

March 25, 1930.

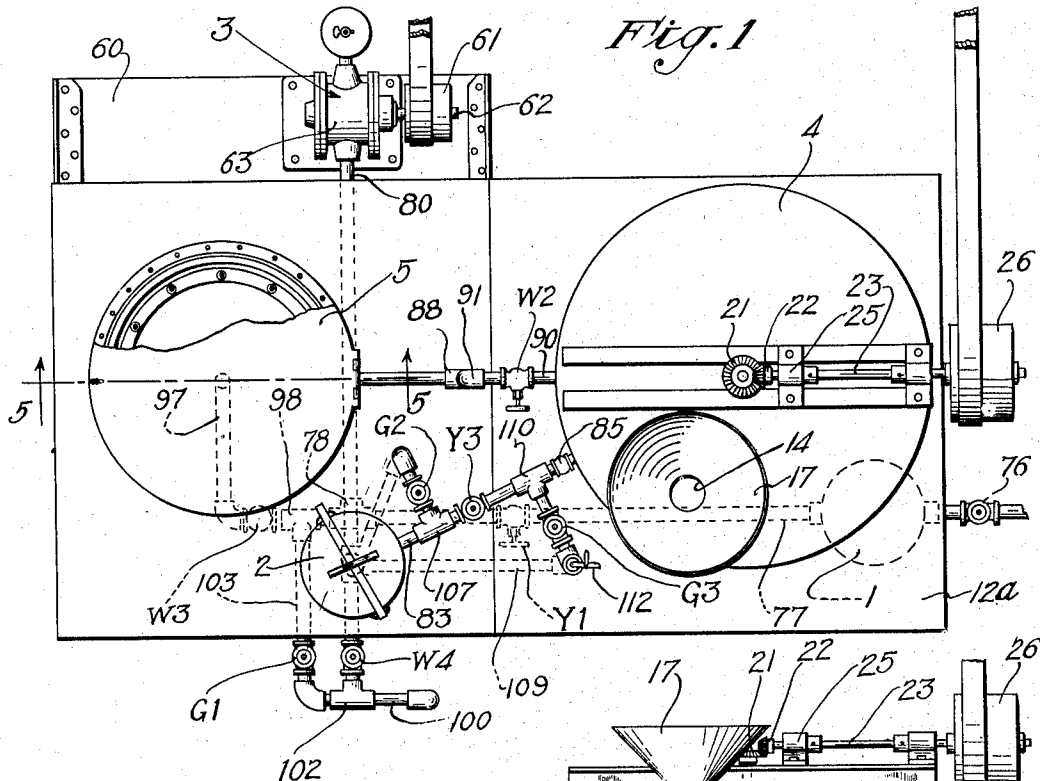
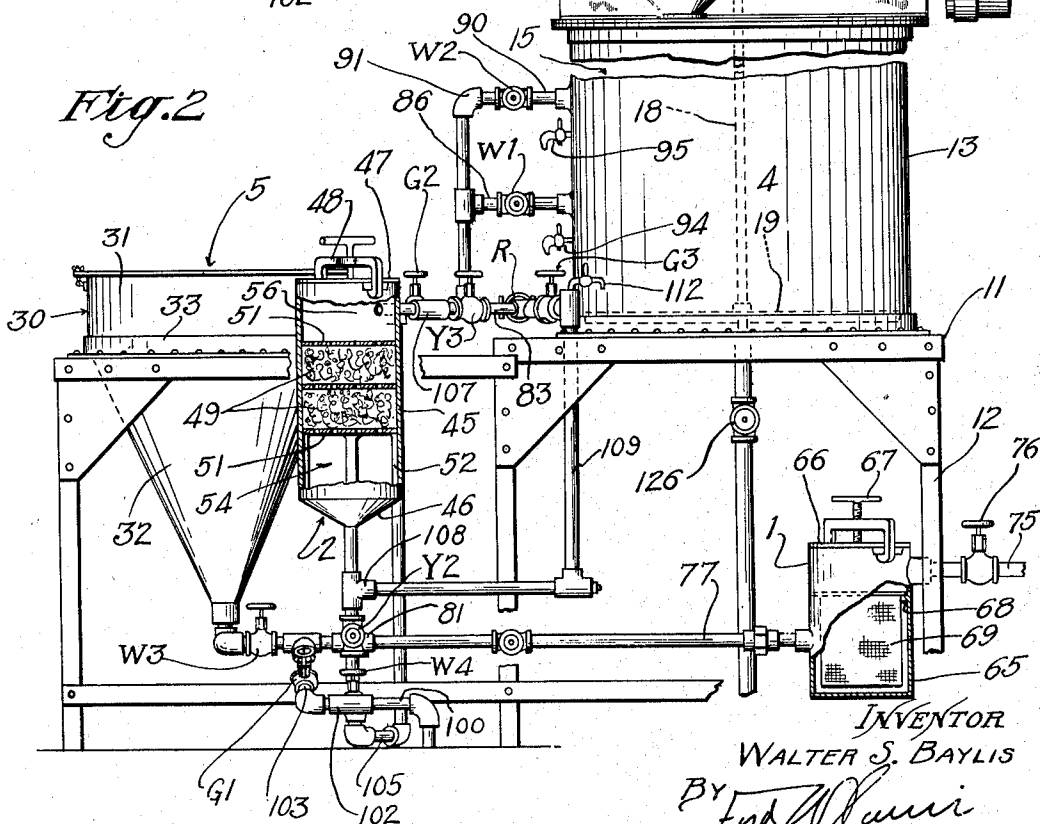
W. S. BAYLIS

