

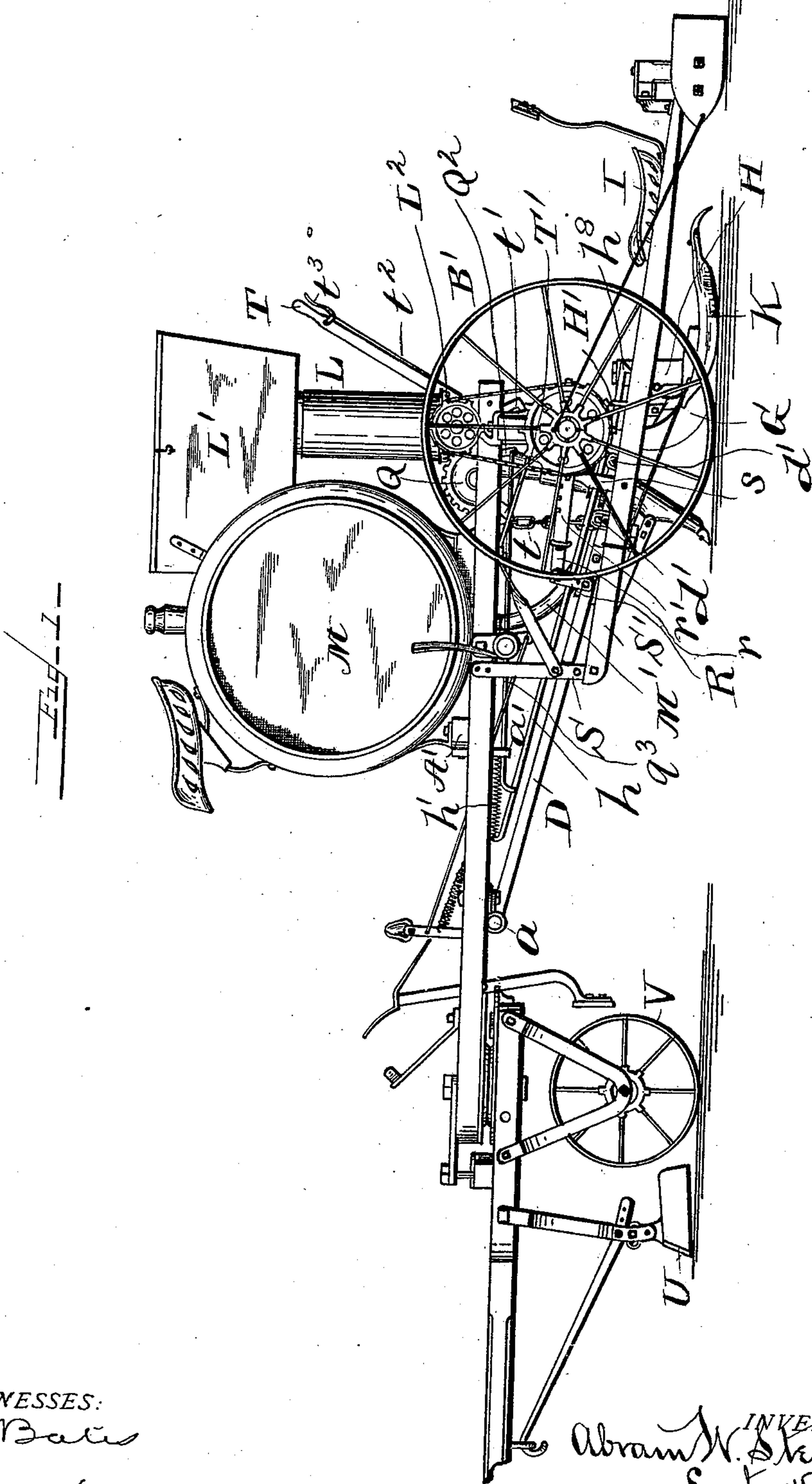
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6 Sheets—Sheet 1.

A. W. STEVENS & L. D. SWART.
TRANSPLANTING MACHINE.

No. 519,460.

Patented May 8, 1894.



WITNESSES:

H. E. Bates

John Kugabury

INVENTORS
Abram W. Stevens and
Lester D. Swart,

BY Whitaker Drewett ATTORNEYS.

(No Model.)

