

No. 670,926.

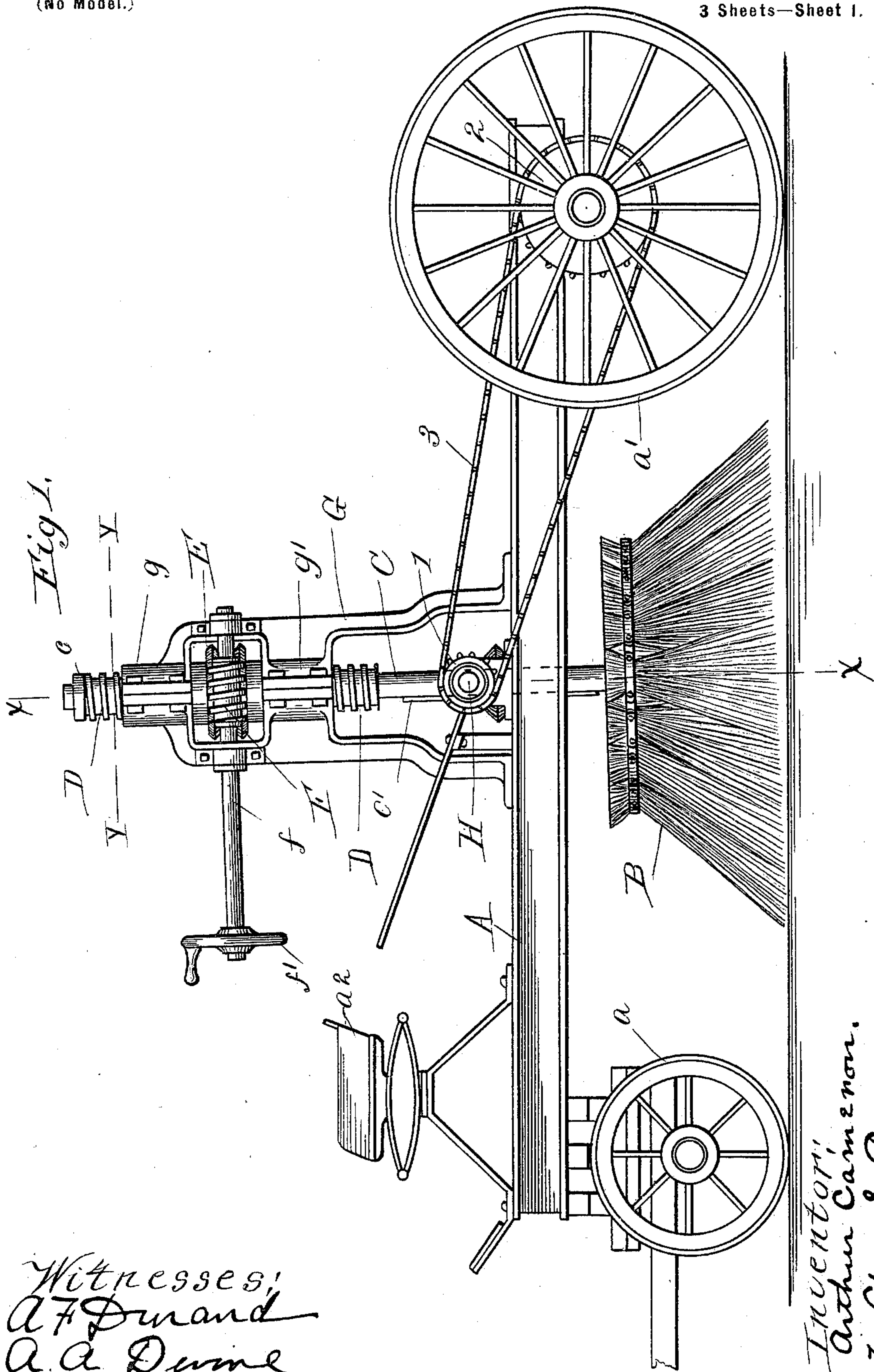
Patented Apr. 2, 1901.