1,751,613

APPARATUS FOR SALVAGING USED CLEANERS' GASOLINE

Filed Dec. 21, 1925

3 Sheets-Sheet 1



INVENTOR

WALTER S. BAYLIS

By Fred W. Harris

ATTORNEY

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W. S. BAYLIS

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APPARATUS FOR SALVAGING USED CLEANERS' GASOLINE

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3 Sheets-Sheet 2

Fig. 5

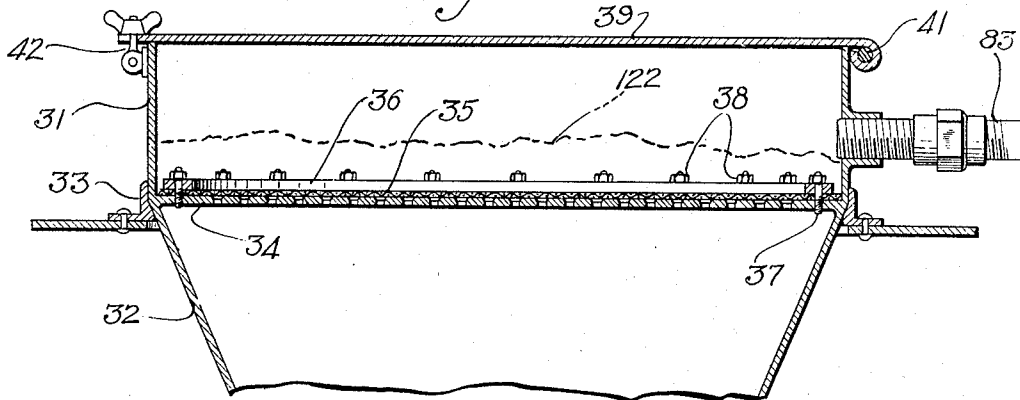


Fig. 3

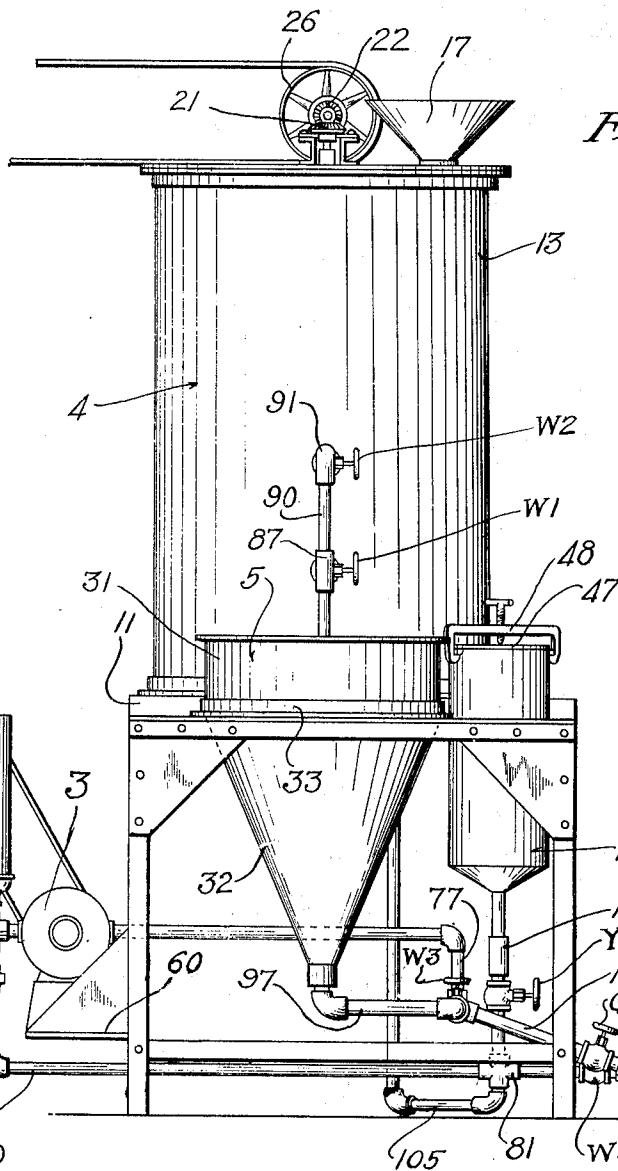
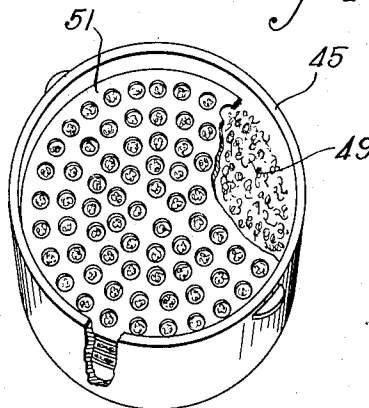


