

No. 653,149.

Patented July 3, 1900.

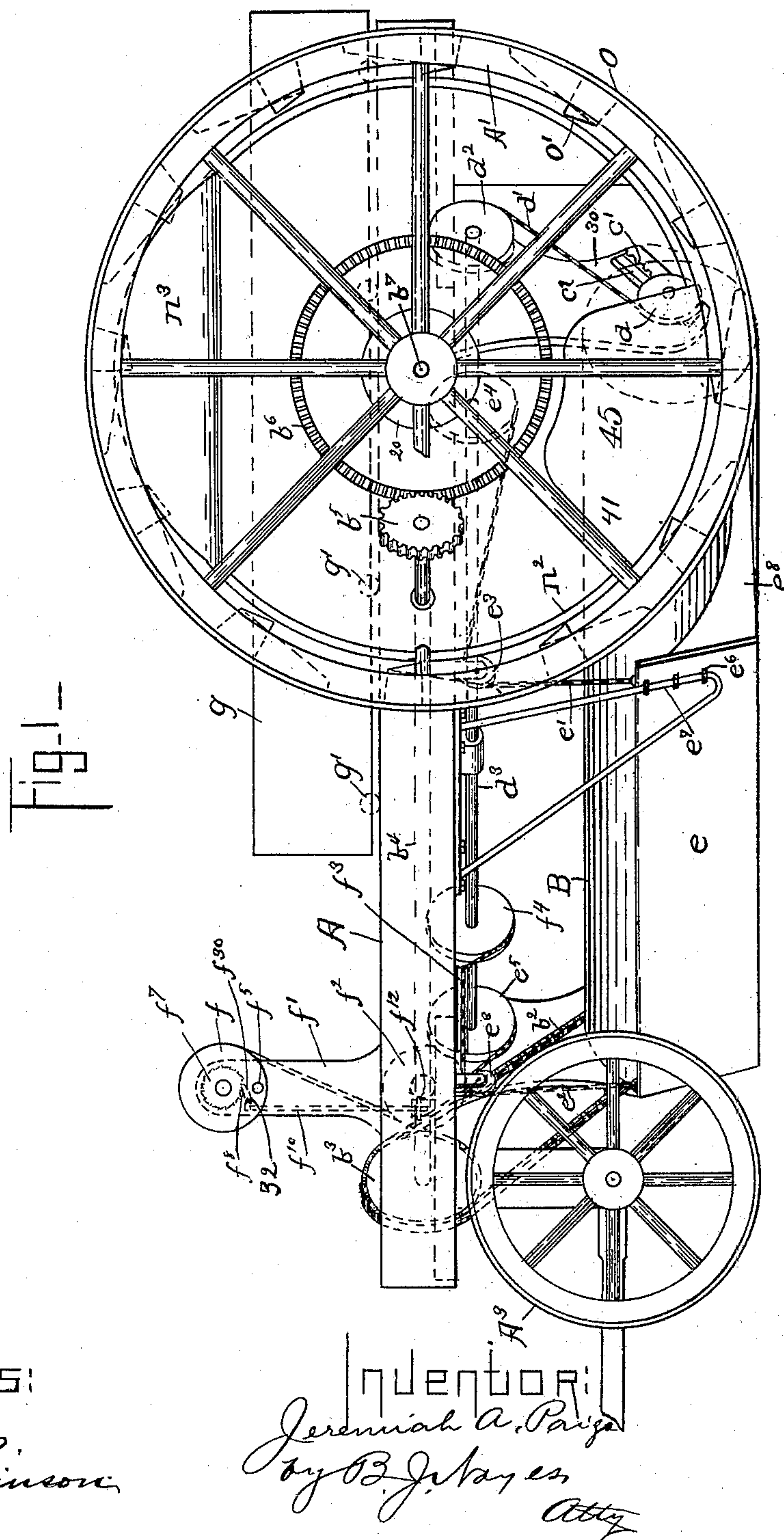
J. A. PAIGE.

APPARATUS FOR SWEEPING AND CLEANING STREETS.

