

No. 734,015.

PATENTED JULY 21, 1903.

T. L. VALERIUS
MILK CAN WASHER.

APPLICATION FILED AUG. 22, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

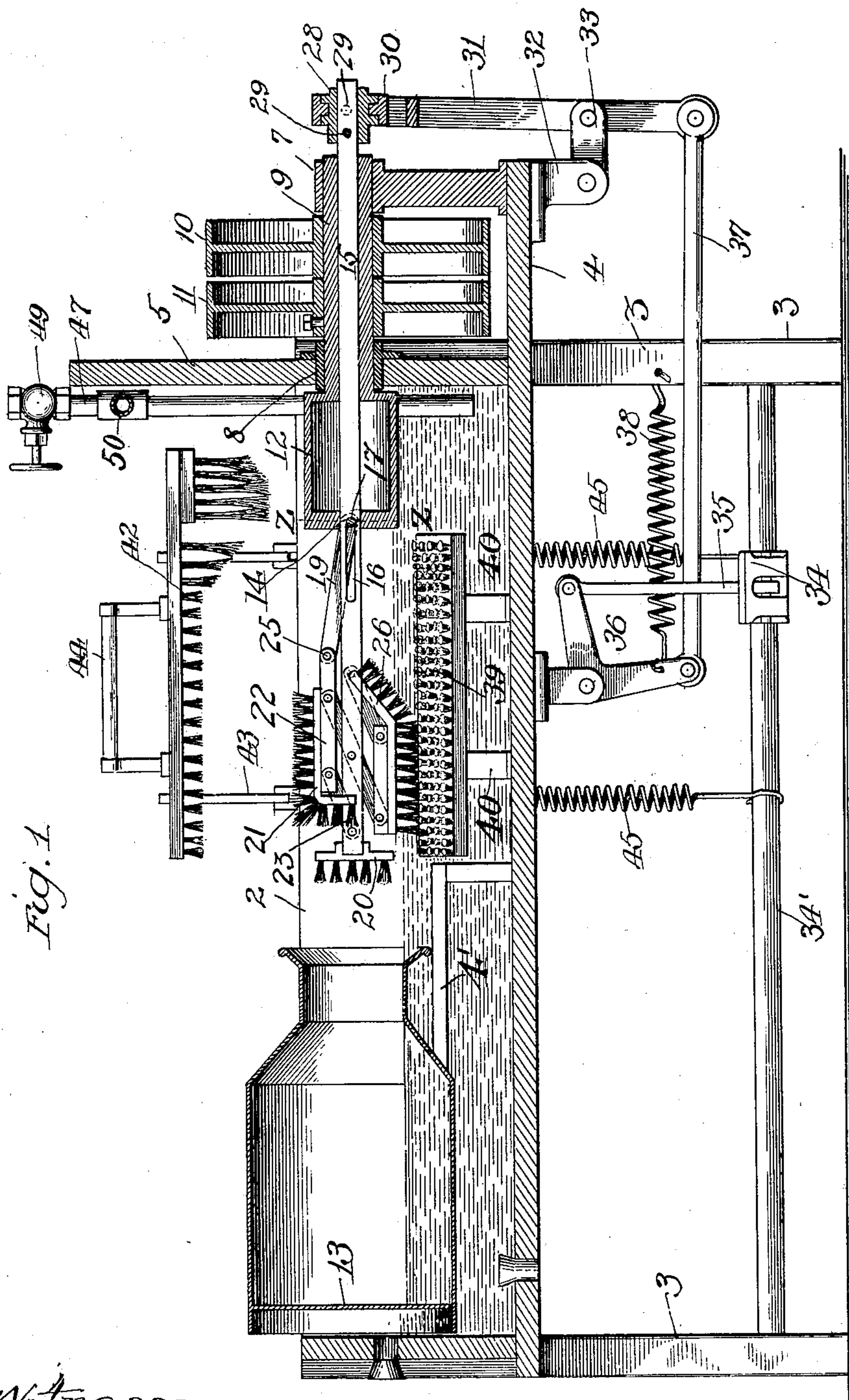


Fig. 1

Witnesses
Harold H. Barrett
Lester S. Alter

Inventor:
Theodore L. Valerius
By C. H. Hawley

No. 734,015.