Fig. 4



INVENTOR
WALTER S. BAYLIS

BY 
 ATTORNEY

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3 Sheets-Sheet 3

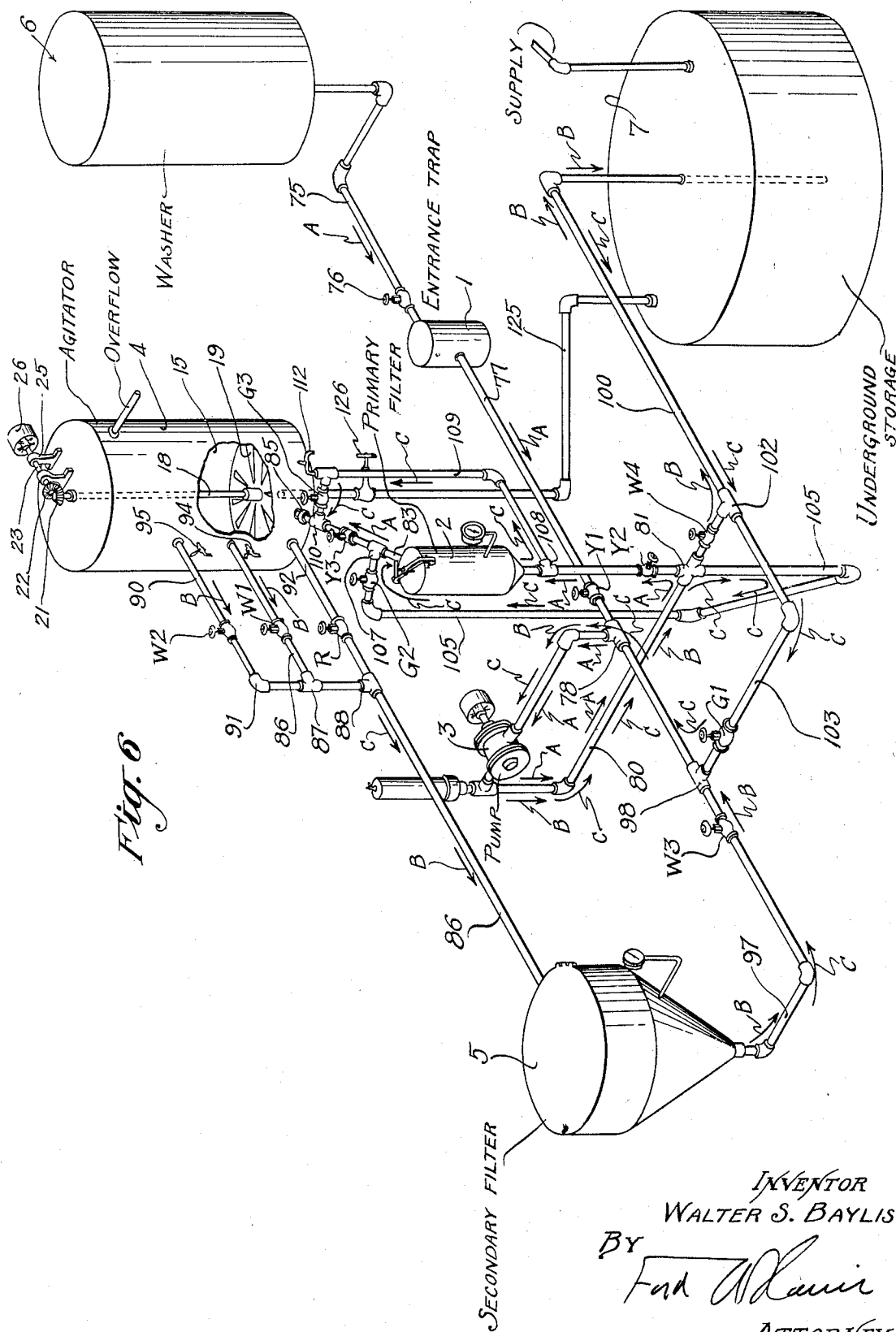


Fig. 6

INVENTOR
WALTER S. BAYLIS
By *Ford Almar*
ATTORNEY

UNITED STATES PATENT OFFICE

WALTER S. BAYLIS, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO FILTROL COMPANY OF CALIFORNIA, A CORPORATION OF CALIFORNIA

APPARATUS FOR SALVAGING USED CLEANERS' GASOLINE

Application filed December 21, 1925. Serial No. 76,650.

