

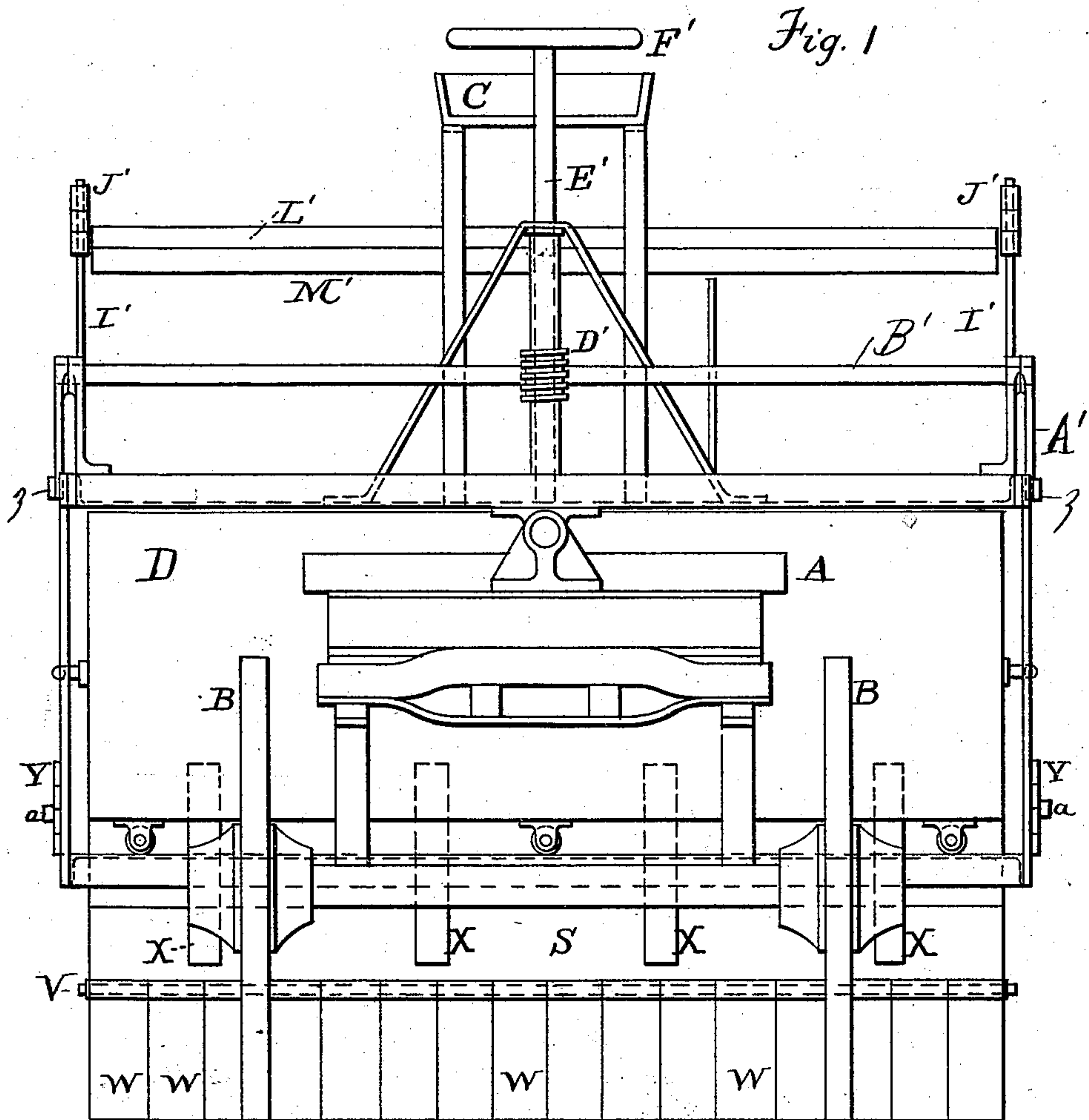
(No Model.)

4 Sheets—Sheet 1.

W. Y. GAMBEE.
STREET SWEEPER.

No. 548,912.

Patented Oct. 29, 1895.



WITNESSES:

John Kehlenbeck.
Edward W. Miller.

INVENTOR
William Y. Gambée.
BY
Chas. C. Gill
ATTORNEY.

