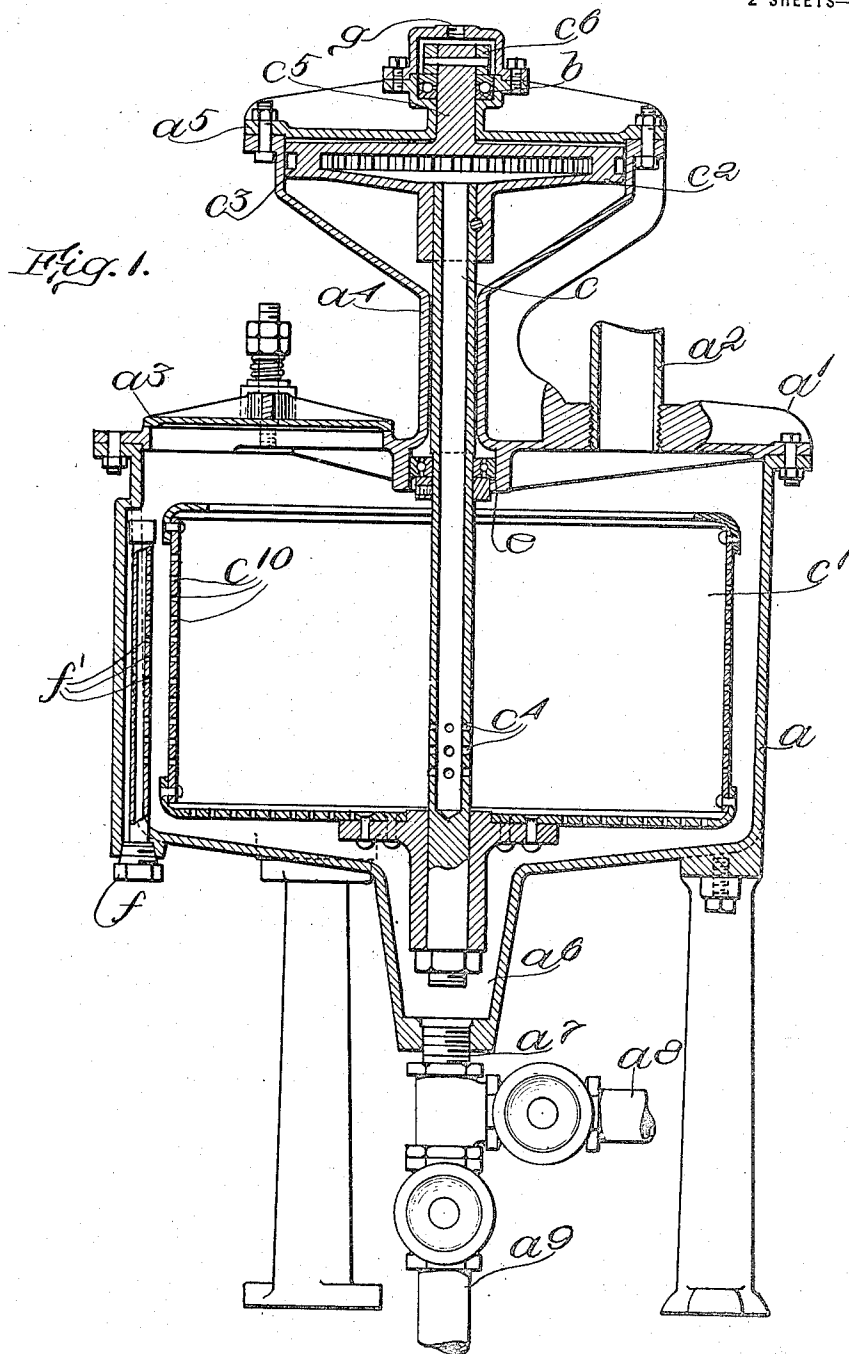


E. W. PHILLIPS.
CENTRIFUGAL MACHINE FOR WASHING WASTE AND OTHER MATERIAL.
APPLICATION FILED FEB. 10, 1909.

1,146,445.

Patented July 13, 1915.