(Application filed June 24, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:
H. B. Davis,
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Inventor:
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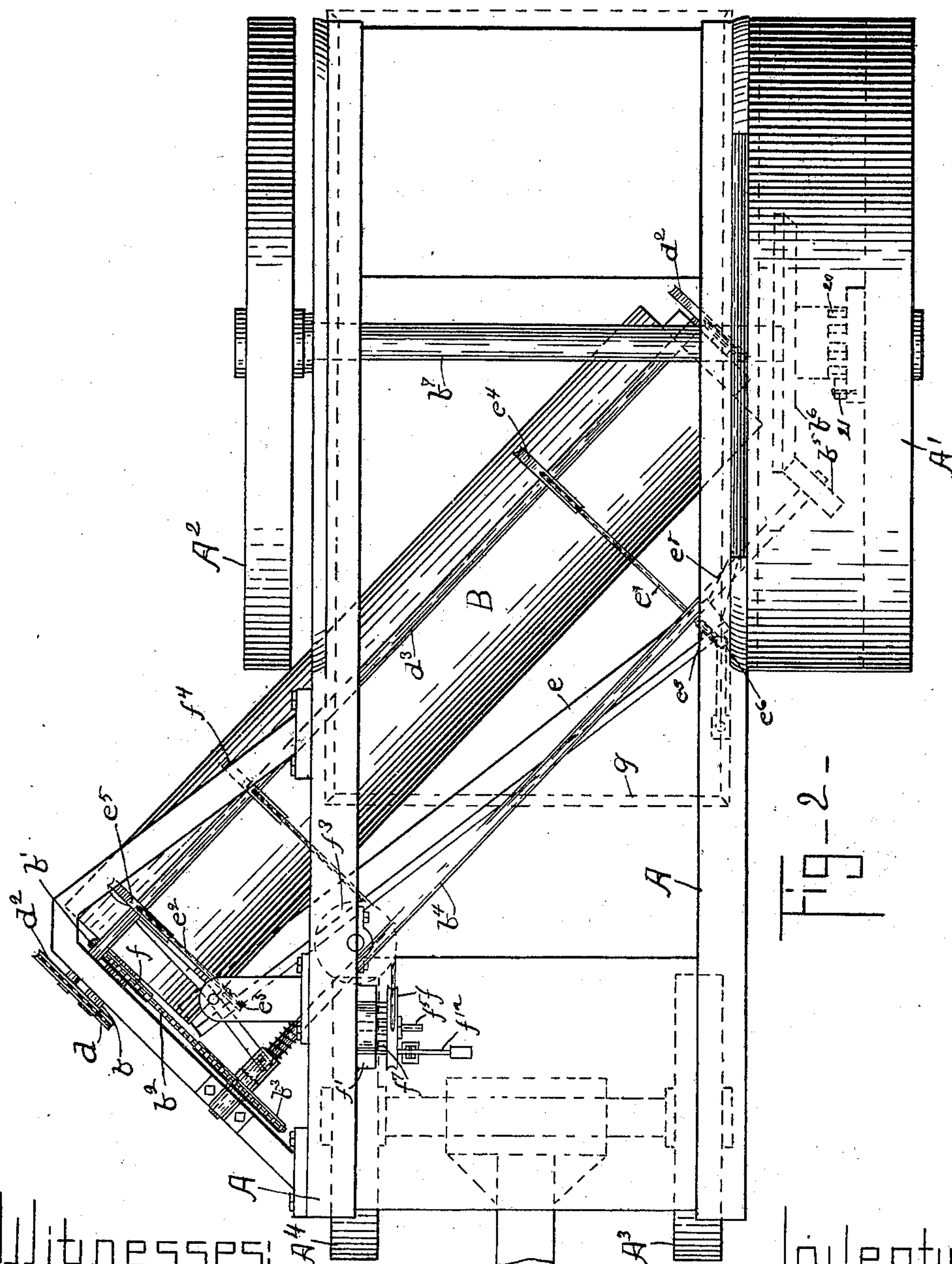
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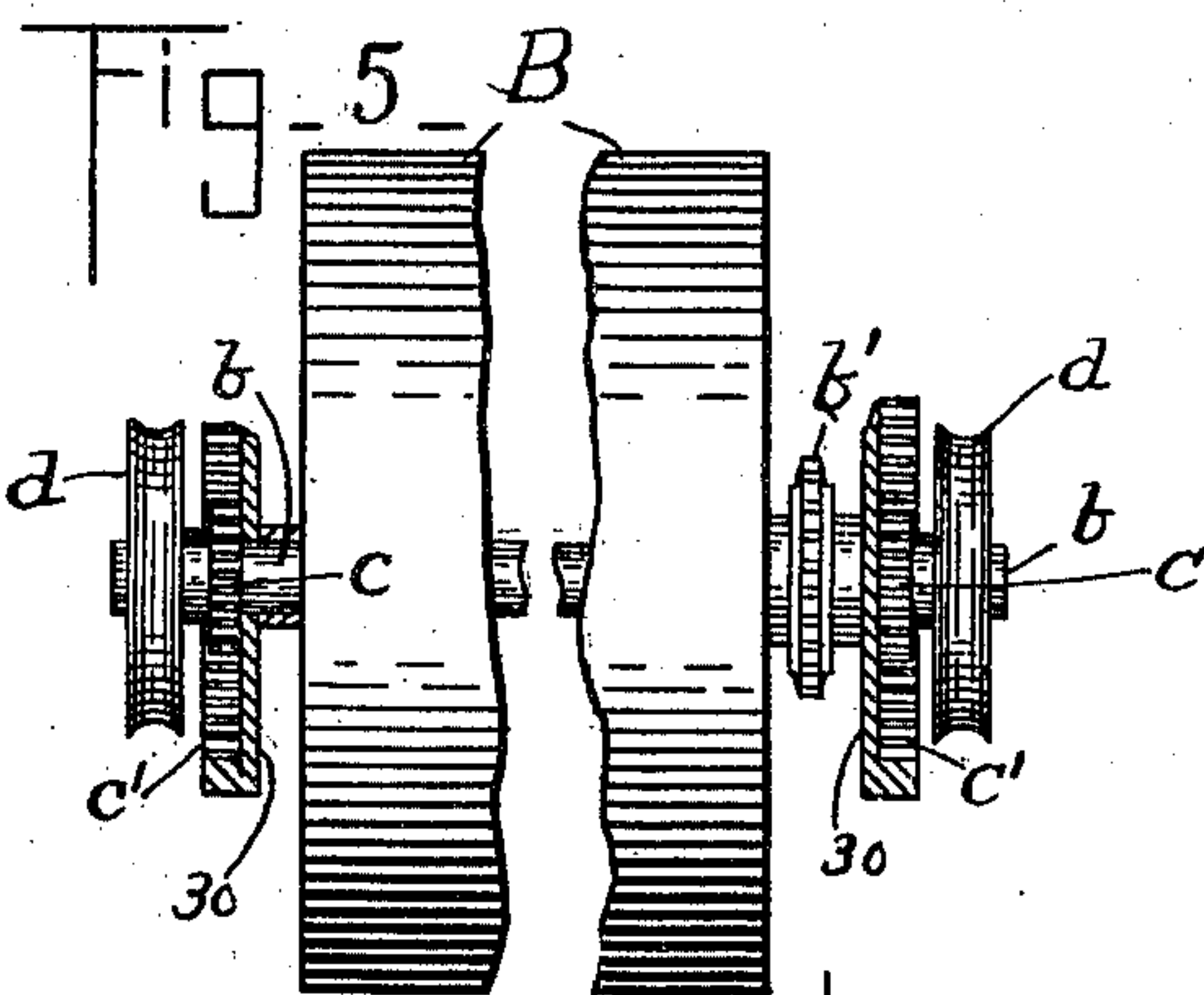
