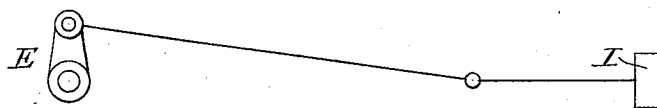
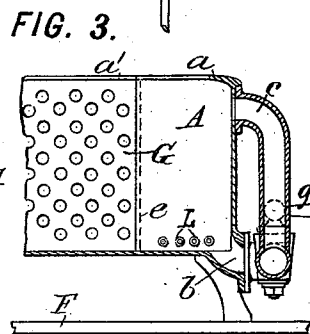
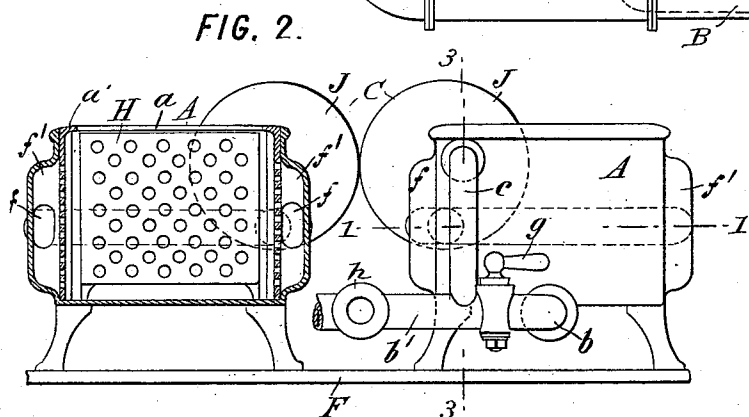
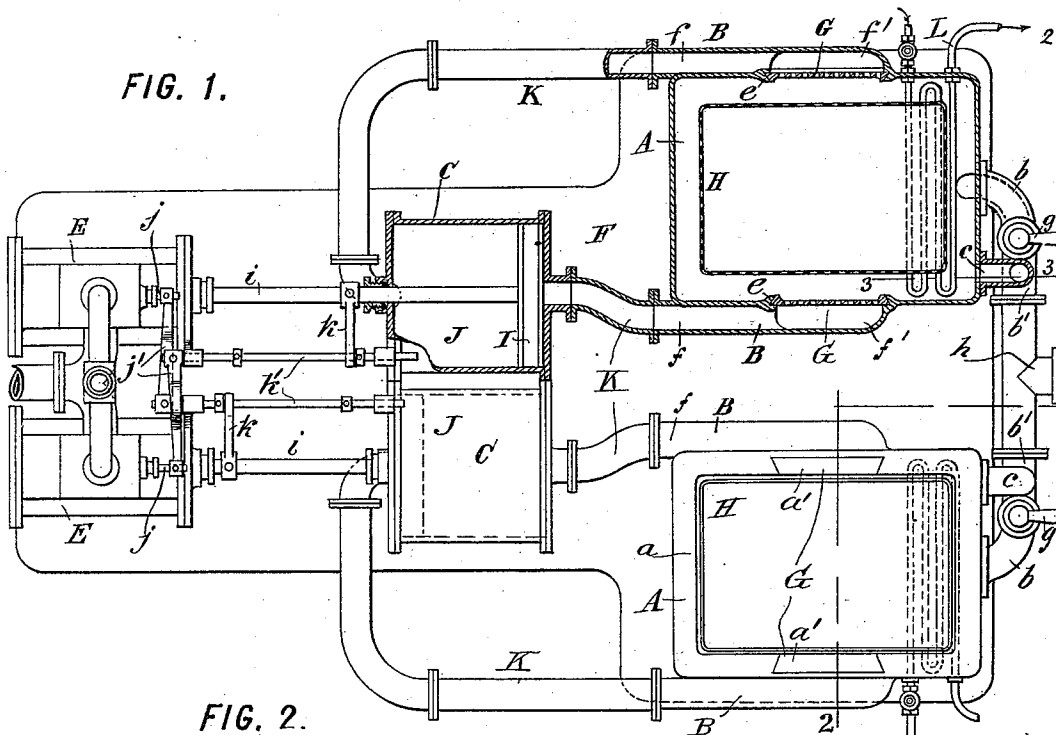


(No Model.)

J. J. O'NEILL.
DISH CLEANER.

No. 527,122.

Patented Oct. 9, 1894.



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UNITED STATES PATENT OFFICE.

JOHN J. O'NEILL, OF NEW YORK, N. Y.

DISH-CLEANER.

SPECIFICATION forming part of Letters Patent No. 527,122, dated October 9, 1894.

Application filed May 20, 1892. Serial No. 433,777. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. O'NEILL, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Apparatus for Washing Dishes, of which the following is a specification

This invention relates to apparatus for washing dishes and for analogous uses in which the dishes are cleaned by the action of a forced current of water.

My invention aims to provide an improved dish washing apparatus which will be simple of construction, economical, effective and convenient of operation, which will operate comparatively noiselessly and with the minimum of power in proportion to the work accomplished, and which will effect the cleaning operation with rapidity.