2 SHEETS—SHEET 1.



Witnesses:
Harrison A. Dugan
Mary S. Henshaw

Inventor:
Eli W. Phillips
by Geo. N. Goddard
Atty.

E. W. PHILLIPS.
CENTRIFUGAL MACHINE FOR WASHING WASTE AND OTHER MATERIAL.
APPLICATION FILED FEB. 10, 1909.

1,146,445.

Patented July 13, 1915.
2 SHEETS—SHEET 2.

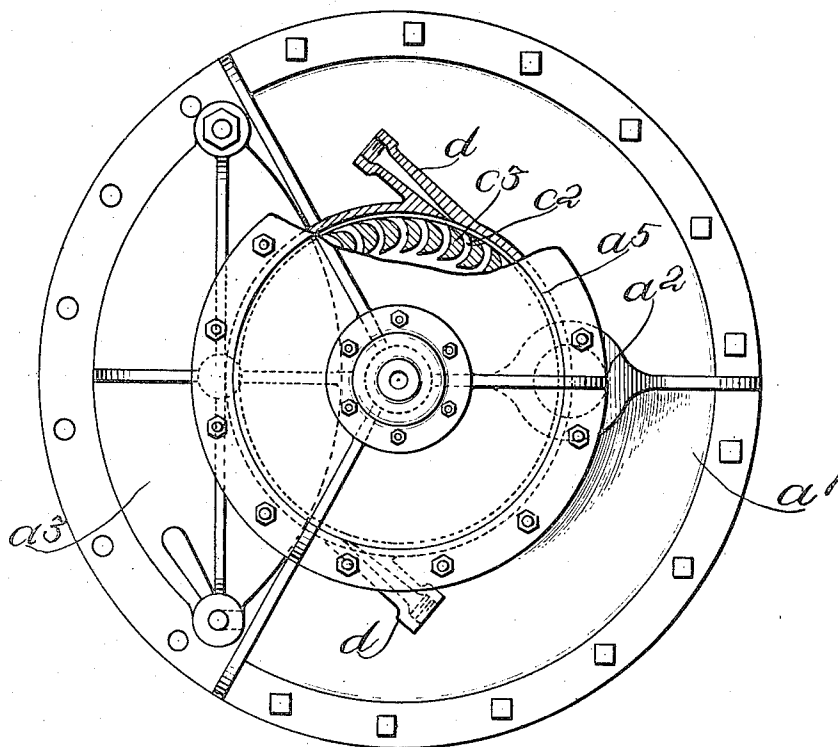


Fig. 2.

Witnesses:

Johnnie A. Dugan
Mary S. Hendrick.

Inventor:

Eli W. Phillips
by *Geo. W. Goldvard*
Atty.

UNITED STATES PATENT OFFICE.

ELI W. PHILLIPS, OF DORCHESTER, MASSACHUSETTS, ASSIGNOR TO AMERICAN TOOL & MACHINE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CENTRIFUGAL MACHINE FOR WASHING WASTE AND OTHER MATERIAL.

1,146,445.

Specification of Letters Patent.

Patented July 13, 1915.

Application filed February 10, 1909. Serial No. 477,055.

To all whom it may concern:

Be it known that I, ELI W. PHILLIPS, citizen of the United States, and resident of Dorchester, Massachusetts, county of Suffolk, have invented certain new and useful Improvements in Centrifugal Machines for Washing Waste and other Material, of which the following is a specification.

This invention relates to machines for washing waste and other material and is intended to provide a simple and efficient arrangement by which the oil or grease may be extracted from the waste and thereafter the waste may be thoroughly cleansed, rinsed and partially dried without being removed or handled until the entire operation is completed.

The invention is characterized by several features of novelty and improvements which will be hereinafter described and will be defined in the claims forming part of the specification.

In the accompanying drawings I have illustrated the preferred form of embodying the principle of this invention, of which—

Figure 1 is a vertical central section; and Fig. 2 is a plan view partly broken away to show the steam driving wheel or turbine.

