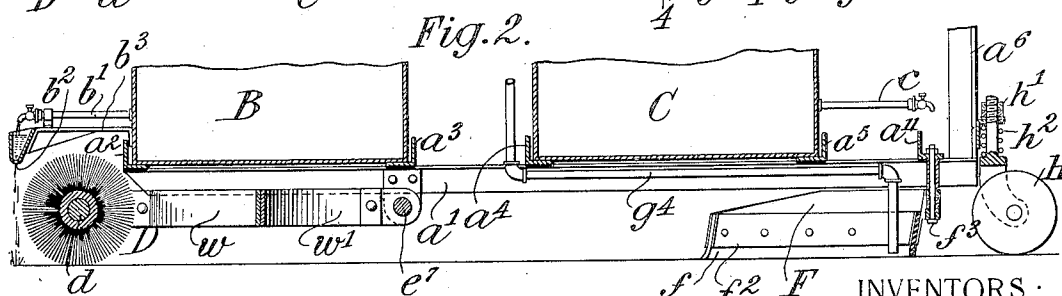
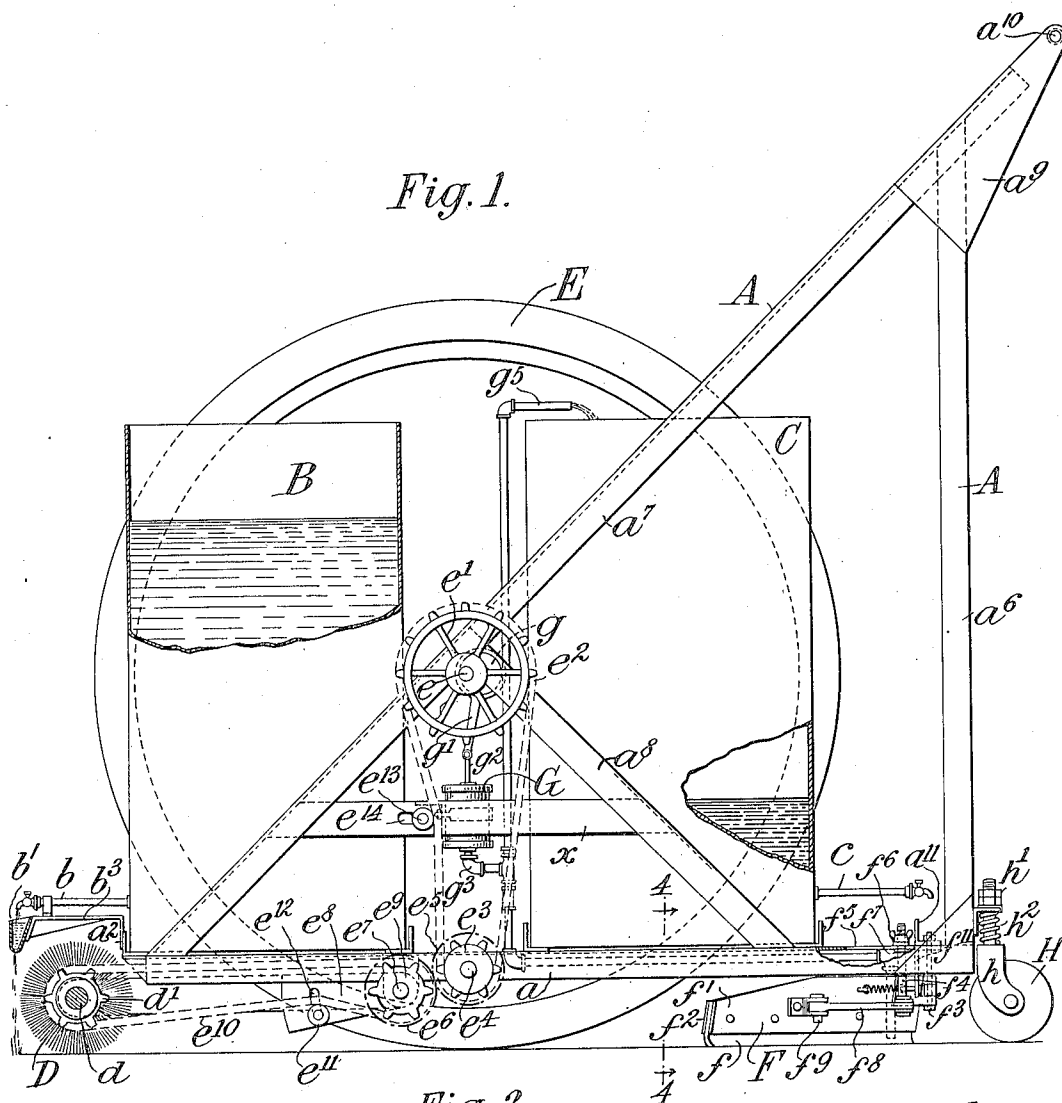


G. H. GASTON & P. MEYER.
SCRUBBING MACHINE.
APPLICATION FILED JULY 17, 1911.

1,057,539.