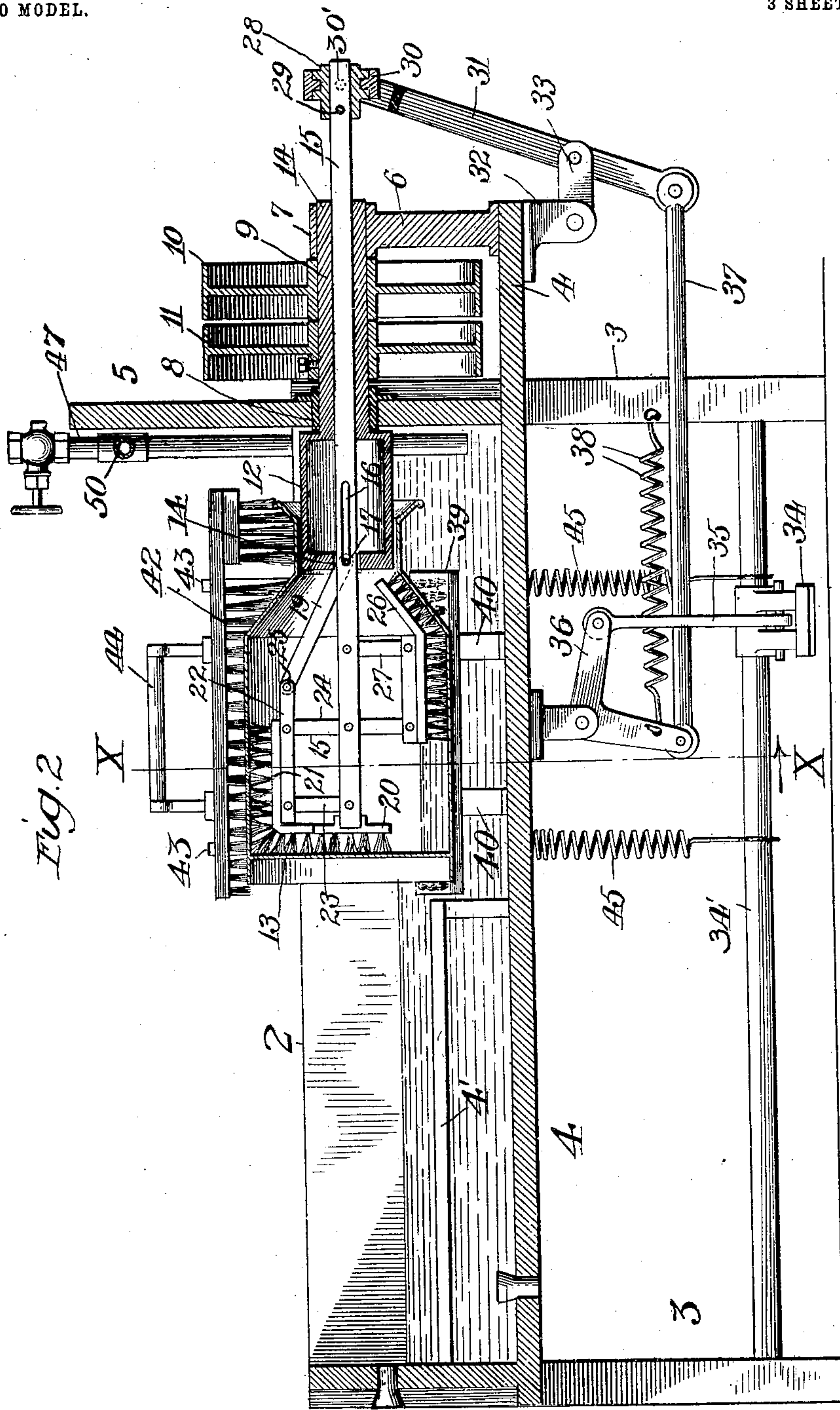
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3 SHEETS—SHEET 2.