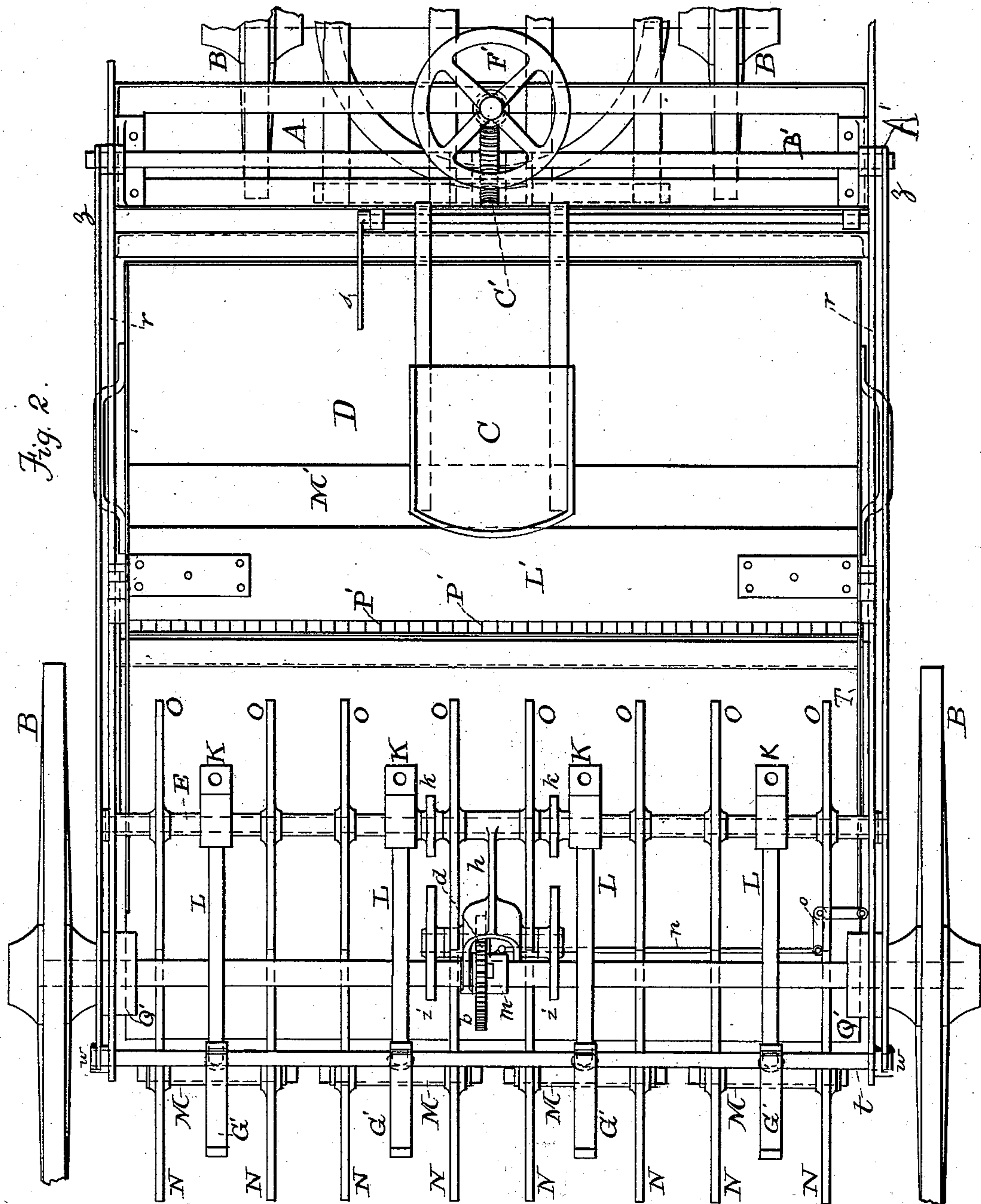
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