

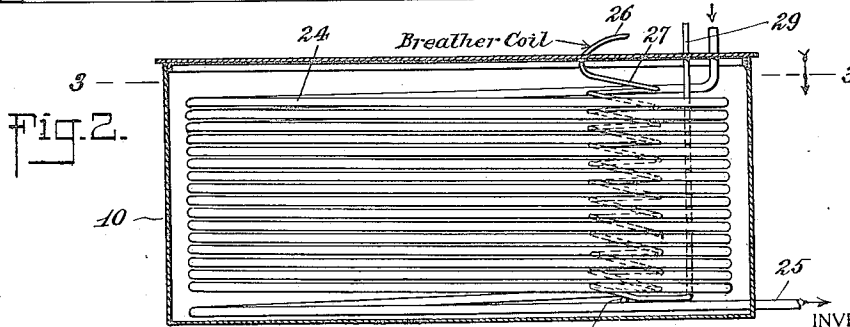
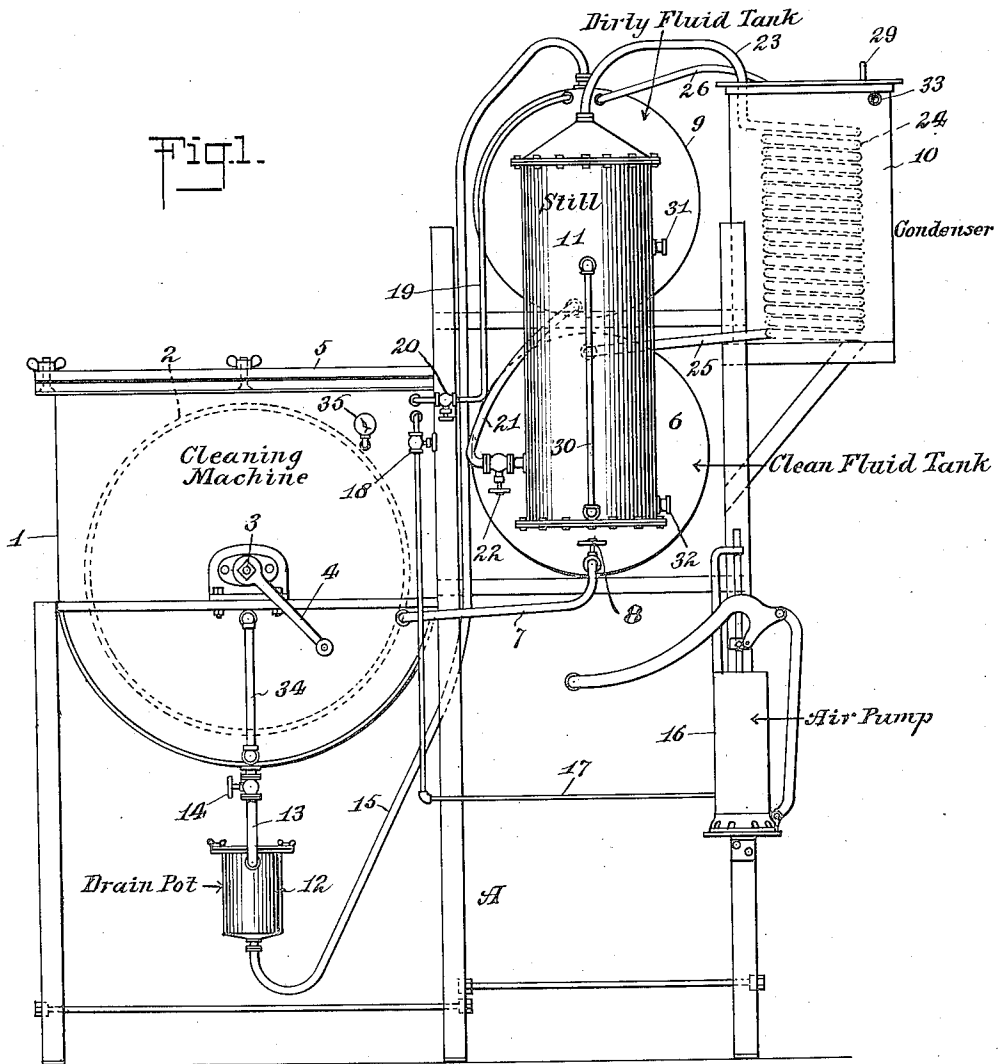
Jan. 1, 1929.