Witnesses:

Abraham B. Bennett

John S. Alter

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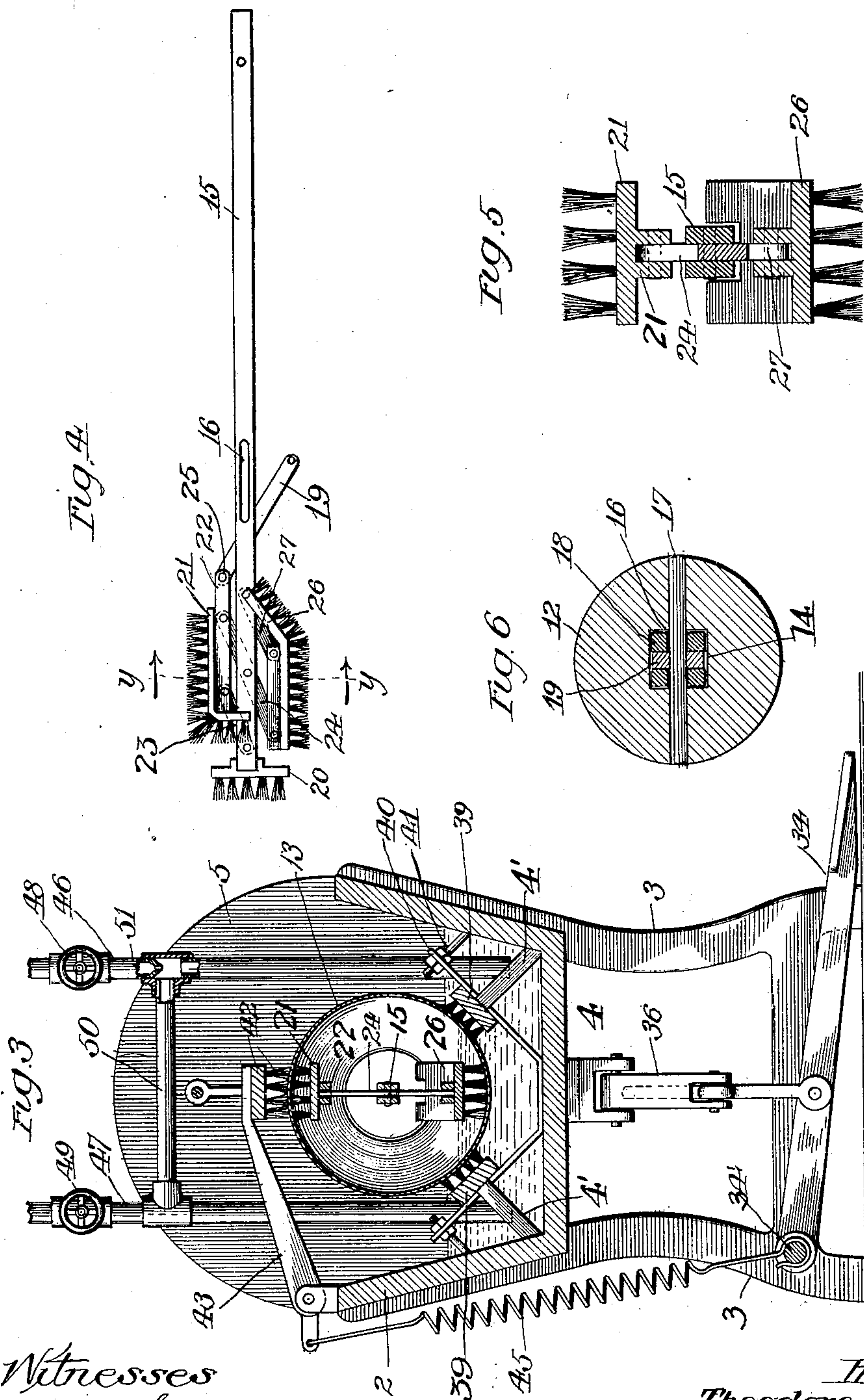
By *Chas. H. Hawley*
Att. 3704

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NO MODEL.

3 SHEETS—SHEET 3.



Witnesses
 Edward E. Barrett
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UNITED STATES PATENT OFFICE.

THEODORE L. VALERIUS, OF FORT ATKINSON, WISCONSIN, ASSIGNOR TO
CREAMERY PACKAGE MFG. CO., OF CHICAGO, ILLINOIS, A CORPORATION
OF ILLINOIS.

MILK-CAN WASHER.

SPECIFICATION forming part of Letters Patent No. 734,015, dated July 21, 1903.

Application filed August 22, 1902. Serial No. 120,617. (No model.)