A. CAMERON.
STREET SWEEPING MACHINE.

(Application filed June 9, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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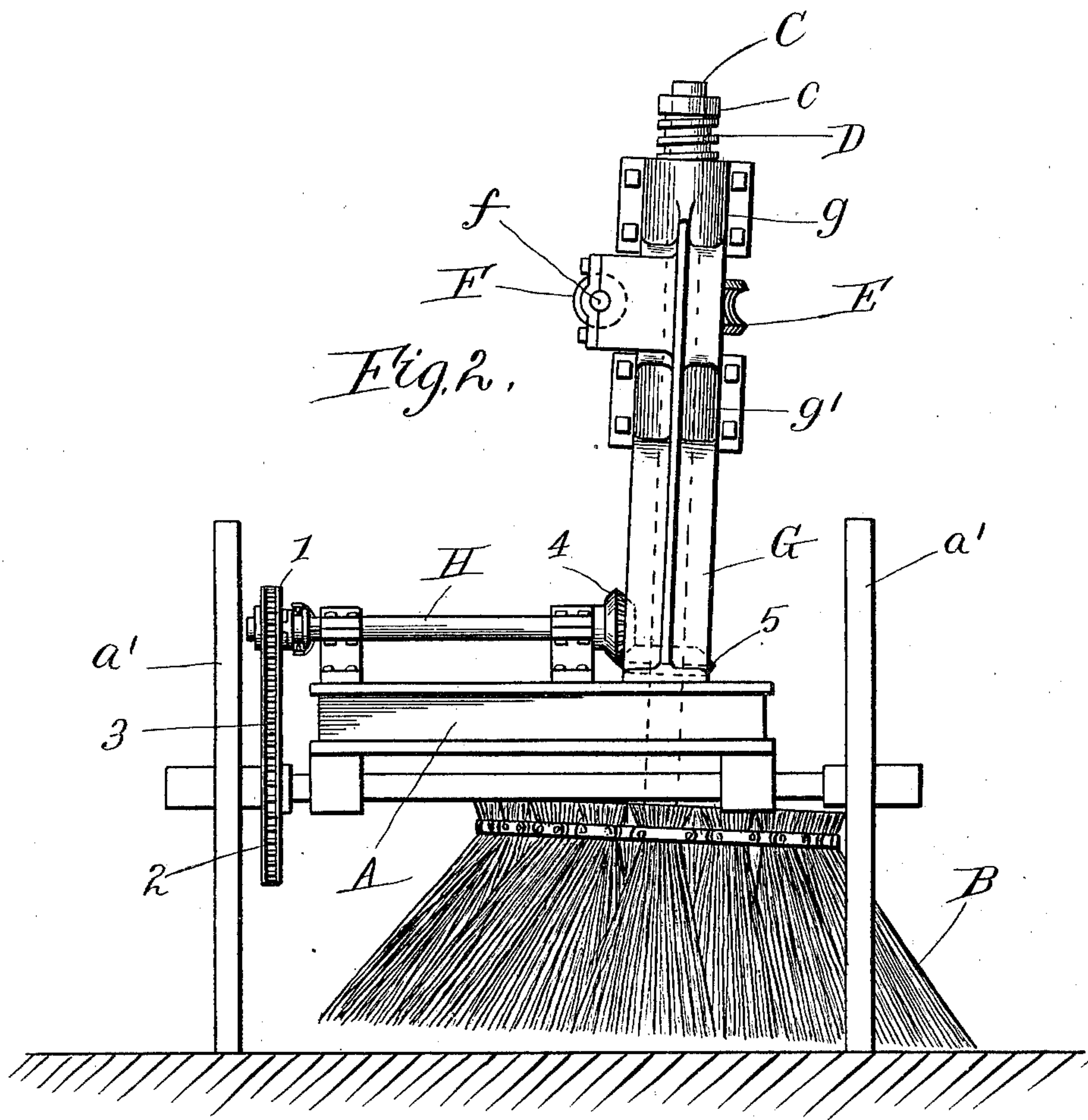
