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

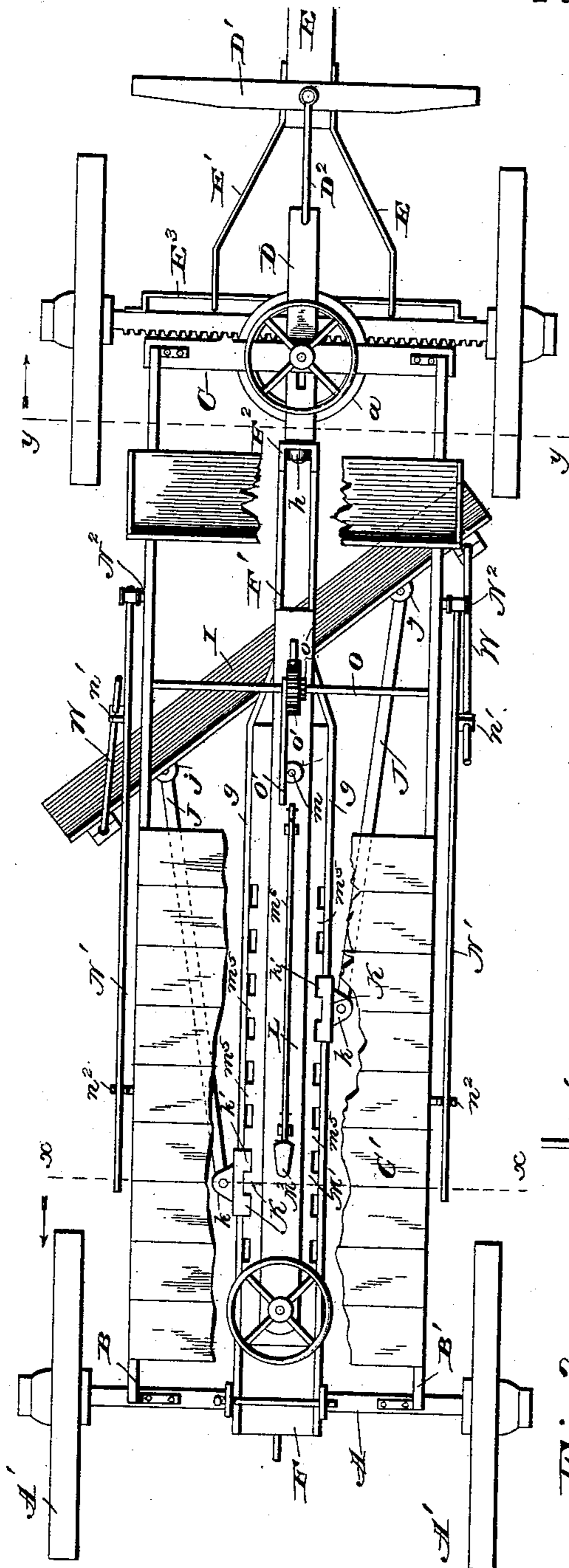


Fig. 5.