To all whom it may concern:

Be it known that I, THEODORE L. VALERIUS, a citizen of the United States, residing at Fort Atkinson, Jefferson county, Wisconsin, have
5 invented certain new and useful Improvements in Milk-Can Washers, of which the following is a specification.

This invention relates to machines for washing and scouring cylindrical receptacles, and
10 particularly milk-cans and the like.

The object of the invention is to provide a machine by means of which milk-cans and the like may be very thoroughly and quickly washed and scoured.

15 The particular object of my invention is to provide a simple, compact, and easily-operated can-washing machine.

My invention is chiefly characterized by a rotary shaft carrying a plurality of brushes
20 and means whereby said brushes may be distended after the can has been placed over the end of the shaft that bears the brushes.

My invention also consists in a washing-machine comprising a hot-water vat contain-
25 ing and having attached to it brushes for washing the exterior of the can.

My invention consists, further, in a brush mechanism for washing the interior of the can and which mechanism is adapted to be
30 expanded to such an extent as to clutch the can, so that it will rotate with the brush-shaft for its washing by the exterior brushes; and the invention consists, further, in various details of construction adapting the machine
35 for easy operation and for quick adaptation to various sizes of cans and in novel combinations of parts, all as hereinafter described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a longitudinal vertical section of the can-washing machine embodying my
45 invention. Fig. 2 is a similar view showing the can in place with the interior brushes expanded to their full extent, in which position they clutch the can onto the shaft, so that it will rotate therewith. Fig. 3 is a vertical
50 transverse section on the line *x x* of Fig. 2. Fig. 4 is a view of the brush-shaft and inte-

rior brushes as they appear when drawn out of the rotating shaft and head. Fig. 5 is an enlarged sectional detail on the line *y y* of Fig. 4. Fig. 6 is an enlarged section on the
55 line *z z* of Fig. 1, showing the square brush-shaft.

As shown in the drawings, 2 represents a long vat supported on legs 3 and having a bottom 4 extending beyond the end 5. The
60 length of the vat considerably exceeds twice the length of the cans to be washed, so that there is plenty of room for rinsing the cans after each is freed from the brushes. On the floor 4 at the end of the vat is a standard 6,
65 and this and the end 5 are provided with bearings 7 and 8 for the shaft 9. 10 and 11 are the loose and fixed pulleys on said shaft for the driving-belt. The inner end of the shaft 9 is enlarged to constitute the head 12, which
70 fits the neck of the can 13. The shaft 9 and the inner end of the head 12 contain the square hole 14 for the square brush-shaft 15, which is thus guided for reciprocation. The shaft has a slot 16, and the head has a pin 17,
75 extending therethrough and serving as the stop which limits the play of the shaft 15. The shaft 15 is provided with another slot 18 at right angles to the slot 16 and which accommodates the end of the link 19, which is piv-
80 oted on the pin 17. The link does not move in and out with the shaft, as its inner end is pivoted on the pin 17 in the head 12.

20 is a brush secured on the end of the shaft 15 for washing the can-bottom. This brush
85 is of less length than the diameter of the neck of the can.

21 is a corner-brush in the form of a right angle for washing the corner and side of the can, and this brush is secured on the bar 22,
90 that is connected to the shaft 15 by the parallel links 23 and 24. The inner end of the bar 22 is pivotally connected to the link 19 by the pin 25.

26 is the shoulder-brush, having the form
95 of an obtuse angle and connected to the shaft 15 by the extension of the link 24 and by the parallel link 27. The long link or, as it might better be termed, the "lever" 24, being piv-
100 oted on the shaft 15, connects the brushes 21 and 26, and thus the brush 26 is connected with the link 19, and thereby to the head 12.

On the outer end of the shaft 15 I provide a grooved collar 28, through the medium of which the lever 31 is connected to the shaft. This collar is secured to the shaft by a pin 29 and has journaled upon it the collar 30, which is provided with trunnions 30', (see dotted lines,) by which the attachment to the lever 31 is made. This lever 31 is connected to the lug 32 on the bottom 4 by a short link 33 and is operated by means of the treadle 34, working through the medium of the link 35, the bell-crank 36, suspended from the vat, and the connecting-rod 37.

