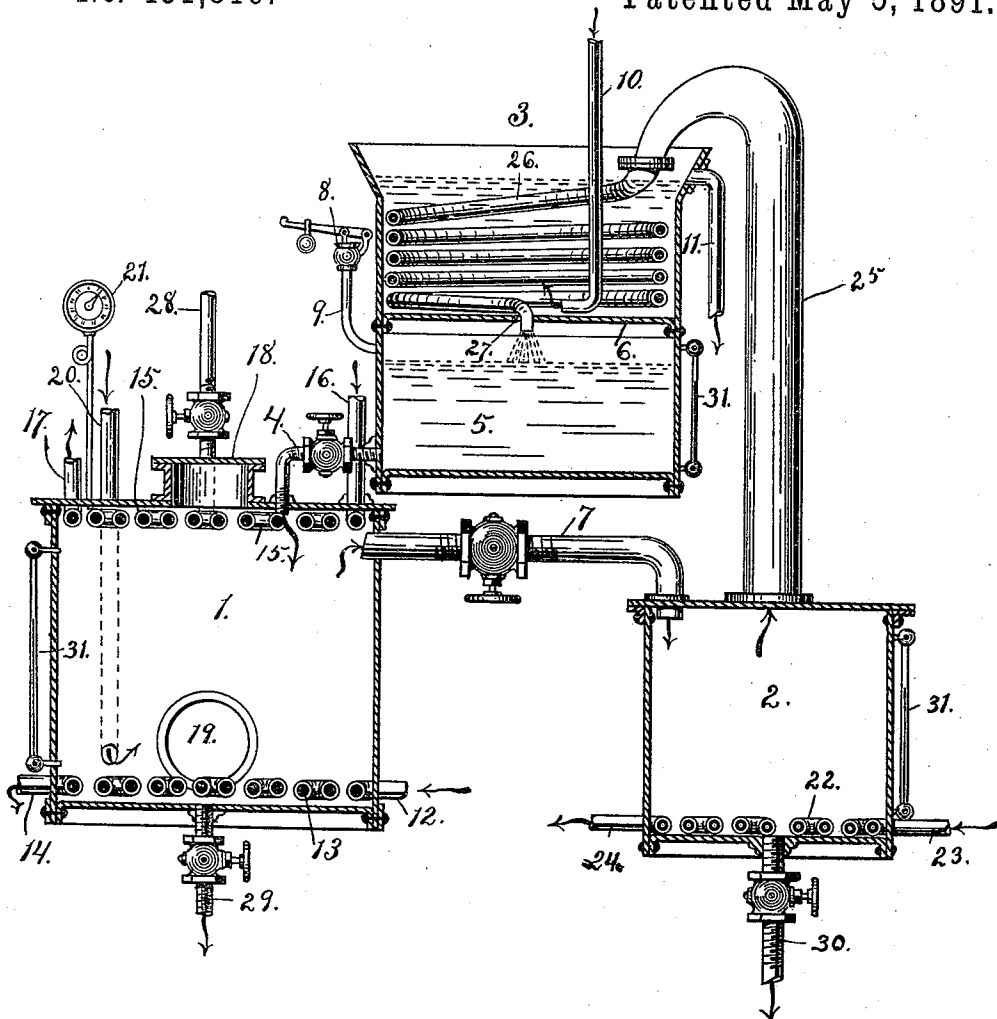


(No Model.)

T. H. GILBERT.
OIL AND GREASE EXTRACTOR.

No. 451,816.

Patented May 5, 1891.



WITNESSES:

Otto E. Hoddick.

Henry W. Brendel

T. H. Gilbert

INVENTOR

BY

James L. Strong

ATTORNEY

UNITED STATES PATENT OFFICE.

TRUMAN H. GILBERT, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO
EDWARD C. STRONG.

OIL AND GREASE EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 451,816, dated May 5, 1891.

Application filed December 31, 1890. Serial No. 376,434. (No model.)

To all whom it may concern:

Be it known that I, TRUMAN H. GILBERT, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful improvements in oil and grease extractors for taking off the oil that adheres to castings during the various processes of manufacture and for extracting grease and oil from various substances; and the following is a full, clear, and exact description of my invention.

Heretofore castings have been cleaned of the oil adhering to them by being boiled in potash; but this is a slow and costly process and is not certain to take the oil entirely off of every part of the pieces, so that the spots from which it is not perfectly cleaned interfere greatly with painting, tinning, or japanning. My invention does the work much cheaper and avoids all this trouble by perfectly cleaning the castings in every part.

I am aware of the fact that grease and oil have heretofore been extracted from various substances by heat, by boiling in water, and by pressure; also that the grease contained in kitchen-garbage has been extracted by the use of benzine; but the apparatus is so defective and the process so intricate and slow that it is not profitable.

The object of my invention is to take the grease or oil off from or out of anything or substance placed under its operation in the quickest, most inexpensive, and most thorough manner possible. The manner in which I accomplish the desired object is illustrated by the apparatus shown in the accompanying drawing, consisting of one sheet, which represents a vertical section of the invention.

1 is a tank in which the castings to be cleaned or the substances from which the oil or grease is to be extracted are placed through the man-hole 18.

2 is a tank into which the hydrocarbon solvent, together with the oil or grease it has extracted, is carried through pipe 7 for the purpose of separating the solvent from the grease by evaporating the solvent.

3 is a tank for holding the hydrocarbon solvent after it has been evaporated from tank 2 and condensed through the copper worm 26.

