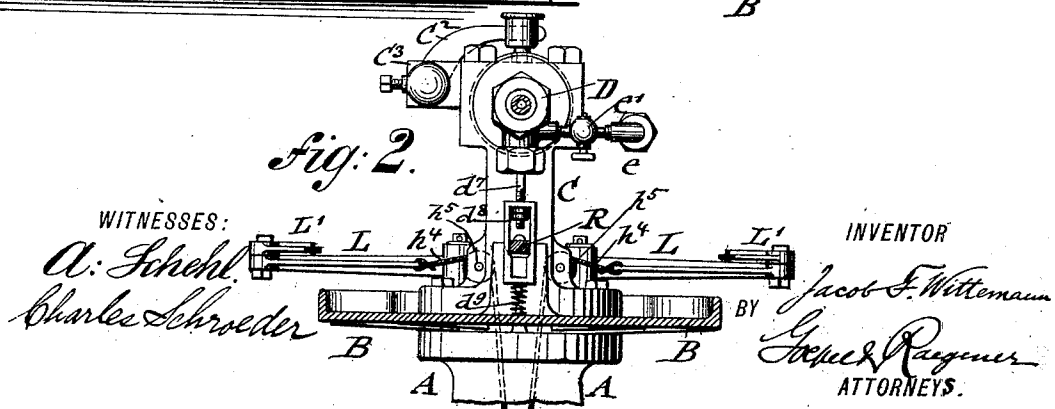
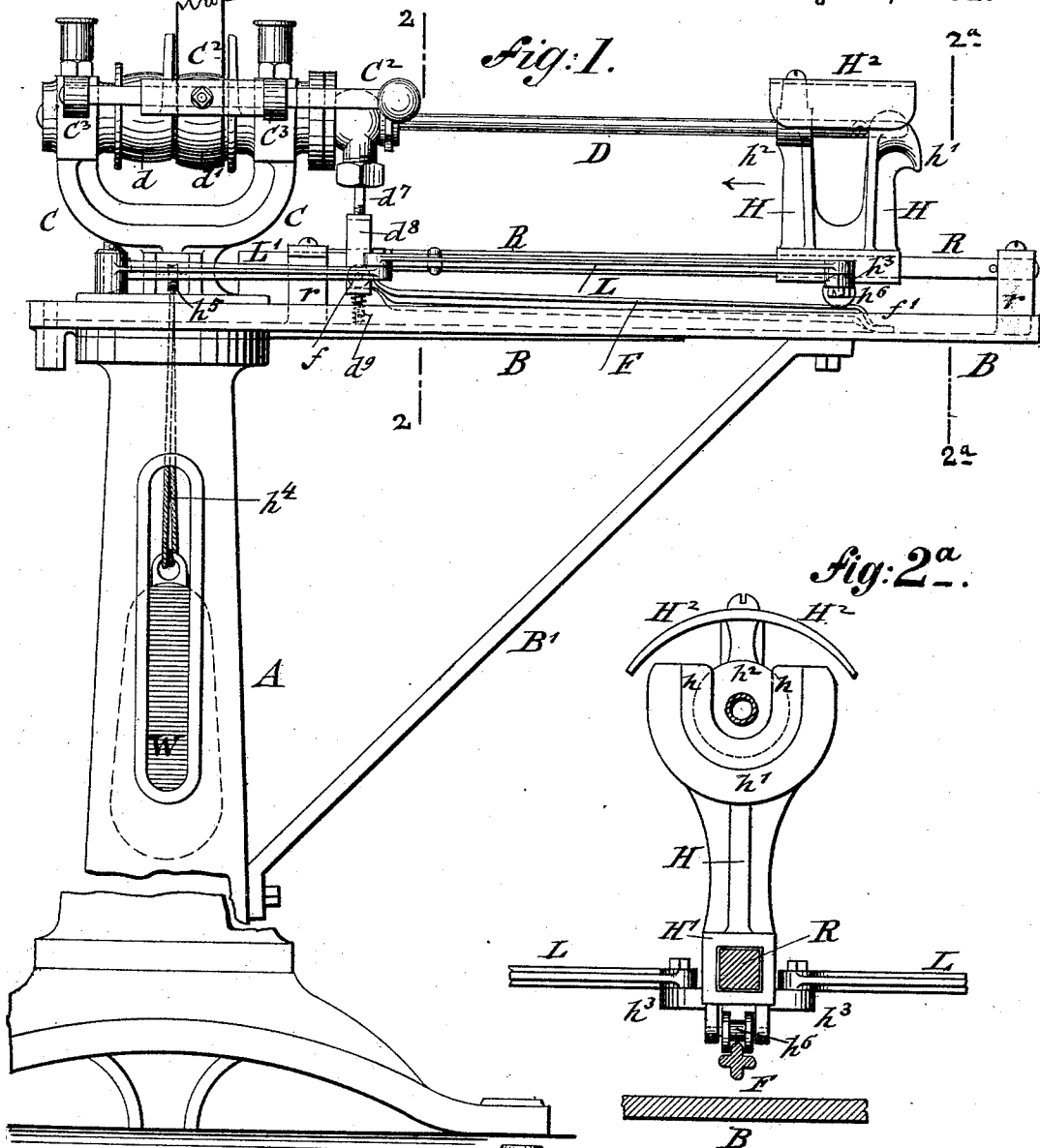


