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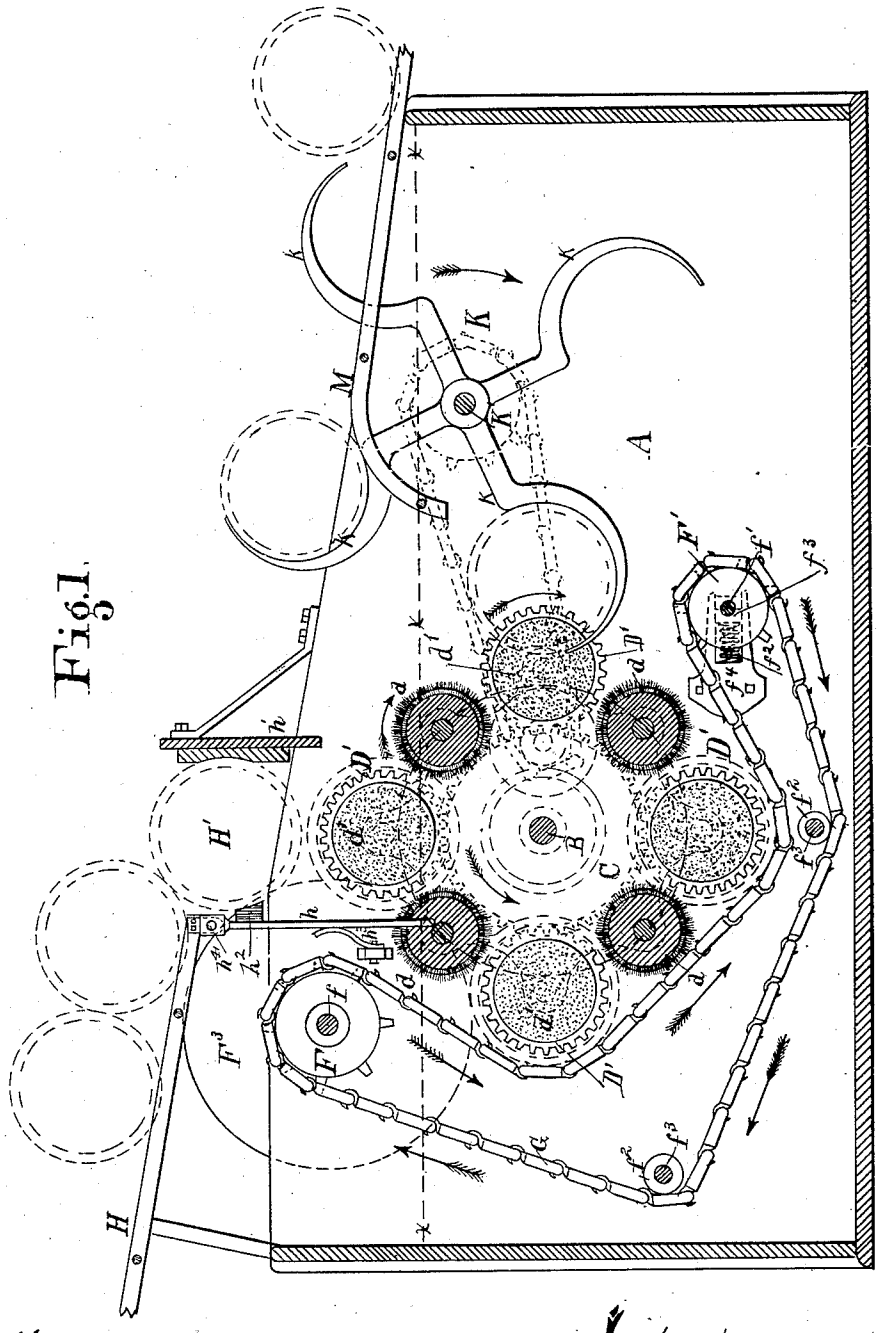
BEER KEG WASHER.