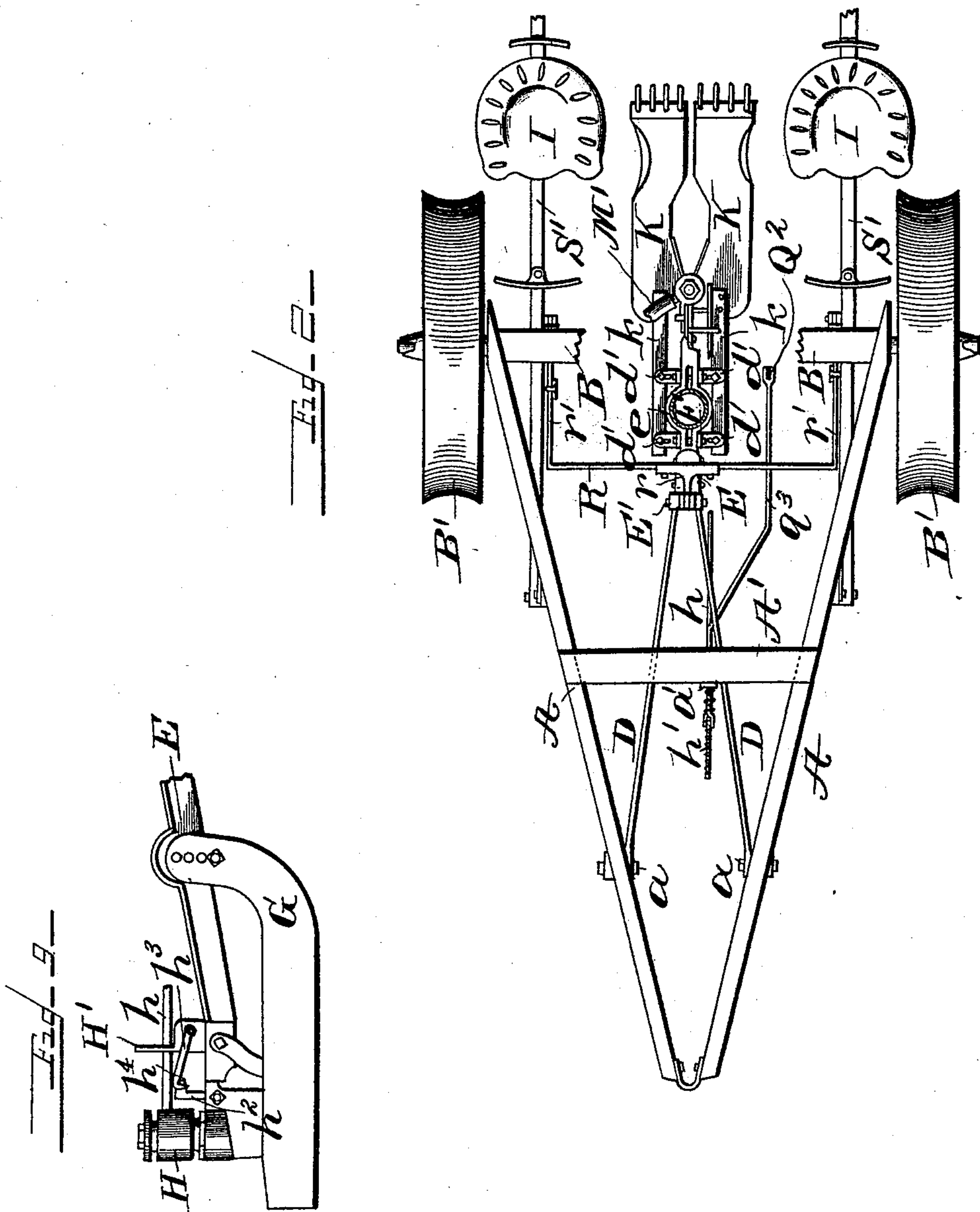
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Witnesses

G. A. Tauberschmidt
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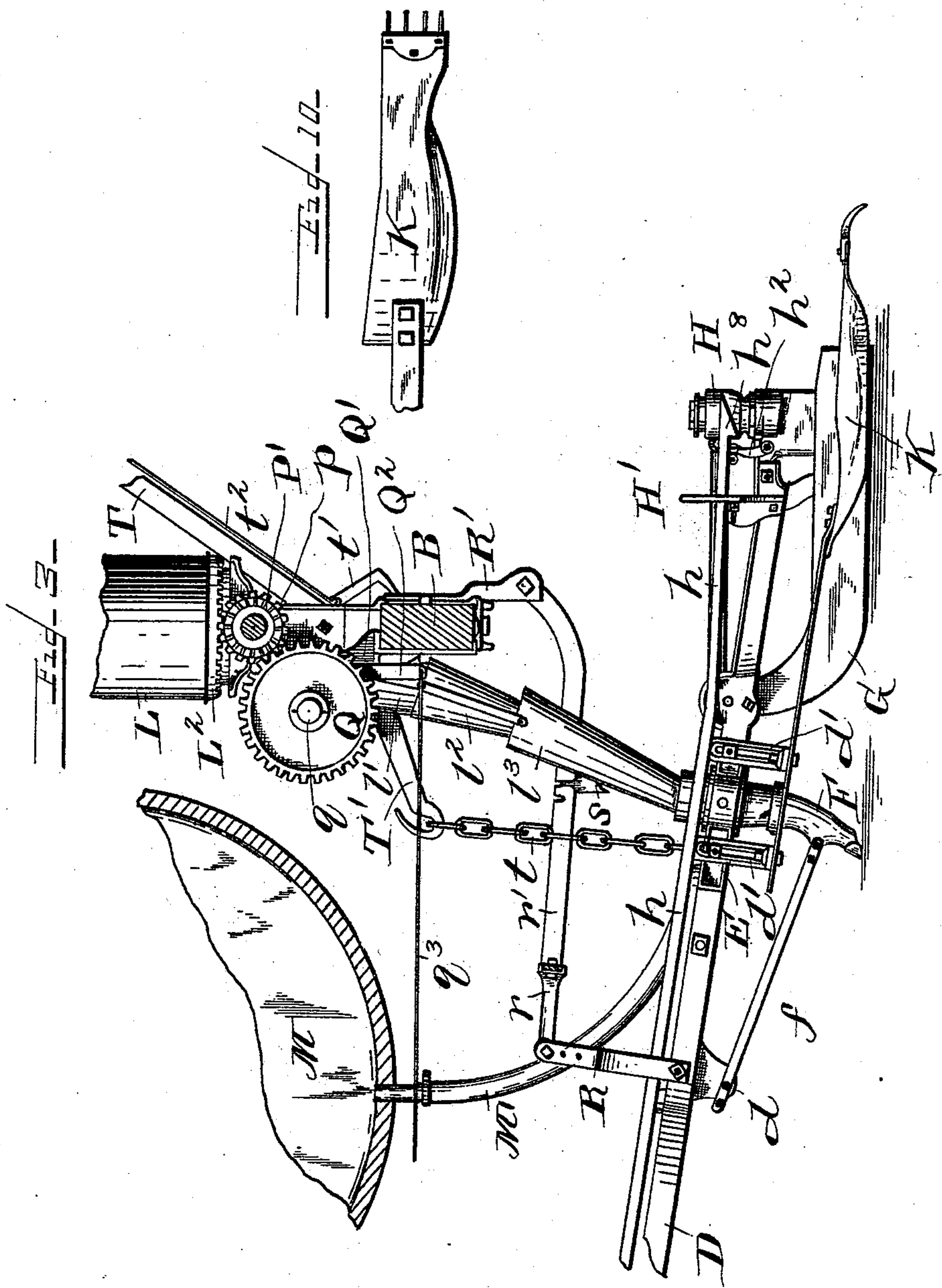
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WITNESSES:

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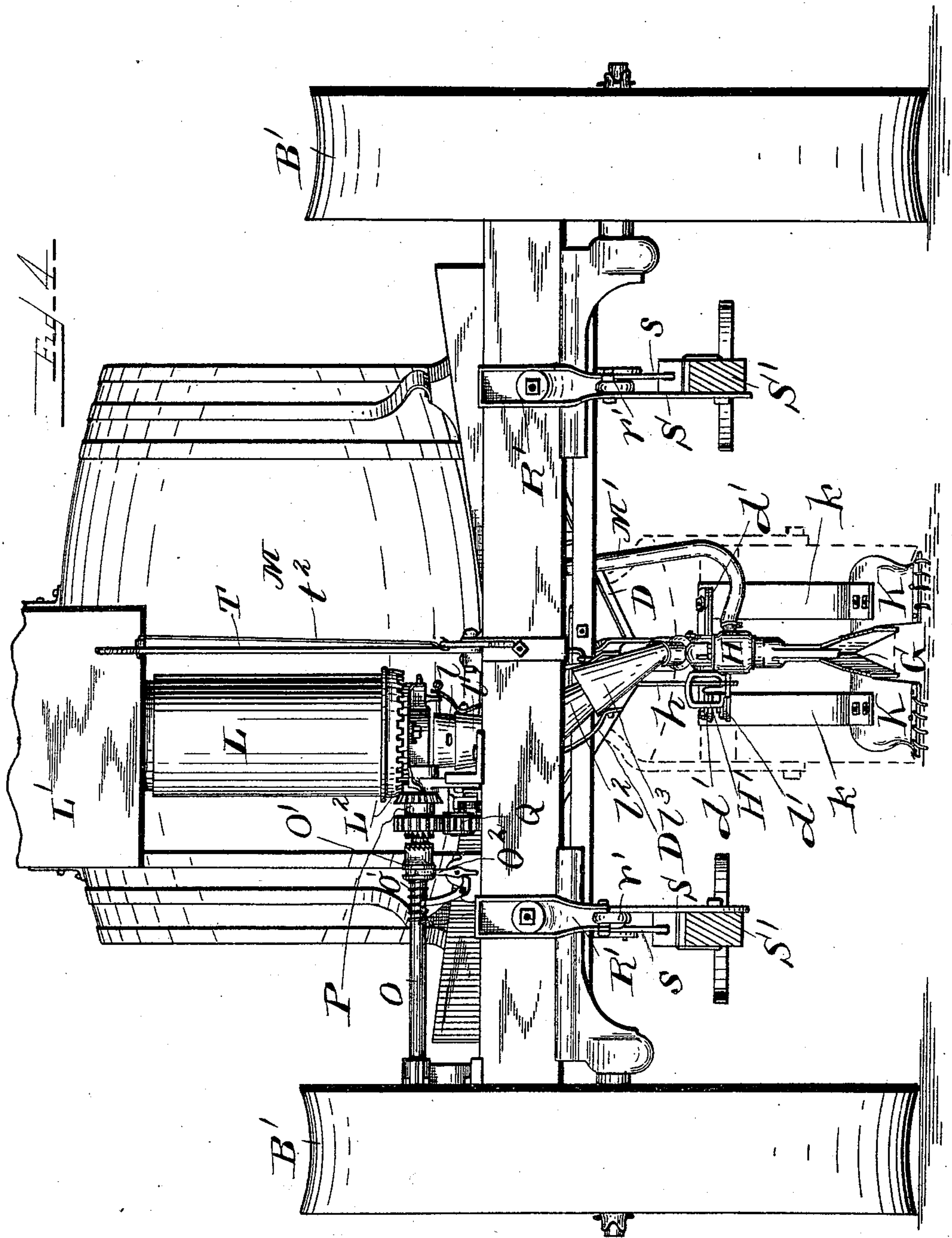
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WITNESSES:

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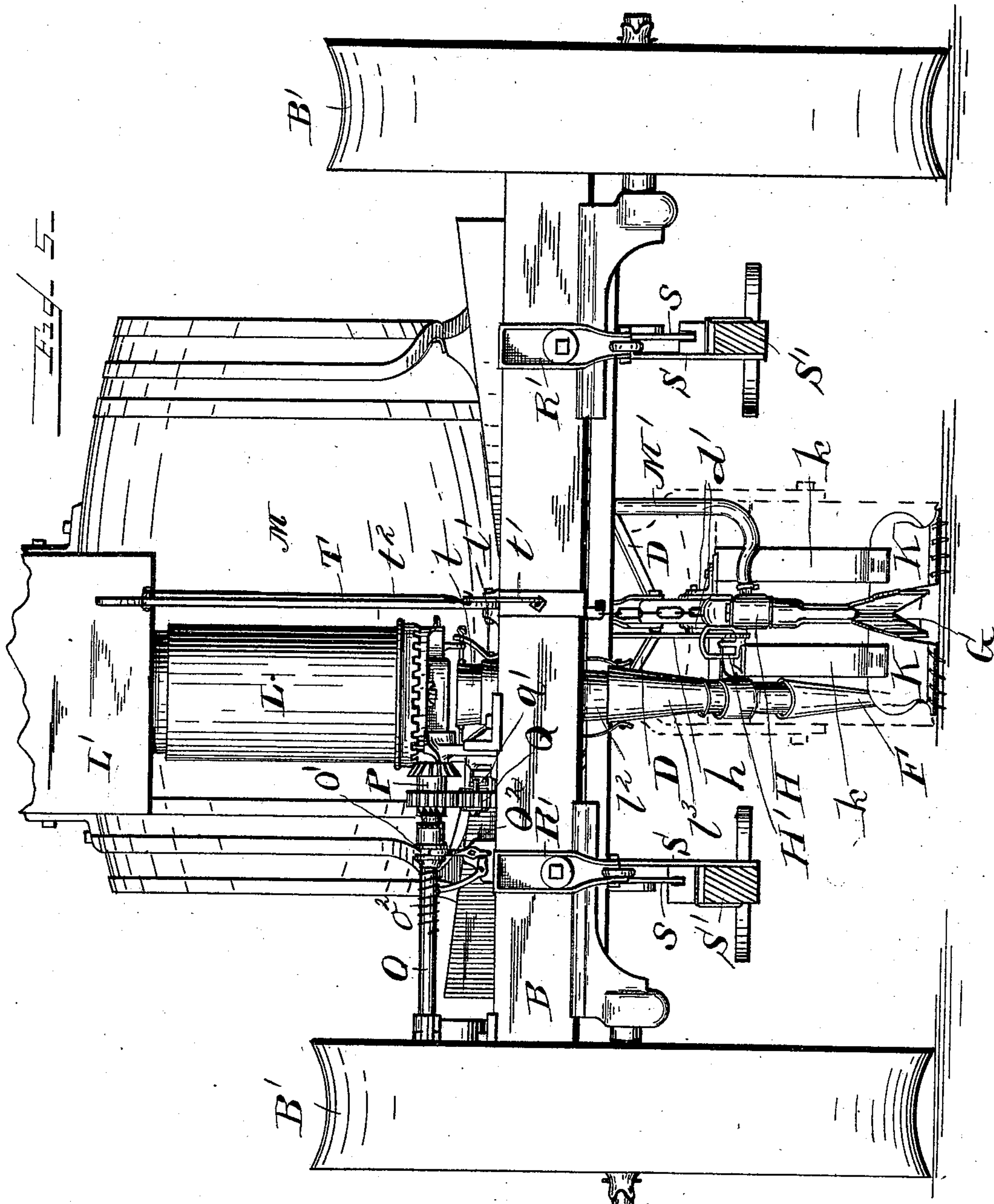
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WITNESSES:

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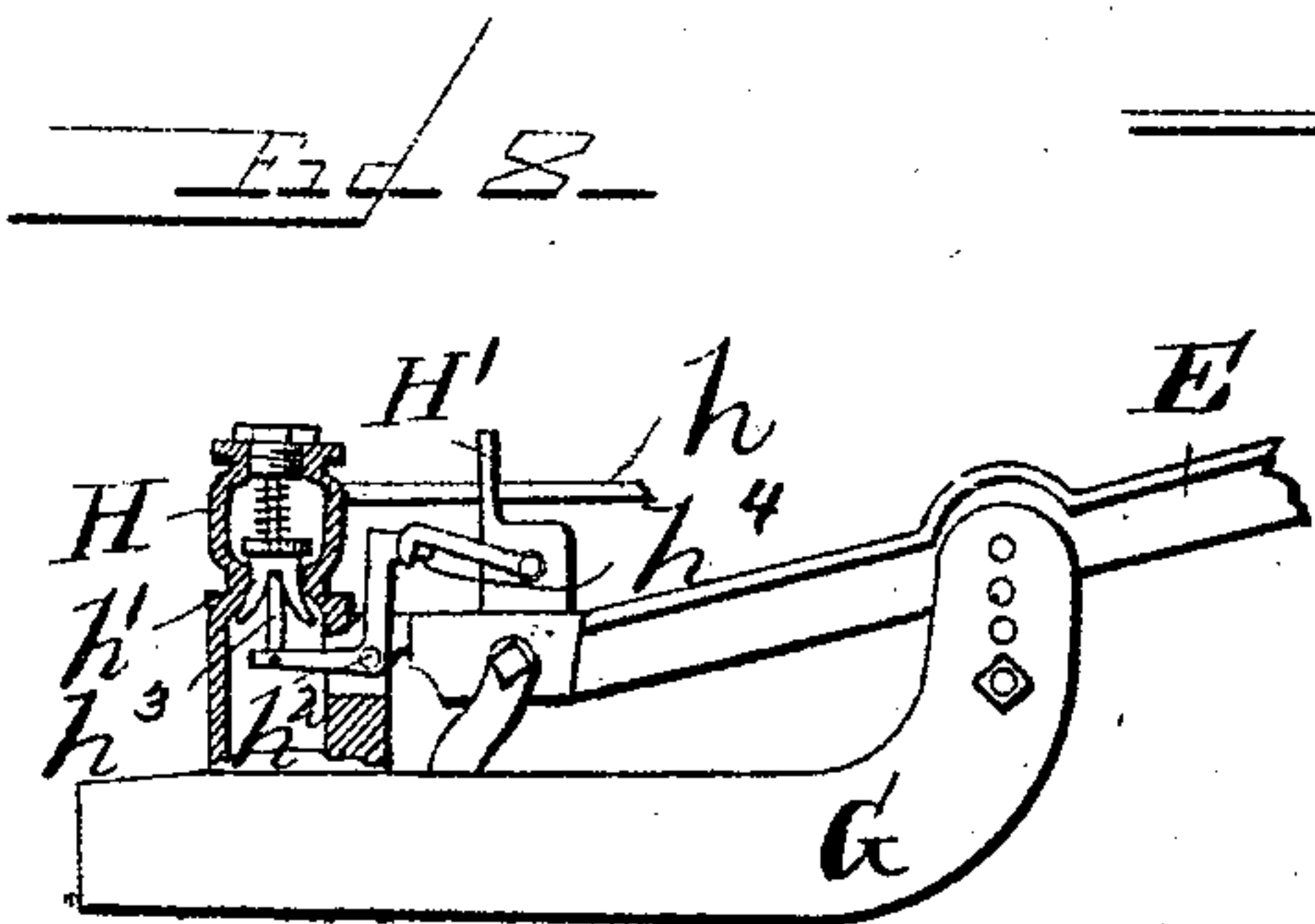
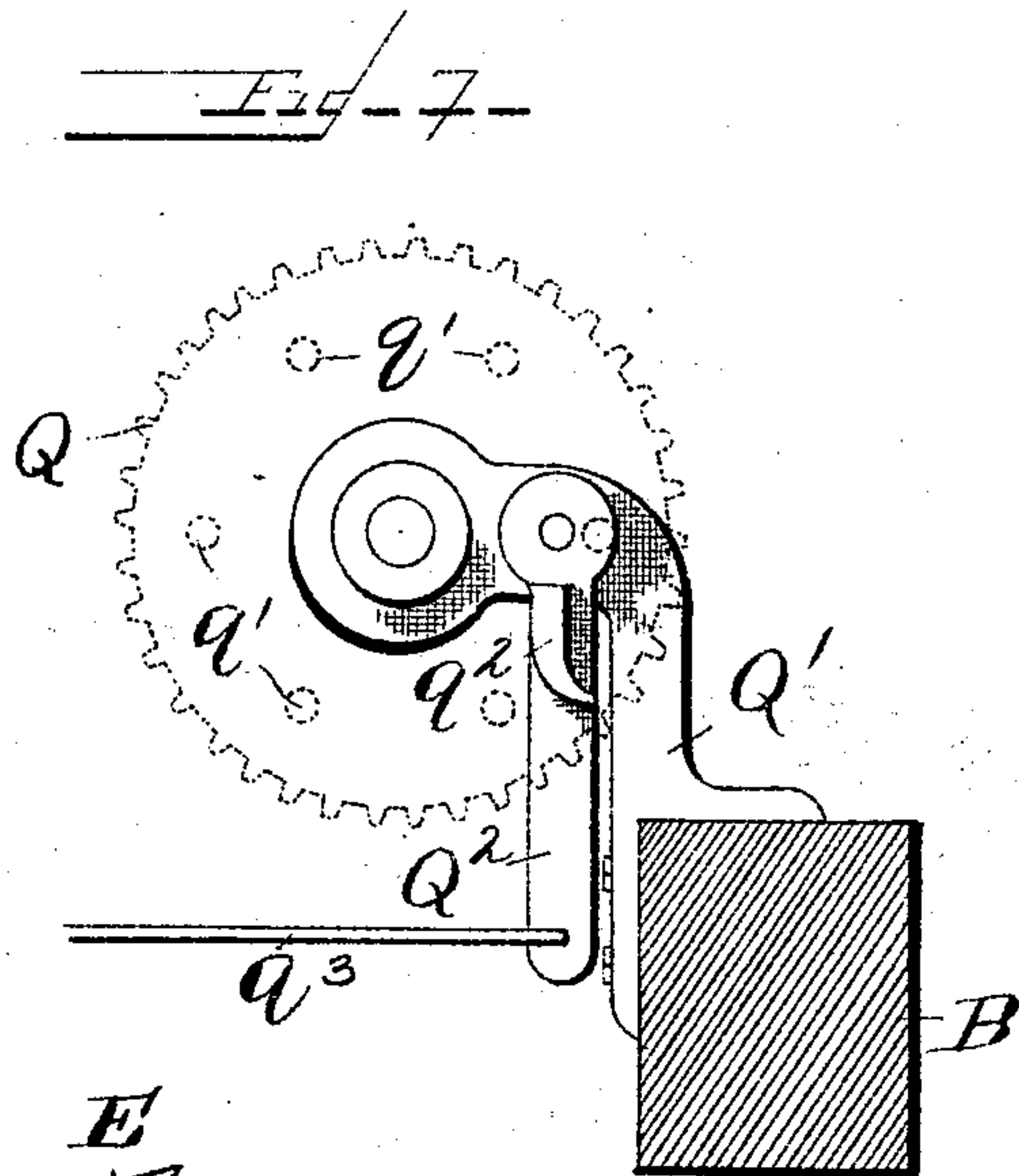
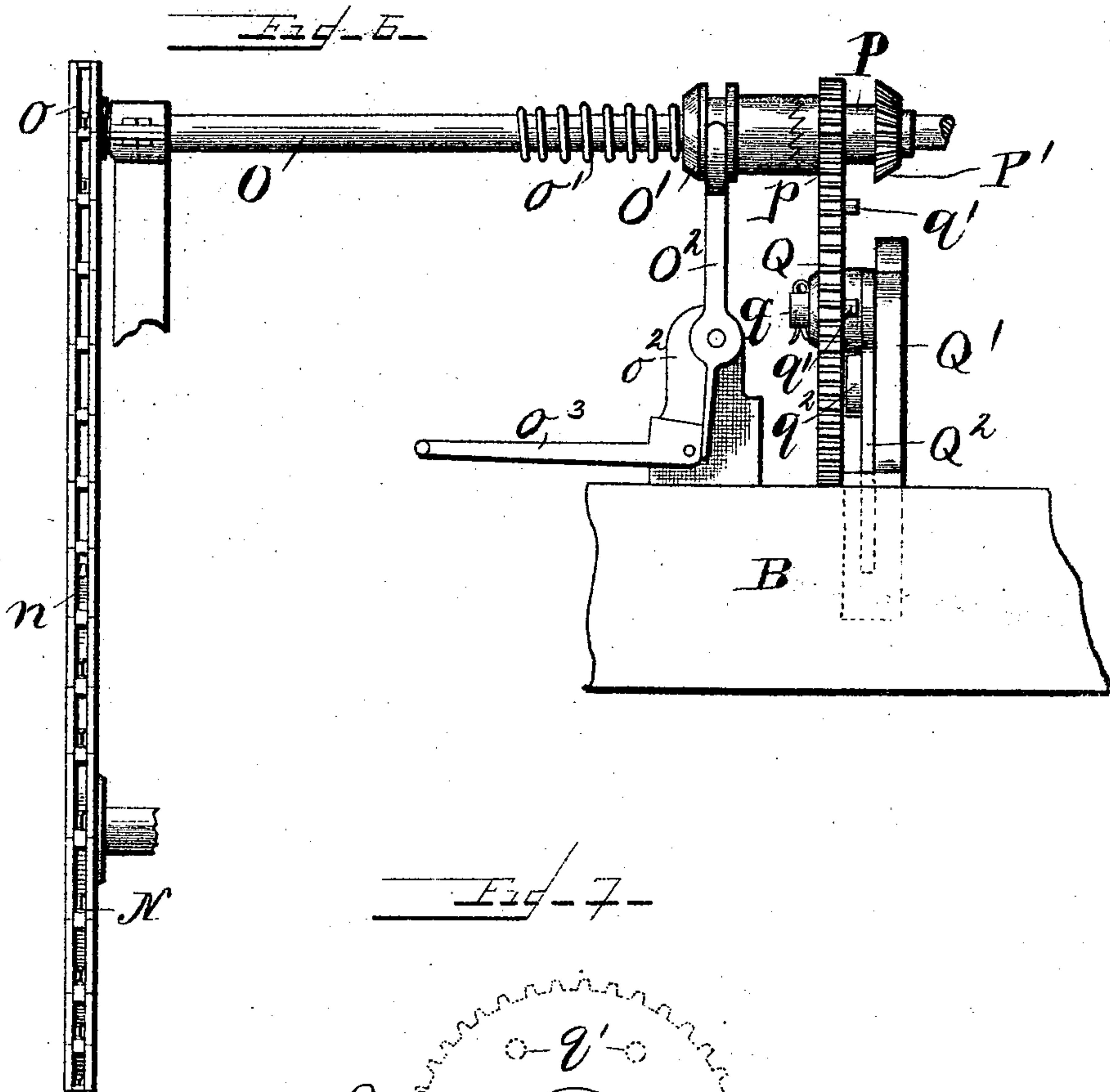
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Witnesses