To this end in carrying out my invention according to its preferred embodiment, I provide certain improvements in the construction of dish washers of the class having a receptacle for the dishes to be washed, having inlet and outlet passages arranged at opposite sides of the location of the dishes, which receptacle is free from internal mechanisms and agitators, and means, as a reciprocating pump for example, connected to said passages and adapted preferably to drive a forced current of water across said receptacle and past the dishes therein in through one passage thereof and out through the other, and then in the reverse direction, and a suitable motor, preferably a steam engine, for operating said pump. Preferably these provisions are duplicated, the one washer being used as a primary washer, and the other as a secondary or rinsing washer, and the two are connected together either by a suitable base or otherwise, and adapted to operate alternately, whereby the currents through each traverse the same relative directions, while the pumps of each reciprocate in opposite directions, whereby the momentum of reciprocating parts is balanced and the direction of the respective currents is alike, thus preventing vibration of the apparatus and confusion of the operator by unlike currents.

In the accompanying drawings, which illustrate the preferred embodiment of my inven-

tion, Figure 1 is a plan view of my improved dish washing apparatus, the upper half showing the receptacle and its water cylinder and passages in horizontal section. Fig. 2 is an end elevation thereof, the left half being in section through one of the dish receptacles on the line 2—2 in Fig. 1. Fig. 3 is a fragmentary vertical section through one of the dish receptacles cut on the line 3—3 in Figs. 1 and 2. Fig. 4 is a diagrammatic view showing another method for operating the current forcing apparatus.

Referring to the drawings, I will now describe the preferred embodiment of my invention in detail.

Let A A indicate the receptacles for the dishes to be washed, B B the water passages therefor, C C the mechanism for producing the forced current of water through the receptacles A, E E the motors for driving the mechanism C C, and F F the base plate on which the various parts are mounted.

The receptacle or tank A may be of any suitable or convenient construction which will serve to receive the dishes to be washed, to contain the water for washing them, and to permit the injection of a forced current of water and its travel across the tank past the dishes and its escape from the tank. Preferably it is constructed as shown of an oblong tank or compartment of cast metal, having overturned flanges *a* surrounding its top wall, and adapted to direct inwardly and backwardly any water rising up the side walls of the tank, with a draw-off duct *b* cast in its bottom wall for withdrawing its contents, with an overflow passage *c* communicating with the interior of the tank near its top, and providing for the escape of any excess of water therein, and with current passages or inlets and outlets B B. The passages B B preferably communicate with the interior of the tank on opposite sides thereof, and are adapted to either withdraw water from or introduce it to the tank. Preferably they are provided with seats *e* where they communicate with the tank, and gates *G* are fitted into these seats constructed with perforations or other interstitial provisions for affording communications between the passages and the interior of the tank for the flow of water

through them, and adapted to prevent the passage of foreign matter or solids from the tank into the passages.

H indicates a basket or cage in which the dishes to be washed would be placed for deposit in the tank or receptacle A as heretofore.

Preferably the seats *e* have undercut or inclined walls as shown, and the gates G have corresponding edges adapted to engage the walls of the seats for making a close joint when they are in position. Preferably the gates are constructed to slide vertically out of the seats, and are provided at their upper inner edges with overhanging flanges *a'* corresponding to the flanges *a* surrounding the top walls of the receptacle for preventing splashing of water.

The passages B are preferably cast integrally with the body of the receptacle A, and consist of flanged tubular portions *f* terminating in enlarged portions *f'* opposite the gates G. The outlet *b* of the receptacle A is preferably connected to the bottom of the body thereof, having a stop-cock *g* for controlling the outlet, and continuing beyond the stop-cock in the form of a tubular duct *b'*, preferably in the direction of the other receptacle, a T-pipe *h* being preferably arranged between the two ducts *b'* for receiving the discharge therefrom and taking it to any suitable place of delivery, as for example the sewer. The overflow *c* is preferably connected near the top with the body of the receptacle A, and communicates with the duct *b'* of the outlet *b* beyond the cock *g* thereof.

The water forcing device C may be any provision which will serve to give a forced current of water of the requisite velocity. In the construction shown, it consists of a reciprocating piston I and an inclosing cylinder J, the latter connected at its opposite ends to the opposite passages B of the tank A, by pipes K K, or in any other suitable manner. The cylinder J and piston I are preferably valveless, and are in this construction adapted upon the reciprocation of the piston to first suck the water from one passage B of the receptacle A through one pipe K into one end of the cylinder, and simultaneously force the water from the other end of the cylinder J through the other pipe K and passage B into that side of the receptacle A, and upon the reverse movement of the piston to reverse this direction of current, the speed of the current in each instance being dependent upon the speed of the piston I. Preferably the cylinder J is constructed with its lower side slightly above the level of the tubular portions *f f'* of the passages B, and the connections with the pipes K K are made at the lowest portions of the cylinder, whereby the water can be entirely drained from the apparatus when desired by opening the cock *g*.