No. 318,306. Patented May 19, 1885.

Fig. 1.



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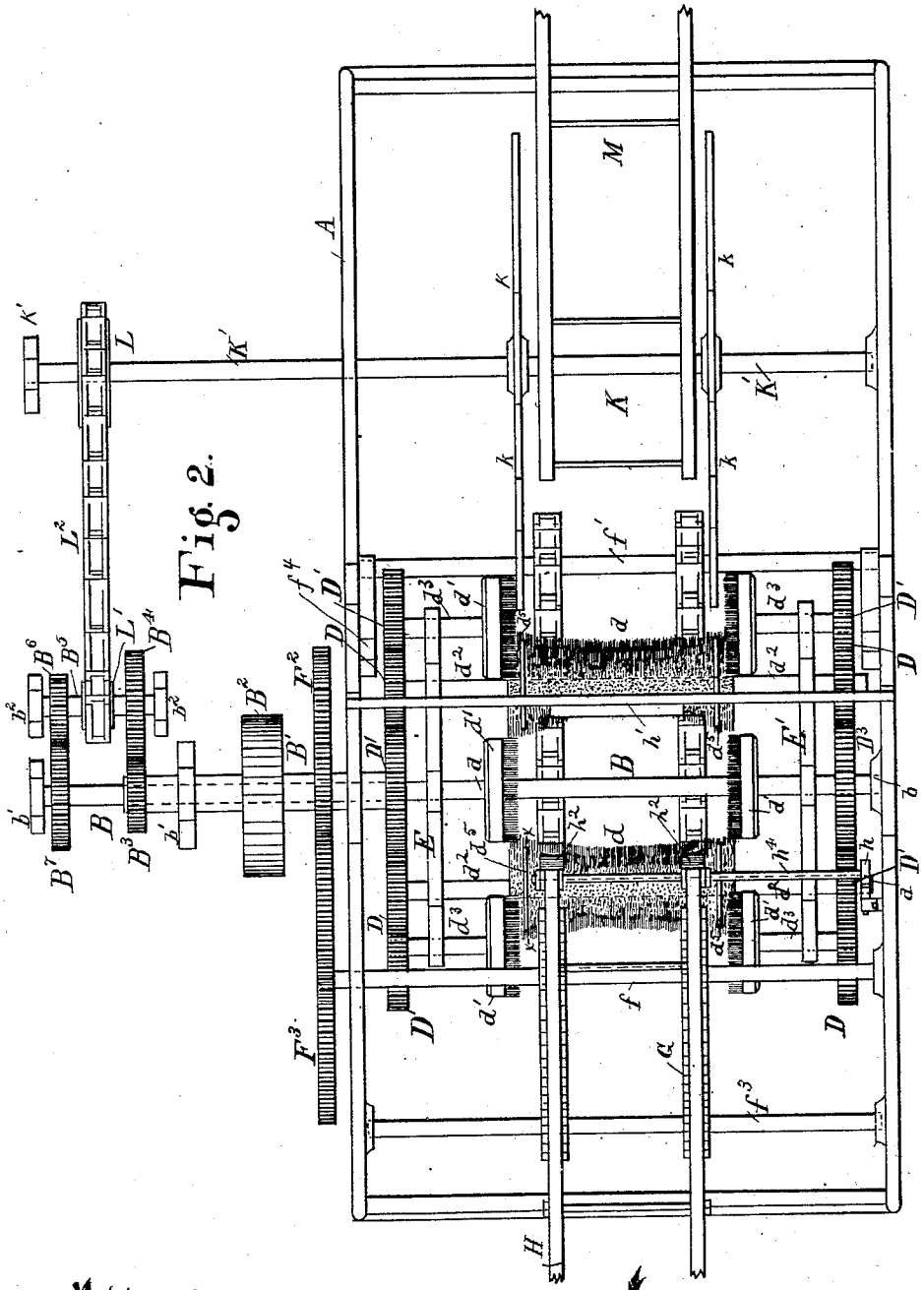

Fig. 2.