1,697,767

M. DE W. HIRST  
DRY CLEANING APPARATUS

Filed Sept. 2, 1925

2 Sheets-Sheet 1



WITNESSES  
*William A. Goebel*  
*S. W. Posten*

INVENTOR  
*Maurice DeWitt Hirst*  
BY *Mum Co*  
ATTORNEYS

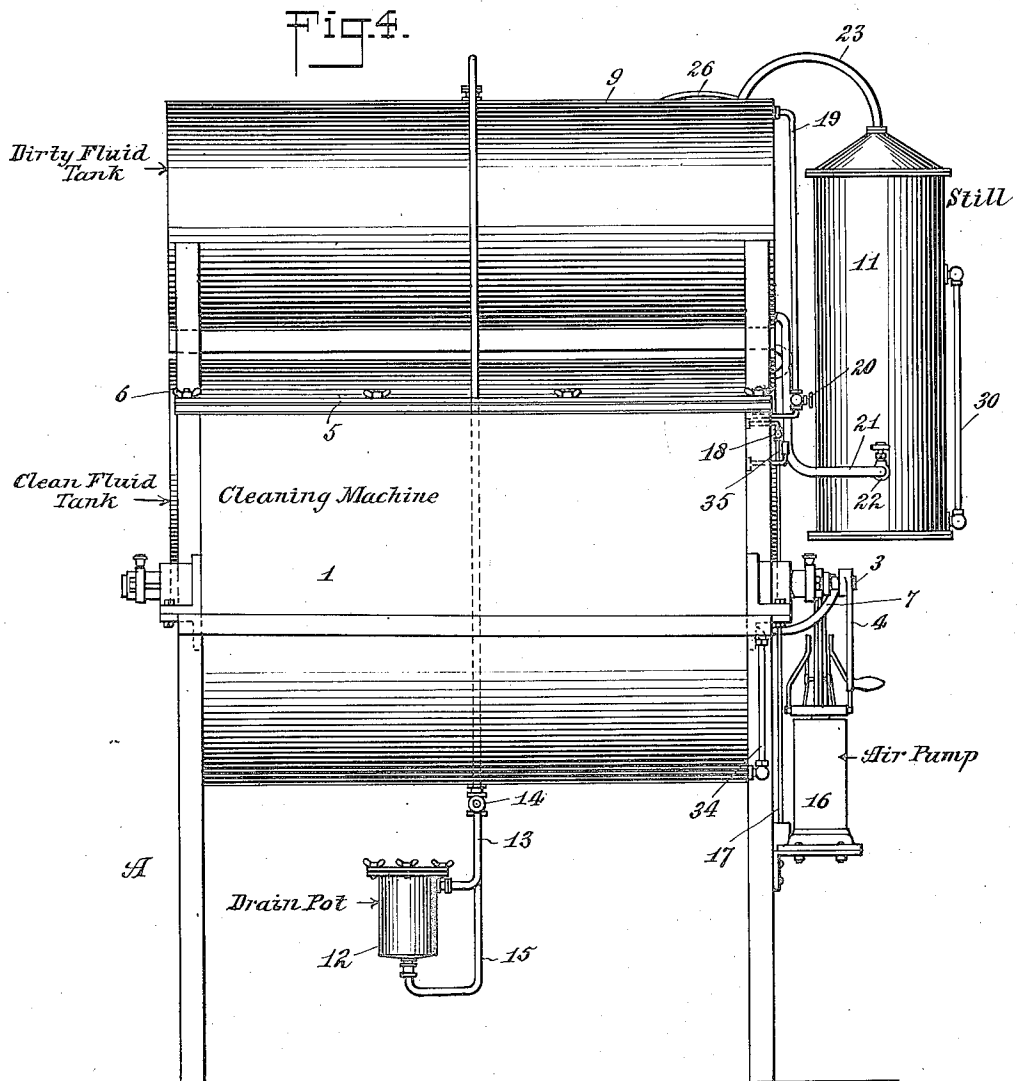
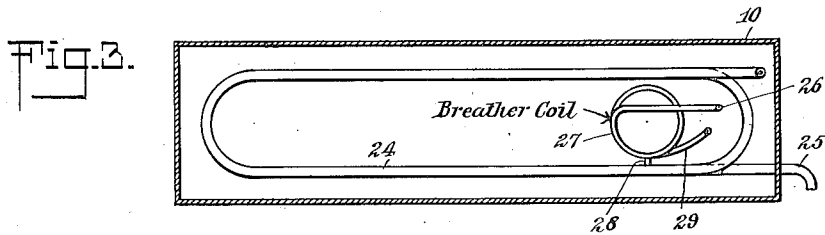
Jan. 1, 1929.

