J. BUHR.

GASOLENE SEPARATOR.

APPLICATION FILED MAR. 11, 1911.

995,521. Patented June 20, 1911.

Fig. 1

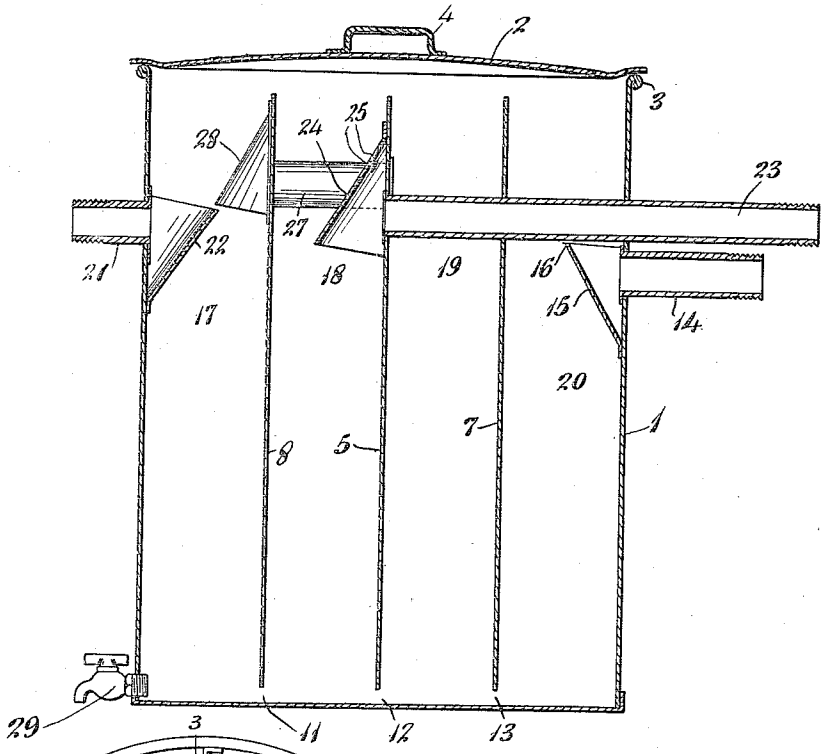
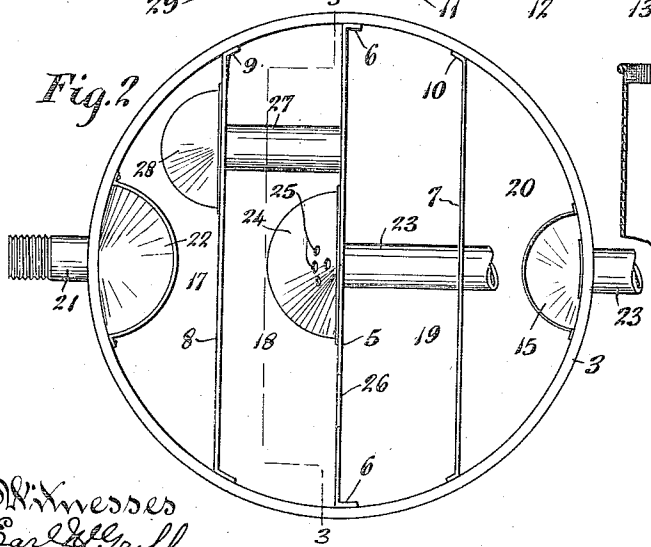


Fig. 2



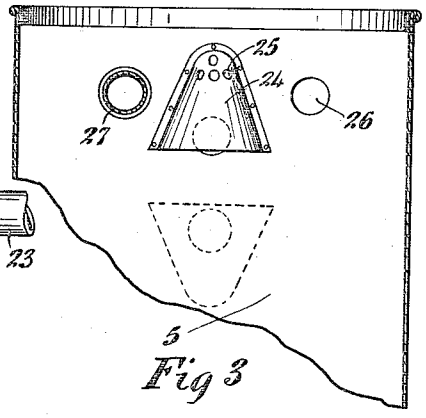


Fig 3

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UNITED STATES PATENT OFFICE.