38 is a strong spring extending between the bell-crank 36 and the leg of the vat and which tends to force the brush-shaft 15 out of the shaft 14, whereby its end brush is moved away from the head 12 and the corner and shoulder brushes are collapsed against the shaft 15, as shown in Figs. 1 and 4.

The bottom of the vat contains the two long brushes 39 for scrubbing the exterior of the can. These are normally immersed in the water with which the vat is partially filled, as indicated. To permit the adjustment of the brushes 39 for different-sized cans or to take up the wear in the brushes, I place the brushes upon the metal strips 40, the lower ends of which are fastened to the bottom of the vat, while the upper ends are made adjustable by means of the inclined bolts 41 and the nuts thereon. The rotation of the brushes inside of the can expels most of the water therefrom, and when the interior brushes are only partially expanded the can tends to float upward away from the brushes 39. I therefore provide a top brush 42, arranged on the levers 43, which are pivoted on the side of the vat. This brush 42 has a handle 44, by which the brush may be forced down onto the can to scrub the body thereof. In addition to this function of the brush it is provided with an end section of long bristles, which reach the small neck of the can to thoroughly wash the same.

45 45 are springs extending from the treadle-shaft 34' to the levers 43 and which lift the brush 42 when the operator removes his hand.

46 and 47 are respectively steam and water pipes, having valves 48 49 for governing the admission of steam or water. The open ends of these pipes extend downward nearly to the bottom of the vat. At points below the valves 48 49 the pipes are connected by the cross-pipe 50, and the steam-pipe contains a nozzle or jet 51, (see dotted lines, Fig. 3,) which terminates opposite the adjoining end of the pipe 50.

The operation of my washing-machine is as follows: The tank is filled with water by turning on the valve 49, after which the valve is closed. The steam-valve is then opened, and the jet of steam, descending in the pipe 46 and creating a strong suction at the end of the pipe 50, soon sets up a rapid circulation of the water through the pipe 47, pipe 50, and pipe 46 and rapidly raises the temperature of the water in the tank, which temperature may

be maintained by regulating the steam-jet at valve 48. This simple contrivance effectually accomplishes the circulation and heating of the water in the tank. The normal position of the parts is as shown in Fig. 1—that is, with the shaft 15 forced inward to collapse the interior brushes. The shaft being set in motion by the belt on the tight pulley, the machine is ready for washing the cans. A milk-can is placed in the free end of the vat and is partly submerged in water. It is then pushed forward along the side rails or bars 4' and over the collapsed and rotating brushes, which effectually clean the neck of the can. After the neck has been thus cleaned, the can being in the meantime held in the hands of the operator, it is then pushed farther over the brushes until the neck of the can passes over the centering-head 12. Thereupon the operator steps on the treadle 34, and thus through the operation of the lever throws out the brush-shaft 15 and expands the brushes, as shown in Fig. 2. This being done, the can will rotate with the shaft 15 and head 12. The operator then presses down the top brush 42, and as the can rotates the exterior thereof will be quickly washed and scrubbed by the brushes 42 and 39. This operation being completed, the operator will either press down more firmly on the brush 42 to stop rotation of the can or will stop the machine and grasp the can by its end and handle, so that he may thereafter hold it against rotation. Then by slightly relieving the pressure on the treadle 34 he may hold the can while the interior brushes rotate and rapidly scrub the inside of the can. These operations may take place in reverse order. When the can has been thoroughly cleansed, the operator removes his foot from the treadle 34, whereupon the spring 38 acts to push the shaft 15 inward, thereby throwing or kicking the can off from the collapsing brushes, and the can will float off into the free end of the vat, from which it is taken and thoroughly rinsed in any suitable manner.

I prefer to provide two or more shafts 15 of different lengths with different sets of collapsing brushes, and each set will fit two or more sizes of cans. If the supply of cans of a certain size has been exhausted, the operator will knock out the pin 29 in the shifting-lever collar 30 and also the pin 17, remove the shaft 15, with its brushes, and insert another shaft with a set of brushes suitable for the new size of cans. It is distinctly advantageous to thus adapt the machine for a quick change of brushes. It is obvious that the shaft 9, the pulleys thereon, and the head 12 are in no wise disturbed by the changing of the brushes. It is also obvious that numerous modifications of my invention will readily suggest themselves to one skilled in the art, and I therefore do not confine the invention to the specific constructions herein shown and described.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. The can-washer comprising the vat in combination with the rotary head, a shaft bearing brushes and said shaft and head being relatively movable to expand said brushes for rotation within the can or to clutch and rotate the can, substantially as described.