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UNITED STATES PATENT OFFICE.

ABRAM W. STEVENS AND LESTER D. SWART, OF AUBURN, NEW YORK,
ASSIGNORS TO A. W. STEVENS & SON, OF SAME PLACE.

TRANSPLANTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 519,460, dated May 8, 1894.

Application filed May 11, 1892. Serial No. 432,614. (No model.)

To all whom it may concern:

Be it known that we, ABRAM W. STEVENS and LESTER D. SWART, citizens of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Transplanting-Machines; and we 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.

This invention relates to machines for transplanting small plants in rows and consists in certain novel constructions and combinations of parts.

The invention is illustrated in the accompanying drawings and is disclosed in the following description and claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of our improved machine. Fig. 2 is a partial plan view. Fig. 3 is a partial longitudinal sectional view. Figs. 4 and 5 are views from the rear of the machine with certain parts omitted to avoid confusion and showing the fertilizer delivery tube in different locations. Figs. 6 and 7 are detail views. Fig. 8 is a partial sectional view showing the mode of operating the water discharge valve, and Fig. 9 is a view in elevation of a part of the machine.

A is the main supporting frame. The rear of this frame is mounted on an axle B provided with the traction wheels B'. Two bars or rods D D are pivoted to the main frame at a a which extend rearwardly, their rear ends approaching each other and being secured to opposite sides of the bar E supporting the main working parts. This bar E will for convenience be denominated throughout the specification as the supporting bar as the earth engaging parts are supported thereby.