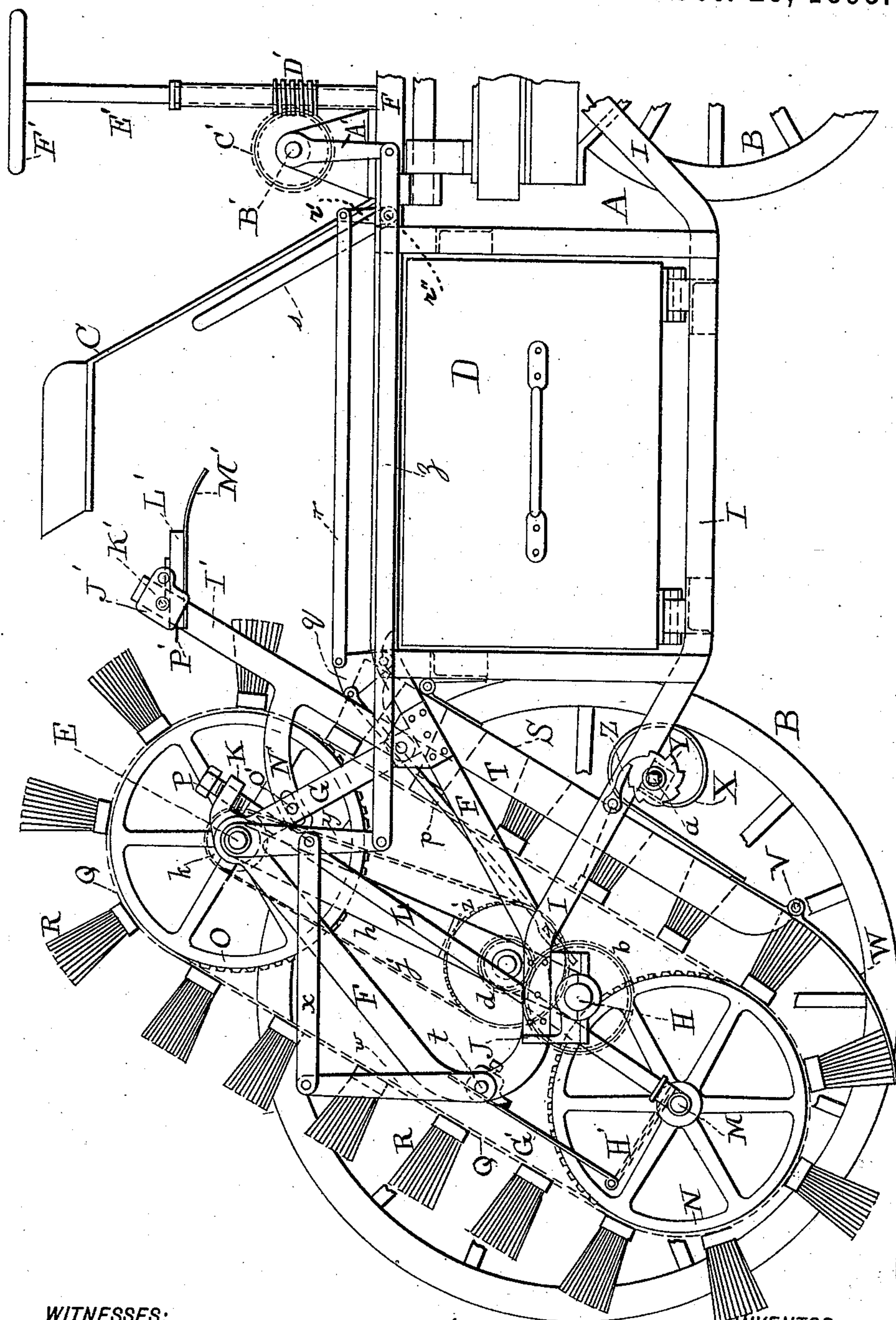
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Fig. 3.