2. The can-washer comprising the vat, in combination with a rotary head, the brush-shaft longitudinally movable in said head, the expanding brushes provided upon said shaft and operable by the movement of said shaft, means for moving said shaft, exterior brushes provided in the lower part of said vat and the movable exterior brush for brushing the top of a can, substantially as described.

3. The can-washer comprising the vat, in combination with the vertical water and steam pipes each provided with a valve, the pipe connecting said water and steam pipes below said valves and said steam-pipe containing a jet or nozzle, as and for the purpose specified.

4. The can-washer comprising the vat, in combination with means for filling the vat and circulating and heating the contents thereof, the rotary horizontal brush-shaft, the interior can-washing brushes expansible on said shaft, lower exterior brushes provided in said vat and the upper movable exterior brush, substantially as described.

5. The can-washer comprising a suitable vat in combination with the horizontal shaft and head, means for rotating said shaft and head, the brush-shaft longitudinally movable in said head, and shaft-operating means at the outer end of said brush-shaft, an end brush on the inner end of said brush-shaft and corner and shoulder brushes expansibly arranged upon the inner end of said brush-shaft and operable by said shaft, substantially as described.

6. The can-washer comprising a suitable vat in combination with the horizontal shaft and head, means for rotating said shaft and head, the brush-shaft longitudinally movable in said head and shaft-operating means at the outer end of said brush-shaft, an end brush on the inner end of said brush-shaft and corner and shoulder brushes expansibly arranged upon the inner end of said brush-shaft, operable by said shaft, and the fixed and movable exterior brushes provided respectively in and upon said vat, substantially as described.

7. The can-washing device comprising the shaft 15, the end brush thereon, the parallel corner and shoulder brushes, the parallel links connecting said brushes to said shaft, one of said links being common to said corner and shoulder brushes and the operating-link connected with one of the parallel brushes, substantially as described.

8. The can-washing machine comprising the vat, in combination with the horizontal shaft and head, the brush-shaft slidable in

said shaft and head, means for rotating said head, means for sliding said brush-shaft, the slot 16 in said brush-shaft, the pin in the head, extending through said slot, the link 19 pivoted on said pin and the expansible brushes operable by said link and shaft 15, substantially as described.

9. The can-washing machine comprising a suitable vat, in combination with the revolvable brush-shaft, means for reciprocating said shaft, the expansible brushes borne by said shaft and operated by the reciprocation of said shaft and the movable exterior brush conforming to the shape of the can, substantially as described.

10. The can-washing machine comprising the vat in combination with the rotary head to fit the neck of a can, the brush-shaft slidable in said head, means for reciprocating said shaft in said head to drive a can therefrom and the expansible brushes carried by said shaft and operated by the movement thereof, substantially as described.

11. The can-washing machine comprising a suitable vat, in combination with the can-washing brushes attached thereto, one thereof being manually operable, and the rotary expansible brush for the interior of the can and operable to rotate within the can or cause the rotation of the can, substantially as described.

12. The can-washing machine comprising a suitable vat, in combination with exterior washing-brushes, the rotary head, the brush-shaft slidable in said head, the corner and shoulder brushes, the parallel links 20 and 27 connecting said brushes to said shaft, the parallel lever 24 connecting both brushes to said shaft and means for operating said lever 24 to collapse or distend the brushes, substantially as described.

13. The can-washer comprising the vat, in combination with the rotary head 12 and means for rotating it, the brush-shaft 15 slidably mounted on said head, the brushes adapted to be expanded and collapsed by the movement of said brush-shaft, a treadle and suitable levers connecting the same with the brush-shaft, and suitable exterior brushes, substantially as described.

14. The can-washer comprising the vat in combination with the adjustable exterior brushes in the bottom of said vat, the pivotally-fixed upper brush, the rotary expansible brushes for the interior of the can and the treadle for expanding said expansible brushes to wash the interior of the can or cause the rotation of the can therewith, substantially as described.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, this 29th day of July, 1902.

THEO. L. VALERIUS.

In presence of—

GILES F. BELKNAP,
HARRY H. CURTIS.