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Fig. 3.

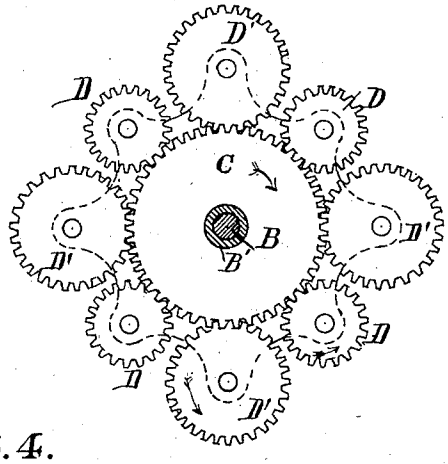


Fig. 4.

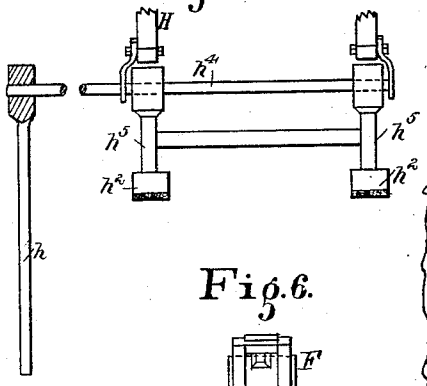


Fig. 5.

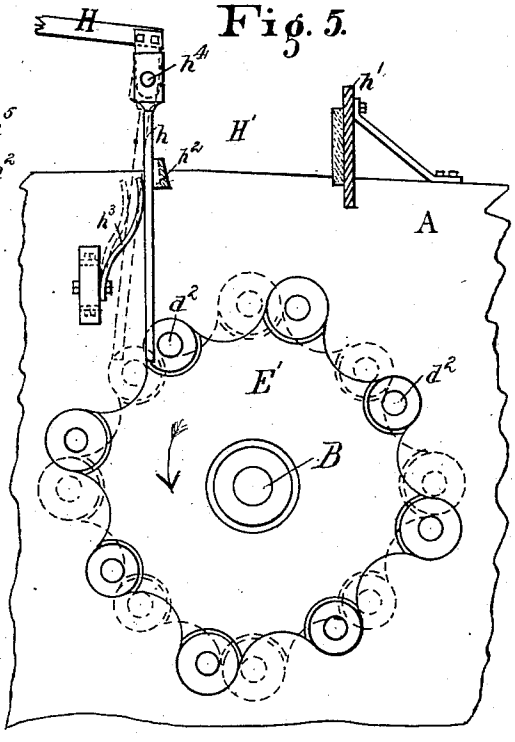
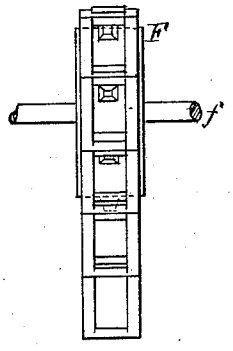


Fig. 6.



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BEER KEG WASHER.

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Fig. 7.

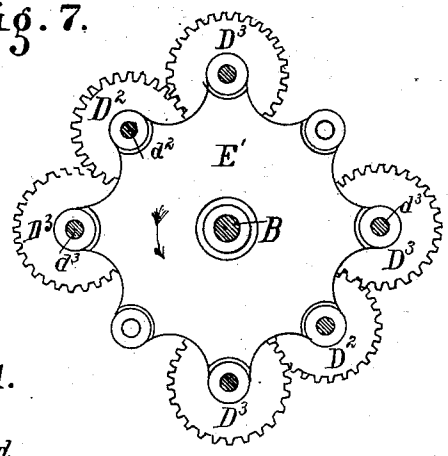


Fig. 11.