WITNESSES:
Edward W. Miller.
John Kehlenbeck.

INVENTOR
William Y. Gambée,
BY
Chas. C. Gill
ATTORNEY.

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Fig. 4.

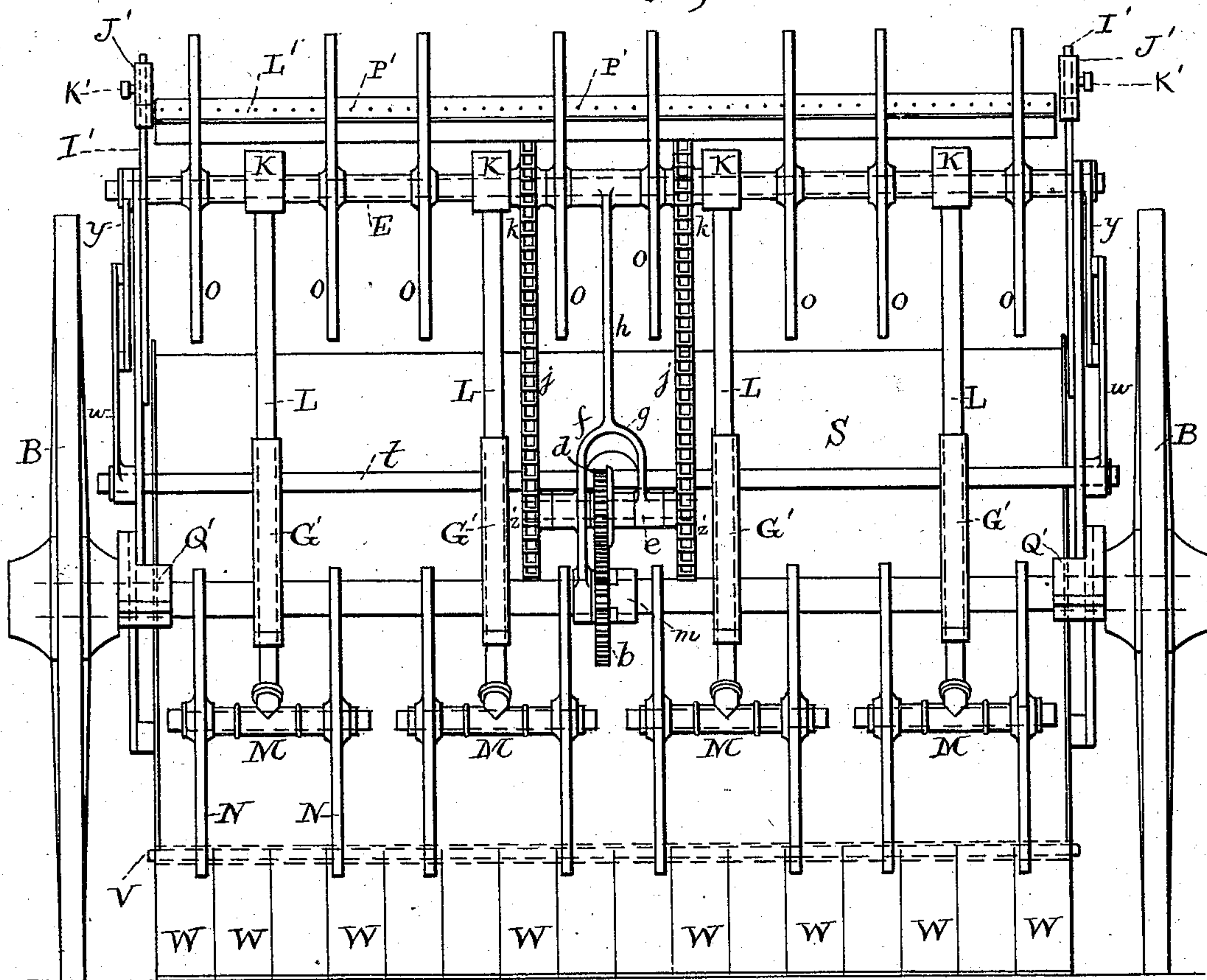
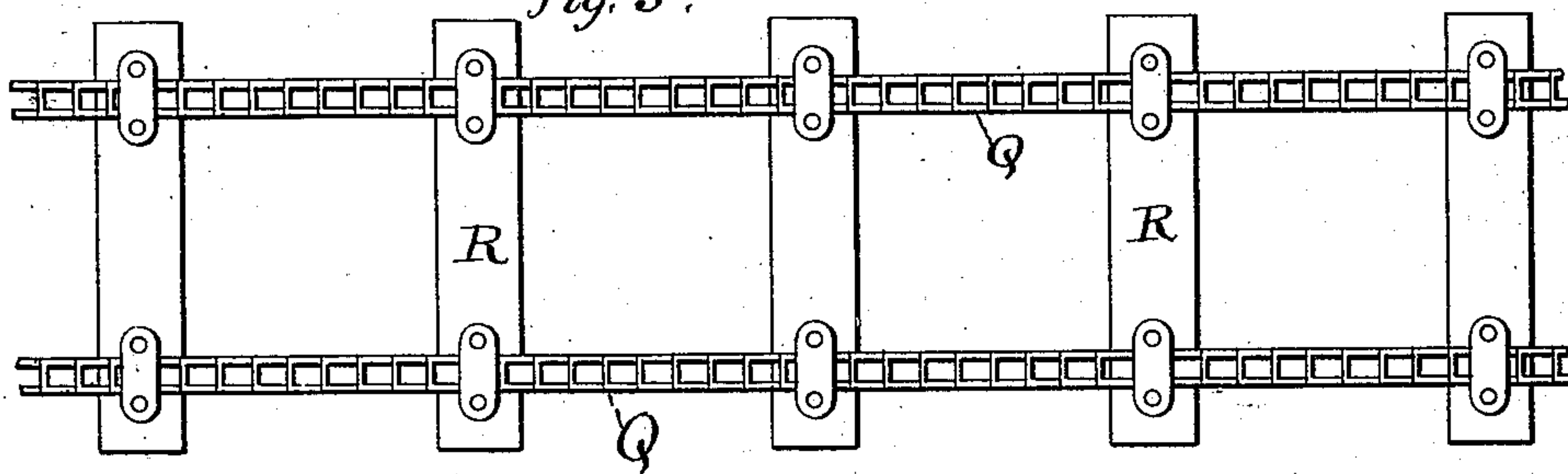


Fig. 5.