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2 SHEETS—SHEET 1.



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Fig. 3.

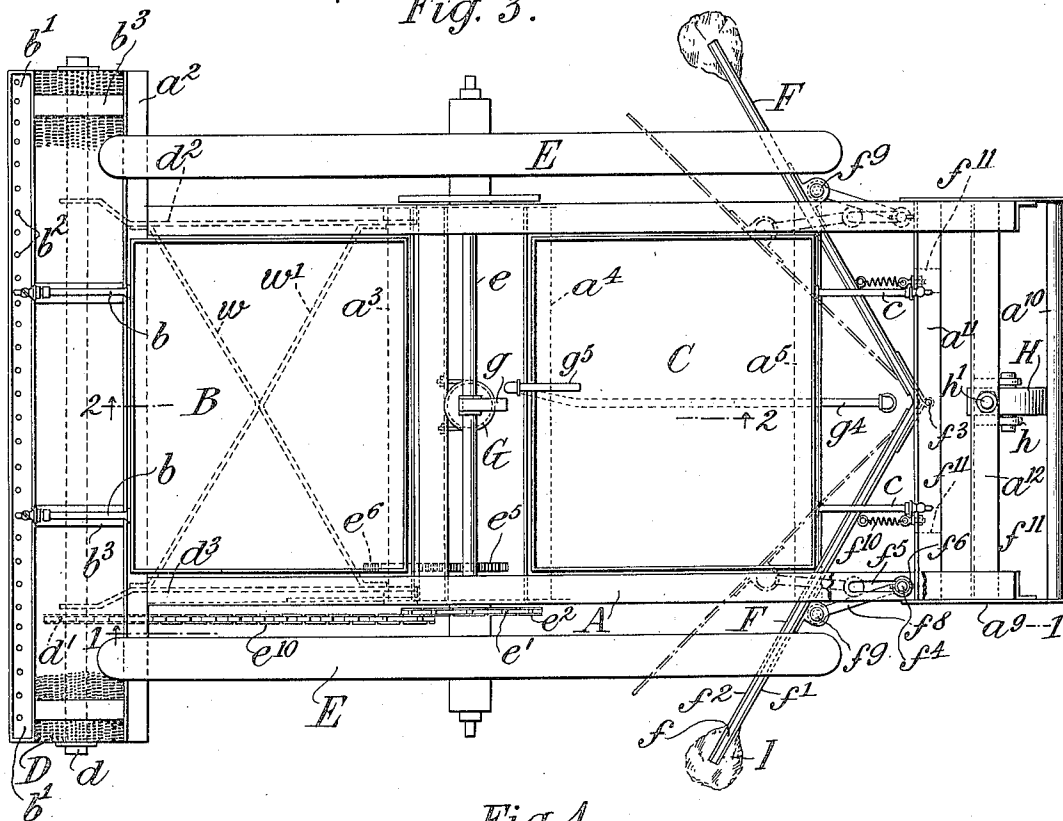
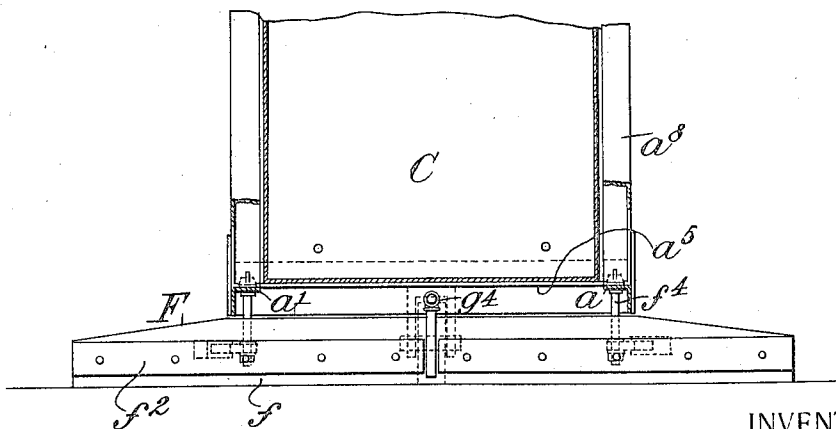


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE H. GASTON, OF NEW YORK, N. Y., AND PETER MEYER, OF NEWARK, NEW JERSEY.