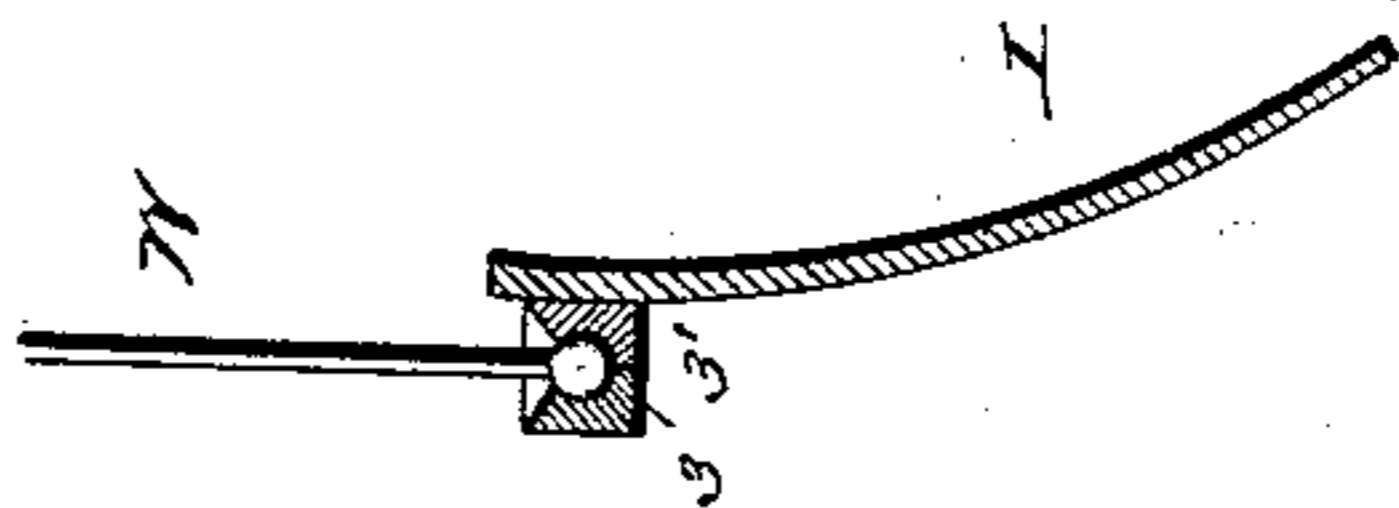


Fig. 4.

