(No Model.) 2 Sheets—Sheet 1.

E. J. GERBER.

APPARATUS FOR DYEING.

No. 483,607. Patented Oct. 4, 1892.

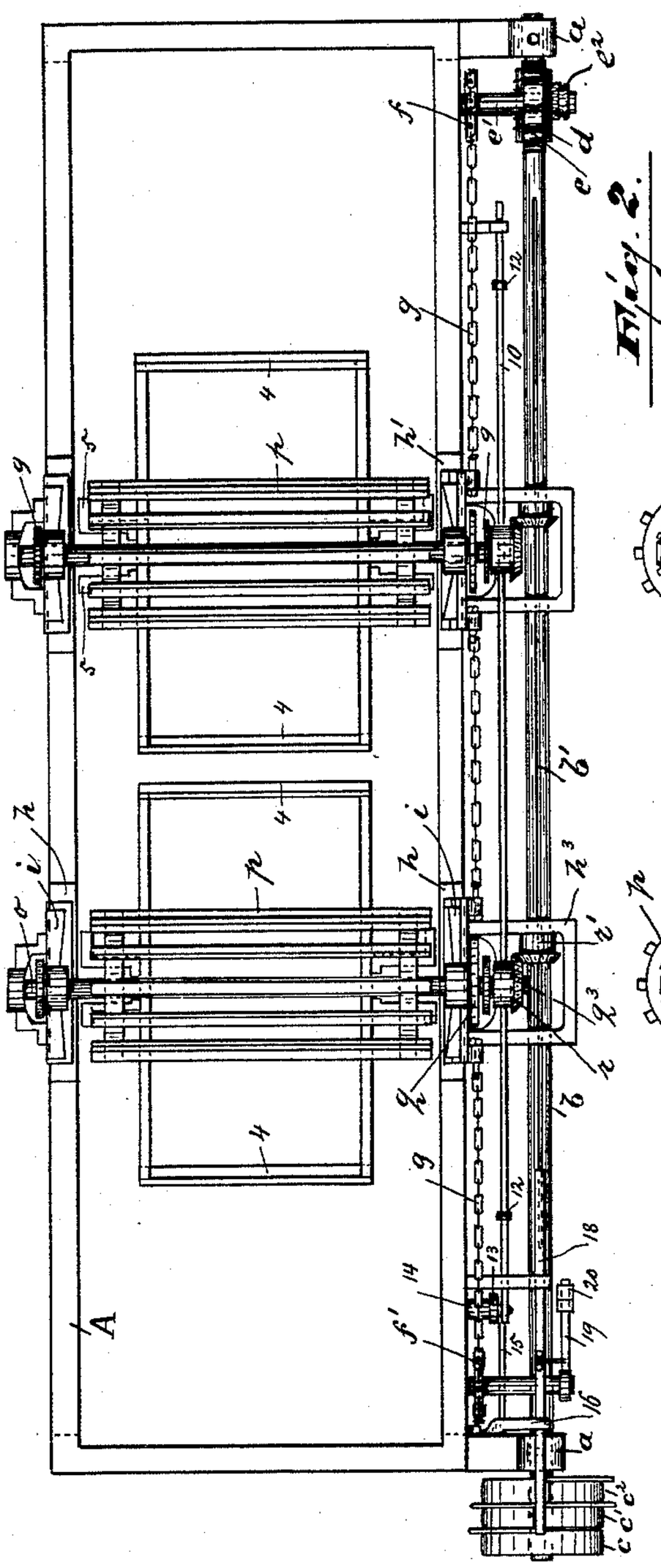

Fig. 1.