SCRUBBING-MACHINE.

1,057,539.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed July 17, 1911. Serial No. 639,089.

To all whom it may concern:

Be it known that we, GEORGE H. GASTON, residing in the borough of Manhattan, city, county, and State of New York, and PETER MEYER, residing in Newark, in the county of Essex and State of New Jersey, both citizens of the United States, have jointly invented certain new and useful Improvements in Scrubbing-Machines, of which the following is a specification.

Our invention relates to scrubbing machines adapted particularly for use in scrubbing floors, decks, etc., and has for its object to provide a simple, economical and efficient construction of such machine; further, to provide means whereby the raising of objectionable dust by the machine is avoided and the dust is wetted before the action of the scrubbing brush; further, to provide means for collecting the dirty water, which shall practically do away with the formation of streaks upon the floor; further, to provide means whereby the dirty water can be pumped to the machine; further, to provide means whereby the supply and receiving tanks are separated so that the weight thereof may be reduced and the same may be easily handled.

One practical embodiment of our invention is illustrated in the accompanying drawings, wherein,—

Figure 1 is a side elevation of one of said machines, the front traction wheel being removed for clearness of illustration; Fig. 2 is a sectional elevation on the line 2—2 in Fig. 3; Fig. 3 is a plan view of the machine; and Fig. 4 is a detail view of the receiving tank and of the squeegee taken on the line 4—4 of Fig. 1 looking rearwardly.

In carrying our invention into practice, we preferably employ a frame A upon which are mounted suitable tanks which may well be separated into the supply tanks B and receiving tanks C. Liquid is delivered from the supply tank B to a rotary scrubbing brush D, which is revolved in a clockwise direction as illustrated in Fig. 1, which is a direction opposed to the travel of the machine. Thereby liquid being delivered from the tank D in front of the scrubbing brush, the dust and dirt upon the floor is wetted before being encountered by the scrubbing brush, and the raising of an objectionable

dust is to a large extent prevented. This scrubbing brush is revolved from one of the traction wheels E. A squeegee F at the rear of the machine, made preferably of V-shape as shown, has its ends extending normally beyond the ends of the rotary scrubbing brush D, for the purpose of preventing formation of streaks in the floor, and gathers up the dirty water which is removed by a pump G operated from the traction wheel E, by which it is conveyed to the receiving tank C. By means of the said machine thus briefly described, the dust is thoroughly saturated, and together with the liquid is constantly pushed ahead by the rotary scrubbing brush D, so that substantially all of the dirt and discoloration on the floor is thoroughly saturated and gathered up by the said brush, and the said dirty water as it gradually passes behind the said brush, is scraped up by the squeegee F and pumped to the receiving tank C.

In detail the frame A, which is preferably composed principally of angle irons, has side members a^1 , which are connected by cross pieces a^2 , a^3 , a^4 and a^5 . Uprights a^6 situated at the rear of the machine, are connected at their upper ends to inclined bars a^7 , which are supported by braces a^8 connected thereto and to the base pieces a^1 . The bars a^7 and uprights a^6 are joined by gussets a^9 at the top and support a handle a^{10} . A cross-piece a^{11} is connected to the longitudinal bases a^1 and carries the squeegee. Another cross-piece a^{12} , similarly connected, carries a rear supporting wheel H.

The supply tank B is supported by the pair of cross pieces a^2 a^3 , and the receiving tank C is similarly supported upon the pair of braces a^4 a^5 . These two pairs of cross pieces or angle irons thus not only connect the two side frames of the structure together but they form seats for the tanks and hold the latter against displacement longitudinally of the structure as the machine is operated. It will be noted that each pair of angle irons or cross pieces is spaced apart far enough to permit the tank to set in between the vertical flanges of the angle irons so that the tanks will be securely held in place without being fastened. The side frames of the structure prevent lateral dis-

placement of the tanks. The said tanks are of similar size and may be reversed in position if desired, or if the supply tank B should be exhausted of water the receiving tank C may be placed at the front of the machine and its water used as a supply, and the supply tank B will then form the receiving tank. The receiving tank B has spigots b by which water is supplied to a trough b^1 which has a row of perforations b^2 extending throughout its length and is situated in front of the rotary scrubbing brush D, so that the water from the supply tank B will be delivered in front of the said brush and evenly distributed throughout the length thereof. The trough is supported by arms b^3 from the cross piece a^2 .