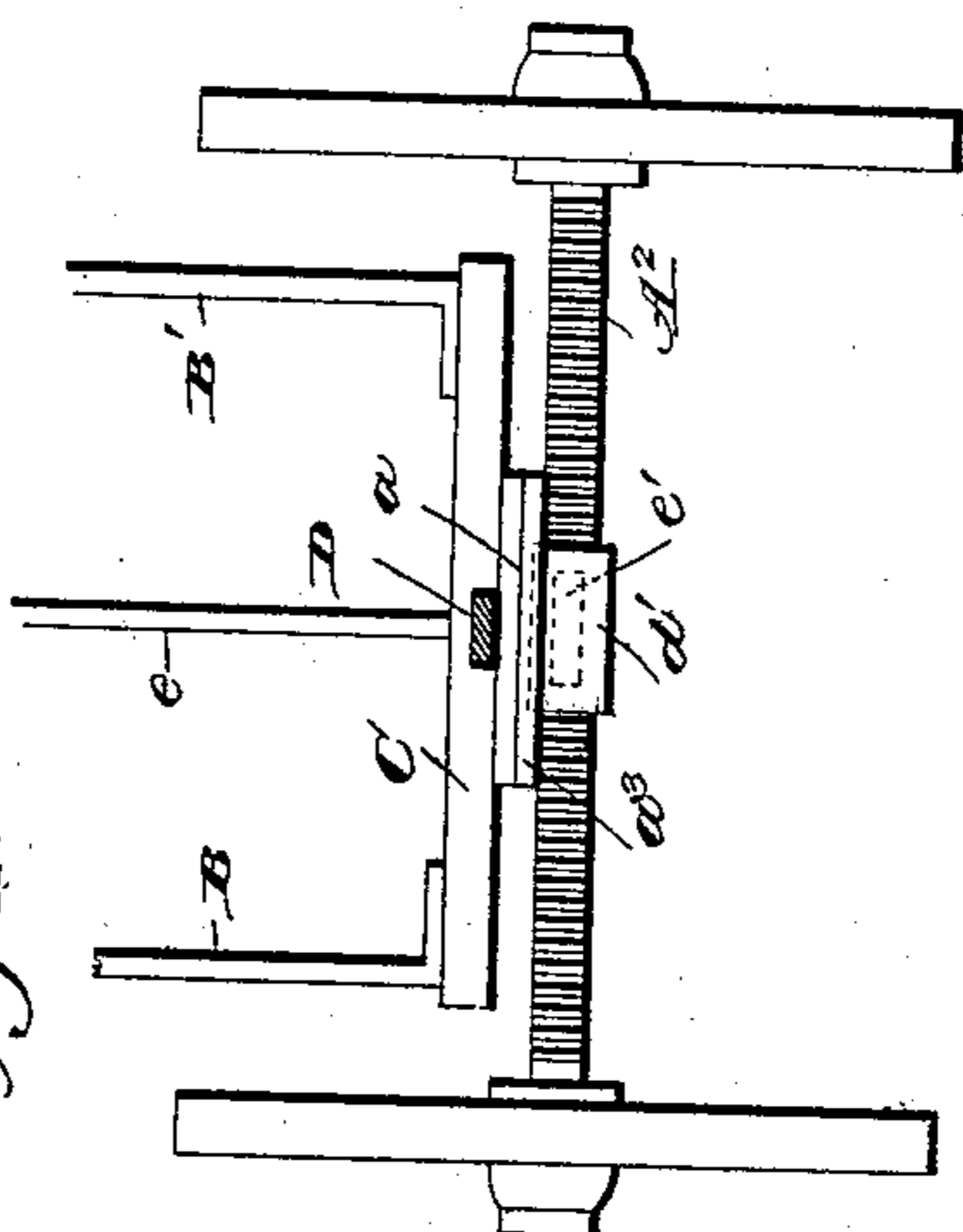
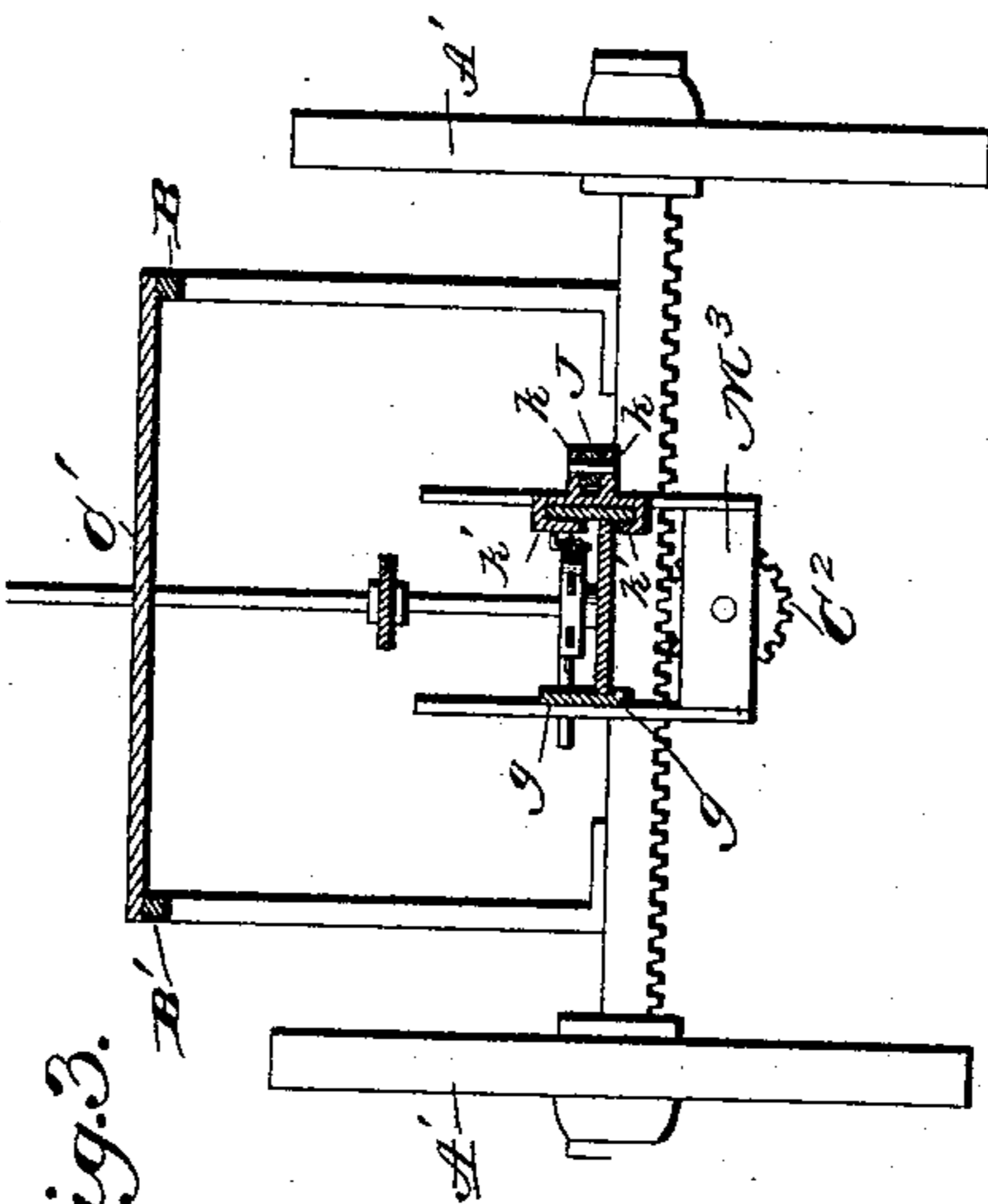