In rear of the point of attachment of the bars D D the supporting bar E is provided with a circular recess e in which is firmly secured the fertilizer tooth or spout F. This spout or tooth is held securely against the strain put upon it when in operation by the brace f which is secured at d to a lug depending from the supporting bar E and has its rear end connected with a lug on the forward side tooth F. The bar E is slotted forward

and rearwardly of the circular opening e for a purpose which will be hereinafter explained.

Rearwardly of the part e of the supporting bar is secured thereto the ground opener G (see Figs. 3 and 9) by a connection permitting adjustment. The ground opener consists of a bar having a narrow solid earth engaging portion forward, but which at the rear is divided, the two parts inclining outwardly. The supporting bar E extends rearwardly of the point to which the ground opener is attached and the rear end is connected with the opener securing the two parts rigidly together. The supporting bar is of such construction that the ground opener is attached to it approximately in line with the center of the main portion of said bar although it is secured to it at one side. Rearwardly of this connection between the supporting bar and the ground opener is located the water valve chamber H which is secured to the ground opener and also to the rear end of the supporting bar. The discharge outlet of the valve chamber or the water discharge pipe is elongated in the line of draft and it extends downward between the diverging ends of the ground opener.

d', d', d', d' are right angular brackets, the arms of which are slotted. Two of these brackets are attached to the supporting bar in advance of the circular or annular portion e of the said bar, by one or more bolts passing through the slotted arms and through the slotted portion of the supporting bar. Two of the brackets are secured to the supporting bar in rear of the circular or annular portion of the said bar. The tightening of these bolts will cause the slotted portion of the supporting bar to yield enough to securely clamp the fertilizer tooth or spout and hold it securely in position.

To the horizontal arms of the brackets d' are secured at each side of the supporting bar a strip of plate spring metal and to the rear ends of these plates or strips are secured the covering plates K K. The inner edges of these plates are fitted to the sides of the ground opener, they extend rearwardly for a little distance approximately in line with the rear ends of the opener thereby leaving a space through which the plants can be placed

in the ground by the operators occupying the seats I I for that purpose. The inner edges of these plates extend inwardly again, leaving only a narrow passage for the tops of the plants, the outer edges of the covering plates K are crimped or bent downwardly and inwardly between the planting point and the ends of the plates forming a flange for pressing the earth inwardly against the plants.

10 The rear ends of the covering plates are the full width of the plates and are provided with hooks h' which extend slightly below the under surface of the plates. These hooks serve to scratch the ground after the passage of

15 the plates, so as to leave the surface of the ground slightly roughened and loosened instead of smooth and impacted.

Upon the axle of the machine is mounted the fertilizer hopper L and forward of this is mounted the water receptacle M. A receptacle L' may be added to increase the capacity of the machine for carrying the fertilizing material. The base of the fertilizer is provided with a means for dropping the fertilizing material at intervals in determinate quantities, the hopper discharging into a series of spouts $l' l'' l''' l^{(4)}$ connecting the hopper with the fertilizer discharge spout or tooth F in an usual and well known manner. The water

20 receptacle M is connected with the water valve chamber by a pipe M'.

The delivery of the fertilizer and the discharge of water is effected by the following instrumentalities: The hub of the wheel B' at one side of the machine shown in this instance as the wheel at the left side viewed from the rear of the machine, is provided with a sprocket wheel N (see Fig. 6) which is connected and geared with a sprocket wheel o on

30 shaft O mounted in suitable bearings above the axle by a sprocket chain n. A sleeve P provided with spur pinion p and beveled pinion p' is placed on shaft O to turn loosely thereon. The pinion p' gears with beveled gear ring L² which forms a part of the discharging devices of the fertilizer hopper in the usual manner, while the spur gear p gears with a spur gear Q journaled upon a pin or stud q extending from a bracket Q' attached

40 to the axle. The gear Q is provided with a number of tappet pins q'. On the arm Q' is pivoted the lever Q² provided with a projection or tappet q² lying in the path of the pins q' so that as the gear wheel Q is revolved the pins q' come in contact with projection q² and impart a movement to lever Q². The tappet projection q² is preferably made as shown with its lower part curved in the opposite direction to the curved line of movement of the

50 tappet pins to cause a sharp movement and quick release of the same thereby effecting the quick opening and closing of the valve.

A clutch sleeve O' is splined upon the shaft O and is normally held in engagement with the sleeve P by a spring o' encircling the shaft O. This clutch sleeve is controlled by the forked lever O² which engages with the

sleeve in a well known way. This lever is pivoted to a bracket o² mounted on the axle and is in turn moved by the cam lever o³, also pivoted on the bracket o². On turning the lever o³ into an upright position the lever O² will move the clutch out of engagement with the sleeve P leaving the shaft O free to rotate within the sleeve without moving it.

70 To the lower end of lever Q² is attached a rod q³ which extends forward through an aperture in an arm or bracket a' (see Fig. 1) depending from the cross bar A' of the frame of the machine. The extreme forward end of the rod q³ is bent downwardly and is pivotally connected with the rod h which extends rearwardly to operate the water valve in chamber H. The forward end of the rod h is connected by a spring h² with the bracket a' which

80 serves to return it to its rearward position after the forward movement has been imparted to it through the pins q' of gear wheel Q acting on the tappet or projection of lever Q².