My invention relates to the refining of gasoline and embodies a process and apparatus by which cleaner's gasoline or other solvent may be cleaned and purified.

5 In clothes cleaning establishments apparel to be cleaned is placed in a washer which is filled with a solvent which is generally gasoline, and is agitated in contact with the solvent therein. This solvent removes all dirt and grease from the apparel and becomes saturated with this dirt and grease. As a matter of economy this contaminated solvent is refined for reuse. It is general practice to refine and cleanse this solvent by use of caustic soda or sulphuric acid. Although these mediums are effective in refining the dirty solvent it is very difficult to entirely neutralize them by means available to the ordinary cleaner, and therefore solvent refined by the use of such mediums may have a very detrimental action on the clothes.

It is an object of this invention to provide a process of refining and cleansing solvent which removes all dirt, grease and other foreign matter from the solvent without the use of caustic soda or acids, and which will not introduce into the solvent an agent which will have a detrimental action on clothing.

I have found that the impurities in cleaner's solvent are actively adsorbed by a suitable decolorizing clay, and that by thoroughly agitating dirty solvent and such clay together and afterwards separating the clay from the solvent, the solvent is absolutely cleaned and refined to a higher grade than before the treatment.

It is a further object of this invention to provide a process of cleaning and refining cleaner's solvent in which the clay is efficiently filtered from the solvent after it has adsorbed all of the foreign matter from the solvent.

The decolorizing clay in adsorbing foreign matter from the solvent gradually loses its power and must be replaced by a new charge when it does not refine the solvent to the extent desired. I find that it is advisable to first pass the contaminated solvent through a primary filter for removing a part of the foreign matter therefrom, since the clay in

this case acts only to adsorb the foreign matter not caught by the primary filter.

It is therefore an object of this invention to provide a process of cleaning and refining cleaner's solvent in which the solvent is primarily filtered before it is subjected to the action of the dirt adsorptive material.

It is a still further object of this invention to provide an apparatus for cleaning and refining cleaner's solvent according to the heretofore mentioned process.

It is another object of this invention to provide an apparatus for cleaning and refining cleaner's solvent having a special form of filter for thoroughly separating the solvent from any particles of dirt adsorptive material which may be held in suspension therein.

I find that in the operation of the apparatus of my invention, the primary filter collects a larger portion of the dirt and foreign matter in the solvent. This primary filter when in use for some time fills up with foreign matter and is not as effective as desired, and also tends to clog up. It is therefore desirable to frequently clean the primary filter and this is conveniently accomplished by backwashing; that is, by directing a flow of solvent through the primary filter in a reverse direction.

It is accordingly an object of this invention to provide an apparatus for cleaning and refining cleaner's solvent in which the primary filter may be automatically backwashed by reversing the passage of solvent therethrough.

Other objects and advantages of the invention will be made evident hereinafter.

Referring to the drawings in which I illustrate a preferred embodiment of my invention,

Fig. 1 is a plan view of the apparatus of my invention.

Fig. 2 is a front elevation of the apparatus with parts in section.

Fig. 3 is an end elevational view of the apparatus.

Fig. 4 is a perspective view, partially sectioned, of the primary filter of my invention.

Fig. 5 is an enlarged fragmentary section

showing the upper part of a secondary filter of my invention, this view being taken as indicated by the line 5—5 of Fig. 1.

Fig. 6 is a diagrammatic perspective view of the apparatus of my invention.

Referring to the drawings and particularly to Fig. 6 the main parts of my invention consist of an entrance trap 1; a primary filter 2; a pump 3; an agitator 4; and a secondary filter 5. This apparatus is properly connected by piping as will be described hereinafter and is used in connection with a washer 6 and an underground storage tank 7. The washer 6, it should be understood, is part of the equipment of cleaning establishments and may be any type of washer, it being only diagrammatically illustrated in Fig. 6. Also the storage tank may be of any character, it also being only diagrammatically shown in Fig. 6.

With reference to Figs. 1 to 5 inclusive, the details of construction of the apparatus of my invention will be described. A table or stand 11 has legs 12 which support a top 12^a. Resting on the top 12^a at one end of the table 11 is the agitator 4. This agitator 4 consists of a cylindrical shell 13 having a tight top and a tight bottom. The top of the agitator is provided with an opening 14 which connects to an agitating chamber 15 thereof, which opening has a funnel 17 extending therefrom. A paddle shaft 18 extends into the agitating chamber 15 through the top of the shell 13, and has an agitating paddle 19 attached on the lower end thereof and at the bottom of the agitator. At the upper end of the paddle shaft 18 there is a bevel gear 21 which is engaged and rotated by a bevel pinion 22 secured at the end of a shaft 23 which extends horizontally above the agitator 4. The shaft 23 is supported in bearings 25 and has a pulley 26 secured at the outer end thereof by means of which the shaft 23 may be driven in order to rotate the paddle shaft 18 and to operate the agitating paddle 19.