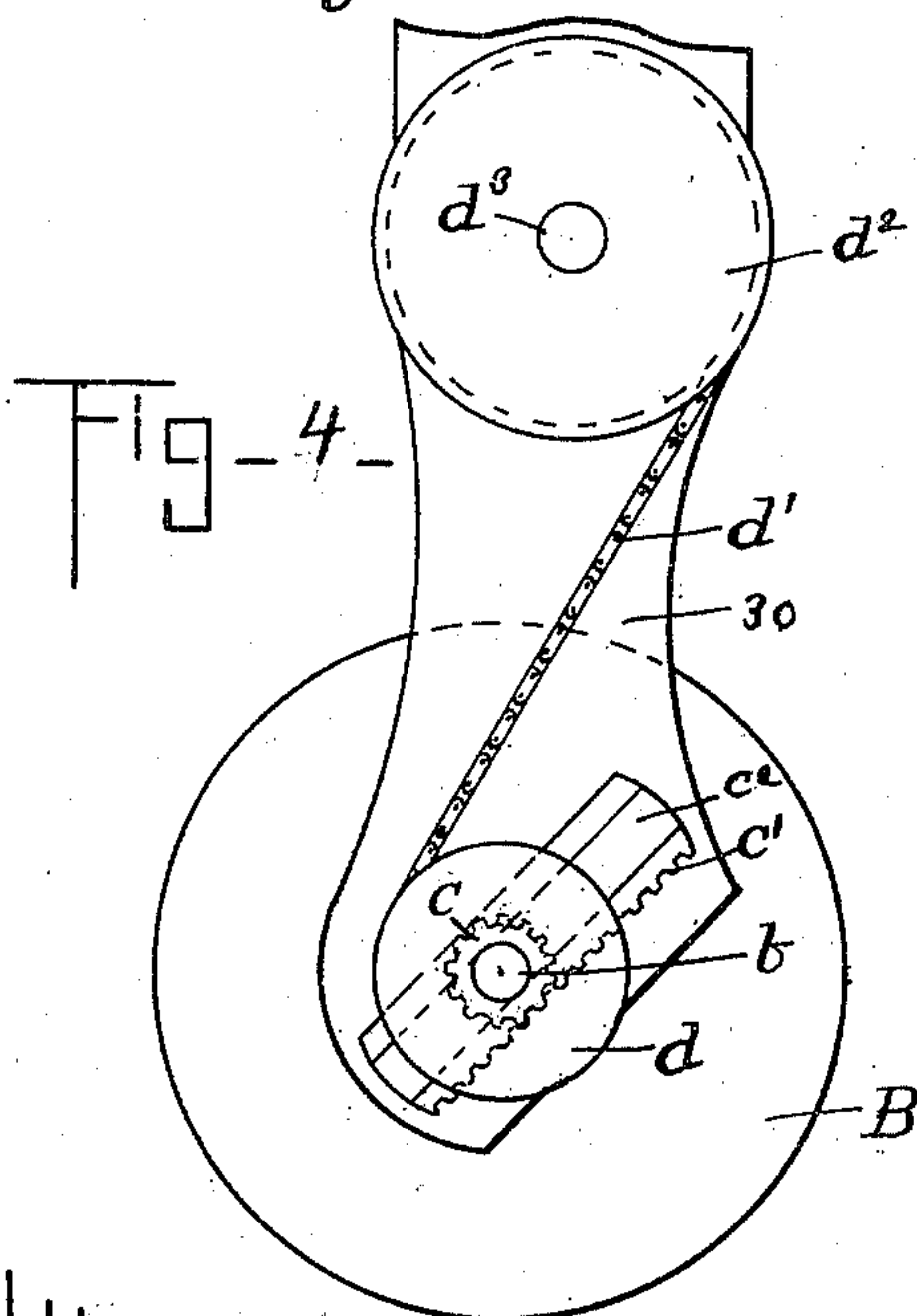
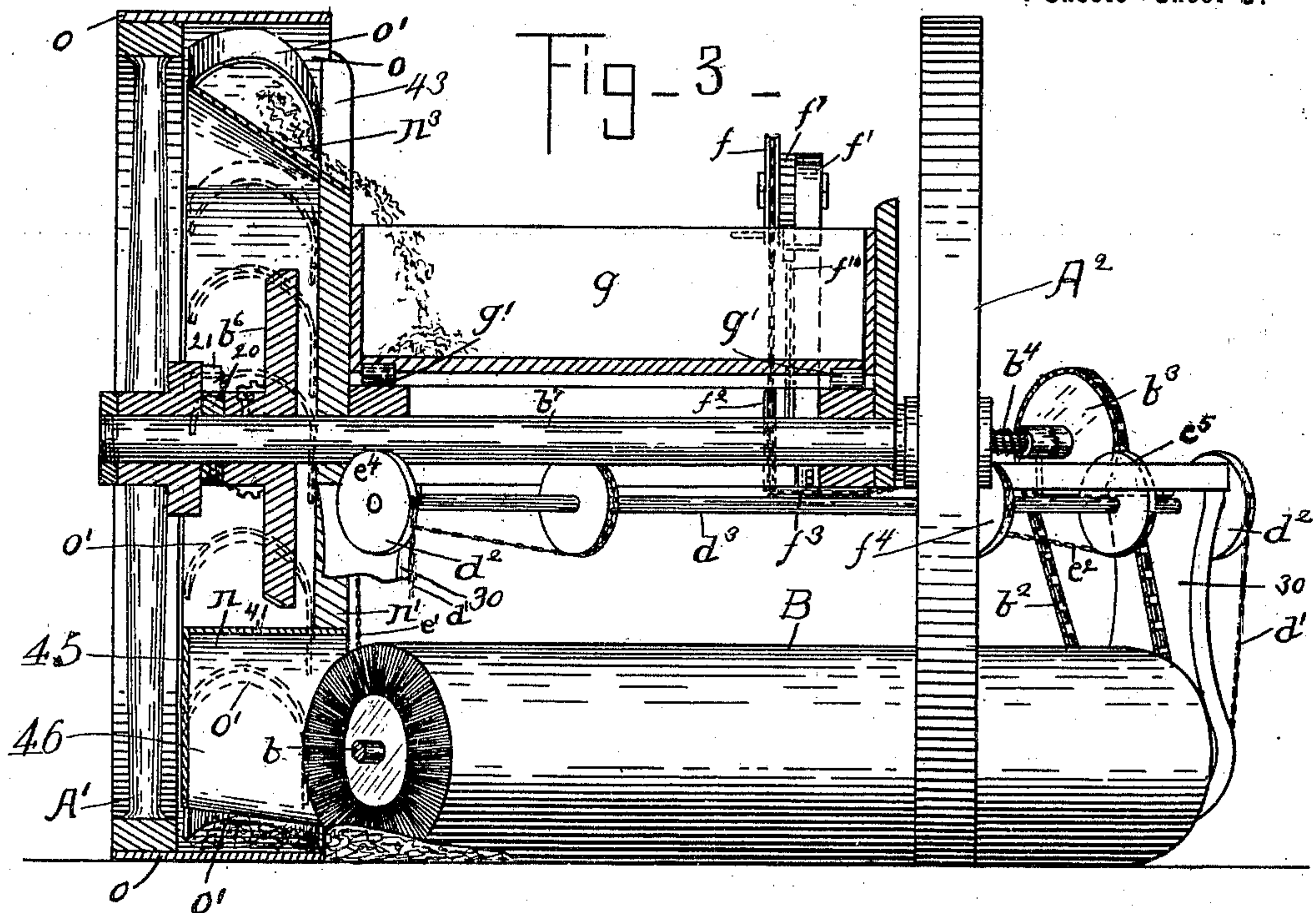
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4 Sheets—Sheet 4.