The traction wheels E have preferably tires formed of some clinging material, such as rubber, and for this purpose we have found bicycle wheels to be well adapted. The said traction wheels are journaled upon a shaft e which is supported at the intersections of the frame pieces a^7 a^8 . Sprocket wheels e^1 upon the said shaft, through chains e^2 , communicate motion to sprocket wheels e^3 fixed upon a shaft e^4 journaled in the frame pieces a a^1 , and carry gear e^5 which meshes with a gear e^6 mounted upon a shaft e^7 supported from brackets e^8 attached to the side frame pieces a^1 a^2 , and carry sprockets e^9 from which sprocket chain e^{10} conveys motion to sprocket wheels d^1 mounted upon shaft d which carries the scrubbing brush D. This shaft d is supported upon arms d^2 d^3 which are connected by braces w w^1 and journaled upon shaft e^7 and the front ends of which are unsupported in order that the scrubbing brushes D may rest upon the floor. The sprocket e^{10} may be adjusted by an adjusting roller e^{11} fixed in a slot e^{12} in the bracket e^8 . The sprocket e^2 may be similarly adjusted by a roller e^{13} mounted in a slot e^{14} in a brace w connecting a^3 and a^7 . The receiving tank C is provided with a spigot c the same as the supply tank B.

At the rear of the machine upon a cross piece a^{12} is situated the supporting wheel H. This is carried in a forked post h which passes through a perforation in the said cross piece and at its upper end has a nut h^1 . A spring h^2 is interposed between the top of the fork h and the said cross piece and provides means whereby the said roller H may be adjusted and the squeegee brought nearer to or raised farther from the floor.

The squeegee F is composed of a flexible wiper or scraper f , preferably made of rubber and mounted between plates f^1 f^2 which are hinged at their rear ends upon a pintle f^3 which is supported in the crosspiece a^{11} . Thereby the two arms of the V-shaped squeegee are pivoted upon the said pintle f^3 and are adapted to swing about the said pintle radially inward or outward. Normally

the said squeegee will be operated with its arms extended so that the same are farther apart than the length of the scrubbing brush D, as illustrated in Fig. 3. It is frequently the desire however to operate the machine close up to a baseboard, and it is not desirable that the scrubbing brush B shall be otherwise than perpendicular to the base board as thereby it is liable to spatter the same. To enable the same to operate close to the base board and without liability of spattering the wall we provide means whereby either or both of the arms of the V-shaped squeegee may be adjusted inwardly. Any one of numerous means may be employed for this purpose. A practical way of accomplishing this is illustrated. Here vertical bolts f^4 slide in the slots f^5 in the frame pieces a a^1 and are held in adjusted position by a wing nut f^6 , together with a jam-nut f^7 . Jointed to these vertical bolts f^4 are links f^8 which are pivotally connected to each arm of the squeegee at f^9 . The arms of the squeegee are normally held retracted and open by coiled springs f^{10} attached to each arm of two brackets f^{11} depending from cross piece a^{11} , and which tend to hold the arms of the squeegee so that it will be supported against the rear ends of slots f^5 .

It frequently happens that in the employment of a squeegee a streak of dirt or dirty water will be left upon the floor. This is highly objectionable and would furnish means for rejecting a machine wherein such trait was observed. To overcome this we provide upon the end of each arm of the squeegee F a small quantity of absorbent material such as sponge, cotton waste, jute, or similar material I, and the said material constitutes a sort of mop which will prevent the formation of the objectionable streak. These mops are so arranged at the ends of the squeegee that they will bear on the floor while the rubber portion of the squeegee bears thereon, so that the mops act simultaneously with the squeegee and prevent streaks from forming along the borders of the strip of floor being washed by the machine.

The dirty water as it is gathered between the arms of the V-shaped squeegee will gradually rise until the same reaches the pipe connecting to the pump G, by which it will be withdrawn and discharged to the receiving tank C. The said pump G is of ordinary construction, and we have not illustrated its arrangement of valves, pistons, etc., as the same are well understood. The pump is operated by a crank g on the shaft e^1 through crank arm g^1 and piston rod g^2 . Connected with the pump is a pipe g^3 which is attached to another pipe one arm g^4 of which extends to a point adjacent the floor and forms the induction pipe, and the other arm of which g^5 extends adjacent the receiv-

ing tank C and forms the eduction pipe. These pipes are equipped with check valves in the usual manner, so that upon the operation of the pump from the crank *g*, water will be intermittently drawn up from the floor by one stroke of the piston *g*² and discharged to the receiving tank by the return stroke of said piston. The pump G is supported directly beneath the shaft *e* and crank *g* and in position to be operated from said crank by a strap *z* which is bolted to a cross piece *y* which is secured at its ends to braces *x x* which are attached to side frame members *a*⁷, *a*⁸.