In the practice of my invention as illustrated, I provide a cylindrical casing a , which in this case is supported upon legs or uprights and has a tight cover a' in which is located an offtake or vent pipe a^2 . The cover is also provided with a hand hole to which is removably clamped a lid or closure a^3 . The upward extension a^4 is enlarged at its upper end and is provided with a removable cap a^5 in which is located a rotary anti-friction thrust bearing b for sustaining a rotatable basket shaft c to whose lower end is secured a perforated basket or receptacle c' .

For the purpose of rotating the shaft and basket there is secured to the upper end of the shaft c a simple form of turbine or jet wheel c^2 , whose vanes c^3 are separated by passages or spaces to allow the escape of steam from the jet nozzles d to the interior of the turbine, whence the steam passes down through the hollow shaft and escapes through lateral perforations c^4 into the interior of the basket. The turbine is provided with a central upwardly projecting journal c^5 which in effect forms a continu-

ation of the shaft c^4 and which is provided with a thrust collar or bearing head c^6 which rests upon the anti-friction bearing b . At the lower end of this upward extension surrounding the shaft is a lateral anti-friction bearing e to afford lateral support to the shaft and prevent vibration. The bottom of the casing is preferably provided with a central depression a^6 forming a pocket or recess into which the liquid contents of the casing drains. The off-take pipe a^7 serves to conduct away the liquid contents and is divided into two branches a^8 and a^9 for purposes hereinafter to be explained. At one side of the casing is provided a vertical inlet pipe f having on its inner side a series of vertically arranged perforations f' preferably arranged to register with or oppose the perforations c^{10} in the side wall of the basket. The perforations f' are preferably smaller than the perforations c^{10} .

The operation of the apparatus is as follows. After the dirty waste has been piled into the basket, the lid a^3 is tightly closed and steam is introduced through the jets d to rotate the turbine and the basket. The exhaust steam passing between the vanes of the turbine enters the hollow shaft c and passes through the opening c^4 into the interior of the basket, thus penetrating the mass of waste contained therein and heating it sufficiently to cause the oil and grease with which the waste is saturated to run down into the bottom of the casing. When this operation has continued for sufficient time to extract the grease, the valve in pipe a^8 is opened to draw off the oil or grease into a storage receptacle, after which said valve is closed. At this stage steam or hot water under pressure is introduced through the inlet pipe f and spreads through the lateral perforations of the basket, thus tending to blow the waste away from the sides of the basket and thoroughly penetrate the mass of waste. Suitable detergents may also be introduced through the opening and cover of the casing to assist in thoroughly washing the contents of the basket. After the washing operation has been completed the steam or hot water is shut off from the inlet pipe f and the valve, the waste pipe a^9 is opened to drain off the dirty water and sediment. After the removal of the water, the rotation

of the basket is continued for the purpose of partially drying the same, the contents being thrown toward the outside of the basket and the exhaust steam from the turbine which enters the basket through the perforation c^4 escaping through the offtake pipe a^2 . A slight lubrication of the bearings is maintained by allowing oil to drip through the oil orifice g at the top of the casing.

10 What I claim is:—

1. A machine for washing waste or other material embracing in its construction a casing, a rotary receptacle supported therein by a hollow rotary shaft, a steam-impelled wheel secured to said shaft above the receptacle, jet nozzles arranged to discharge against said wheel, said nozzles having communication through the rotary shaft with the interior of said receptacle in order to mingle the exhaust steam with the contents of said receptacle, substantially as described.

2. A machine for washing waste or other material embracing in its construction an inclosing casing, a rotary receptacle mounted therein, a hollow shaft rotatably supporting said receptacle, a driving wheel secured to said shaft above the receptacle, said driving wheel being adapted to be driven by steam jets impinged thereon, the interior of said driving wheel having communication with the interior of said hollow shaft, said shaft being provided with outlets discharging into the receptacle, substantially as described.

3. The combination of the outer casing, a rotary shaft suspended therein from an overhead rotary bearing, a receptacle secured to said shaft to rotate therewith, a jet nozzle for discharging steam through said shaft into the receptacle, and means for rotating said shaft, said means being actuated by the steam from the jet nozzle, substantially as described.