JOSEPH BUHR, OF NORWOOD, OHIO.

GASOLENE-SEPARATOR.

995,521. Specification of Letters Patent. Patented June 20, 1911.

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To all whom it may concern:

Be it known that I, JOSEPH BUHR, a citizen of the United States, and a resident of the city of Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Gasolene-Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to apparatus for separating gasolene and the like from water mixed therewith in the process of redistillation employed in recovering from the waste products the gasolene used in dye houses, dry-cleaning establishments and the like.

In order to recover the waste gasolene, it has been customary to distil the waste product, condense the distillate in a condensing coil and then run the distillate, which contains a large percentage of water, to a separator to separate by gravity process the water and gasolene, the water sinking to the bottom of the separator and the gasolene floating on top, so that the gasolene can be run from the upper portion and the water from the lower portion of the receptacle. In separators as usually constructed, a tank or receptacle is employed, provided with a single central partition open at the bottom, and dividing the receptacle into two compartments. The mixture of water and gasolene is run from the condensing coil into one of these compartments, and by reason of the fact that the opening between the compartments is only at the bottom, the water fills the lower portion of both compartments, while the gasolene is expected to be caught in the single compartment into which the mixture of gasolene and water is delivered from the condenser. I have found, however, that with such construction, the distilled product comes from the condenser in a foaming condition, with air, water and gasolene so commingled that it is impossible to prevent something being carried into the water compartment, and when the water is discharged, a considerable percentage of gasolene is wasted.

The object of my invention is to overcome this difficulty, and it consists of that certain novel construction of separator to be hereinafter particularly pointed out and claimed, whereby the separator is divided into more than two compartments, preferably four, and passageways are formed in such relation to each other that no gasolene whatever can pass into the compartment for the water from which the overflow is to the waste water outlet, and thus no gasolene can be lost with the waste water.

In the drawings, Figure 1 is a central vertical section of my improved separator. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical section taken on the line 3, 3, of Fig. 2.

1 is a metal tank or can, preferably cylindrical in shape, and provided with a lid or cover 2 resting on the annular bead 3 at the top edge of the receptacle, and provided with a handle 4 for removing the lid. The receptacle is divided into two parts by the central partition 5, secured in any suitable way between the side walls, preferably by the flanges 6, 6, and each of the two compartments is again divided into two parts by the partitions 7, 8, secured to the side walls of the receptacle by the flanges 9 and 10, with the partitions 7 and 8 preferably parallel to the central partition, and forming four compartments 17, 18, 19 and 20. All of these partitions are open at the bottom at 11, 12 and 13, preferably by not extending the partitions entirely to the bottom, and in this way there is a free passage and free circulation for the liquid at the bottom of the receptacle.

One of the outside compartments, as for example, compartment 20, is provided with a discharge pipe 14, located some convenient distance below the top of the receptacle, and this discharge pipe is provided on the inside with a guard plate 15, semi-cone shaped and secured to the wall of the receptacle, with the upper edge 16 of the guard plate about in line with the upper portion of the waste pipe 14, through which the waste water is discharged. In the opposite compartment 17, I provide an outlet pipe 21 for the gasolene, which is provided on the inside with a guard plate 22 of the same construction as in connection with the water discharge pipe. The discharge pipe 21 and the upper edge of

the guard 22 are substantially higher than the upper edge of the guard plate 15 and the discharge pipe 14, so that any liquid which circulates in the entire receptacle by reason of the passages 11, 12 and 13 at the bottom, will all flow over the guard plate 15 and the outlet pipe 14 without reaching the overflow through the pipe 21, as the passage is filled with liquid. The distilled water and gasolene from the condensing coil is supplied to the separator through the pipe 23 which extends through the side wall and the partition 7 and opens through the central partition 5, and the discharge opening from the pipe 23 is provided with the semi-cone shaped guard plate 24 secured to the partition wall 5 and opening downward. This guard plate 24 is provided with a series of openings 25 in the upper portion thereof. The supply pipe 23 is located preferably a slight distance above the waste pipe 14 and about on a line with the pipe 21, although the particular height of the pipe 23 with relation to the other pipes is not of importance.