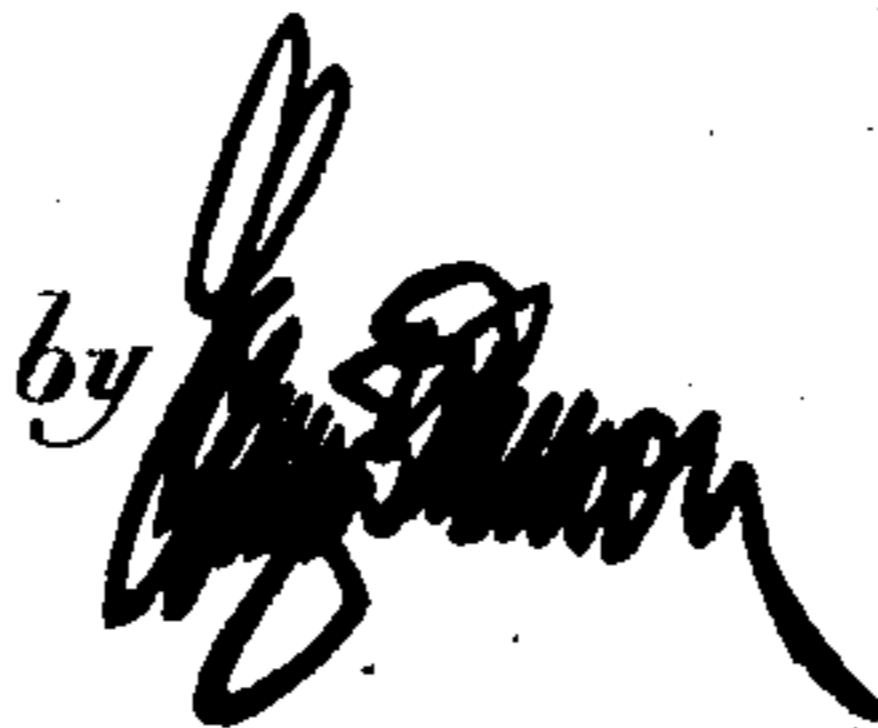