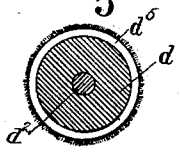


Fig. 12.

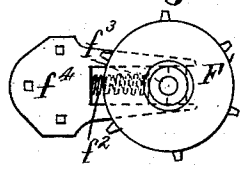


Fig. 8.

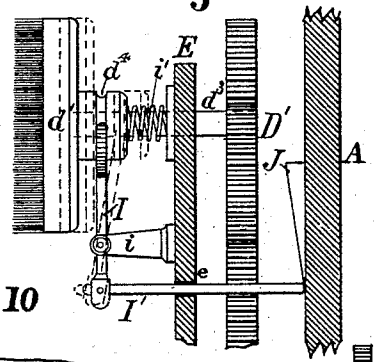
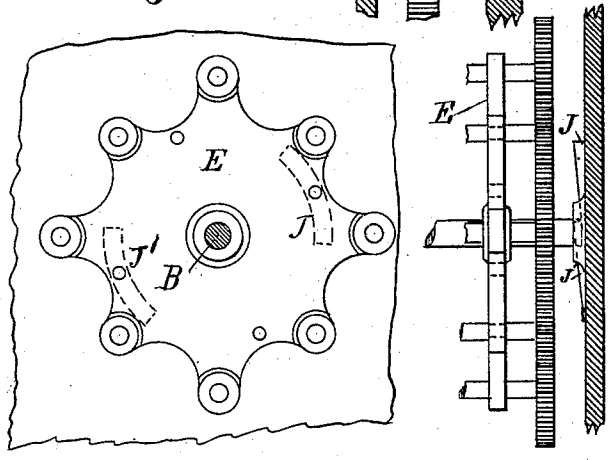


Fig. 10

Fig. 9.



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UNITED STATES PATENT OFFICE.

ADAM SCHULTZ, OF CINCINNATI, OHIO.

BEER-KEG WASHER.

SPECIFICATION forming part of Letters Patent No. 318,306, dated May 19, 1885.

Application filed March 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, ADAM SCHULTZ, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Beer-Keg Washers, of which the following is a specification.

My invention relates to apparatus or machinery for scrubbing or washing the external surfaces of beer-kegs, barrels, and similar articles, and has for its object the construction of an apparatus in which the entire operation of charging the same with kegs, scrubbing the kegs, and finally discharging the cleaned kegs from said apparatus shall be accomplished mechanically, without manual labor, and with the smallest possible consumption of water. The apparatus is also designed to clean the kegs much more rapidly than by any other method of scrubbing with which I am acquainted.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of my improved scrubbing-machine. Fig. 2 is a plan thereof; Fig. 3, elevation of gearing on the driving side of the machine. Figs. 4 and 5 are detached views of the devices for feeding the kegs to the machine. Fig. 6 is a detached view of the endless keg-conveyer chain and sprocket-wheel; Fig. 7, elevation of gearing on the driven side of the machine. Figs. 8, 9, and 10 are detached views of devices for shifting the vertical or end brushes to receive and discharge the kegs. Fig. 11 is a section through horizontal or side brush, and Fig. 12 is a detached view of the spring-bearing for sprocket-wheel and endless chain.

Similar letters of reference indicate similar parts.

A is a large tank, made water-tight at the joints, of wood or metal, into which water is introduced to the level indicated by dotted lines *x x* of Fig. 1.

B is a shaft, journaled at *b* in a bearing formed in or attached to the side of tank A, and in bearings *b' b'* placed outside of tank.

B' is a hollow or tubular shaft, mounted upon shaft B, and provided with the pulley B^2, to which motion is transmitted from a steam-engine or other prime mover by belt in the customary manner.