At the opposite end of the table 11 is positioned the secondary filter 5. As shown best in Figs. 2 and 5 the secondary filter 5 consists of a shell 30 having an upper part 31 which is cylindrical and a lower part 32 which is conical. The conical part 32 of the shell 30 extends below the top 12^a of the table 11 and the shell 30 is secured to the top 12^a by an annular angle plate 33. Extending inward from a plane near the juncture of the cylindrical part 31 and the conical part 32 of the shell 30 is an annular flange 34 which is adapted to support a filter member 35. This filter member although it may be of any construction is preferably a double thickness of fabric having a metal screen-like structure on the inside to stiffen it. This filter member 35 is tightly secured to an upper face of the annular flange 34 by a ring 36 which is clamped in place by studs 37 having nuts 38 advanced

on the extending ends thereof. The space inside the shell 31 above the filter member 35 forms the intake side of the secondary filter and the space below the filter member 35 forms the exhaust side of the secondary filter. The upper end of the shell 30 is closed by a cover 39 which is hinged at 41 and which may be locked in closed position by a bolting arrangement 42.

The primary filter 2 is carried by the table 11 at one side of the secondary filter 5. This primary filter 2, as shown best in Figs. 2 and 4, consists of a shell 45 having a conical bottom 46 and a removable top 47 which is held tightly in place by a yoke and screw arrangement 48. The inside of the shell 45 is provided with layers of filter material 49 which are separated by perforated plates 51. I find that ordinary waste is suitable for use as the filter material 49. The lowermost perforated plate 51 is supported on legs 52 so that a collection space 54 is provided below the filter layers. There is also an exhaust space 56 formed above the layers of filter material.

The pump 3 as shown best in Figs. 1 and 3 is supported on a shelf 60 which extends from the table 11 slightly above the ground line. The pump 3 is shown in the form of a rotary suction pump but, of course, may be any desirable form of pump. This pump is operated through a pulley 61 which is secured on a pump shaft 62 which extends from a body 63 of the pump.

The trap 1 is also of standard construction and as shown best in Fig. 2 consists of a shell 65 having a removable top 66 which is held in place by a yoke and screw arrangement 67. An annular ledge 68 is formed inside the shell 65 for supporting a screen bucket 69.

The main parts of the apparatus just described as connected together by piping are as follows:

Extending from the lower part of the washer 6 and connected to an upper part of the entrance trap 1 is piping 75 having a shut-off valve 76 therein. The piping 75, as illustrated in Fig. 2, connects with the entrance trap 1 above the bucket 69 so that the gasoline or other solvent must flow through the screen of the bucket in passing through the entrance trap and therefore any threads, buttons, pins, etc., which may be in the solvent, will be taken therefrom. Connected to the lower part of the entrance trap 1 is a pump suction pipe line 77. This pump suction pipe line connects to the entrance trap 1 in such a manner that it takes solvent therefrom from a space around the lower part of the screen bucket 69. This pump suction pipe line extends to a T fitting 78 wherefrom it extends at an angle and is connected to the suction side of the pump 3. The suction pipe line 77 has a valve Y₁ positioned at a point just before it reaches the T fitting 78.

Extending from the pressure side of the pump 3 is a primary filter intake line 80. This line 80 extends downward and then forward from the pump 3 to a cross fitting 81 whereat it extends upward and connects to the lower and intake end of the primary filter 2. The primary filter intake line 80 has a valve Y_2 which is positioned just above the cross fitting 81. Connected to the upper chamber 56 which is the exhaust end of the primary filter 2 is a primary filter exhaust line 83 which connects to the lower part of the agitator 4. This primary filter exhaust line 83 has a valve Y_3 and also a check valve 85 which is positioned next to the agitator 4.

Connected to the agitator 4 a distance above the lower part thereof is a drain line 86 having a valve W_1 positioned therein directly adjacent to the agitator. This drain line extends horizontally to a T fitting 87, vertically downward to a T fitting 88 and horizontally to the secondary filter 5. The drain line 86 is connected to the intake side of the secondary filter 5, as shown in Fig. 5. Connected to the agitator 4 at a point above the drain line 86 is a branch drain line 90 having a valve W_2 positioned therein adjacent to the agitator 4. This branch drain line 90 extends horizontally to an elbow fitting 91 and then extends vertically downward and connects to the drain line 86 by means of the T fitting 87.

Connected to the extreme lower part of the agitator 4 and to the T fitting 88 is an emptying pipe line 92 having a valve R.

Connected to the agitator 4 directly below the point at which the drain line 86 connects thereto is a lower test cock 94 and connected to the agitator 4 at a point just below the point at which the branch drain line 90 is connected thereto is an upper test cock 95.