4. A machine for washing waste or other material embracing an outer casing provided with a vertical upward extension forming a separate wheel chamber, an anti-friction bearing supported therein, a rotary shaft supported by said bearing, a basket secured to said shaft to be rotated thereby, a jet-impelled wheel secured to said shaft, a jet nozzle for delivering steam against said wheel, and a conduit for conveying the exhaust steam to the interior of said basket, substantially as described.

5. A machine for washing waste or other material embracing in its construction a hollow casing, an inner receptacle, a rotary shaft secured to said receptacle and supported upon an overhead rotary bearing carried by said casing, a lateral anti-friction bearing surrounding said shaft to prevent vibration, a series of vanes secured to said shaft, a jet nozzle for delivering a jet

of steam against said vanes, and a conduit or passage inside said shaft for leading the exhaust steam to the interior of said basket, substantially as described.

6. A machine of the class described embracing in its construction an outer casing, an inner rotatable receptacle, a shaft suspended from an overhead bearing to support and rotate said receptacle, a steam-impelled wheel secured to said shaft above the receptacle to drive the same, and means for conducting the exhaust steam from the wheel to the interior of the receptacle, substantially as described.

7. A centrifugal waste washing machine embracing in its construction an outer casing provided with an upward extension forming a wheel chamber, a rotary shaft suspended to hang through said chamber into the casing, a driving wheel secured to said shaft inside said chamber, a perforated receptacle secured to the lower end of said shaft within the casing, a jet nozzle for impinging steam against the wheel and means for conducting the exhaust steam from the driving wheel to the interior of said receptacle, substantially as described.

8. In a centrifugal machine the combination of the rotary basket, a hollow basket-carrying shaft suspended from an overhead bearing, a hollow steam driven wheel provided with vanes to receive an impact of a steam jet, the interior of said wheel having communication with the interior of said receptacle to allow the escape of steam from the wheel into the interior receptacle, and a casing inclosing the receptacle, substantially as described.

9. A machine for washing waste or other substance, embracing an outer casing, a cover therefor provided with an upward hollow extension enlarged at its upper end to form a steam chamber, a cover for said chamber, said cover being provided with a rotary bearing, a hollow shaft suspended from said rotary bearing, a receptacle secured to said hollow shaft and disposed within the casing, a series of vanes secured to said shaft within the steam chamber, a jet nozzle arranged to discharge steam against said vanes, said hollow shaft forming a communicating passage between the steam chamber and the interior of the receptacle, substantially as described.

10. In a machine for washing waste or other substance, the combination of the outer casing, a rotatable receptacle mounted therein, a hollow shaft for rotatably supporting said receptacle, vanes secured to said shaft, a steam chamber inclosing said vanes, a jet nozzle for discharging steam against said vanes, said steam chamber and said receptacle being connected by a communicating passage, an inlet pipe arranged in said casing outside of said receptacle for

injecting fluid into said receptacle, an oil
offtake pipe, and a waste pipe having com-
munication with the bottom of said recepta-
cle, and valves for controlling said pipes,
5 substantially as described.

11. A centrifugal waste washing machine
embracing in combination a centrifugal
basket and its hollow supporting shaft, a
steam driven wheel secured to said shaft and
10 having communication with the shaft to
permit the flow of its exhaust steam into
the interior of the basket, a casing sur-
rounding said driving wheel and arranged
to prevent the escape of steam to the basket
15 except through said rotary shaft, substan-
tially as described.

12. In a centrifugal machine the combina-
tion of a casing, the top whereof is provided

with an upward extension forming a hol-
low chamber, a rotary shaft extending 20
through said extension into the casing, a
basket secured to the lower end of the shaft
in said casing, a thrust bearing carried by
the upward extension for rotatably support-
ing the shaft, a lateral bearing arranged to 25
receive the lateral thrust of said shaft, and
a steam-impelled wheel secured to said shaft
intermediate of said bearings, substantially
as described.

In witness whereof, I have subscribed the 30
above specification.

ELI W. PHILLIPS.

In the presence of—
G. A. ROCKWELL,
GEO. N. GODDARD.