Fig. 3.



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UNITED STATES PATENT OFFICE.

HUGH O'HARE, OF MOUNT PLEASANT, IOWA, ASSIGNOR TO JOHN F. LEECH,
OF SAME PLACE.

ROAD-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 435,365, dated August 26, 1890.

Application filed May 22, 1890. Serial No. 352,747. (No model.)

To all whom it may concern:

Be it known that I, HUGH O'HARE, a citizen of the United States of America, residing at Mount Pleasant, in the county of Henry and State of Iowa, have invented certain new and useful Improvements in Road-Scrapers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to road scraping and grading machines; and it consists in the improved construction hereinafter described and set forth, whereby simple and efficient provision is afforded for scraping and grading, adjusting and controlling the scraper-blade in a great number of desirable positions within and relative to the main frame of the machine.

The invention also contemplates certain details of construction extremely novel and positive in their operation, and which all highly contribute to the operation and utility of the machine.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical longitudinal sectional view of a machine embodying my improvements. Fig. 2 is a plan view of the same, the platform being broken away to more clearly show parts. Fig. 3 is a transverse section taken on the dotted line $x x$, Fig. 2, looking in the direction of the arrow. Fig. 4 is a similar view on the line $y y$, Fig. 2, looking in the direction of the arrow. Fig. 5 is a detail sectional view through one of the ball-and-socket connections of the scraper.

The rear axle A, having the rear carrying-wheels A' A', may be horizontal or arched, as preference may demand, and has connected thereto near each wheel A' the rear ends of the longitudinal rods B B', forming the sides of the main frame, said rods being shown as extending vertically and horizontally to give the frame the desired width and height for supporting the numerous other parts of the machine, and at their front ends the rods are

bent downward and rigidly connected to a transverse head C, carrying the upper member a of a fifth-wheel. Upon the horizontal portions of the rods B B' is supported a platform C' for one of the attendants.

The front axle has its rear face provided with rack-teeth, and said axle is loosely and centrally embraced by a horizontal rectangular loop d' , which carries the lower member a^3 of the fifth-wheel, and at the same time makes provision through its upper and lower portions for the bearing of a vertical shaft or spindle e , which also passes through the head C and serves as a king-bolt. A pinion e' is keyed on the shaft to engage the rack d , while the upper portion of the shaft extending above the shaft has a hand-wheel connected thereto to enable its rotation in its bearing. A short metallic tongue D has its central portion seated in a longitudinal recess formed in the lower face of the head C, and said tongue has a vertical slot f , through which the shaft e passes to provide a draft-connection for said tongue but permit a limited longitudinal play of the latter in its recess. The forward end of the tongue D has connection with a tree D' through the medium of a link D², and these parts perform the function of a draft-evener irrespective of the transverse position of the head, and its parts may be relative to the front axle.

The main draft-tongue E is connected directly to the front of the axle through the medium of diverging straps E', which are adapted to slide laterally on a rod E³, secured on the front of the axle, so that the tongue can be shifted transversely when the head is moved, thereby preventing side draft.

The scraper-carrying beam of the machine consists of the horizontal body F, provided at each side with upper and lower flanges $g g$, and front upwardly-curved neck F', the latter terminating in the vertical clevis F², the front face of which is provided with a vertical slot closed at its upper and lower ends. The vertical side walls of the clevis are each provided with a vertical series of registering perforations, and located between said sides is a roller h on the rear end of the tongue D, the perforations in the sides of the clevis permitting a pin to be passed transversely there-

through to limit the vertical play of the clevis relative to the tongue, when desirable.

A bolt *i* depends from the bottom of the body F of the beam adjacent to its junction with the neck, and pivotally engages the ears *i'* *i'* projecting integrally from the rear side of the scraper I, a forwardly-inclined spring-brace *i*² being connected at its rear end to the bottom of said body and perforated at its front end, so that it can be sprung in engagement with the belt between the ears *i'* *i'* before the application of the retaining-nut, and prevent too free vibration of the ears on said bolt, the spring character of the brace permitting it to yield sufficiently to take up shocks or jars to which the pivotal connection might otherwise be subjected. On the rear side of the scraper and adjacent to each end thereof are located integral ears *j* *j*, between which is pivotally connected the forward end of a rod J, the inner end of which is pivotally connected between ears *k* *k*, located on the outer side of a clip K, bearing against the outer flanged portion of the body F, and having inwardly-bent portions *k'* to engage the upper and lower flanges *g* *g* of said body. It will be noticed that the connections at each side are similar, and that the upper portions *k'* are centrally cut away to form a notch.