L is a steam heating coil.

Any suitable motor may be employed adapted to operate the water forcing device

used. In the construction shown the motor E consists of a simple steam engine, one for one apparatus and the other for the other. In this arrangement it is preferable to construct the engine in such manner that one piston I will be driven in one direction while the other piston is being driven in the other direction, in order that the momentum of each may be balanced within the apparatus. Therefore the engines are shown here as controlled each by the piston rod *i* of the other, this being preferably accomplished by providing the respective piston rods with arms *k* engaging respectively slide-rods *k'* having tappets, and their respective valve-rods *j* with lateral arms *j'*, each engaging the slide rod of the opposite engine, and operated by the action of the arm *k* thereof against the tappets of the slide rod. Thus the piston rod of each engine, through its arm *k*, one slide-rod *k'* and one arm *j'*, manipulates the valve of the other engine to preserve the approximately simultaneous operation of the engines in opposite directions. The construction shown for accomplishing this is a well known expedient.

It will be seen that according to my invention the receptacle A for the dishes to be washed constitutes part of a closed circuit throughout which a forced current of water may be caused to travel. This circuit consists of a receptacle A between the communicating points of the passages B B with the interior of the receptacle, the passages B B, the connecting pipes K K when used, and the water forcing device in the example shown being the cylinder J.

According to my invention the dishes to be washed are interposed in the path of the circuit thus established, and hence as the current of water is forced to traverse the circuit, the dishes are subjected to its action, with the result that they are speedily cleansed under the force of the current. The water may traverse this circuit in any desired manner, but according to the preferred form of my invention, and the construction just described, it is caused first to traverse the circuit in one direction and then in the other direction, being first forced through one passage and across the receptacle A, while being simultaneously withdrawn through the other passage, and then reversed in direction and injected through the passage through which it was previously withdrawn, and withdrawn through that from which it was previously injected. By this means the dishes are subjected to a violent alternating action by the water, which is best adapted to thoroughly and quickly cleanse them.

Where two apparatus are combined as shown and described, the one may be used for the first washing, and the other for the second washing or rinsing. In this manner the apparatus are convenient for the transfer of the dishes either separately or collectively from one tank to the other as the washing proceeds,

and the apparatus is balanced to prevent jarring by the opposite action of the reciprocating parts, while the movements of the respective currents in the two tanks are substantially simultaneously the same, whereby the operator is not confused in using the tanks by being compelled to contend against oppositely directed currents in the two at one time.

The apparatus can be readily drained, and can be kept clean by reason of the simplicity of construction and arrangement of the parts constituting the water circuit.

In operation, the tank A will be filled with the requisite amount of water, and soap or other cleansing agents will be added if desired, whereupon the dishes to be washed inclosed in the usual basket or cage will be inserted within the receptacle A between its opposite communications with the passages B B, when the motor can be started to produce the washing currents. There will be comparatively no opportunity for counter currents or wasteful jarring, as the current will be directed through the basket or cage from one passage B to the other and back again in substantially a direct line. When the first cleansing is completed, the dishes will be transferred, preferably with their retaining basket or cage, to the adjacent compartment, where they will be rinsed with clean water for example, after which they may be removed and dried. In case the water becomes too high it will pass out through the overflow and escape. When either of the receptacles is to be emptied, its cock *g* will be opened, whereupon the contents of the receptacle, its passages, and its cylinder J, will escape.

It will be understood that my invention is not limited to the precise details of construction and arrangement set forth and shown, nor to the duplication of apparatus described, as it can be variously availed of in whole or in part in such modified forms as will readily

suggest themselves to those skilled in the art, without departing from its essential features.

What I claim is, in an apparatus for washing dishes and analogous uses, the following-defined novel features and combinations, substantially as hereinbefore set forth, namely:

1. In apparatus for washing dishes, the combination of two receptacles A A receiving the dishes, each of said receptacles having passages communicating with their interiors, a support F for said receptacles, two pumps C C each consisting of a cylinder J and a plunger I reciprocating in said cylinder, pipes K K, the one connected to said cylinder at one side of said piston, and the other connected thereto at the other side of said piston, and said pipes respectively communicating with inlet passages at the opposite sides of said receptacle, similar pipes for the other pump and receptacle, said pipes, and the pump and receptacle to which they are connected, constituting each a complete liquid circuit, and means for simultaneously moving the pistons in said cylinders in opposite directions to circulate water through said circuits, substantially as and for the purpose set forth.

2. In apparatus for washing dishes, a cast metal receptacle A having substantially vertical side walls and overhanging flanges *a* at top of said walls, inlet and outlet passages B having tubular portions *f* and enlargements *f'* and formed integrally with said receptacle A, and gates G movably mounted in the side walls of said receptacle, and having flanges *a'* at top corresponding with said flange *a*, all combined and arranged substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN J. O'NEILL.

Witnesses:

GEORGE H. FRASER,
FRED WHITE.