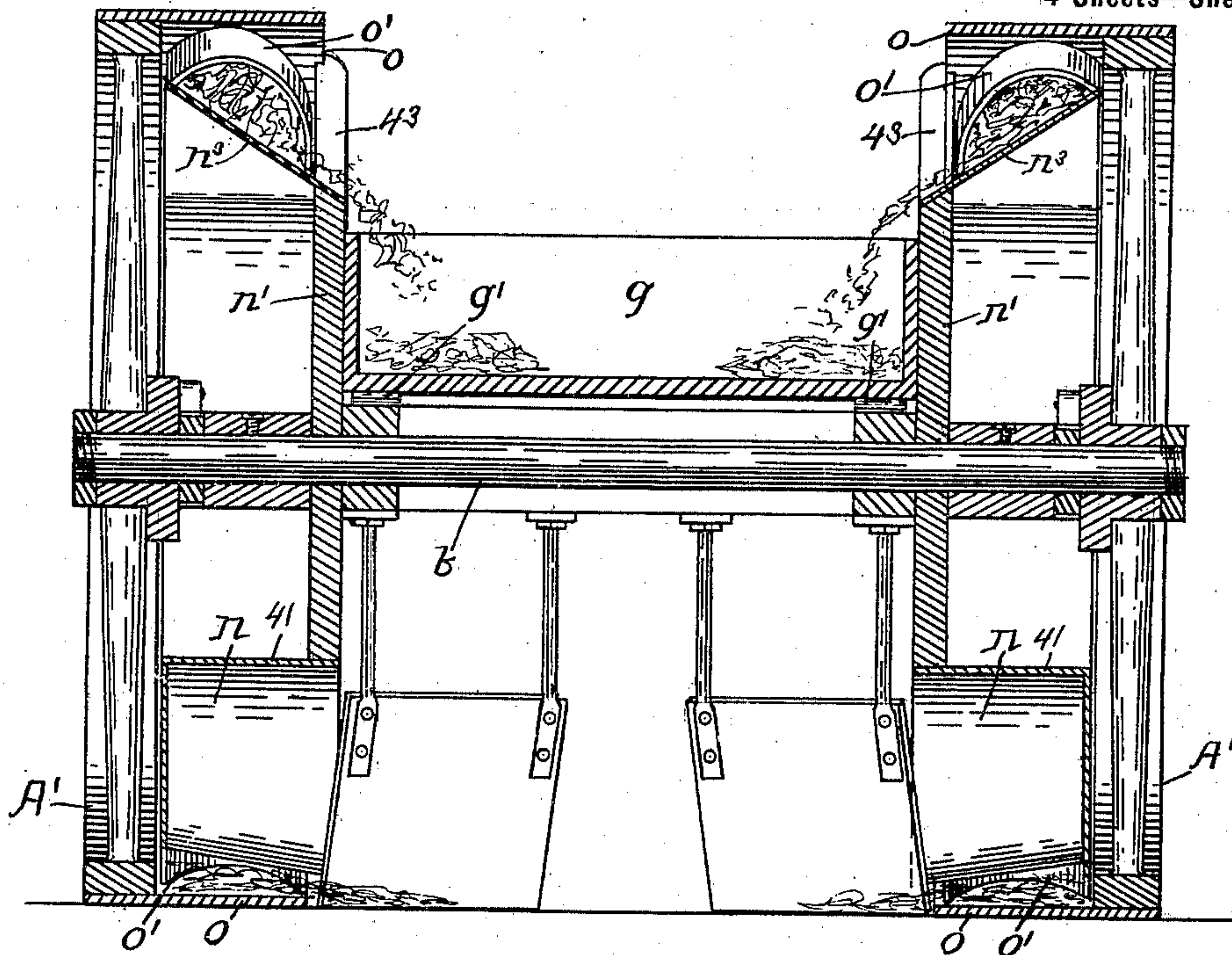


Fig-7-

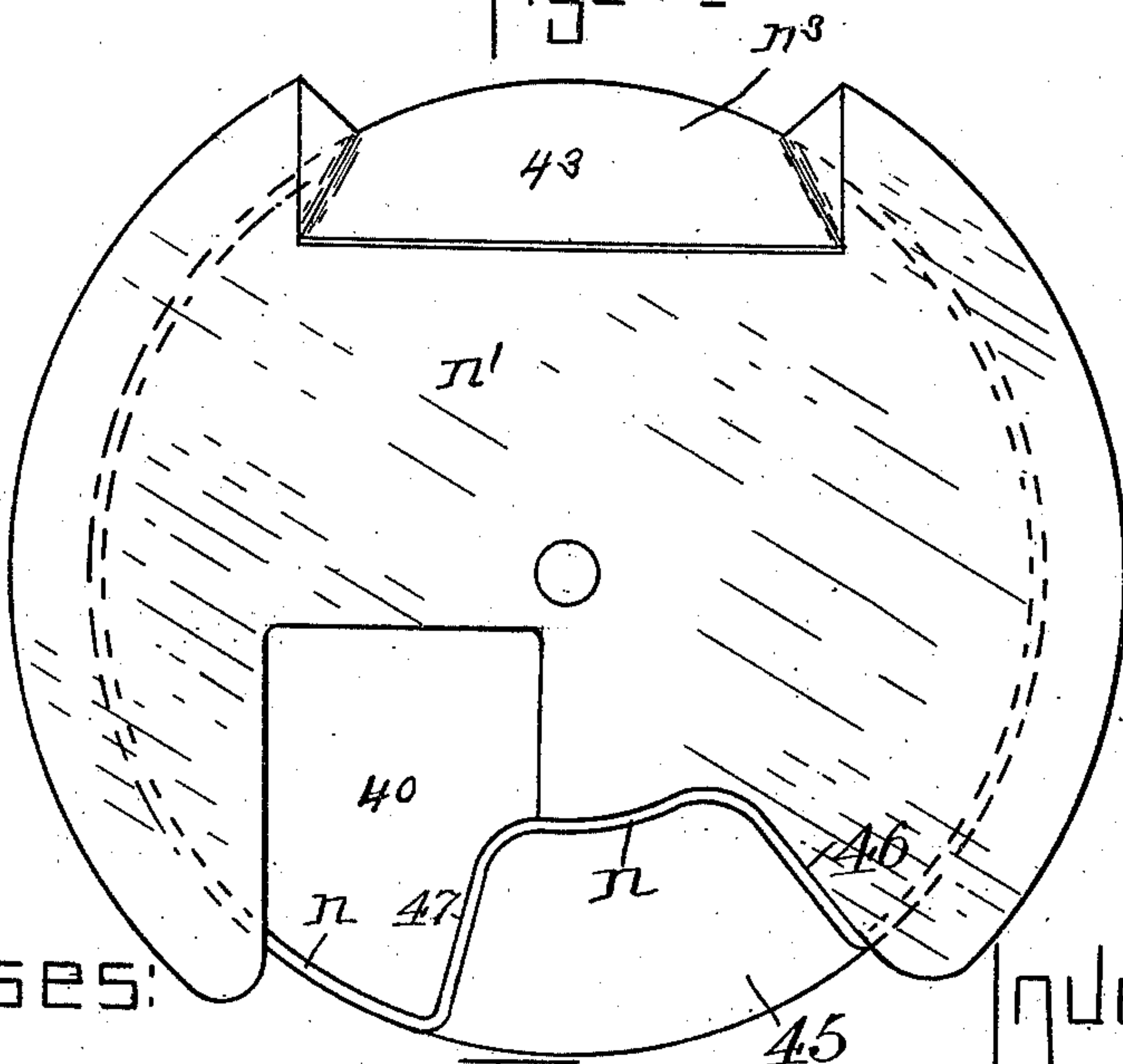


Fig-6

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UNITED STATES PATENT OFFICE.

JEREMIAH A. PAIGE, OF MANCHESTER, NEW HAMPSHIRE.

APPARATUS FOR SWEEPING AND CLEANING STREETS.

SPECIFICATION forming part of Letters Patent No. 653,149, dated July 3, 1900.

Application filed June 24, 1899. Serial No. 721,698. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH A. PAIGE, of Manchester, county of Hillsborough, and State of New Hampshire, have invented an Improvement in Apparatus for Sweeping and Clearing Streets, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention has for its object to improve the construction of machines for sweeping and clearing streets of that type wherein the material collected by the clearing device is delivered to a carrier or conveyer which is operated to deliver it to a suitable receptacle; and the invention consists in a wheel-supporting frame, an oblique clearing device carried by it, which may be a brush or a board or any equivalent device, a moving carrier or conveyer, a receiving-chamber located at the rear end of said clearing device having an open bottom beneath which said carrier moves, and means for operating said carrier or conveyer to raise the material and deliver it to a receptacle adapted to receive it; also, in means for concealing the dirt-carrying receivers of the moving carrier or conveyer as they pass from said receiving-chamber to the point of delivery; also, in adjustable means for holding the clearing device relative to the carrier or conveyer to compensate for wear of the clearing device; also, in certain details of construction, as will be hereinafter pointed out.