The partition 5 is provided with an opening 26, somewhat above the upper edge of the guard plate 22, surrounding the outlet to the pipe 21, and this partition plate 5 is provided with an overflow pipe 27, making an overflow opening from the chamber 19 into chamber 17 across the chamber 18. The discharge end of this pipe from compartment 19 into compartment 17 is provided with a semi-cone shaped guard plate 28, secured to the partition 8 in the compartment 17. The lower edge of this overflow pipe is about on a line with the upper edge of the guard plate 22, surrounding the discharge outlet 21.

With this construction and arrangement, the mixture of gasolene and water is run from the condenser through pipe 23 into compartment 18. The funnel shaped guard plate spreads out the liquid and discharges it downwardly into compartment 18, while any air under compression escapes for the most part through the openings 25 in this guard plate. The water thus delivered spreads out over the bottom and rises in the receptacle in all the compartments, seeking its own level, while gasolene for the most part separates from the water and rests on top of the water in the compartment 18. As the separator fills with liquid, the water rises, and with it the gasolene, until the gasolene escapes through the opening 26 into the compartment 19, and thence through the pipe 27 into the compartment 17, whence it flows out over the guard 22 through the pipe 21. As the water rises, it finally reaches a level to discharge over the guard plate 15 and out through pipe 14.

With my construction, it will be seen that I have provided three separating compartments 18, 19 and 17, in which all entrained gasolene may separate from the water, and I insure a complete separation of the gasolene by this construction. Any gasolene that may be entrained with the water in compartment 18 separates in the comparatively quiet compartment 19, which is not stirred up or agitated by the delivery of the liquid from the condenser. In addition to this, the delivery compartment 17 for the gasolene is still further removed from the original compartment 18, by the necessity of the gasolene passing from compartment 18 into compartment 19 and thence into compartment 17 through the pipe 27. I am enabled, therefore, to run my separator with water alone discharging through pipe 14, and gasolene alone through pipe 21.

For the purpose of removing the surplus water from the bottom of the receptacle when desired, I provide the stop cock 29, especially to prevent freezing of the water in winter.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a gasolene separator, a receptacle for the liquid to be treated, and a plurality of vertical partitions dividing the receptacle into compartments, with free passageways at the bottom of the partitions, and a supply pipe opening into the upper end of one of said compartments, with openings into the upper end of the adjoining compartments, and a discharge opening from the receptacle below the level of the openings in the partition, and another discharge opening from the receptacle substantially on a line with said partition openings.

2. In a gasolene separator, a receptacle for the liquid to be treated, and a plurality of vertical partitions dividing the receptacle into four vertical chambers, with free passageways at the bottom of the partitions, a supply pipe discharging into the upper end of one of the inner compartments with an opening therefrom into the upper end of the adjoining inner compartment, a passageway therefrom into an outer compartment, on substantially the same level, with a discharge opening from said outer compartment also on substantially the same level, and a discharge opening from the opposite outer compartment at substantially a lower level than the opposite discharge opening.

3. In a gasolene separator, a receptacle for the liquid to be treated, and a plurality of vertical partitions dividing the receptacle into compartments, with free passageways at the bottom of the partitions, and a supply pipe opening into the upper end of one of said compartments, with openings into the upper end of the adjoining compartments,

and a discharge opening from the receptacle below the level of the openings in the partition, and another discharge opening from the receptacle substantially on a line with said partition openings, with said supply opening provided with a guard plate to deflect the entering liquid downwardly, said guard plate having openings in its upper portion to permit the escape of entrained gas.

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Attest:
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