WITNESSES:

John Kehlenbeck.
Edward W. Miller.

William Y. Gambée, INVENTOR

BY
Chas. C. Gill
ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM Y. GAMBEE, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO
JAMES McCARTNEY AND ANTHONY McOWEN, OF SAME PLACE.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 548,912, dated October 29, 1895.

Application filed November 27, 1894. Serial No. 530,087. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM Y. GAMBEE, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Street-Sweeping Machines, of which the following is a specification.

The invention relates to improvements in street-sweeping machines; and it consists in the novel features of construction and combinations of parts hereinafter described, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a front elevation of a street-sweeping machine constructed in accordance with and embodying the invention. Fig. 2 is a top view of same, the brushes being omitted from the sprocket-wheels for clearness of illustration and a portion of the wagon being broken away. Fig. 3 is a side elevation of same, one of the main supporting-wheels being omitted for clearness of illustration. Fig. 4 is an end view of the machine, the brushes and their chains being omitted from the sprocket-wheels thereof; and Fig. 5 is a detached elevation of a portion of the brushes and chains to which they are secured, and which brushes and chains are omitted from Fig. 4.

In the drawings, A designates the wagon portion of the machine, said wagon being mounted upon supporting-wheels B and provided with the driver's seat C. The wagon A is provided with the receptacle D, which is open at its upper end and is adapted to receive the sweepings from the brushes hereinafter described.

The receptacle D is simply an elongated box, preferably mounted upon rollers, as shown in Figs. 1 and 3, and provided on its end with a handle to facilitate its withdrawal by hand from the wagon-frame.

In rear of the receptacle D, and at a slightly higher elevation than the upper edge of same, is mounted the shaft E, the opposite ends of the latter being mounted in bearings formed at the upper end of the bars F G, constituting at each side of the machine a supporting-frame for said shaft E. The bars F extend rearward from any suitable point along the front portion of each side of the wagon A to

the rear end of the said wagon, and thence extend downward, as indicated more clearly in Fig. 3, to a point directly over the rear axle H, whence the said bars F curve rearward and then on an inclined plane upward to the shaft E, while the bars G are in the form of braces and extend from said axle E downward and forward to the bars F just in rear of the receptacle D, whereby the bars F G are caused to constitute a rigid frame capable of bearing the series of brushes and their sprocket-wheels, as hereinafter explained. The said frames, composed of the bars F G, are strengthened and aided in the supporting of the sweeping mechanism by means of the bars I, which extend from the wagon A along the lower sides of the frame supporting the receptacle D and thence upward to the lower portion of the bars F, where suitable boxes J are formed for the journaling of the ends of the main axle H. The bars F I converge toward each other in rear of the receptacle D and form supports of great strength and rigidity.

Upon the shaft E are provided the series of arms K, and from these arms there extends downward the series of tubular rods L, whose lower ends engage and support the short axles M, which are in line with each other, and each is provided with the pair of sprocket-wheels N N, the latter being of usual construction and corresponding in size and being in alignment with the pairs of sprocket-wheels O O, secured upon the shaft E, which is continuous and not in sections or composed of a series of short shafts.

The tubular rods L are held at their upper ends by means of the screws P, Fig. 3, by which the said rods may be adjusted vertically to a limited extent for the purpose of adapting the sprocket-wheels N O to the condition of the chains Q, upon which the brushes R are secured. The lower ends of the screws P enter the upper ends of the tubular rods L, wherein are provided internal threads to engage said screws. The chains Q, carrying the brushes R, are continuous, as illustrated in Fig. 3, and each pair of the sprocket-wheels N O is provided with one endless chain of brushes. In the present instance four pairs of the sprockets N O are provided, and hence the

the machine will carry four endless chains of brushes R.