Tank 1 is made of boiler-iron riveted steam-tight and made to sustain a pressure of ten to fifteen pounds. It can be made any shape or size that may be required to best accommodate the articles to be cleaned. In the top of tank 1 and attached to the top of tank is a coil of pipe 15, as represented in the drawing, to be filled with cold water from pipe 16, with outflow at pipe 17. Pipe 7 is an overflow from tank 1 to tank 2. Pipe 20 is for the purpose of letting in cold or hot water or steam into tank 1, as will be hereinafter explained. In the bottom of tank 1 is placed a coil of pipe 13, through which, when the machine is in operation, steam is constantly passing, let in through pipe 12 and making its exit at pipe 14. Pipe 28 emerges from the top and pipe 29 from the bottom of tank 1. The uses of both will be hereinafter explained. The man-hole 19 in tank 1 is for the purpose of taking out the castings or other material after being subjected to the process. This man-hole 19 can be made of any size or shape that may be desired or necessary to facilitate the putting in or taking out of large castings. If tank 1 is made square or oblong, man-hole 19 can be made of an entire side or end.

Tank 2 is made of boiler-iron and constructed in the same manner as tank 1. In the bottom of this tank is also a coil of pipe 22, into which steam is passed through pipe 23, making its exit through pipe 24. Pipe 30 is for the purpose of drawing off the grease or oil that is deposited in this tank after the solvent is evaporated, as will be hereinafter explained. Pipe 25 is for the purpose of conveying the vaporized solvent back into tank 3, passing through the worm 26, where it is condensed and falls into receptacle 5 at the exit 27 of the worm 26.

Tank 3 is also made of boiler-iron and is constructed in the same manner as tank 1. About a third of the way down from the top is placed an iron division wall or plate 6. Under this division wall or plate 6 is receptacle 5 for the hydrocarbon solvent used in the process. Above this division-wall 6 the tank is filled with cold water constantly running in through pipe 10 and overflowing

through pipe 11. In this space surrounded by this cold water is a coil of copper pipe 26, commonly called a "worm," with its discharge 27 passing through division-wall 6 into receptacle 5, the use of which will be hereinafter explained. Directly under division-plate 6 is pipe 9, introduced into receptacle 5 for the purpose of relieving any pressure in receptacle 5. Pipe 4 conducts the solvent from receptacle 5 to tank 1. Glass gages 31 are attached to each tank for the purpose of showing the height of the liquids in the tanks, and a steam-gage 2 is to indicate the pressure in tank 1.

My manner of taking the oil off of castings or grease or oil from other substances with the hereinbefore-described apparatus is as follows: I first fill tank 1 with the castings or substance to be operated upon through man-hole 18, then let into tank 1 about an inch of water through pipe 20, covering the coil of pipe 13, then through pipe 4 let into tank 1 sufficient of the hydrocarbon solvent previously placed in receptacle 5 to dissolve the oil or grease on the castings or in the substance being treated, then close pipe 4 and admit steam into the coil of pipe 13. This has the effect of boiling the solvent in tank 1, sending it up through the castings or other substance in a vapor, which enables it to penetrate every part of the castings, even where they are resting the one upon the other. As the vaporized solvent strikes the cold-water pipe 15 at the top of tank 1 the vapor is condensed and immediately falls into the boiling mass, thus keeping a continuous flow of solvent coursing up and down directly through the castings or other substance. When the object is accomplished, the steam is shut off from pipe 12 and hot water admitted to tank 1 through pipe 20, and as the oil or grease and the solvent are lighter than water they rise on the top of the water (which is gradually admitted) to the top of tank 1 and flow over into tank 2 through pipe 7. If there is any scum or refuse on the top of the water that it is not best to run over into tank 2, it can be blown off through pipe 28 by cutting off the water from pipe 20 and turning on steam through the same pipe. Then by closing pipe 28 the water and any residuum can be blown off through pipe 29. Then by cutting off the steam from pipe 20 and turning it on again at pipe 12 and opening pipe 28

the heat becomes so great in tank 1 as to thoroughly dry the castings or other substance in a very few minutes, when it can be taken out at man-hole 19, and tank 1 is ready for another charge without waiting for the solvent that was used in the first charge to be evaporated back into tank 3. As soon as the oil or grease and solvent are run over from tank 1 into tank 2 through pipe 7 steam is let into the coil of pipe 22 through pipe 23, the heat of which soon vaporizes the solvent, sending it in vapor through pipe 25 into the copper worm 26, where it is condensed and runs into receptacle 5 at 27, ready to be used over again when needed. Receptacle 5 should be of sufficient size to hold solvent enough for at least two charges. The oil or grease is then drawn from tank 2 through pipe 30.

The apparatus, as shown in the drawing and as herein described, can be changed in several particulars and yet accomplish the same result. Therefore I do not wish to confine myself to just the apparatus shown and described, but include in my invention any equivalents that accomplish the same object.

I claim as my invention—

1. In an apparatus for extracting oil or grease, the combination, with a tank having a blow-off, hot or cold water or steam pipes, and an imperforate coil of pipe at top and bottom of said tank, of an additional tank suitably connected with the first tank and containing a coil of pipe, an eduction-pipe leading from the second tank into a third tank containing a condenser, and a receptacle suitably connected with the first tank, substantially as and for the purpose described.

2. In an apparatus for extracting oil or grease, the combination, with a tank having a blow-off, hot or cold water or steam pipes, and an imperforate coil of pipe at top and bottom of said tank, of an additional tank, the upper part of which is connected with the upper part of the first tank by a valved connecting-pipe and containing a coil of pipe, an eduction-pipe leading from the second tank into a third tank containing a condenser, and a receptacle suitably connected with the first tank, substantially as and for the purpose described.

TRUMAN H. GILBERT.

Witnesses:

JAMES C. STRONG,
EDWARD C. HANDWERK.