Connected to the extreme lower end of the secondary filter 5, which is the exhaust side thereof is a secondary filter exhaust line 97. This secondary filter exhaust line 97 extends as clearly shown in Fig. 6 so that it connects to the pump suction line 77 at the T fitting 78. Therefore, it may be said that the secondary filter exhaust line extends in communication with the suction side of the pump 3. The secondary filter exhaust line 97 is provided with a valve W_3 which is positioned between the secondary filter 5 and a T fitting 98. A storage line 100 is connected to the primary filter intake line 80 at the cross fitting 81 and is connected to the underground storage tank 7. The storage line 100, since it is connected to the primary filter intake line 80, may be said to be in communication with the pressure side of the pump 3. A valve W_4 is included in the storage pipe line 100 directly adjacent to the cross fitting 81 and between the cross fitting 81 and a T fitting 102. Extending between the T fitting 102 of the storage pipe line 100 and the T fit-

ting 98 of the secondary filter exhaust line 97 is a storage return line 103 which includes a valve G_1 .

Connected to the cross fitting 81 and connected to the primary filter exhaust line 83 is a backwash intake line 105. This backwash intake line 105 is connected to the primary exhaust line 83 at a point between the primary filter 2 and the valve Y_3 by means of a T fitting 107. The backwash intake line 105 is provided with a valve G_2 which is positioned adjacent to the T fitting 107. The primary filter intake line 80 is provided with a T fitting 108 which is positioned therein between the valve Y_2 and the primary filter 2. Connected to this T fitting 108 is a backwash exhaust line 109 which is connected to the primary filter exhaust line 83 by means of a T fitting 110 which is included in the primary filter exhaust line 83 between the check valve 85 and the valve Y_3 . The backwash exhaust line 109 is provided with a valve G_3 adjacent to the point at which it connects to the T fitting 110. The backwash exhaust line 109 also is provided with a backwash test cock 112.

The operation of the apparatus just described and the process of my invention is as follows:

When it is desired to clean and refine dirty solvent contained in the washer 6 the agitator 4, if it does not have a charge of dirt adsorptive material or decolorizing clay, is charged. This is accomplished by dumping the dirt adsorptive material into the agitating chamber 15 through the funnel 17. The agitator ordinarily used has a capacity of about 100 gallons of solvent, and for adsorbing the dirt and foreign matter from this solvent I use a charge of 50 pounds of dirt adsorptive material.

Then the valve 76 in the line 75 is opened and the valves Y_1 , Y_2 and Y_3 are opened and the pump 3 is set into operation. Solvent is then drawn from the washer 6 and passes through a course indicated by the arrows A in Fig. 6. Any suitable solvent may be employed, for instance, gasoline, benzine, benzol, naphtha, carbon tetrachloride, and mixtures of the foregoing with or without soaps dissolved therein. Briefly, however, the solvent passes through the inlet pipe 75 to the entrance trap 1 where any large particles, buttons, pins, etc., are removed therefrom. The solvent then passes from the entrance trap 1 through the pump suction line 77 to the suction side of the pump 3. The solvent passes from the pressure side of the pump 3 through the primary filter intake line 80 into the intake end of the primary filter 2. The solvent then passes through the filter layers 49 and to the upper exhaust end 56 thereof. In passing through the filter layers 49 a great portion of the foreign matter is removed from the solvent. This solvent passes directly

from the primary filter 2 through the primary filter exhaust line 83 to the agitator 4. When the agitator is completely filled with solvent the valves Y_1 , Y_2 and Y_3 and the valve 76 are closed; also the pump 3 is shut down.

The agitating paddles 19 may then be set into operation and the adsorptive material and solvent are thoroughly agitated. During this agitation the dirt adsorptive material is brought into intimate contact with the solvent, and all of the dirt, grease and other foreign matter is completely adsorbed by this adsorptive material. In practice I find that five minutes is a sufficient length of time to agitate the dirt adsorptive material and the solvent together. When the agitation is finished the particles of dirt adsorptive material are held in suspension in the solvent and must be allowed to settle before any solvent is drawn from the agitator. I find in practice that five minute is a sufficient length of time for the dirt adsorptive material to settle. When a period of five minutes or so has elapsed, solvent may be drawn from the upper test cock 95 to determine whether or not there has been sufficient settling to allow the solvent in the upper part of the tank to be drawn therefrom.

If it is found that the dirt adsorptive material has sufficiently settled, the valve W_2 in the branch drain line 90 is opened and solvent above this level in the agitator 4 flows through the branch pipe 90 and a part of the drain line 86 to the intake side of the secondary filter 5. At this time the valves W_3 and W_4 are opened and the pump 3 is set into operation. The solvent flowing from the agitator 4 at this time passes through the course indicated by the arrows B in Fig. 6. However, the solvent passes through the branch line 90 and through a portion of the drain line 86 as mentioned, and is then drawn through the filter member 35 in the secondary filter 5 by the sucking action of the pump 3. The secondary filter is provided to separate very thoroughly any particles of dirt adsorptive material which may be held in suspension in the solvent. It is very evident that it is almost impossible to absolutely separate solvent and dirt adsorptive material by settling and decantation. The secondary filter, however, is extremely effective in accomplishing this separation.