1,697,767

M. DE W. HIRST  
DRY CLEANING APPARATUS

Filed Sept. 2, 1925

2 Sheets-Sheet 2



WITNESSES  
*William P. Goebel*  
*S. W. Foster*

INVENTOR  
*Maurice De Witt Hirst*  
BY *Mum & Co*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

MAURICE DE WITT HIRST, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO SAFETY DRY CLEANING SYSTEM CO., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

## DRY-CLEANING APPARATUS.

Application filed September 2, 1925. Serial No. 54,097.

This invention relates to dry cleaning apparatus, an object of the invention being to provide a relatively small compact apparatus which may be manufactured and sold as a unit, which will be manually operated and controlled, and which can be easily installed in a relatively small room for use.

A further object is to provide a dry cleaning apparatus in which the cleaning fluid is maintained in a closed circuit with the exception of a breather coil so that losses are reduced to a minimum. This is important as it is the purpose of my apparatus to employ a dry cleaning fluid which is comparatively expensive as compared with the cost of gasoline.

A further object is to provide an apparatus of this character, in which the several parts are arranged in compact form, conveniently supported on a frame so that additional supports for parts of the apparatus are not required.

A further object is to provide an apparatus of this character which is within the means of smaller establishments so that they may do their own dry cleaning in a safe manner, and at the same time carry out the operation in a manner which will give vastly improved results over the ordinary apparatus in common use.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a view in end elevation, illustrating my improved apparatus as a whole;

Figure 2 is a view in longitudinal section through the casing of the condenser shown in Figure 1, the coils being in elevation;

Figure 3 is a sectional plan view of Figure 2, the view being taken on the line 3—3 of Figure 2;

Figure 4 is a view in side elevation or at right angles to Figure 1.

A represents a supporting frame, which may be made in various ways, but is preferably of open work metal construction, so that the frame as a whole may be permanently formed or may be assembled at the point of use of the apparatus, as may be desired. This frame may be made as light as possible

but, of course, must be strong enough for the purpose intended.

1 represents a cleaning machine supported on the frame A and provided with a rotary drum 2, one trunnion 3 of which has a crank arm 4 fixed thereto outside of the casing of the cleaning machine so as to permit this drum to be manually turned.

It is to be understood, of course, that the clothes or other articles to be cleaned may be placed in the drum, and a suitable removable cover 5 is provided on the casing of the machine, although I do not wish to be limited to the particular details of construction of the machine, as I may employ any structure which will perform the necessary functions, but preferably use a mechanism of standard type in general use.

The frame A supports a clean fluid tank 6 at one side of the machine 1, and preferably at an elevation to allow the fluid in the tank 6 to flow into the machine 1 through a pipe 7, having a manually operated valve 8 controlling the passage therethrough.

Above the clean fluid tank 6 is a dirty fluid tank 9. This is also supported by frame A, and a condenser 10 is secured to the frame A adjacent the said tanks 9 and 6, as clearly shown in Figure 1.

11 represents a still which is also supported by the frame A and is preferably located at the ends of the tanks 9 and 6, as shown.

12 represents a drain pot which is connected to the bottom of the casing of machine 1 by a pipe 13, having a valve 14 therein, so that the fluid of the machine can drain into this pot 12, and buttons or articles which may collect in the machine may be caught and retained by the drain pot. This drain pot 12 is connected at its bottom with the top of tank 9 by a pipe 15.

A manually operated air pump 16 is secured to the frame A, and an air outlet pipe 17 connects the pump 16 with the upper portion of machine 1, and has a valve 18 therein. A pipe 19 connects the upper portion of the machine 1 with the upper portion of tank 9 and is provided with a valve 20.

The still 11 above referred to is adapted to receive the dirty fluid from tank 9, which drains through a pipe 21 communicating with the lower portion of the still and having a valve 22 therein. The vapor from this still

escapes from the upper end thereof through a pipe 23 which communicates with a coil 24 in condenser 10, and said coil 24 has an outlet pipe 25 which connects the lower end of the coil with the upper portion of the tank 6.

A pipe 26 connects the upper portion of tank 9 with a breather coil 27 located in the condenser 10 and at its lower end communicating with one of the lower coils, as shown at 28 in Figure 3. This breather coil 27 has an outlet pipe 29 extending from its lower end upward and discharging into the atmosphere or wherever desired.

31 and 32 represent inlet and outlet couplings for a steam line communicating with the still 11, and 33 is a fluid inlet to the condenser to admit the cooling agent. A sight glass 30 is also provided on the still 11.

The pipes 17, 19 and 26 are preferably of smaller diameter than the other pipes above referred to, although of course I do not limit myself to the size of the several pipes employed.

The operation of the apparatus above described is as follows:

Assuming, of course, that the tank 6 contains a supply of clean fluid, the clothes or other articles are placed in machine 1 and the latter tightly closed, the lid 5 being secured air-tight thereon.