The valve chamber H is provided with a valve h' normally closed by spring pressure. A bell crank lever h² has one arm extending beneath the valve and a short link h³ pivoted thereto extends upward and has its upper

90 end seated in a recess in the under side of the valve. The other arm of the lever h² extends vertically upward and has on its right side, viewed from the rear of the machine a pin h⁴. A bracket H' is secured to the rear end of the supporting bar E (see Figs. 3, 4 and 8). To this bracket is attached a hasp or hook h⁵ which in its normal position rests upon the pin h⁴ and holds the lever h² in such position that the link h³ is maintained

100 in proper relation with the valve h. The bolt on which the hook h⁵ is pivoted passes through a slot in the bracket to permit adjustment. If desired the hook can be placed in such position as to hold the valve open when placed in engagement with pin h⁴. The upper part of the bracket H' extends at right angles to the line of draft and has an inverted U shaped slot. The rear end of the rod h passes through this slot and can be moved

110 from one to the other of its downwardly extending portions. When it is placed in the part of the slot farthest to the right when viewed from the rear, the rod is in line with a pin h⁶ extending from the left of the upper end of the lever h² viewed from the rear of the machine. The rod h is near its end provided with a shoulder or hook h⁷ so that when moved forward it will engage the pin h⁶ and move the lever h² to open the valve h'.

To the main supporting bar or parts connected therewith is secured a standard or standards E (see Fig. 3) to which is pivoted an arm r of the yoke R. This arm may be integral with the yoke or made separately therefrom and secured thereto. The yoke extends nearly across the machine and has rearwardly extending arms r' r' (see Figs. 2, 3 and 4). The arms are notched on their up-

per edges and have their rear ends pivoted in hangers R' R' secured to the axle.

Depending from the frame A at each side are hangers S S to the lower ends of which are pivoted the forward ends of two seat bars S' S'. A link s is pivoted to each of the bars S' and the upper end of such link is provided with a hook to engage the notches of the arms r' r'. The standard E is provided with means for adjusting the arms r in relation thereto, the hangers S can be adjusted upon the frame and the seat bars adjusted upon the hangers. These adjustments with the adjustment of the links s upon the arms r provide adequate means for the adjustment of the seat bars and seats and each seat can, as will be readily seen, be separately adjusted, which is sometimes very desirable when persons of different weights occupy the seats.

A lever T is pivoted to a bracket on the axle and has a forwardly extending arm T' which is connected by a chain t with the supporting bar E. By pressing the lever backward and downward the supporting bar with the fertilizer spout or tooth, the earth opener, the water discharge pipe, the covering plates and the seats I will all be raised together. When raised to the proper distance for transportation from place to place, a hoop t' secured to the lever will drop beneath the axle and hold the parts in their elevated position. By withdrawing this hook the parts may be lowered again to the operative position. We may provide the rod or link t² and hand lever t³ for the easy manipulation of this work.

Instead of having the fertilizer tooth located in line with the earth opener and the row of plants we may have it located at one side and out of line therewith.

The machine is preferably provided in advance of the earth opener with a clearing share U and roller V as is usual in this class of devices.

What we claim, and desire to secure by Letters Patent, is—

1. In a transplanter the combination with the main frame, of the pivoted supporting bar, a ground opener, a fertilizer spout or tooth and a separate water discharge pipe rigidly connected with said bar, substantially as described.

2. In a transplanter the combination with a main frame, of a supporting bar movable in a vertical direction toward and from said frame, a ground opener secured to said bar, means for raising and lowering said bar, a fertilizer spout and a separate water discharge pipe connected with said supporting bar for vertical movement therewith, substantially as described.

3. In a transplanter the combination with a main frame, of a pivoted supporting bar, a fertilizer hopper and a water receptacle

mounted on the main frame, a ground opener, fertilizer discharge spout or tooth and a separate water discharge pipe rigidly connected with the supporting bar and movable toward and from the frame with said bar, substantially as described.

4. The combination with the water chamber and valve, of the valve lever, the shouldered rod or bar adapted to engage said valve lever, the gear wheel having pins or tappets, the tappet lever having a tappet projection curved oppositely to the path of the tappets and connections between said lever and the said shouldered rod, whereby a short sharp movement is given to the said valve, substantially as described.

5. In a transplanter the combination with the supporting bar provided with the annular or spout engaging portion and slotted forwardly and rearwardly of said portion, of the closing plates and brackets with which they are connected, said brackets being secured to the bar by bolts passing through the slotted portions of the same, substantially as described.

6. In a transplanter the combination with the pivoted supporting bar, of the yoke having a pivoted connection with said bar and with the axle, the seat bars and the hooked links connecting said bars with said yoke, substantially as described.

7. In a transplanter the combination with the supporting bar, of a ground opener secured thereto, the closing plates and the slotted brackets connecting the said plates and bar, whereby the said plates can be adjusted toward and from the ground opener and vertically, substantially as described.

8. In a transplanter, closing plates provided at their rear ends with means to scratch or roughen the ground in rear of said plate, substantially as described.

9. The combination with the water chamber and valve of the bell crank valve lever having pins on opposite sides of its upwardly extending portion, the shouldered rod for engaging one of said pins on one side of said lever and the hook for engaging the pin on the opposite side, substantially as described.

10. In a transplanter the combination with the pivoted supporting bar, of the yoke having a pivoted connection with said bar and with the axle, and the seat bars suspended from said yoke and independently adjustable thereon substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

ABRAM W. STEVENS.
LESTER D. SWART.

Witnesses:

JOHN D. AIKEN,
HARRY D. ALLEY.