B^3 is a spur-pinion, and B^4 a spur-gear, transmitting motion from shaft B' to shaft B^5, mounted in bearings b^2 b^2. B^6 is a spur-pinion, and B^7 a spur-gear, transmitting motion from shaft B^5 to shaft B. The relation of pinions B^3 B^6 to spur-gears B^4 and B^7 is such that shaft B^5 revolves at one-half the speed of shaft B' and shaft B' revolves at one-half the speed of shaft B^5 and one-fourth the speed of shaft B. These proportional speeds are not absolute, but are what I prefer to employ.

To the inner end of hollow shaft B', I attach by keying, or in any approved manner, the spur-gear C, (shown in dotted lines, Fig. 1, and in elevation in Fig. 3,) which gear communicates a rapid motion to pinions D D', which pinions, respectively, drive the horizontal or side brushes, *d*, and vertical or end brushes, *d'*. The brushes *d* are mounted upon shafts d^2, journaled at their ends in the housings E E', which housings are securely keyed or otherwise mounted upon and caused to revolve with shaft B, while the brushes *d'* are mounted upon short shafts d^3, journaled in the housings E E'.

Upon the side of the machine next to hollow shaft B' the pinions D D', and consequently the brushes *d d'*, are driven from spur-gear C, Fig. 3; but upon the side of machine opposite hollow shaft B' (see Fig. 7) the pinion D^3 and brushes *d'* are driven by the spur gears or pinions D^2 on through shafts d^2. The proportions of pinions D^2 D^3 are such that the rate of motion imparted to the vertical brushes *d'* upon the side of machine next to housing E' is the same as upon the side of machine next to housing E and spur-wheel C; but the motion of vertical brushes *d'* upon opposite sides of the machine will be in opposite directions.

The housings E E' being securely keyed to shaft B, it follows that as shaft B revolves at one-fourth the speed of shaft B', and consequently of spur-gear C, the housings and brushes *d d'* will have a motion around the axis of shaft B in the direction of arrows, Fig. 1, at a comparatively slow rate, while the brushes *d d'* are revolved about their axes in the direction of the arrows, Fig. 1, at a comparatively rapid rate to cleanse the keg.

The spur-wheel C is shown as possessing fifty teeth, while the pinions D have thirty teeth, and the pinion D' twenty teeth, and said spur-wheel C makes four revolutions to

one revolution of shaft B, whence the brushes *d d'* will revolve at eight times the speed of housings E E', or one complete circuit of housings E E' produces eight revolutions of the brushes *d d'*. Assuming the normal speed of the machine to be twelve revolutions per minute, equivalent to the delivery of forty-eight kegs, then the scrubbing-brushes *d d'* will revolve at a speed of ninety to one hundred revolutions per minute.

F F' are sprocket-wheels, mounted upon shafts *f f'*, which latter are journaled in suitable bearings in the sides of tank A, around which sprocket-wheels and anti-friction rollers f^2 is trained the endless chain G. The anti-friction-rollers are mounted on shafts f^3, and turn in suitable bearings in sides of tank A.

Referring to Fig. 1, the side of chain G next to shaft B has a motion coincident with housings E E', as indicated by the arrows.

H is an inclined railway, upon which the kegs are laid and down which they roll by gravity to the chute or opening H', where the swinging spring-lever *h* in conjunction with the abutment *h'* retains each keg until it is automatically fed into the machine. The swinging spring-lever consists of the lever *h*, shaft h^4, and two arms, h^5 h^5, pendent from shaft h^4. The latter carry at their extremities the detents h^2, which engage with the external surface of the keg below the horizontal center thereof, as shown in Fig. 1. The abutment *h'*, secured rigidly to tank A, and the detent h^2 on swinging spring-lever *h*, are faced with rubber to increase the frictional contact of the surfaces with external surface of keg. The lever *h* is pivoted in suitable bearings under the inner end of railway H, and is pressed toward the keg by the spring h^3. The lower end of lever *h* when in position (shown by full lines of Figs. 1 and 5) engages with the projecting end of shafts d^2, (upon which the horizontal brushes are mounted,) and as the housing E' revolves forward the lever *h* is pressed away from the keg, as shown by dotted lines, Fig. 5, until the detent h^2 and abutment *h'* release it, when it drops in between two vertical or end brushes, *d'*, and two horizontal or side brushes, *d*, where it is retained by the endless chain G until it is scrubbed, and finally discharged from the machine. Directly the keg is released from abutment *h'* and detent h^2 the swinging lever *h* is forced back to its normal position by spring h^3, to intercept and retain the next succeeding keg in chute H'.