With the arrangement disclosed, it will be noted that the squeegee is located between the traction wheels E and the rear wheel H. The rear wheel is yieldingly connected with the framework of the machine, so that it is possible to press downward on the handle to force the squeegee firmly into contact with the floor. This downward movement of the rear portion of the framework does not affect the contact of the scrubbing brush D with the floor, since the frame of the scrubbing brush is hingedly connected with the framework by the rod *e*¹ so that the weight of the brush and its framework maintains the brush firmly in contact with the floor to insure an efficient scrubbing action. Also when the machine is passing over an uneven surface, the scrubbing brush will maintain an effective scrubbing contact with such surface, even though the machine has two points of supports, viz., the traction wheels E and the rear wheel *h*.

It is not to be inferred by reason of the great particularity with which we have described all minor details of construction of our machine, that we conceive our invention to be necessarily limited in operation to the employment of such details of construction, as equivalent features may be employed and numerous changes and modifications made in the said arrangement and construction of parts, within the limits of the appended claims.

What we claim is:—

1. In a scrubbing machine, a frame, a scrubbing brush at the front of the frame, an adjustable squeegee at the rear of the machine and extending from side to side thereof, having a normal width greater than said brush, and means for adjusting the width thereof.

2. In a scrubbing machine, a V-shaped squeegee at the rear of the machine, and means for adjusting the ends of said squeegee toward each other.

3. In a scrubbing machine, a V-shaped squeegee at the rear of the machine, and means for adjusting either of the ends of said squeegee inwardly.

4. In a scrubbing machine, a V-shaped squeegee at the rear thereof, the arms of

which are adjustable radially inwardly about the apex of the V as an axis, and means for adjusting said arms.

5. In a scrubbing machine, a frame, a brush at the front thereof, a V-shaped squeegee at the rear thereof having a normal width in excess of that of the said brush and the arms of which are each adjustable radially inwardly about the apex of the V as an axis, and means for adjusting either of said arms independently of the other.

6. In a scrubbing machine, the combination of a scrubbing element utilizing water, with a wiping device following in the wake of the said element and having a sweep wider than the same, said device consisting of a yielding non-absorbent floor-engaging strip and absorbent material at the ends thereof to wipe the borders of a strip of surface scrubbed by the said element.

7. In a scrubbing machine, the combination of a scrubbing element utilizing water, with a squeegee following the same and comprising a plurality of relatively-adjustable and jointed members, and a floor-engaging strip of yielding material extending continuously along the members and bridging the joint between them.

8. In a scrubbing machine, the combination of a scrubbing element utilizing water, with a squeegee following the same and comprising a continuous yielding floor-engaging strip having its extremities disposed forwardly of the middle portion, and a plurality of relatively-adjustable supports for the said strip.

9. In a traveling scrubbing machine, the combination of a wheel-supported frame, a scrubbing element mounted thereon, a squeegee consisting of jointed relatively-adjustable sections, means for mounting the jointed portion of the sections centrally on the frame, and members forming braces between the outer portions of the sections and the frame and adjustable for changing the effective width of the squeegee.

10. A traveling scrubbing machine comprising a frame, a scrubbing element mounted thereon, a squeegee disposed behind the element and consisting of two angularly-disposed members, a centrally-disposed pivot on the frame for supporting the inner adjacent ends of the members together, bracing elements hingedly connected to the rear sides of the members outwardly from their inner pivoted end, and means for adjustably connecting the bracing elements to the frame to change the effective width of the squeegee.

11. In a machine of the class described, the combination of a wheel-supported structure having a cross bar, a squeegee composed of hingedly-connected sections pivotally attached to and disposed under the cross bar and extending outwardly from under the said structure, said structure having slotted

side members, devices adjustable in slots of the members, and links connected with the devices and with the said sections of the squeegee for holding the said sections in different positions of adjustment.

12. In a scrubbing machine, the combination of a supporting frame, traction wheels supporting the frame, a rear wheel yieldingly attached to the back of the frame, a squeegee located between the rear and traction wheels, a scrubbing brush located in front of the traction wheels, a frame supporting the brush and pivotally connecting

the same with the said structure to permit the brush to maintain contact with the floor upon the depression of the rear end of the structure or the raising of the front end thereof. 15

In witness whereof, we have hereunto signed our names in the presence of two subscribing witnesses. 20

GEORGE H. GASTON.
PETER MEYER.

Witnesses:

HENRY M. FUCH,
FRED WHITE.