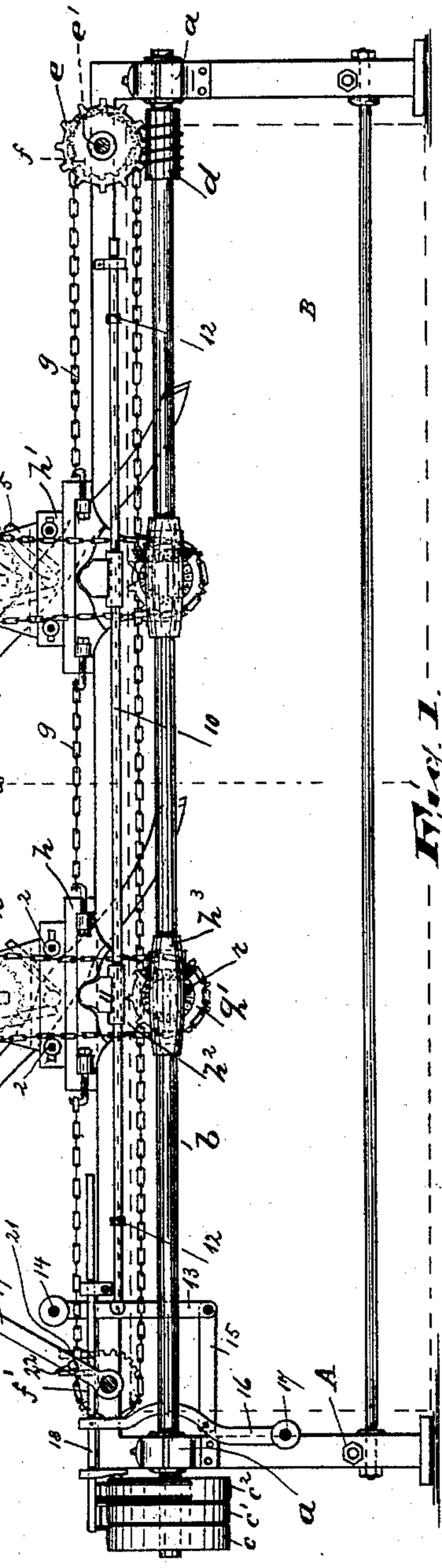

Fig. 2.

WITNESSES:

Wm. D. Bell.
D. Robertson.

INVENTOR:

Edward J. Gerber

BY Gartner & Co

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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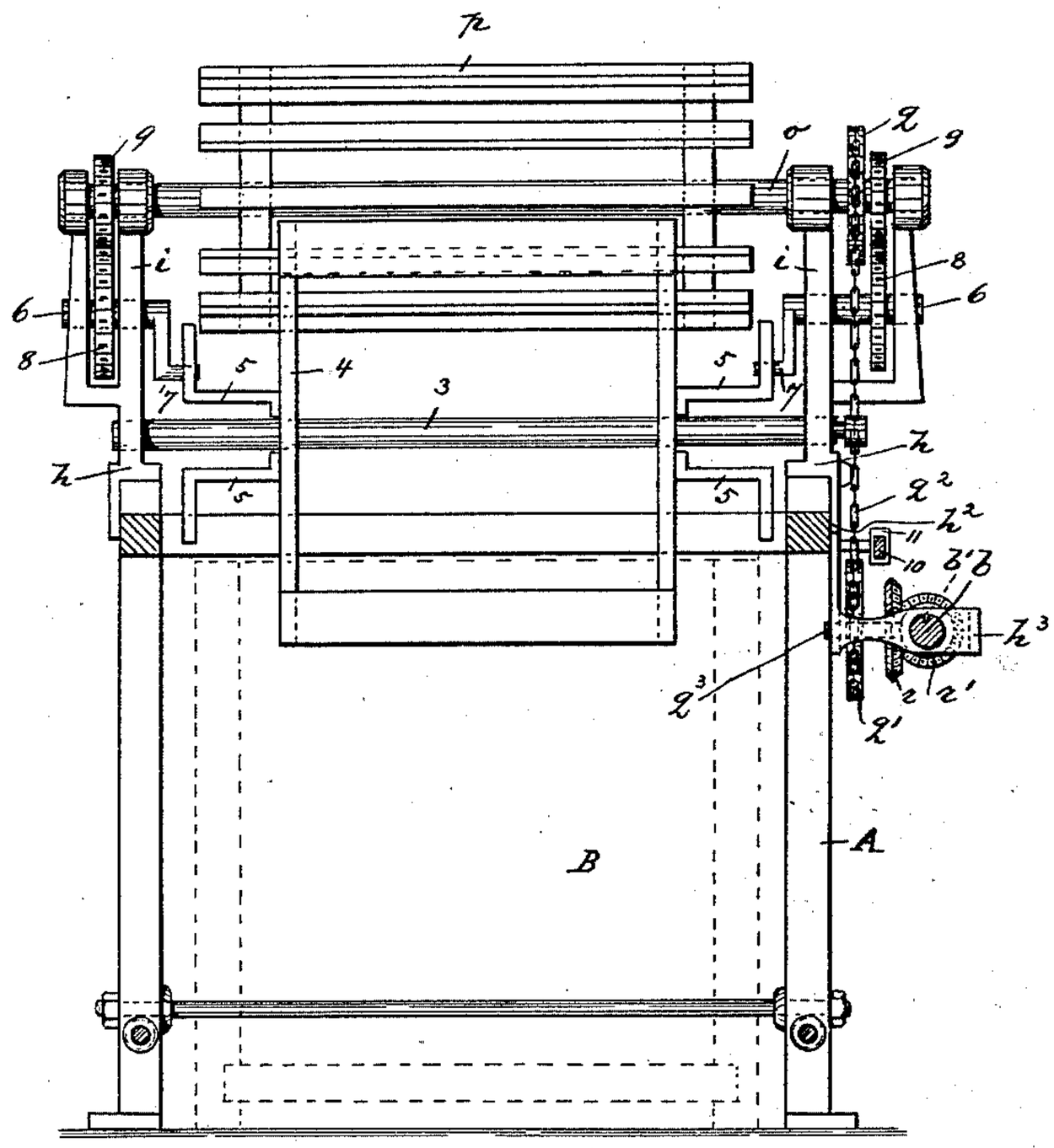