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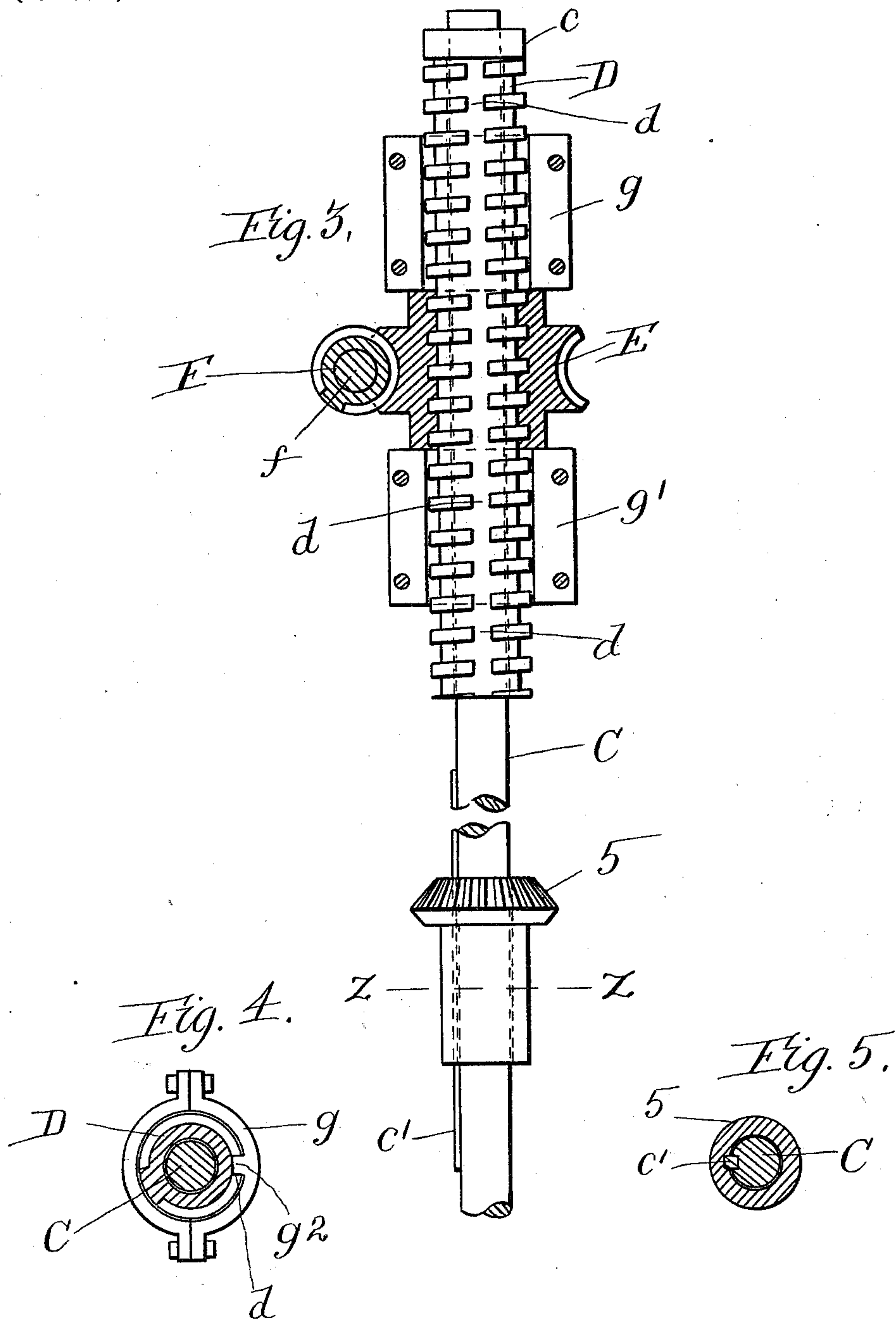
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UNITED STATES PATENT OFFICE.