Upon the rear portion of the frame supporting the receptacle D is provided the pan S, which is provided with the sides T and is sufficient in width to extend entirely across the machine and inclose at its sides T all of the chains of brushes R. The upper portion of the pan S extends upward to a point adjacent to the rear upper edge of the receptacle D, and at the lower portion or edge of the pan S is provided a rod V, upon which are the curved sheet-metal plates W, which, as illustrated in Fig. 4, correspond with each other in size, and are in transverse alignment with each other and constitute the lower portion of the pan S. The lower edges of the plates W are adapted to follow the surface outline of the street, and said plates being independent of each other will closely follow the irregularities of the surface to be swept. The pan S is adapted to be moved toward or from the brushes R, in order to adapt the same to the condition of said brushes or the nature of the material being swept up the pan, by means of the springs X, ratchet Y, and pawl Z, the springs at one end having a bearing against the pan S, as shown in Fig. 3, and at their other end being secured to the shaft *a* of the ratchet-wheels Y, the said shaft being secured in a suitable bearing to the side bars I, and being adapted when turned to wind the springs X for the purpose of increasing or decreasing their tension, and thus moving the pan S rearward toward the brushes R or permitting it to lower from said brushes. The pawl Z is secured upon the said bar I in position to engage the teeth of the ratchet Y and thereby lock said ratchet in the customary manner.

Upon the rear main axle H is secured the gear-wheel *b*, as shown more clearly in Fig. 4, which engages a pinion-wheel *d*, secured upon a short shaft *e*, mounted in bearings furnished by the bifurcated arms *f g* of the rod *h*, which is suspended from the shaft E and extends downward for the purpose of supporting the axle *e* and the wheels thereon, the lower end of the arm *f* of said rod being retained upon the axle H. Upon the ends of the axle *e* are secured the sprocket-wheels *i*, upon which run the sprocket-chains *j j*, as shown in Fig. 4, and which are in alignment with the smaller sprocket-wheels *k*, rigidly secured upon the shaft E.

The purpose of the gear-wheels *b d*, axle *e*, sprocket-wheels *i k*, and chains *j* is to communicate power from the main axle H to the shaft E, and through said shaft to the sprocket-wheels O, chains Q, and sprocket-wheels N, whereby the series of brushes R are caused to have a traveling movement and to sweep the refuse up the pan S and into the receptacle D.

Upon the axle H is provided an ordinary clutch-box *m*, connected, as shown in Figs. 2 and 3, by a draw-rod *n*, bell-crank *o*, rod *p*, lever *q*, rod *r*, arm *r'*, and shaft *r''* with the

hand-lever *s*, which is in convenient relation to the seat C and may be operated by the driver to withdraw the clutch *m* from the gear-wheel *b* or to cause the engagement of said clutch and gear-wheel as desired. The gear-wheel *b* is free upon the axle H, while the clutch-box *m* is keyed in the usual manner thereon, so that when the clutch-box is free of the gear-wheel *b* the latter will remain idle and the brushes R will not travel, and when the said clutch-box *m* is in engagement with said gear-wheel *b* the latter will be thereby locked to the axle H and rotate with the same and impart its movement through the gear-wheel *d*, axle *e*, chains *j*, and sprocket-wheels *i k* to the shaft E, and thence to the sprocket-wheels N O and brushes R.

Within the bars F is journaled the rock-shaft *t*, upon each end of which, as shown in Fig. 3, is secured the arm *w*, which, by means of a link *x*, is connected with the arm *y*, hung from the end of the shaft E and connected at its lower end by the rod *z* to the arm A', which is firmly secured upon the end of the shaft B', having the pinion-wheel C', the latter being in engagement with the worm D' on the vertical shaft E', having upon its upper end the hand-wheel F', by which said shaft may be turned at will by the driver from the seat C.

The purpose of the arms and rods lettered *w*, *x*, *y*, *z*, and A', the shaft B', and the worm and pinion C' and D' is to enable the driver to move the rock-shaft *t* in its bearings and thereby to cause the springs G', secured upon said shaft, to move either outward and rearward or inward and forward, and draw through the chains H' the axles M outward from the pan S or permit them to approach said pan.

When by means of the worm D' and pinion C' the rod *z* is drawn forward, the latter will, through the arms *w y* and rod *x*, turn the rock-shaft *t* to move the springs G' rearward, and thereby, through the chains H', pull the axles M, sprocket-wheels N, lower portions of the tubular rods L, and the series of brushes R rearward, while, upon a reverse or rearward movement being imparted to the rod *z* from the worm and pinion, the rock-shaft *t* will be turned in a reverse direction and the springs G' will permit the shafts M and their connections to move downward and forward of their own specific gravity. By means of the worm D' and pinion C', and the connections just described intermediate the said pinion and the axles M, the brushes R may be lifted clear of the ground when desired.