BOTTLE WASHING MACHINE.

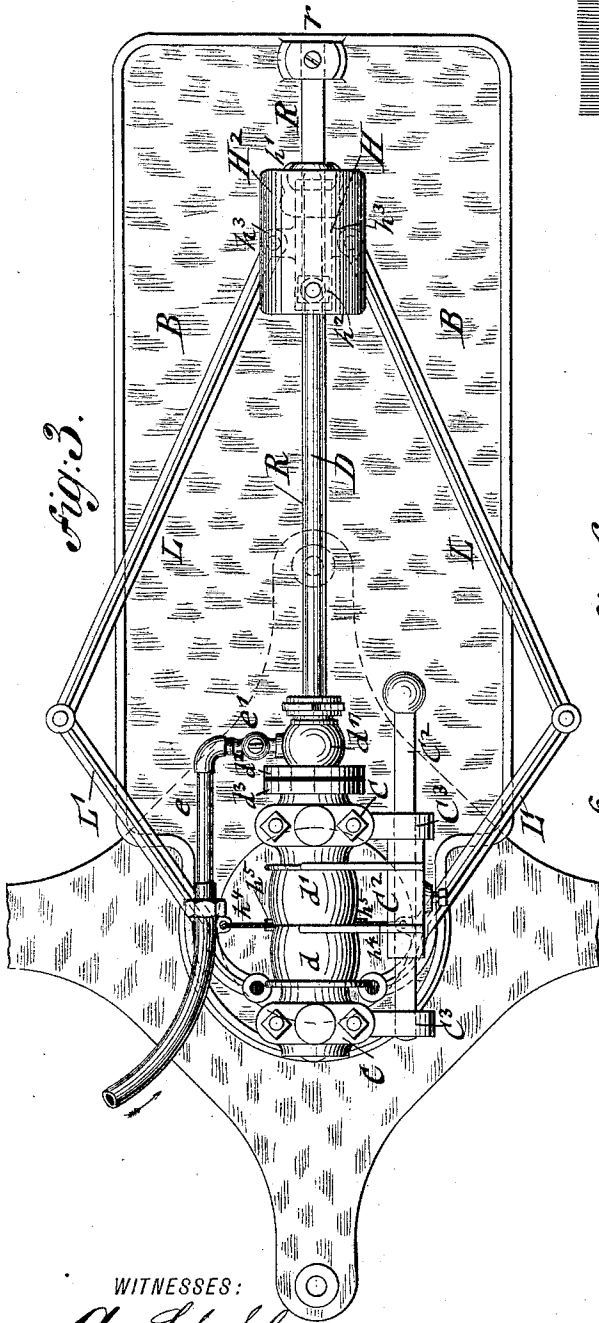
No. 474,510.

Patented May 10, 1892.