ARTHUR CAMERON, OF CHICAGO, ILLINOIS, ASSIGNOR TO FREDERICK C. AUSTIN, OF SAME PLACE.

STREET-SWEEPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 670,926, dated April 2, 1901.

Application filed June 9, 1899. Serial No. 719,889. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR CAMERON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Street-Sweeping Machines, of which the following is a specification.

My invention relates to a construction of street-sweeping machine involving a rotary and vertically-disposed shaft or spindle provided at its lower end with a suitable brush or broom. Sweeping-machines of this description are particularly adapted for operating upon the sides or portions of the street next to the curbing and are for this reason commonly known as "gutter-sweepers."

The objects of my invention are to provide a simple, serviceable, and thoroughly reliable sweeping-machine, to facilitate the operation of raising and lowering the brush, to prevent the rotation of the brush-shaft from turning or operating the adjusting mechanism by which the brush is raised and lowered, to permit the rotary brush or broom and its operating shaft or spindle to automatically rise with reference to inequalities in height of the street or road-bed independently of the adjusting mechanism by which the brush and its shaft can be raised or permitted to drop to a predetermined limit, and to provide certain details and features of improvement tending to increase the general efficiency.

To the attainment of the foregoing and other useful ends the rotary and vertically-disposed brush shaft or spindle may be supported by a non-rotatable sleeve or bearing, and the latter can be made adjustable for the purpose of raising and lowering the brush. The arrangement may be such that the adjusting mechanism will be under the control of the driver—as, for instance, by providing a horizontally-disposed shaft or journal having its rear end suitably connected with the brush-shaft and its forward end provided with a crank or hand wheel. A rotation of the brush can be obtained in any suitable manner, but preferably by arranging some form of power-transmitting connection between the brush-shaft and the rear axle, and such power-transmitting mechanism may of course involve a clutch or clutches of any known or

suitable construction, so as to permit the rotation of the brush to be stopped or started at will. The non-rotatable bearing or bearings for the rotary brush-shaft may be of any suitable form or construction, and various devices may be employed for adjusting the same for the purpose of raising and lowering the brush; but as a matter of further and special improvement such bearing may consist of an externally-threaded and non-rotatable sleeve, and the adjusting means may comprise a nut applied to and arranged upon said sleeve in such manner that the latter can be adjusted up and down by simply rotating the nut. The vertical adjustment of the sleeve will of course effect a like adjustment of the brush, or, in other words, the rotation of the adjusting-nut will operate to either raise or lower the brush, and with the arrangement a rapid rotation of the brush-shaft will have no tendency whatever to turn or operate the adjusting mechanism, as the threaded sleeve which thus supports and provides a bearing for the brush shaft or spindle is, as previously stated, non-rotatable. A sweeping-machine thus constructed can be driven close to the curb at either side of the street, and by so doing the dirt and refuse in the gutter will be swept outward and left in a sort of windrow. The driver can raise, lower, start, or stop the brush at will and can also adjust to permit the adjustment of the brush gradually downward as fast as it wears off. Other matters of improvement will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a side elevation of a sweeping-machine embodying the principles of my invention. Fig. 2 is a rear elevation of the machine shown in Fig. 1. Fig. 3 is a vertical section through the adjusting mechanism on line $x x$ in Fig. 1. Fig. 4 is a horizontal section on line $y y$ in Fig. 1. Fig. 5 is a section on line $z z$ in Fig. 3.

A street-sweeping machine constructed in accordance with my invention may comprise a body-frame A, of any suitable form or construction, and the same can be mounted upon front and rear wheels $a a'$ and provided at its forward end with the usual driver's seat a^2 . Thus constructed the forward end of the machine may also be provided with suitable draft appliances, though it is obvious that

these can be dispensed with, if so desired, and the machine driven by steam or other power without in any way departing from the spirit of my invention. The rotary brush or broom B may be arranged intermediate the front and rear wheels and is preferably carried by and secured to the lower end of a vertically-disposed shaft or spindle C. It will be observed that the brush is preferably arranged at one side of the body-frame, so as to permit the brush to extend somewhat beyond the wheels, and also that the shaft or spindle C is tilted forward and outward to an extent sufficient to obtain an effective sweeping action. The shaft or spindle C can be driven or rotated through the medium of suitable power-transmitting connection with the rear axle and is arranged for a vertical or up-and-down adjustment to permit a raising and lowering of the brush as occasion may require. As a simple and effective arrangement for thus adjusting the brush the latter's shaft or spindle may be supported by a non-rotatable sleeve or bearing D, and the latter can be adapted and arranged for an extent of vertical adjustment sufficient to permit a raising and lowering of the brush; but as a matter of further and special improvement, however, the vertically-adjustable and non-rotatable sleeve or bearing D may be externally threaded, and an adjusting-nut E can be applied to and arranged upon the threaded sleeve in such a manner that the latter can be readily adjusted up and down by simply rotating the nut one way or the other, according to the particular adjustment desired; and as a matter of still further improvement the said adjusting-nut may consist of an internally-threaded worm-wheel, and a suitably-operated worm F can be employed to rotate the worm-wheel, and thereby raise and lower the brush. By referring to Figs. 1 and 3 it will be seen that the upright casting or bracket G, which supports the adjusting mechanism and also sustains the weight of the brush, is constructed with a couple of cylindric and hollow portions g and g' , which afford a sort of guideway for the sleeve D. It will also be observed that the worm-wheel E is supported upon the lower cylindric portion g' and that upward shift on the part of the said wheel is effectually prevented by the upper cylindric portion g . The worm-shaft f may be journaled in suitable bearings on the frame or casting G, and the forward end of such shaft can be provided with a crank or hand wheel f' , which, it will be observed, is within easy reach of the driver or other attendant occupying the seat at the forward end of the machine. To prevent rotation of the sleeve, the same can be provided with a longitudinal and external groove d , and one or both of the cylindric portions of the casting G can be provided internally with a lug or other projection g^2 , adapted to engage the said groove. (See Figs. 3 and 4.) The upper end of the brush-shaft