Fig. 3.

WITNESSES:

W. D. Bell
D. Robertson.

INVENTOR:

Edward J. Gerber

BY Gartner & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD J. GERBER, OF PATERSON, NEW JERSEY.

APPARATUS FOR DYEING.

SPECIFICATION forming part of Letters Patent No. 483,607, dated October 4, 1892.

Application filed March 18, 1892. Serial No. 425,392. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. GERBER, a citizen of the United States, residing in Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Dyeing-Machines; 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 and figures of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a reliable dyeing and bleaching apparatus simple and durable in construction and easily handled and operated, whereby large quantities of material can be worked at one time.

The invention consists of the improved dyeing apparatus generally applicable for dyeing, bleaching, scouring, washing, or otherwise treating wool, silk, cotton, or any animal or vegetable fiber, and comprises a movable carriage automatically operated by a suitable mechanism, revolving reels and oscillating rockers arranged on said carriage, a stationary vat, and the arrangement and combination of the various parts, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters and figures of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of my improved dyeing apparatus, the vat being shown in dotted lines. Fig. 2 is a top plan view thereof; and Fig. 3 is an enlarged sectional view on line x, Fig. 1.

In the drawings, A represents the frame, to which are secured bearings a, in which the horizontal shaft b is adapted to be revolved in either direction by means of reversible pulleys c c' c^2. To the rear end, Fig. 1, of said shaft is secured or made integral therewith a worm d, meshing into worm-wheel e, loosely secured on stub-shaft e' and capable of being tightened on and revolved with said stub-shaft by means of a clutch e^2 or in any desired manner. To said stub-shaft is also secured a toothed wheel f, adapted to operate a chain g, which chain passes over a corresponding toothed wheel f' at the other end of the machine. This chain is secured to carriages h h' and adapted to move said carriages along when the machine is in operation—that is to say, when the worm-wheel e is clutched on and revolving with the stub-shaft e'. Each of said carriages is provided with side frames i, serving as bearings for shaft o of reel p. Firmly secured to said shaft is a toothed wheel q, receiving its motion from a corresponding toothed wheel q' through chain connection q^2, which latter can be tightened by means of adjustable rollers 2, as clearly shown in Fig. 1. The toothed wheel q' is secured to a stub-shaft q^3, adapted to be revolved in a bearing arranged in the downwardly-extending portion h^2 of carriage h, and receives its motion from the main driving-shaft b through beveled-gear connection r r'. The gear-wheel r' is provided with a feather adapted to slide (with said gear-wheel) in an elongated slot b' of shaft b, and is prevented from getting out of gear with r by the horizontal projection h^3 of the downwardly-extending portion h^2 of carriage h. The side frames i of said carriage serve, also, as bearings for the rocker-shaft 3, carrying the rockers 4 and extension-arms 5. Said rocker-shaft receives its oscillating motion from the revolving cranks 7 coming in contact with and striking against the extension-arms 5. The cranks 7 are secured or made integral with shaft 6, carrying gear-wheel 8, which latter is driven or operated from shaft o through pinion 9.

Parallel to shaft b is arranged a rod 10, guided in suitable bearings on frame A. On said rod are adapted to slide sleeves 11, provided with inwardly-extending projections, operating or resting in corresponding recesses in carriages h h', whereby said sleeves are caused to slide along and on rod 10 with the said carriages.