Valve 8 is opened, allowing clean fluid to flow into the machine 1 up to the desired level, as indicated by gauge 34. This valve 8 is then closed. The operator then turns handle 4, revolving the drum 2 to agitate the clothes or other articles in the fluid for a desired length of time, as, for example, from about fifteen to twenty minutes.

The valve 18 is then opened and the air pump 16 manually operated to force air through the pipe 17 into the upper portion of the machine 1 until the desired pressure of air is had, as indicated by the gauge 35.

Valve 18 is then closed and valve 14 opened so that the fluid in machine 1 is forced downwardly through the pipe 13 into the drain pot 12 and then up pipe 15 into the top of the dirty fluid tank 9. Buttons and other articles will be caught by the drain pot 12 and only the fluid will flow into tank 9.

The valve 14 is then closed and a charge of clean fluid from tank 6 is allowed to flow through pipe 7 by opening the valve 8 the desired length of time. This constitutes a rinsing charge and the operator turns the crank handle 4 for the desired length of time to thoroughly rinse the articles. This may take from ten to fifteen minutes.

The valve 18 is again opened and the air pump 16 manually operated to force a charge of air into the machine 1, when said valve 18 will be closed. The valve 14 will then be opened and the fluid will be forced to the top of tank 9.

The valve 14 is then closed and valve 18

opened, and a further charge of compressed air should be forced into the machine 1.

The valve 18 is then closed and the valve 20 opened; also valve 14 should be opened.

The air and vapor in the machine 1 will flow through the pipe 19 and also through the pipe 15 to the top of tank 9, assuming of course that valve 20 is opened. This tank 9 is vented through the pipe 26 and breather coil 27 so that the fluid which condenses in the breather coil will flow into the fluid coil 24 and be returned to tank 6 through the pipe 25.

This takes care of what vapor may rise above the air in the machine, and takes off practically all the saturation from the clothes or other articles.

The machine can then be opened and the clothes or other articles removed, when the cleaning process is completed.

To clean the fluid in tank 9 the still 11 is employed and the operation is as follows:

The valve 22 is opened, allowing the dirty fluid to flow from tank 9 into the still 11. The vapor arising from the still escaping through the pipe 23 and flowing through coil 24 is condensed and passes through pipe 25 into the clean fluid tank 6.

Various slight changes and alterations might be made in the general form of the parts described without departing from my invention and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. A dry cleaning apparatus, including a supporting frame, all parts of the cleaning apparatus being fixed to the frame, a cleaning machine on the frame, dirty fluid and clean fluid tanks supported on the frame, a condenser supported on the frame, a manually operated air pump on the frame, manually operated means for controlling the operation of the machine, a pipe connecting the clean fluid tank with the washer whereby the fluid feeds by gravity to the washer, said machine, tanks and condenser being in a closed circuit, and said air pump adapted to force air into the machine, a vapor outlet pipe connecting the upper portion of the machine with the top of the dirty fluid tank, and a breather coil in the condenser communicating with the top of said dirty fluid tank.

2. A dry cleaning apparatus, including a supporting frame, all parts of the cleaning apparatus being fixed to the frame, a cleaning machine on the frame, dirty fluid and clean fluid tanks supported on the frame, a condenser supported on the frame, a manually operated air pump on the frame, manually operated means for controlling the operation of the machine, said machine, tanks and condenser being in a closed circuit, and said air pump adapted to force air into the

machine, a vapor outlet pipe connecting the upper portion of the machine with the top of the dirty fluid tank, a breather coil in the condenser communicating with the top of said dirty fluid tank, and a still supported by the frame and located in circuit between the dirty fluid tank and the clean fluid tank.

3. A dry cleaning apparatus, including a supporting frame, all parts of the cleaning apparatus being fixed to the frame, a cleaning machine supported directly on the frame, dirty and clean fluid tanks supported on the frame, the ends of said tanks and machine being at the same end of the frame, a condenser secured to the frame, a manually operated air pump secured to the frame, an outlet pipe in the bottom of the machine communicating with the top of the dirty fluid tank, a drain pot in said last mentioned pipe, a crank han-

dle at one end of the machine for operating the same, an air pipe connecting the air pump with the upper portion of the machine, a vapor pipe connecting the upper portion of the machine with the upper portion of the dirty fluid tank, a still secured to said frame, a pipe connecting the dirty fluid tank with the still and feeding by gravity to the latter, a main coil in the condenser connected at its inlet end to the still and at its outlet end to the clean fluid tank, and a breather coil in the condenser communicating with the main coil and having its inlet end communicating with the upper portion of the dirty fluid tank, and manually controlled valves in said pipes whereby the passage and flow of the fluid, vapor and air are controlled.

MAURICE DE WITT HIRST.