is preferably provided with a collar c , which rests and turns upon the upper end of the sleeve D.

The collar c rotates with the brush shaft or spindle and forms a stop device, which limits the downward movement of the brush-spindle independently of the non-rotatable sleeve D; but at the same time the stop device permits the brush and its spindle to automatically rise independently of the sleeve D, so that when the brush passes over any rise in the road it will be free to move upwardly in conformity with such rise and after passing the same drop to the extent permitted by the engagement of the stop device with the upper end of the sleeve D. While, therefore, the vertical adjustment of the non-rotary sleeve, either up or down adjustment of the brush-spindle, the latter will at all times be free to rise independently of the adjustable sleeve and to drop to the limit determined by the adjustment of such sleeve.

As previously stated, the brush can be driven from the rear axle, and this may be accomplished in any known or suitable manner—as, for example, by gears connecting the brush-shaft with a horizontal shaft H and connecting the latter with the rear axle by means of sprockets 1 and 2 and a sprocket-chain 3. With such arrangement the gear connection between the shaft H and the spindle C may comprise a pair of bevel-gears 4 and 5, it being observed that the latter has a sliding connection with the said spindle C, which is for this reason provided with a long spline or feather c' . The hub of the bevel can be inclosed in a suitable bearing on the body-frame. It will of course be understood that one or more clutches may be, and preferably are, arranged at a suitable point or points in the power-transmitting connection between the brush and rear axle and that such clutch or clutches can be brought under the control of the driver, so as to permit the brush to be started or stopped at will.

From the foregoing it will now be seen that I provide a gutter-sweeper which is simple and effective and in which the rotation of the brush-shaft will have no tendency whatever to turn or in any way affect the adjusting mechanism. It is also obvious that the arrangement permits a ready and easy adjustment of the brush and, furthermore, that such adjustment is under the control of the driver. The combination of a threaded sleeve and worm-gearing constitutes a powerful and reliable adjusting device; but as there are obviously many other devices which could be employed for adjusting the non-rotatable bearing I do not limit myself to the precise construction shown or to the exact arrangement.

What I claim as my invention is—

1. A street-sweeper comprising a suitable body-frame mounted upon wheels, a substantially vertically-disposed shaft having a broom or brush at its lower end, means for

rotating said shaft, a sleeve on said shaft, said sleeve being externally threaded and provided with a longitudinal groove, a worm-wheel on said sleeve, a bracket or framework supporting said worm-wheel and adapted to provide a guideway for said sleeve, the said bracket or framework being provided with one or more projections which engage the said groove on the sleeve, a horizontally-disposed shaft provided at its rear end with a worm engaging said worm-wheel and provided at its forward end with a crank or hand wheel, substantially as and for the purpose set forth.

2. A street-sweeper comprising a body-frame mounted upon wheels; a substantially upright rotary shaft or spindle provided at its lower end with a street-sweeping brush or broom and normally free to rise in order to permit the brush or broom to rise and fall with reference to the road or street surface, but adjustably limited in its extent of drop; suit-

able means for rotating the brush or broom spindle during the progress of the machine; a non-rotary and vertically-adjustable sleeve which is externally threaded and arranged to receive the upper portion of the rotary brush-spindle; a worm or gear wheel supported by a suitable fixture on the machine and adapted to form a nut which receives, engages and serves to vertically adjust the externally-threaded sleeve; suitable operating means gearing with and serving to actuate the said worm or gear wheel; and a stop device permitting the rotary brush shaft or spindle to rise independently of the non-rotary and vertically-adjustable sleeve, but limiting the extent of drop on the part of such brush shaft or spindle relatively to the adjustment of the said sleeve, substantially as set forth.

ARTHUR CAMERON.

Witnesses:

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