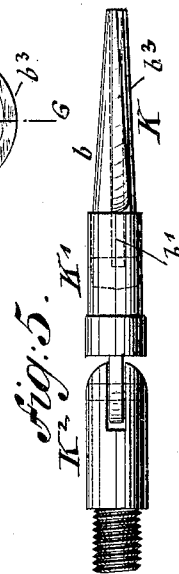
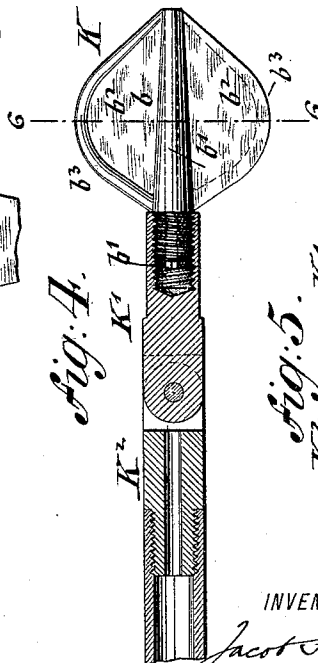
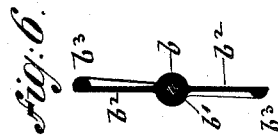
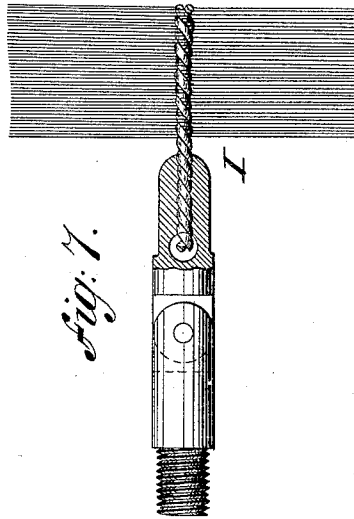


No. 474,510.

Patented May 10, 1892.



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UNITED STATES PATENT OFFICE.

JACOB F. WITTEMANN, OF FORT HAMILTON, NEW YORK.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,510, dated May 10, 1892.

Application filed June 22, 1891. Serial No. 397,131. (No model.)

To all whom it may concern:

Be it known that I, JACOB F. WITTEMANN, a citizen of the United States, and a resident of Fort Hamilton, Kings county, New York, have invented certain new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

This invention relates to certain improvements in the bottle-washing machine for which Letters Patent were granted to me, numbered 419,486 and dated January 14, 1890, the said improvements being designed with a view to render said machine more effective in use and adapt the same for being operated by power; and the invention consists, primarily, of a bottle-washing machine which comprises a hollow rotary spindle having an elastic scraper or other cleaning device connected by a knuckle-joint to its front end, a yoke-shaped slide-frame guided on a rail of the table, toggle-levers connecting the slide-frame with a counterbalancing-weight, a guide-sleeve for the spindle and shank of the scraper and a bottle-rest on said slide-frame in line with the spindle, a water-supply valve for said spindle, and a shifting-lever operated by said slide-frame, so as to produce the opening of the supply-valve when the same is moved in backward direction and the closing of the valve when the slide-frame is returned to its normal position of rest.

The invention consists, secondly, of an elastic scraper provided with a flexible tapering center-piece having a flexible core and flat wings having raised rims at the opposite sides, said scraper being connected by a pivot-joint with the front end of the spindle.

The invention consists, further, of certain details of construction, which will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved machine for washing bottles. Fig. 2 is a front elevation of a portion of the same, partly in section, on line 2 2, Fig. 1. Fig. 2^a is a front elevation of the bottle-holder, taken on line 2^a 2^a. Fig. 3 is a plan of the same. Figs. 4, 5, and 6 are respectively a vertical longitudinal section, a top view, and a vertical transverse section on line 6 6, Fig. 4, of the scraper used in connection with the spindle of the

bottle-washing machine. Fig. 7 is a detail side view of a scraper in the form of a cleaning-brush used in connection with said spindle; and Figs. 8 and 9 are respectively a vertical longitudinal section and a vertical transverse section on line 9 9, Fig. 8, of the valve for supplying the water to the tubular spindle.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the supporting-standard of my improved bottle-washing machine, which standard is made of tubular shape and provided with outwardly-extending feet for attaching the same to the floor. To the upper end of the tubular standard A is attached a horizontal table B, which is extended in forward direction and made of oblong shape, said table being supported by an inclined brace B', that is attached to the standard and to the under side of the table, as shown clearly in Fig. 1.

To the rear part of the table B, vertically above the standard A, is applied a fork-shaped support C, which is provided with bearings for a shaft C', that is provided with a fixed pulley *d* and a loose pulley *d'* for the motion-transmitting belt J, which is shifted from one pulley to the other by a suitable belt-shifter C², that is guided in laterally-extending keepers C³ of the forked support C, as shown clearly in Figs. 1 and 2.