The normal position of the vertical brushes *d'* is such that the bristles are pressed with sufficient force against the ends of the keg to readily scrub away any dirt on the heads thereof; but in order to admit or receive the dirty keg from chute H' between the end brushes, *d'*, which assist in the discharge of the scrubbed keg at the end of its circuit from the machine, the end brushes or one of each pair (of which four pair are shown in the drawings) must have a longitudinal motion upon their shafts d^3 sufficient to clear the chine of the keg. This I accomplish by the devices shown in Figs. 8, 9, and 10, of which d^4 is an annular groove cut in the hub of brush *d'*, into which is fitted the shipper-bar I. *i* is a fulcrum, attached to and revolving with the housing E, in which the shipper-bar I is pivoted.

I' is a spindle, pivoted to the extreme end of shipper-bar I, and playing longitudinally through a guide, *e*, in housing E, as shown in Fig. 8.

J J' are concentrically disposed inclined planes, rigidly attached to sides of tank A, one, J, above, and the other, J', below, the plane of shaft B, with which the outer ends of spindle I' intermittingly engage, as the shaft B and housings E E' make their revolution.

The spindle I', engaging with inclined plane J or J', as the case may be, the spindle and outer end of shipper-bar I are pressed inward, as shown by dotted lines of Fig. 8, while the inner end of shipper-bar and vertical brush *d'* are pressed outward, as shown by dotted lines, same figure, sufficiently to either receive the keg from chute H' or discharge the keg after being scrubbed, as the spindle I' engages with inclined planes J or J', respectively. Directly the spindle I', by the revolution of housing E, has passed the inclined plane J or J', the brush *d'* is forced back by spring *i'* to its normal position on shaft d^3, as shown in full lines of Fig. 8. The hub of brush *d'* is splined, and is driven by a feather set in the shaft d^3. Each of the vertical brushes *d'* upon the driving side of the machine is provided with the devices just described for producing the longitudinal motion of brushes *d'*; but only two inclined planes are required, one to operate the devices to receive the keg, and the other to operate the devices to discharge the keg.

The horizontal brushes *d* are provided with rings d^5, (see Fig. 11,) which loosely fit the core or wooden center of the brush and roll around the same by frictional contact with the keg. The rings d^5 limit the pressure of the keg on the bristles of the horizontal brushes *d*. The endless chain G is driven from sprocket-wheel F, and this in turn driven from tubular shaft B' by spur-wheels F^2 F^3.

The endless chain G is geared to travel at such a speed as will roll the keg through one complete revolution upon its own axis between the points where it is received and discharged by the scrubbing mechanism.

K is a lifter, consisting of the four hooked arms *k k*, mounted upon shaft K', which latter is journaled in suitable bearings in the sides of tank A, and also in bearing *k'* outside of the tank.

Upon the outer end of shaft K' is keyed a sprocket-wheel, L, and upon shaft B^5, Fig. 2, is keyed a sprocket-wheel, L', transmitting motion by endless chain L^2 to shaft K', and consequently to the hooked arms *k k* of lifter K. The sprocket-wheel L is twice the diameter of sprocket-wheel L', to cause the shafts B and K' to revolve at the same angular speed—that is, each revolution of shaft B and hous-

ings E E′ is accompanied by a corresponding revolution of lifter K.