Solvent passes from the secondary filter 5 through the secondary filter exhaust line 97 to the portion of the pump suction line adjacent to the pump 3 to the suction side of the pump 3. The cleaned solvent then passes through the primary filter intake line 80 as far as the cross fitting 81 and then passes through the storage pipe line 100 to the underground storage tank 7.

When the solvent reaches the level of the branch drain line 90 the lower test cock 94 may be opened to determine whether or not

the dirt adsorptive material has settled sufficiently to justify opening the valve W_1 . If so, the valve W_1 is opened and solvent will flow through this portion of the drain line 86 and pass to the course, just described, to the underground storage tank 7. After all the settled solvent has been drawn from the agitator 4 the valves W_1 , W_2 , W_3 and W_4 are closed and the pump 3 is shut down.

As previously mentioned the primary filter 2 collects a great deal of foreign matter and must be cleaned, which cleaning is accomplished by backwashing. The backwashing may be done in two ways; first by backwashing with solvent from the storage tank 7 and, second, by backwashing with solvent taken directly from the agitator 4.

When backwashing by taking solvent directly from the agitator 4 the pump 3 is set into operation and the valves W_1 or W_2 and W_3 and the valves G_2 and G_3 are opened. The solvent at this time passes through a course indicated by the arrows C of Fig. 6. Briefly, however, the solvent from the agitator passes through the same path, ordinarily as far as the cross fitting 81. The valve W_4 being closed, the solvent is directed through the backwash intake line 105 to the primary filter exhaust line 83, by means of which it is directed into the upper end of the primary filter 2. The solvent passes through the primary filter 2 in a reverse direction and then passes through the backwash exhaust line 109, after which it is carried by a portion of the primary exhaust line 83 to the agitator 4. It will be seen then that the solvent is passed in a reverse direction through the filter layer 49, and this is effective in quite efficiently cleaning these filter layers and removing any foreign matter from the chamber 54 of the primary filter 2, this foreign matter being delivered into the agitator 4.

During the backwashing operation the backwash test cock 112 may be opened so as to see the color of the solvent and to determine when the primary filter is cleaned.

The backwashing of the primary filter by solvent from the underground storage 7 is accomplished as follows: All of the valves are closed with the exception of the valves G_1 , G_2 and G_3 . The pump is set into operation and solvent is drawn through a portion of the storage pipe line 100 and the storage return 103, through that portion of the secondary filter exhaust line between the T fittings 98 and 78 and through that portion of the pump suction line between the T fitting 78 and the pump 3. This solvent is then forced by the pump through the piping as described in the other method of backwashing. Either method of backwashing is effective and may be optionally employed as the operator desires.

The adsorptive material, as mentioned in the introductory remarks of the specification,

in adsorbing the foreign matter from the solvent in time becomes impregnated and contaminated so that it will not effectively clean and purify the solvent. In practice I find that one charge of fifty pounds of adsorptive material may be used for from between eight and twelve- one-hundred gallon batches of solvent. When the adsorptive material becomes contaminated, it is removed from the agitator 4 and a fresh charge is used. The contaminated adsorptive material is removed preferably just after the primary filter 2 has been backwashed, and therefore this dirt delivered to the agitator 4 from the primary filter 2 will also be removed at this time from the agitator. The emptying of the agitator 4 is accomplished as follows:

The valve R, W₃ and W₄ are opened and the pump 3 is set into operation. The solvent and adsorptive material are then drawn from the agitator 4 through the emptying line 92 and a portion of the drain line 86, and are delivered to the secondary filter 5 where the adsorptive material which includes the adsorbed foreign matter is separated from the solvent. The solvent then passes from the exhaust part of the secondary filter 5 through the filter exhaust line 97 and to the underground storage tank 7 in the usual manner, as previously described. The adsorptive material collects in a body 122 (Fig. 5) above the filter member 35 and after the agitator 4 has been drained the cover 39 of the secondary filter 5 may be swung into open position and the adsorptive material and the filter member 35 may be removed. It is advisable to place a new filter member 35 in the secondary filter 5; at this time the old one may be cleaned for later use.

As a matter of safety, I provide a fire drain line 125 which connects to the bottom of the agitator 4 and to the underground storage tank 7. This pipe line 125 has a valve 126 which may be opened in case of fire so that any solvent in the agitator 4 may be drained to the underground storage and thus avoid an explosion.

The apparatus of my invention is comparatively simple and, as shown in Figs. 1, 2 and 3, is very compact. Although the piping appears to be somewhat intricate, the apparatus is very simple to operate. Its operation is made even more simple by coloring the valves. The valves Y₁, Y₂ and Y₃ are colored yellow and the valves G₁, G₂ and G₃ are colored green, the valves W₁, W₂, W₃ and W₄ are colored white and the valve R is colored red. Therefore, in delivering solvent to the agitator 4 all of the yellow valves are opened. In draining the solvent from the agitator 4 and delivering it to the storage tank 7, all of the white valves are opened. When backwashing, the green valves are opened and when emptying the agitator, the red valve and part of the white valves are opened. This coloring of the valves makes the opera-

tion extremely simple even for the first time.

