

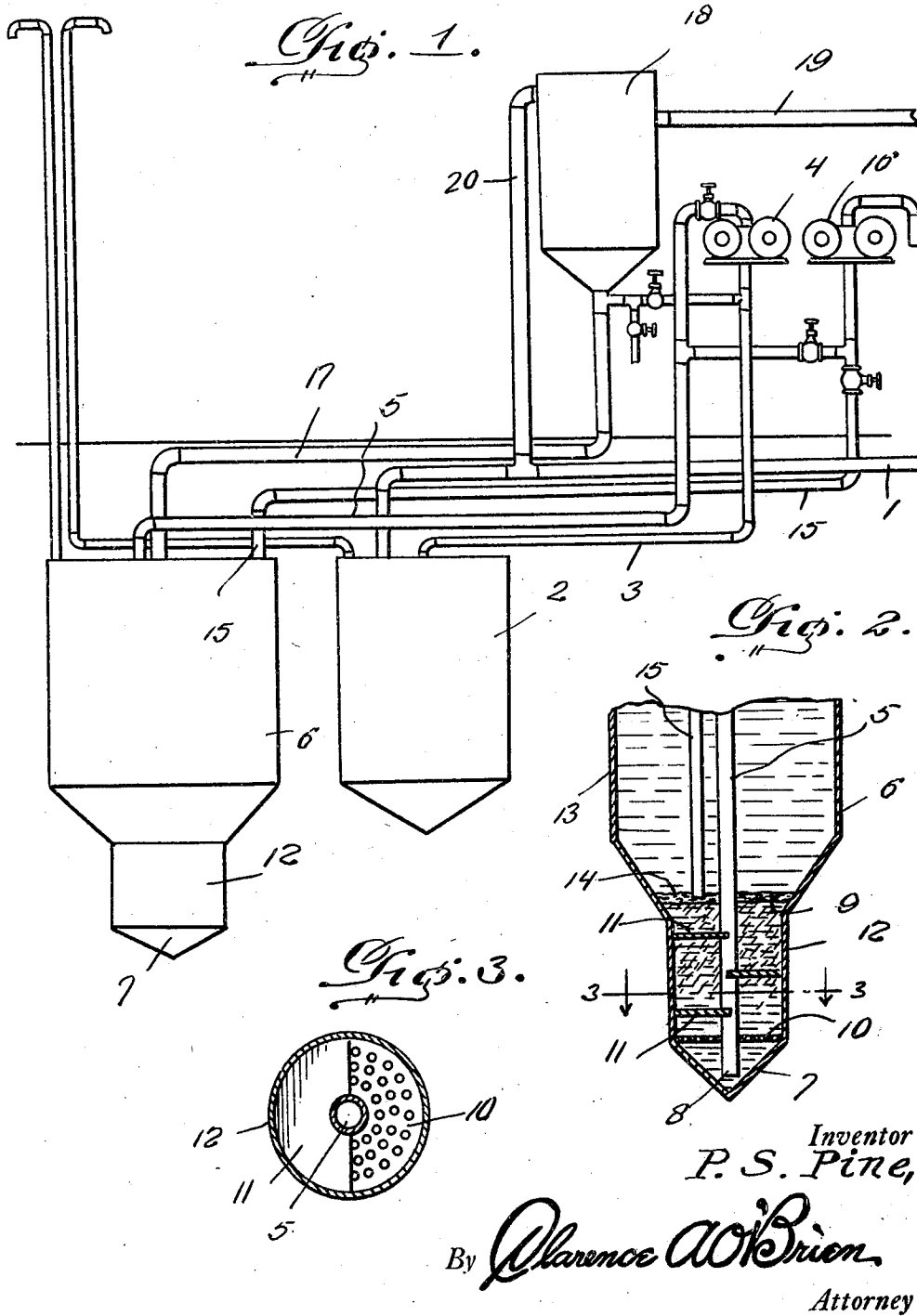
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CLARIFIER

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UNITED STATES PATENT OFFICE.

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CLARIFIER.

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This invention relates to improvements in clarifiers, and particularly those for clarifying gasoline used in dry cleaning establishments.

5 An object of the invention resides in providing an improved type of clarifier construction in which the gasoline to be treated is discharged at the bottom of the clarifier and in flowing upwardly, is broken up by a suitable reticulated plate to a plurality of fine streams in order to be thoroughly subjected to the action of an alkali adapted to separate or precipitate foreign matter carried by the gasoline, while a plurality of baffles prevent the agitation of the entire liquid content of the clarifier so that the precipitated foam or mud will form in a body on the top of the alkali solution from which point it may be drawn off by suitable means so that it will not commingle with the gasoline in the upper end of the clarifier which has been cleaned.

The invention includes other objects residing in the particular construction and relation of the parts which are more particularly pointed out in the following detailed description, and in the claims directed to a preferred form of construction, it being understood, however, that various changes in the size, shape and relation of the parts may be made without departing from the spirit or scope of the invention as herein set forth.

In the drawings forming a part of this application:

35 Figure 1 is a diagrammatic view in side elevation of a portion of a clarifier system in which the present invention is used.