The housings E E′ and brushes *d d′*, with their respective mountings, in conjunction with the endless chain G, to roll the keg, I term the "scrubber" or "washer," and the hooked arms *k k* and shaft K′ and its driving-gear, I term the "lifter," the latter being designed to receive the cleaned kegs from the scrubber and deliver them successively, as shown in Fig. 1, to the inclined railway M, from whence they roll away by gravity to the charging-cellar.

By reference to Figs. 1 and 12 it will be observed that the shaft of sprocket-wheel F′ is mounted in elastic bearings, one on each end of shaft *f′*, which, by the pressure of spring f^2 against the movable bearing f^3, mounted in guides f^4, keeps the descending side of chain G taut, and holds the kegs firmly against the rings d^5 on horizontal brushes *d* until delivered to the lifter K.

The operation of the machine is as follows: Water being supplied to the line *x x* in tank A, and power transmitted to pulley B^2 to give motion to the scrubber, the kegs are placed upon inclined railway H, as illustrated by the dotted circles of Fig. 1, and roll down into the chute H′, where they are retained by devices *h h′* h^2 h^3, Figs. 4 and 5, until delivered to the scrubber by the contact of projecting end of shaft d^2 with spring-lever *h*, (the vertical brush *d′* upon the driving side of the machine having been shifted by the devices shown in Figs. 8, 9, and 10 to receive the keg.) The keg is received between two vertical brushes *d′* and two horizontal brushes *d* resting on rings d^5 and passed around the scrubber, as shown in Fig. 1, during which process the brushes *d d′* are revolved against the side and ends of keg in the water of tank A. Directly the keg has passed beyond the supporting influence of endless chain G it is caught by the hooked arms of lifter K and delivered to the inclined railway M.

The water in the tank is renewed as required, and the tank may be supplied with inlet and outlet pipes and valves for convenience in managing the water-supply; but in every instance the water of tank A is used until its condition is unsuited to the cleansing of kegs, when the foul water is discharged and a new tankful supplied. In this manner no water is wasted as in the processes now in general use by breweries, where the water is projected by hose or nozzles under pressure against the kegs to wash off the dirt. These are details not material to my invention, and are not show in the drawings.

I do not wish to confine myself to the arrangement of driving-gear shown, because this may be varied to suit different applications of the machine without departing from the principles of my invention.

Having described my invention, what I claim is—

1. In a machine for scrubbing kegs, the combination of a series of horizontal revolving brushes and a series of revolving vertical brushes, with devices, substantially as shown, for delivering the kegs to the revolving scrubbing-brushes and removing the cleaned keg from said brushes, and a water-tight tank, A, substantially as described.

2. In a machine for scrubbing kegs, the combination of the series of horizontal revolving brushes *d*, the series of revolving vertical brushes *d′*, and the housings E E′, with devices, substantially as shown, for the delivery of the keg to the brushes and removing the cleaned keg from the brushes, substantially as described.

3. In a machine for scrubbing kegs, the combination of a feed mechanism consisting of the swinging lever *h*, detents h^2, and abutments *h′*, with the horizontal revolving brushes and the vertical revolving brushes arranged, substantially as shown, to receive the kegs from the said feed mechanism, substantially as described.

4. In a machine for scrubbing kegs, the combination, with housings E E′, horizontal brushes *d d*, and rings d^5, of the endless chain G and sprocket-wheels F F′, substantially as described.

5. In a machine for scrubbing kegs, the combination of the keg-discharging mechanism consisting of the revolving lifter *k*, having hooked arms *k k*, and the inclined track M, with the revolving brushes adapted to scrub the kegs and the conveyer for delivering the kegs to the discharging mechanism, substantially as described.

6. In a machine for scrubbing kegs, the combination, with the horizontal revolving brushes and the keg-feeding mechanism, of the vertical brushes *d′*, shipper-bar I, fulcrum *i*, spindle I′, inclined planes J J′, and spring *i′*, substantially as described.

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

ADAM SCHULTZ.

Witnesses:
CHAS. ANDERSON,
JOHN W. HILL.