The rear end of a tubular spindle D is screwed into a threaded socket of the shaft C', by which rotary motion is imparted to the spindle. The rear part of the spindle D is provided with water-supply openings *d*¹², which are inclosed by a valve-casing *d*¹¹, that is attached by a circular flange *d*² to a corresponding flange on the front end of the forked support C, as shown clearly in Fig. 8, a suitable packing-ring being interposed between the faces of the flange *d*² and the face of the support C, so as to produce a tight connection between the same.

The tubular spindle D is provided at the points where it leaves the valve-casing *d*¹¹ with suitable packing, of which the packing at the front end of the casing *d*¹¹ is inclosed by a suitable stuffing-box, while the packing at the rear end of the same is tightly applied in position by a screw-nut that is screwed into a threaded socket at the rear end of the valve-

casing d^{11} . The valve-casing d' is connected at one side with a water-supply pipe e , having a stop-cock e' , which pipe is connected by a rubber or other hose with the water-supply.

5 The end of the water-supply pipe e terminates below a valve d^4 , which is pressed by a spring against a valve-seat below the perforated portion of the tubular spindle D, said spring being located on the valve-spindle and inter-

10 posed between the valve d^4 and a screw-cap d^6 , that is applied to the exteriorly-threaded lower end of the valve-casing d^{11} , as shown clearly in Fig. 8. The lower end of the valve-spindle d^7 is passed through the upper end of

15 a stirrup d^8 and attached thereto by a nut and jam-nut. Between the lower part of the stirrup d^8 and the table B is interposed a cushioning-spring d^9 , which is applied to pins on the stirrup and on the table, as shown clearly

20 in Figs. 2 and 8, said spring serving to impart an upward pressure to the stirrup. The stirrup d^8 is guided in vertical position by means of transverse pins d^x , that are applied to a fixed longitudinal guide-rail R, that is rigidly

25 attached to upright posts r , arranged, respectively, at the rear and front part of the table B. The transverse guide-pins d^x and the guide-rail R serve to guide the stirrup in line with the valve-spindle, so as to prevent any strain on the

30 valve and secure thereby the easy and reliable movement of the same. The lower end of the stirrup d^8 is engaged by an anti-friction roller f , which is applied to the upwardly-curved rear end of a longitudinal shipping-lever F,

35 the downwardly-bent front end f' of which rests on the table B, vertically below the guide-rail R. On the guide-rail R is guided by a bottom sleeve H' a yoke-shaped slide-frame H, which is provided with an open

40 bottle-rest h , having a flaring flange h' at the front part of the same for the bottle-mouth and with a sleeve-shaped rear part h^2 , that serves to hold the jointed shank of the cleaning device in line with the tubular spindle D,

45 as shown clearly in Figs. 1 and 2. An open space is arranged between the bottle-rest h and the guide-sleeve h^2 , in which the scraper can rotate without friction or wear when the scraper is running idle during the time when

50 no bottle is placed over the same for cleaning.

The under side of the sleeve H' of the slide-frame H has two laterally-extending perforated ears h^3 , to which are pivoted the front ends of two toggle-levers L L', whose rear

55 ends are pivoted to the rear part of the table B, one at each side of the forked support C, the toggle-levers L and the slide-frame H being counterbalanced by a counter-weight W, which is suspended in the tubular standard

60 A from a wire cord h^4 , that passes through an eye of the weight W and over pulleys h^5 , the shafts of which turn in bearings at opposite sides of the forked support C. The upper ends of the wire cord h^4 are attached to eyes

65 at the rear parts of the toggle-levers L L', so that the same can readily follow the motion of the slide-frame H and either move away

from each other or toward each other, according as the slide-frame H is moved in backward direction by the pressure of the bottle 70 on the bottle-rest or in forward direction toward when it is returned into its normal position of rest at the front part of the table B.

To the under side of the base H' of the slide-frame H is applied a flanged anti-fric- 75 tion roller h^6 , which rides on the top of the shipping-lever F and which serves to depress the same as soon as the roller h^6 passes over the curved front end f' of the same, so as to lower thereby the rear end, and a downward 80 pressure on the stirrup d^8 , attached to the valve-spindle d^7 , so that the springs d^9 and d^5 of the stirrup and valve-spindle are depressed and the valve d^4 opened and water admitted into the perforated rear part of the tubular 85 spindle D, from which it is then supplied to the perforated front end of the same and ejected into the bottle, which is at that time in position on the bottle-rest.