Figure 1 shows in side elevation a machine for sweeping and clearing streets embodying this invention. Fig. 2 is a plan view of the machine shown in Fig. 1. Fig. 3 is a rear end view of the machine shown in Fig. 1; Figs. 4, 5, and 6, details of the clearing device to be referred to; and Fig. 7, a modification showing two clearing devices, and consequently two carriers or conveyers which receive the material collected by them and which deliver it to a receptacle adapted to receive it.

A represents a frame which may be of any suitable construction and adapted to support the wheels $A^1 A^2 A^3 A^4$, thereby serving as and constituting a wheel-supporting frame, al-

though I desire it to be understood that said wheel-supporting frame may be constructed in any suitable manner.

B represents a clearing device, which is shown in Figs. 1 to 3 as a cylindrical brush having journals b at its ends supported in suitable bearings, as will be described. The brush B is disposed obliquely to the wheel-supporting frame, as best shown in Fig. 2. To one of the journals b of said brush a sprocket-wheel b^1 is secured, over or around which passes a chain b^2 , which also passes over or around a sprocket-wheel b^3 , mounted upon one end of a rotating shaft b^4 and adapted to be connected with said shaft by any suitable clutch mechanism. The shaft b^4 extends obliquely across the frame in parallelism with the brush B and is supported in suitable bearings, and said shaft b^4 has secured to it at its rearmost end a bevel-gear b^5 , which is engaged and driven by a bevel-gear b^6 , secured to the axle b^7 , bearing the ground-wheels $A^1 A^2$. The ground-wheel A^1 is connected with said axle b^7 by means of a ratchet-wheel 20 and pawl 21, as is common, to provide for positively rotating the axle as the machine advances and to permit the machine being moved rearwardly without turning said axle. As the machine advances along the road the ground-wheel A^1 will revolve the axle b^7 and through the mechanism thus described will rotate the brush B.