A bar L, located longitudinally above the body, has its front portion rigidly connected to the neck, and adjacent thereto is perforated to receive the upper end of a short shaft *m*, carrying a sprocket-wheel *m'*, located between the upper flanges of the body F, the lower end of said shaft *m* bearing in said body, while the rear portion of said bar L is perforated for the passage of the upper portion of a vertical shaft *m*², also carrying a sprocket-wheel *m*³ and bearing in the body, and upon the upper end of which is mounted a suitable operating-wheel *m*⁴. It will be noted that shafts *m* *m*² have nuts located above and below the bar L, serving to rigidly hold said bar in position and prevent vertical movement thereof. Bell-crank levers M are pivotally mounted on the bar L, and have their lower horizontal members connected by links to a flat longitudinal plate M', of a size sufficient to rest between the flanges *g* *g* of the body, and having lugs *m*⁵ on its sides, one of which at each side is designed to engage the notch in the clip thereat and lock said clip against movement on the body. The upper vertical members of said bell-crank levers are pivotally connected to move in unison by a longitudinal link *m*⁶, the rear end of which is pivotally connected to the forward portion of a rod extending vertically through the platform and provided with a treadle. By moving the rod M² the plate M' can be lifted out of the space between the flanges *g* of the body, so as to release the clips, the opposite movement securing the locking of the parts. The said clips, and hence the direction of inclination of the scraper,

may be adjusted by means of an endless chain X, which passes around both sprocket-wheels and is connected to one of said clips.

The rear axle A has a series of rack-teeth on its under side, and an inverted yoke M⁸ has its vertical members perforated for the passage of the axle, so that the yoke may slide transversely on the former. The lower portion of the yoke beneath the axle is composed of two transversely-parallel plates in which bears a longitudinal shaft carrying a pinion C², meshing with the rack, and said shaft terminates in a projecting operating-crank to effect the movement of the yoke, as aforesaid. The rear reduced end of the body portion F of the beam rests on the rear axle A between the vertical members of the yoke, so that as the latter is moved the end of said body portion will be correspondingly shifted. The vertical members are provided with a series of registering perforations through which a rod may be passed to support the rear end of the body portion F at various heights.

At each upper corner of the scraper I, at the rear side thereof, two plates 3 3 are bolted, said plates being recessed on their adjacent face to form a socket and present a ball-and-socket joint by receiving a ball on the end of a vertical rod W, which plays through a swivel-loop *n'* on a longitudinal lever N', the forward end of which is swiveled in an elevated bearing N², mounted on one of the bars B B'. The rear ends of these levers N' are extended to render them convenient for operation from the rear portion of the platform and also permit their engagement with supports *n*², mounted on the side rods of the frame to hold the levers N'. Each swivel *n'* has a perforation through which a pin may be passed to engage one of a series of perforations in the adjacent rod W to establish a positive connection between the same and the lever N' and enable the levers to lift the scraper so that it may clear obstructions.

A cross-rod O connects the side rods of the main frame and has mounted thereon a fixed ratchet-wheel *o* and loosely-turned gear-wheel *o'*, the teeth of which are adapted to be engaged by a spur or spurs on a lever O', also loosely mounted on said rod O. The gear-wheel *o'* carries a spring-pawl *o*², adapted to engage the ratchet-wheel *o* and lock the wheel against rotation. The wheel *o'* meshes with a vertical rack-bar secured on the plate L. Hence when the spur of the lever engages the teeth of the gear-wheel *o'* the latter may be partially turned to raise the beam and all its parts, including the scraper, and when the lever is disengaged from the gear-wheel the pawl of the latter will engage the ratchet and prevent the rearward rotation of the wheel under the force exerted by the weight of the beam and parts. By repeated engaging and disengaging the lever the beam may be elevated to the desired extent with but a lim-

ited movement of said lever, and at the same time the rear end of the beam may be vertically adjusted in the yoke, so that said beam and connected parts will be held in an elevated position to facilitate transportation.

The preceding detailed description, in connection with the drawings, will enable a clear understanding of the operation and merits of the machine. By operating the shaft e , seated in the head, the beam can be shifted to throw the scraper to any lateral position, the draft devices, including the evener and sliding tongue, insuring a proper draft irrespective of such lateral position. The locking device may be operated to release the clips, and the shaft m^2 in the rear end of the body revolved to cause the endless chain to move the clips in opposite directions to vary the direction of inclination of the scraper. The entire beam and parts supported thereby may also be shifted at its rear end through the medium of the crank-shaft, pinion C^2 , and yoke.