On the guide-sleeve h^2 of the slide-frame H 90 is supported an arched guard-plate or hood H^2 , which serves as a guard for the scraper that is applied to the front end of the spindle D, so as to prevent the water from being scattered by the quick rotations of the said 95 scraper and return it to the table. The hood H^2 is attached by a post on the guide-sleeve of the slide-frame H and extended over the top part of the bottle-rest, as shown clearly in Figs. 1, 2, and 3. To a threaded socket at the 100 front end of the tubular spindle D is applied a scraper of any suitable construction—for instance, a cleaning-brush I, which is used for the final cleaning of the bottle, or a scraper K, which is preferably used when bottles with 105 hollow bottoms have to be cleaned.

The scraper, in the form of a brush I, is provided with radial bristles, which are retained between the twists of a binding-wire, 110 which is applied to a shank that is pivoted to the threaded piece which is screwed into the socket at the front end of the spindle, as shown in Fig. 7.

The scraper K is preferably made of rubber and provided with a central flexible tapering rib b , that is reinforced by a core b' , 115 of fish-bone or other flexible substance.

The scraper K is provided with a threaded end that is screwed into the threaded socket of a shank K', which latter is connected by a 120 knuckle-joint to a tubular shank K², that is screwed into the front end of the spindle, as shown in Fig. 4.

The scraper K is formed of two or more radially-extending flat wings b^2 , of soft rubber, 125 that are made integral with the central tapering rib b and provided with circumferential rims b^3 at opposite sides of said wings, as shown clearly in Figs. 4 and 6.

The rimmed wings of the scraper K are 130 readily folded so as to penetrate into the annular cavity at the bottom of the bottle when the scraper arrives at that point, while they expand to their full width when they leave

said cavity, so as to exert a scraping action on the inner surface of the bottle.

The operation of the machine is as follows: The bottle is taken from the washing-tank and placed with its neck on the bottle-rest, it being then in line with the axis of the tubular spindle D. The bottle is then pressed firmly against the bottle-rest and moved with the latter and its supporting slide-frame in backward direction, so as to raise the balance-weight of the slide-frame. By the backward motion of the slide-frame the bottle is passed over the scraper, which is guided into the mouth of the bottle, so that the scraper, which is rotated at the same time and thrown outwardly by the pivot-joint of its shank, cleans the entire inner surface of the bottle. By the backward motion of the slide-frame the shipping-lever is depressed, and thereby the water-supply valve opened, so that almost simultaneously with the backward motion of the slide-frame the water for cleaning the bottle is supplied through the tubular spindle, whereby the washing operation is accelerated. As soon as the bottle is cleaned by the action of the rotary scraper the pressure on the bottle-rest is relaxed so that the balance-weight is lowered, the toggle-levers are moved toward each other, and the slide-frame returned into its former position of rest at the front part of the supporting-table. The guide-sleeve engages thereby the jointed end of the scraper and holds it in line with the spindle, so that it cannot be moved out of alignment therewith. The bottle is then set aside and the next bottle is taken up and cleaned in the same manner by repeating the operation just described.

My improved bottle-washing machine has the advantage that the water-supply valve is located at the nearest possible place to the scraper and is operated automatically by the motion of the slide-frame, so that the water is supplied as soon as the bottle-mouth has passed over the scraper and shut off when the same clears the scraper. The cleaning action is performed in an effective manner by means of my improved form of scraper, so that the cleaning of bottles is accomplished in a very quick, easy, and effective manner.

The term "scraper" used in the claims without specific description is to be understood as including a scraper of any suitable form, whether of solid wings or provided with bristles.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of a rotary tubular spindle, a scraper connected to the front end of said spindle, and a reciprocating yoke-shaped slide-frame provided with a bottle-rest at its front end and a guide-sleeve for the spindle at its rear end, substantially as set forth.

2. The combination of a tubular rotary spindle, a scraper connected to the front end of the same, a supporting-rod, a reciprocating

yoke-shaped slide-frame guided on said rod, said slide-frame being provided with a bottle-rest at its front end and a guide-sleeve at its rear end and with an open space between the bottle-rest and guide-sleeve, and a guard or hood extending over the open space between the bottle-rest and guide-sleeve, substantially as set forth.