The end journals b of the brush B instead of being mounted in and supported by ordinary bearing-boxes each have loosely mounted upon them a pinion c , (see Figs. 4 and 5,) and said pinions c rest upon and engage sets of rack-teeth c^1 , formed at or along the lower side or edge of an oblique or diagonally-disposed slot c^2 , provided at or near the lower end of a bracket 30, depending from the frame, and said journals b are free to revolve in said pinions c , which thereby serve as bearings for the journals. The brush B will be bodily raised and lowered, and as it is thus moved its journals b will follow in the oblique slots c^2 , the pinions c rolling along on the rack-teeth c^1 , upon which they rest.

By providing oblique slots c^2 for the journals of the rotating brush it will be seen that

said brush may not only be raised and lowered, but at the same time will be moved forward and backward.

The machine forming the subject-matter of this application comprises a carrier or conveyer which will be described, and the rear end of the brush B terminates close to said carrier or conveyer, so as to deliver the material collected by it to said carrier or conveyer, and hence it is important that the rear end of said brush shall always occupy a certain relative position to said carrier or conveyer, and it will be seen that by providing the oblique slots c^2 the brush may be moved downward and also forward at the same time to compensate for the bristles wearing away and the rear end of the brush thus always caused to occupy the same relative position to the carrier or conveyer regardless of the length of the bristles. The brush may also be raised whenever desired, so as to haul the machine about without sweeping. It will also be seen that by mounting the journals of said brush in pinions which rest upon and freely move along the rack-teeth c' the movement of said brush along the oblique slots c^2 is much facilitated and its correct position maintained.

To each journal b of the brush B a pulley d is loosely mounted, and to each pulley d one end of a chain or cord d' is attached, and the opposite ends of said chains or cords are attached to similar pulleys d^2 , both of which are rigidly secured to a rock-shaft d^3 , having its bearings in the brackets 30, and as said shaft d^3 is rocked the pulleys d^2 borne by it will be turned more or less, and consequently the pulleys d on the journals b of the brush will be correspondingly turned and the brush raised and lowered according to the direction of movement of the rock-shaft d^3 .

In front of the brush B a fender e is located, which is herein shown as supported by chains or cords e' e^2 , which are attached to the upper edge of the fender and which pass up and over suitable pulleys, as e^3 , supported by the frame, and thence to two pulleys e^4 e^5 , to which said chains are attached, and said pulleys e^4 e^5 are both rigidly secured to the said rock-shaft d^3 , so that whenever said shaft d^3 is rocked the fender e will be raised and lowered with the brush. The fender e has eyes e^6 , which receive a guide-rod e^7 , depending from the frame. The fender e is disposed obliquely to the wheel-supporting frame, being arranged in parallelism with the brush B, and it has at its rear end a shoe e^8 , or in lieu of said shoe a rearward extension may be provided on the fender, and said shoe e^8 extends rearward and terminates adjacent the carrier or conveyer.

Any suitable means may be employed for rocking the shaft d^3 to raise and lower the brush and fender; but for the purpose of illustration a pulley f is journaled to an upright or support f' , and a chain or cord is at-

tached to said pulley f , which passes over or around a pulley f^2 , thence over or around a pulley f^3 , and thence to a pulley f^4 , to which it is attached, which is secured to the rock-shaft d^3 , and a handpiece f^5 is secured to said pulley f , by which it will be turned. A ratchet-wheel f^7 is secured to the shaft or journal of said pulley f , which is engaged by a pawl f^{30} to prevent backward movement of the pulley f . The pawl f^{30} is pivoted at 32 to the upright or support f' , and it has connected to it a link f^{10} , which is connected to a foot-treadle f^{12} , so that said pawl may be at any time thrown out of engagement with the ratchet-wheel f^7 in order that the pulley f may be turned in the opposite way.

The carrier or conveyer which is provided at the rear end of the brush B or other form of clearing device serves to take the material collected by said brush or other clearing device and deliver it to a receptacle g , adapted to receive it. The receptacle g may be of any suitable description, but is herein shown as a box-like structure mounted upon rollers g' on the frame, so as to be easily removed.

Upon the axle b^7 is mounted a circular plate n' , (see Figs. 1, 3, and 6,) which is rigidly secured to the frame, and thereby held stationary, and said circular plate n' is cut away at its lower end to provide an opening 40, and a shell or casing is secured to the plate n' at the opening 40, which is formed with an outer wall 45, a top wall 41, a front end wall 46, and a rear end wall 47 to thereby provide a receiving-chamber n , having an opening at one side and also at the bottom. The side opening of the receiving-chamber n is made large enough to admit the rear end of a brush B in such manner that said brush can sweep the material collected by it into the chamber. The circular plate n' is cut away at its upper edge to provide another opening 43, which is located above the receptacle g , and an oblique board n^3 is secured to said plate n' at said opening 43, so that any material which is deposited thereon will be caused to fall by gravity through the opening 43 and into the receptacle g . The oblique board n^3 , with the opening 43, thus serves as a delivery-chute for the material. The circular plate n' has also secured to it at a short distance within its outer edge a circular rim n^2 , which extends from the shell or case 41, on each side thereof, up to the oblique board n^3 , although said rim n^2 may be omitted, if desired. The stationary plate n' and parts attached to and supported by it will be directly opposite one of the ground-wheels—as A' , for instance—the axle b^7 passing through it, and said circular plate will be made of a diameter approximately equal to the diameter of said ground-wheel or a little less. A circular rim o is attached to the rotating ground-wheel A' , being made of the same diameter as the rim of said wheel, and for simplicity of construction it is herein shown as an extension