At or near each end of rod 10 are adjustably secured stops 12, which when pressed against by the sleeve will impart a horizontal motion to the said rod. This movement of rod 10 operates the belt-shifting mechanism 18 by means of lever connections 13, 15, and 16. The lever 13 is pivoted at 14 to frame A and at its other end to lever 15, which again is pivoted to lever 16, pivoted at 17 on frame

A. The other end of said lever 16 is pivotally secured to belt-shifting rod 18, carrying a forked projection 21, engaging with a pin 22, secured to the lever 19 with weight 20.

The operation of the machine is as follows: The fabric is placed in the vat B (shown only in dotted lines in Figs. 1 and 3) and is carried through the rockers and over the reels in the usual manner. The shaft *b* is then revolved, (say, first, from right to left, Fig. 3,) thus causing, through worm connection *d e*, the toothed wheels operating the chain *g* to revolve, whereby the carriages *h h'* are slowly moved on the upper surface of frame A from right to left. The revolving shaft *b* also causes the gear-wheel *r'* to revolve, which latter imparts its motion through gear-wheel *r* to shaft q^3, carrying the toothed wheel *q'*, which operates, through chain q^2 and toothed wheel *q*, the reel-carrying shaft *o*. The pinion 9, secured to said shaft *o*, operates through gear-wheel 8 the crank-carrying shaft 6. Said crank 7 in rotating strikes against the extension-arms 5, thus imparting an oscillating motion to rockers 4. When the carriage *h* has moved so as to bring the sleeve 11 into contact with stop 12, the said sleeve will press against said stop, thus causing a horizontal movement of rod 10 from right to left, Fig. 1. Through said movement of rod 10 and through the lever connection 13, 15, and 16 and the belt-shifting rod 18 the shaft *b* is reversed in its rotation. This reversing of the shaft will cause the reels to revolve in the opposite direction and the carriages to travel backward until the sleeve 11 (in connection with carriage *h'*) engages the stop 12 at the other end of rod 10, thereby again reversing the motion of shaft *b*, and also of the reels and carriages. Should it be desired to rotate the reels and oscillate the rockers without having the carriages travel along the frame, the clutch e^2 is unshipped, thus allowing the worm-wheel *e* to revolve freely on stub-shaft *e'*.

By this uniformly combined traveling, rotating, and rocking motion of the various parts of the improved dyeing apparatus a perfect and uniform color is obtained in the fabric, and no waste of the dyeing liquid occurs.

I do not intend to limit myself to the exact construction shown and described, as various changes can be made without changing the scope of my invention.

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

1. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide back and forward on said frame, revolving reels arranged on said carriages, rockers below said reels and on said carriages and adapted to be oscillated thereon, and means for operating said carriages, reels, and rockers, all said parts being combined and adapted to operate substantially as described, and for the purposes set forth.

2. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide back and forward on said frame, revolving reels arranged on said carriages, toothed wheels arranged on the frame, a chain connecting said toothed wheels and secured to said carriages, a shaft adapted to operate said toothed wheels and chain through a worm connection, rockers arranged on said carriages and below the reels and adapted to be oscillated, means for operating the reels, and means for operating said rockers, all said parts being arranged and combined substantially as described, and for the purposes set forth.

3. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide on said frame, toothed wheels arranged on the frame, a chain connecting said toothed wheels and secured to said carriages, a shaft adapted to operate said toothed wheels and chain, revolving reels arranged on said carriages, a gear-wheel arranged on the shaft and adapted to slide thereon and to revolve therewith, a gear-wheel adapted to revolve in bearings in the carriage and meshing into gear-wheel on the shaft, and means for transmitting said motion to the reel, all said parts being arranged and combined to operate substantially as described, and for the purposes set forth.

4. A dyeing apparatus consisting of a vat and a surrounding frame, a double carriage adapted to slide on said frame, toothed wheels arranged on the frame, a chain connecting said toothed wheels and secured to said carriages, a shaft adapted to operate said toothed wheels and chain, rockers arranged on said carriages, a gear-wheel arranged on the shaft and adapted to slide thereon and to revolve therewith, a gear-wheel adapted to revolve in bearings in the carriage and meshing into gear-wheel on the shaft, means for transmitting said motion to the rockers, reels arranged on said carriages and adapted to be revolved and operated from the said shaft, and means for reversing the motion of all said parts, substantially as described, and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of March, 1892.

EDWARD J. GERBER.

Witnesses:
ALFRED GARTNER,
WM. D. BELL.