Upon the opposite side bars F are pivotally mounted the standards I', carrying upon their upper ends the sleeves J', adjustably held in place by screws K', and which sleeves have pivotally secured between them the bar L', upon whose lower surface is rigidly affixed the metal fender M', which is curved along its front portions and is directly over the receptacle D, and the purpose of which is to prevent the dirt swept upward by the brushes R

from being thrown upward and entirely over the receptacle D. The position of the fender M' is such that the dirt carried upward by the brushes and inclined to fly over the receptacle D will strike said fender and be thereby arrested and caused to fall into the receptacle. The fender M' extends entirely across the machine and has at its ends short pivots which enter the sleeves J' and permit of the fender being turned axially to any desired position, and the said fender may be adjusted as to its position with respect to the receptacle by means of the segments N', formed on said standards I' and having elongated slots engaged by a set-screw O' from the bars G. The segments N', with their elongated slots and the set-screws O', are of ordinary construction and are intended as a means of adjusting the said standards I' and fender M', the said standards being free to turn on the pivots securing them at their lower ends to the side bars F.

Upon the bar L', carrying the fender M', is secured the series of rearwardly-projecting pins P', forming a comb against which the points of the bristles of the brushes R pass during their traveling movement, and which will have the effect of cleaning the said bristles of all foreign matter prior to their descending to the ground for further use in carrying the sweepings up the pan S to the receptacle D.

The rear wheels B, during any backward movement of the machine, will revolve freely upon the ends of the axle H without turning the latter, and hence without setting in motion the series of brushes R; but during all forward movement of the machine the wheels B and axle H will be locked together by the customary pawl-and-ratchet mechanism used in street-sweeping machines and located in casings Q' at the inner side of the hubs of said wheels, as illustrated in Fig. 4. The pawl-and-ratchet mechanism for the ends of the axle H is not specifically shown, since said elements are well known in the art and are not claimed herein.

From the foregoing description it will be seen that the motion of the rear wheels B, while the machine is going forward, is communicated through the axle H and clutch-box *m* to the gear-wheels *b d*, shaft *e*, chains *j*, sprocket-wheels *i k*, shaft E, all of the sprocket-wheels O, and the series of brushes R, and that the revolution of the shaft E and the sprocket-wheels O is communicated, through the chains Q, carrying the brushes R, to the sprocket-wheels N, mounted upon the short shafts M, and hence that during the forward travel of the machine all of the brushes R are in constant traveling motion sweeping the street and moving the refuse up the pan S and into the receptacle D. When it is desired to stop the motion of the brushes R while the machine is going forward, the driver, by moving the lever *s*, may withdraw the

clutch *m* from the gear-wheel *b* and cut off the power of the wheels B and axle H from the gear-wheels *b d*, chains *j*, and brushes R. When it is desired to lift the brushes R, sprocket-wheels N, and axles M from their operating position, the driver will simply rotate the shaft E' in one direction, and thereafter when it is desired that said brushes and shafts may lower again the driver will simply reverse the movement of the shaft E'. The brushes R, sprocket-wheels N, and shafts M are suspended by the tubular rods L from the shaft E, which is the pivotal point of the sweeping mechanism, and the distance between the sprocket-wheels N and the sprocket-wheels O on the said shaft E is adjustable by means of the screws P, which engage threaded apertures in the arms K and enter the upper threaded ends of the rods L. The fender M' may be adjusted vertically upon the standards I' by means of the sleeves J' and screws K', or adjusted axially by means of the pivots which secure said fender to said sleeves J'. The standards I' may be also adjusted toward or from the brushes R, and hence the pins P' supported by said standards may be moved toward or from the brushes they are to comb. The pan S is secured by a hinge to the upper rear portion of the frame about the receptacle D, and its lower portion may be adjusted toward or from the brushes R by means of the springs X, ratchet Y, and pawl Z. The parts of the machine are thus rendered adjustable at the will of the operator in a convenient manner and are adapted to effectually perform the work intended for them.