The primary filter 2 is quite a feature of economy, since it collects a great portion of foreign matter from the solvent and therefore prevents the adsorptive material from being saturated as quickly as would ordinarily occur; and therefore the adsorptive material may be used for a longer period of time. The secondary filter is also a desirable feature, since it absolutely filters all of the particles of adsorptive material from the gasoline.

In addition to removing all dirt, grease and foreign matter from the solvent, my process also refines the solvent. For example, when treating cleaner's gasoline the unsaturated hydrocarbons and other undesirables are adsorbed from the gasoline and the boiling point is lowered. My process, then, not only cleans the solvent but refines it so that it is a more powerful cleaning agent than before treatment.

One very important feature of my invention is that the solvent is kept pure and free from any harmful ingredients which might be difficult to separate from the solvent.

In the foregoing description I have described my invention in connection with cleaner's solvent. Ordinarily cleaners use gasoline as a solvent, but I do not wish to limit the invention to any single solvent since it may be used in cleaning and refining a number of solvents which are suitable for cleaner's use.

The primary filter 2, although it is a very valuable part of the invention, may be replaced by a centrifuge, some cleaners desiring the substitution since a centrifuge is part of a cleaner's ordinary equipment, and this would slightly reduce the cost of the apparatus. The office of the centrifuge would be the same as that of the primary filter 2, although not quite as effective.

I claim as my invention:

1. An apparatus for refining cleaner's solvent which comprises: a pump; a pump suction line connected to the suction side of said pump; a primary filter; a primary filter intake line connected to the pressure side of said pump and to the intake end of said primary filter; an agitator; an agitator intake line connected to the exhaust end of said primary filter and said agitator; a secondary filter; an agitator drain line connected to the intake side of said secondary filter and to said agitator; a secondary filter exhaust line connected to the exhaust end of said secondary filter and communicating with the suction side of said pump; a storage line in communication with the pressure side of said pump; an intake backwash line extending so as to communicate with the pressure side of said pump and the exhaust side of said primary filter; and an exhaust backwash line extending so as to communicate with the intake end of said primary filter and said agitator.

2. An apparatus for refining cleaner's solvent which comprises: a pump; a pump suction line connected to the suction side of said pump; a primary filter; a primary filter intake line connected to the pressure side of said pump and to the intake end of said primary filter; an agitator; an agitator intake line connected to the exhaust end of said primary filter and said agitator; a secondary filter; an agitator drain line connected to the intake side of said secondary filter and to said agitator; a branch agitator drain line connected to said agitator and extending so as to cause a different level in the agitator to communicate with the intake side of said secondary filter; a secondary filter exhaust line connected to the exhaust end of said secondary filter and communicating with the suction side of said pump; a storage line in communication with the pressure side of said pump; an intake backwash line extending so as to communicate with the pressure side of said pump and the exhaust side of said primary filter; and an exhaust backwash line extending so as to communicate with the intake end of said primary filter and said agitator.

3. An apparatus for refining cleaner's solvent which comprises: a pump; a pump suction line connected to the suction side of said pump; a primary filter; a primary filter intake line connected to the pressure side of said pump and to the intake end of said primary filter; an agitator; an agitator intake line connected to the exhaust end of said primary filter and said agitator; a secondary filter; an agitator drain line connected to the intake side of said secondary filter and to said agitator; an emptying line connected to said agitator and extending so as to communicate with the intake side of said secondary filter; a secondary filter exhaust line connected to the exhaust end of said secondary filter and communicating with the suction side of said pump; a storage line in communication with the pressure side of said pump; an intake backwash line extending so as to communicate with the pressure side of said pump and the exhaust side of said primary filter; and an exhaust backwash line extending so as to communicate with the intake end of said primary filter and said agitator.

4. An apparatus for refining cleaner's solvent which comprises: a pump; a pump suction line connected to the suction side of said pump; a primary filter; a primary filter intake line connected to the pressure side of said pump and to the intake end of said primary filter; an agitator; an agitator intake line connected to the exhaust end of said primary filter and said agitator; a secondary filter; an agitator drain line connected to the intake side of said secondary filter and to said agitator; a secondary filter exhaust line connected to the exhaust end of said secondary

filter and communicating with the suction side of said pump; a storage line in communication with the pressure side of said pump; an intake backwash line extending so as to communicate with the pressure side of said pump and the exhaust side of said primary filter; an exhaust backwash line extending so as to communicate with the intake end of said primary filter and said agitator; and a storage return line extending so as to communicate with said storage tank on the suction side of said pump.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 15th day of December, 1925.

WALTER S. BAYLIS.