of the rim of said wheel, and said circular rim *o* has secured to its inner side a number of curved vanes *o'*, which project inward. The circular rim *o* and vanes carried by it 5 revolve with the ground-wheel *A'*, and said rim is located close to the circular plate *n'*, so that its vanes will move along beneath the open bottom of the receiving-chamber *n* and over the top of the oblique board *n³*, and as 10 said rim *o* revolves the vanes will take the material from the receiving-chamber *n* and will carry it up and deposit it upon the oblique board *n³*. The circular plate *n'* will or may be fitted within the circular rim *o* to thereby 15 serve as an end wall for said carrier, and the circular rim *n²* will serve as an inner wall, being so disposed relative to the moving vanes that the latter may move along freely without touching it, and the felly of the ground-wheel *A'* substantially closes the outside of 20 the recess thus provided and in which said vanes move. Thus it will be seen that the circular rim *o* and vanes carried by it serve as and constitute a carrier or conveyer which 25 receives the material and conveys it to the receptacle *g* and that said carrier or conveyer will continually pass beneath the open bottom of the receiving-chamber *n*, and thereby serve as a moving bottom therefor upon which 30 the material is deposited by the clearing device, being directed thereon more or less by the walls of the shell or case 41.

In some cases the shell or case 41 may be omitted and the material deposited directly 35 upon the rotating carrier or conveyer, but as the walls of said shell or case effectively assist in directing the material onto the carrier or conveyer I prefer to employ it.

In Figs. 1 to 3 a single carrier or conveyer 40 is shown; but in Fig. 7 two carriers or conveyers, constructed substantially alike and like the carrier or conveyer shown in Figs. 1 to 3, are provided, one for each ground-wheel, and in such case two oblique clearing devices 45 will be provided extending in opposite ways.

I claim—

1. In an apparatus of the kind described, a wheel-supporting frame, an obliquely-arranged clearing device, a revoluble carrier or 50 conveyer, and a fixed receiving-chamber projecting into said carrier or conveyer, substantially as described.

2. In an apparatus of the kind described, a wheel-supporting frame, a fixed receiving-chamber, a carrier or conveyer inclosing said 55 receiving-chamber, and an obliquely-arranged clearing device projecting into said receiving-chamber, substantially as described.

3. In an apparatus of the kind described, 60 a wheel-supporting frame, an obliquely-arranged clearing device, a fixed receiving-chamber having an open bottom and open side, and a carrier or conveyer having vanes or pockets, said carrier or conveyer surrounding the receiving-chamber and adapted to 65

revolve around the same, substantially as described.

4. In an apparatus of the kind described, a wheel-supporting frame, an obliquely-arranged clearing device, a revoluble carrier or 70 conveyer, and a receiving-chamber projecting into the carrier or conveyer and mounted upon a plate fixed to the supporting-frame, substantially as described.

5. In an apparatus of the kind described, 75 a wheel-supporting frame, an oblique clearing device carried by it, a moving carrier or conveyer, a receiving-chamber projecting into said carrier or conveyer at the rear of said clearing device and having an open bottom 80 beneath which said carrier or conveyer moves and an open side for the entrance of the material, a delivery-chute over which said carrier or conveyer moves and a circular rim extending from said receiving-chamber to said 85 delivery-chute which in conjunction with the moving carrier or conveyer forms an inclosed recess, substantially as described.

6. In an apparatus of the kind described, a wheel-supporting frame, an oblique clearing 90 device carried by it, a moving carrier or conveyer, a receiving-chamber projecting into said carrier or conveyer at the rear of said clearing device and having an open bottom beneath which said carrier or conveyer moves 95 and an open side for the entrance of the material, a delivery-chute over which said carrier or conveyer moves and a circular rim held in fixed position concentric to said moving carrier or conveyer which conceals the 100 dirt-carrying receptacles borne by said carrier or conveyer, substantially as described.

7. In an apparatus of the kind described a wheel-supporting frame, a clearing device 105 carried by it, upwardly-inclined bearings which receive the journals of said clearing device, a revoluble carrier or conveyer, and a fixed receiving-chamber projecting into said carrier or conveyer, substantially as described. 110

8. In an apparatus of the kind described, a wheel-supporting frame, a clearing device carried by it having journals with pinions thereon, upwardly-inclined bearings having rack-teeth which engage the pinions on the 115 journals of the clearing device, pulleys on the outer ends of the journals of the clearing device, pulleys carried by brackets supported on the frame, and a rope or chain connecting the pulleys on the said journals with the pulleys on the said brackets for the purpose of 120 raising or lowering the clearing device, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of 125 two subscribing witnesses.

JEREMIAH A. PAIGE.

Witnesses:

ARTHUR S. CALEF,
CHAS. L. HARMON.