The machine constructed as above described is thoroughly durable and entirely practicable, and in use it has been demonstrated that the lower sections or fingers W of the pan will follow the irregularities in the surface over which the machine is passing and that the endless chains of brushes swung from the shaft E and independently yielding at their lower ends with the short shafts M will effectually clean the irregular surfaces of streets.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a street sweeping machine, the side bars F, I, extending rearward from the wagon portion of the machine and the rear end of the bar F, thence extending upward and forward, the braces G connecting the two parts of the bars F, the shaft E journaled at the upper ends of said bars F and braces G, and the pan S extending downward from the rear portion of the wagon part of the machine, combined with the series of sprocket wheels on the said shaft E, the series of short shafts M carrying the sprocket wheels N, the rods extending downward from the shaft E to said short shafts M, the series of chains carrying brushes and mounted upon the said sprocket wheels on the shaft E and shafts M, the gear wheel on the main rear axle H, the

short shaft *e* carrying the pinion in engagement with the said gear wheel and having at its ends the sprocket wheels *i*, the sprocket wheels *k* on said shaft E, the chains *j* connecting the sprocket wheels *i*, *k*, and the rod *h* extending downward from the shaft E and carrying the said shaft *e* and supported at its lower end on the said axle H; substantially as set forth.

2. In a street sweeping machine, the shaft E rigidly supported and carrying the series of sprocket wheels, the short shafts M carrying another series of sprocket wheels, and the chains connecting said sprocket wheels on said shafts and carrying the series of brushes R, combined with the receptacle for sweepings, the pan S up which the brushes pass, the rods connecting the short shafts M with the shaft E, the springs G' mounted upon a rock shaft and connected with the short shafts M, and mechanism for actuating the said rock shaft from a point adjacent to the driver's seat; substantially as set forth.

3. In a street sweeping machine, the shaft E rigidly supported and carrying the series of sprocket wheels, the short shafts M carrying another series of sprocket wheels, and the chains connecting said sprocket wheels on said shafts and carrying the series of brushes R, combined with the receptacle for sweepings, the pan S up which the brushes pass, the rods connecting the short shafts M with the shaft E, the springs G' mounted upon a rock shaft and connected with the short shafts M, the worm and pinion on the wagon, and intermediate levers and connecting rods passing from the shaft of said pinion to the rock shaft carrying said springs G'; substantially as set forth.

4. In a street sweeping machine, the shaft E rigidly mounted and carrying the series of sprocket wheels O, the series of short shafts M carrying the sprocket wheels N, the rods connecting the said shaft E with the shafts M, and the series of chains connecting said sprocket wheels and carrying the brushes R, combined with the receptacle to receive the sweepings, the pan up which the brushes move, the gear wheel *b* on the rear axle H, the clutch box *m* on said axle H, the short shaft *e* supported in a rod that is connected with the shaft E and rear axle H and carrying the pinion *d* and sprocket wheels *i*, the sprocket wheels *k* on the shaft E, the chains *j* connecting said sprocket wheels *i*, *k*, and mechanism operating said clutch box *m*

whereby the driver may move the said clutch at will; substantially as set forth.

5. In a street sweeping machine the shaft E rigidly mounted and carrying the sprocket wheels O, the series of short shafts M carrying the sprocket wheels N, the series of chains running on said sprocket wheels and carrying the brushes R, the arms K on said shaft E and provided with the adjusting screws P, and the tubular rods L extending upward from said short shafts M and engaged at their upper ends by the said screws P, combined with the receptacle, the pan S, means for raising and lowering said brushes, and means for communicating power from the rear axle H to the shaft E; substantially as set forth.

6. In a street sweeping machine the receptacle D, the series of brushes R in rear of said receptacle, the supporting frame for the brushes and the pan S intermediate the said receptacle and brushes, combined with the pivotally mounted adjustable standards I' and vertically adjustable fender mounted on said standards; substantially as and for the purposes set forth.

7. In a street sweeping machine, the receptacle D, the series of brushes R in rear of said receptacle, the supporting frame for the brushes and the pan S intermediate the said receptacle and brushes, combined with the pivotally mounted adjustable standards I', the sleeves J' on said standards, the board L' secured to said sleeves, the fender M' secured to said board, and the pins P' also secured to said board and constituting a comb; substantially as set forth.

8. In a street sweeping machine, the receptacle D, the series of brushes R in rear of said receptacle, the supporting frame for the brushes and the hinged pan S intermediate the said receptacle and brushes and having the series of independent plates W at its lower end, combined with the springs X bearing against the said pan S and secured upon the shaft *a*, which is journaled on the rigid side frames of the machine the ratchet Y on said shaft *a*, and the pawl Z engaging the said ratchet; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 26th day of November, A. D. 1894.

WILLIAM Y. GAMBEE.

Witnesses:

CHAS. C. GILL,

EDWARD D. MILLER.