Fig. 2 is a vertical sectional view through the clarifier showing the improved construction, forming the subject matter of this invention.

Fig. 3 is a sectional view taken on the line 2-3 of Fig. 2.

Referring to the drawings in detail, it will be seen that the reference character 1 indicates the discharge from the cleaning or washing machine which empties into the upper end of the tank 2, while a fluid feed line 3 leads from the bottom of the tank 2 through the feed pump 4 from which the fluid is discharged through the pipe 5 into the clarifier 6.

This pipe 5 as shown more particularly in Fig. 2, extends downwardly through the central portion of the clarifier 6 and discharges in the conical-shaped lower end 7

of said clarifier as indicated at 8. This fluid is forced through the pipe 5 under pressure by the pump 4, so that after being forced outwardly at the bottom end of the pipe 5 within the clarifier at 8, the fluid will then be forced upwardly through the clarifier. The lower end portion of the clarifier up to the level indicated by the numeral 9 is filled with a suitable alkali solution such as caustic soda for re-action on the gasoline in order to precipitate the foreign matter carried thereby which has been removed from clothing.

In order that the action of the alkali will thoroughly treat all of the gasoline, this invention provides a means to break the stream of gasoline flowing from the pipe 5 at 8 up into a plurality of fine streams by means of the reticulated plate 10 at the upper end of the conical portion 7. The stream of gasoline will thus be broken up into finely divided form and subjected thoroughly to the action of the alkali in order that all dirt and foreign matter carried in suspension will be precipitated out of the gasoline.

It has been found from experience that the upward flow of the fluid through the reticulated plate 10 produces considerable agitation in the lower end portion of the clarifier sufficient to stir the separated mud and foreign matter from the gasoline throughout the entire liquid content of the clarifier which has been found necessary to provide suitable means to check this agitation, so as to prevent the agitation of the entire content of the clarifier, but at the same time permitting the thorough inter-mixture of the alkali solution with the gasoline for obtaining complete precipitation of the foreign matter carried thereby. For this purpose, a plurality of flow controlling members 11 are mounted in staggered relation in the reduced cylindrical portion 12 of the clarifier containing the alkali solution in order that the flow from the reticulated plate 10 will be given a circuitous path which has been found to permit thorough intermixture of all particles of the gasoline with the alkali, and at the same time to prevent agitation of the liquid in the main part of the tank as indicated at 13 by the discharge through the reticulated plate 10.

Through the cooperation of the reticulated plates and the flow controlling members 11, it has been found that the mud and other foreign matter will precipitate upon the sur-

face of the alkali solution as indicated at 14 in Fig. 2. From this point it may be pumped off through the discharge pipe 15 leading to the discharge pump 16, so that the accumulation of foreign matter in the clarifier may be kept at a minimum amount throughout the continuous operation of the system.

This construction has been found to be of material advantage in the art as compared with other constructions known and at present used for the reason that the cooperation of the flow controlling members and the reticulated plates permits a thorough reaction between the gasoline and the alkali to remove all foreign matter, and provide for the precipitation of all foreign matter on the surface of the alkali so that it may be pumped off without pumping off the alkali solution.

In constructions heretofore used in the art, it is usually necessary in order to remove the foreign matter and mud falling on the alkali solution, to entirely remove the alkali solution to remove the mud which necessitates an unnecessary waste of the alkali which must be renewed after such operation to remove the mud. In addition, the devices provided by the prior art do not thoroughly commingle the gasoline with the alkali, as a result of which some of the dirt and foreign matter is carried back into the washer.

The pipe 17 leading from the top portion of the clarifier 6 conveys the steam and clear gasoline into the filter 18 from which it is distributed through the conduit or pipe 19 to the washers for re-use in cleaning in a well-known manner over flowing from the filter 18 being discharged through the pipe 20 and then returning to the pipe 1 from which it flows into the tank 2.

This construction therefore provides an improved association of elements in a clarifier construction to improve the operation thereof as well as effect considerable economy in such operation as compared with other devices at present in use in the art.

Having thus described my invention, what I claim as new is:—

1. In a liquid clarifier, a container having an alkali chamber, a reticulated plate member in the bottom portion of said chamber, a fluid inlet opening into the chamber below said reticulated plate member, baffle plates within the chamber above said plate member and a sediment level regulating pipe arranged within the container with its intake end disposed at the upper end of said chamber.

2. In a liquid clarifier, a container having an alkali chamber, a reticulated plate member in the bottom portion of said chamber, a fluid inlet below said plate member, a plurality of flow-controlling elements mounted in staggered relation within said chamber and spaced from each other above said plate member and a sediment removal pipe arranged within the container with its intake end disposed adjacent the upper end of said chamber.

3. In a liquid clarifier, a container having an alkali chamber formed at the lower end thereof, a pressure-fed fluid inlet in the bottom portion of said chamber, means above said inlet for breaking up fluid therefrom into a plurality of fine jets, baffle plates arranged within the chamber above the jet-forming means adapted to tortuously direct the flow of fluid upwardly, and a sediment removal pipe extending vertically within the container with its sediment intake end disposed at the upper level of the alkali within said chamber.

In testimony whereof I affix my signature.

PERCY S. PINE.