3. The combination, with a tubular rotary spindle, of a scraper connected to the front end of said spindle, a reciprocating yoke-shaped slide-frame provided with a bottle-rest at its front end and a guide-sleeve at its rear end, a valve for controlling the supply of water to the spindle, a shipping-lever adapted to be depressed by the lower part of the slide-frame, and a water-supply connected with the rear end of the shipping-lever, so as to open or close said valve by the action of the slide-frame on the shipping-lever, substantially as set forth.

4. The combination of a hollow supporting-standard, a horizontal table supported on said standard, a fixed longitudinal guide-rail supported on said table, a tubular rotary spindle supported above said guide-rail, a reciprocating slide-frame guided on said longitudinal rail, toggle-levers connecting the slide-frame with the rear part of the table, and a counterbalancing-weight connected to the rear ends of the toggle-levers, substantially as set forth.

5. The combination of a hollow supporting-standard, a horizontal table attached to the upper end of said standard, a forked support attached to the upper part of the standard, a rotary shaft supported in bearings of said support, a tubular spindle attached to said rotary shaft, said spindle being provided with openings in its rear end, a valve-casing extending around the perforated rear part of the spindle, a water-supply pipe, a valve located in the valve-casing so as to open or close the water-supply pipe, a reciprocating and counterbalanced slide-frame guided on said spindle, and a shipping-lever connected to said water-supply valve and opened or closed by said slide-frame, substantially as set forth.

6. The combination of a rotary tubular spindle having perforations at its rear end, a valve-casing extending around the perforated portion of the spindle, a water-supply pipe connected with said valve-casing, a spring-valve in said valve-casing, a stirrup attached to the spindle of said valve, a shipping-lever pivoted to said stirrup, and a reciprocating slide-frame guided in line with said spindle, so as to actuate the shipping-lever and thereby the supply-valve, substantially as set forth.

7. The combination, with a rotary shaft, of a tubular spindle attached to said shaft, said spindle being provided with perforations in its rear end, a valve-casing extending around the perforated portion of the spindle, a water-supply pipe connected to said valve-casing, a spring-actuated valve in said valve-casing, a

stirrup applied to the spindle of the valve, a shipping-lever pivoted to said stirrup, and a reciprocating and slide-frame guided in line with the tubular spindle, said slide-frame being provided with an anti-friction roller at its lower part, so as to engage or release the shipping-lever and open or close the supply-valve of the spindle, substantially as set forth.

8. The combination of a forked support having a disk-shaped flange at one end, a rotary driving-shaft supported in bearings of said support, a tubular spindle secured in line with said rotary shaft and provided with perforations at its rear portion, a valve-casing extending around the perforated portion and provided with a disk-shaped face that is attached to the disk-shaped flange of the said support, a water-supply pipe connected with said valve-casing, a spring-actuated valve opening and closing the water-supply, a shipping-lever connected with the spindle of said valve, and a reciprocating slide-frame adapted to operate the shipping-lever, substantially as set forth.

9. In a bottle-washing machine, an elastic scraper composed of a flexible tapering center portion having a flexible core and flat wings extending from the center portion, substantially as set forth.

10. In a bottle-washing machine, an elastic scraper formed of a tapering center portion, a flexible core in said center portion, and flat

wings extending from said center portion and having raised circumferential rims at opposite sides of said wings, substantially as set forth.

11. The combination, with a rotary shaft, of a tubular spindle secured to said rotary shaft, said spindle being provided with holes at that portion next adjoining said shaft, a valve-casing inclosing the perforated portion of the spindle, said valve-casing being attached to the bearings of the shaft, a valve in said valve-casing, and means for tightening the connection between the valve and spindle, substantially as set forth.

12. The combination, with a rotary tubular spindle, of a tubular holder adapted to be inserted into the outer end of the spindle, a scraper connected by a pivot-joint to said holder, and a reciprocating slide-frame provided with a guide-sleeve that is adapted to engage said holder and the shank of the scraper when the slide-frame is returned to its normal position and release the shank when the slide-frame is moved backward so as to release the pivoted scraper, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JACOB F. WITTEMANN.

Witnesses:

HERMANN COLLINS,
HUGO MUNDSTECKNER.