The special construction of clevis at the front of the beam-neck, together with the connection with the evener-tongue, will permit the beam to be readily elevated and lowered without effecting the draft relation of these parts. All the swivel-connections of course provide for the varying and torsional movement of the parts.

Having thus described my invention, I claim—

1. In a ditching-machine, the combination, with the front and rear axles, of a supporting-frame having a transversely-adjustable connection with the front axle and rigidly connected to the rear axle, and a beam carrying a scraper and rigidly connected at its front with the frame to move laterally therewith, and adapted to be transversely shifted at its rear relative to the supporting-frame of the axle.

2. The combination, with the rear and front axles, of a supporting-frame connected rigidly to the rear axle and to a head transversely adjustable on the front axle, together with a beam provided with a scraper connected to travel with the head and having its rear end supported in a stirrup on the rear axle and laterally adjustable thereon, substantially as set forth.

3. The combination, with the rear and front axles, the latter having a sliding draft-tongue connected thereto, of a head laterally adjustable upon said front axle and having a draft-evener connected therewith, together with a main frame, beam, and scraper supported on the two axles, said main frame connected at its rear to the rear axle and at its front to the head, substantially as set forth.

4. The combination, with the rear and front axles, and a head transversely adjustable on the latter and provided with a draft-evener and sliding tongue, of a main frame connected to said rear axle and to said head, beam, and

scraper supported on the two axles, the forward end of the beam being provided with a clevis in which the end of the evener-tongue is adjustable, substantially as set forth.

5. The combination, with the rear axle, supporting-frame, beam, and scraper supported as described, of the front axle having a rack, a strap moving on said axle and provided with a vertical shaft bearing in the strap and having a pinion gearing with the rack, together with the fifth-wheel sections, evener, sliding tongue, and beam-clevis connected therewith, substantially as set forth.

6. The combination, with the beam suitably suspended and having upper and lower side flanges, of the scraper pivoted to said beam, clips sliding thereon and connected to said scraper by rods, and means for shifting said clips, substantially as set forth.

7. The combination, with the flanged beam suitably suspended and having the scraper pivoted thereto, of the clips sliding on said beam, connections between the scraper and clips, means for moving them in opposite directions, a horizontal plate having lugs on its sides, and connections for lowering said plate to engage said clips, substantially as set forth.

8. The combination, with the flanged beam suitably suspended and having the scraper pivoted thereto, of clips sliding on said flanges and connected to the scraper, vertical shafts seated in said flanged beam and provided with wheels and an endless belt passing around said wheels and connected to one of the clips, and means for rotating said shafts, substantially as set forth.

9. The combination, with the main frame having supports n^2 , of levers swiveled at their front to supports N^2 and having loops, a beam having side flanges and its pivotally-connected scraper, clips sliding on said flanges and connected to scraper, and vertical rods connected by ball-joints to said scraper and playing through loops on said levers, together with means for oppositely moving said clips on said flanges, substantially as set forth.

10. The combination, with the main frame, front and rear axles, of the scraper-carrying beam having a vertical clevis at its front, a transversely-adjustable block connected to said clevis, and ratchet and rack devices for elevating the beam and scraper relative to head, substantially as set forth.

11. The combination, with the axle A , having a rack, of a yoke sliding on said axle and having a pinion gearing with said rack, and crank-shaft for operating the same, together with a beam carrying the scraper and having its end bearing in said yoke to be transversely shifted relative to the axle, substantially as set forth.

12. The combination, with the axle A , having a rack, of a yoke sliding on said axle and having its vertical members provided with a

series of registering perforations, a pinion
carried by said yoke and meshing with said
rack, crank-shaft for operating said pinion,
a beam located in said yoke and carrying the
5 scraper and adapted to be transversely shifted
with the yoke, and a pin seated in said per-
forations to variably support the end of the
beam, substantially as set forth.

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

HUGH O'HARE.

Witnesses:

JAMES BIGELOW,
O. J. GIMP.