

J. C. L. VANDER LANDE.
OIL DECOLORING, BLEACHING, AND THICKENING APPARATUS.
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Patented Mar. 1, 1910.

Fig. 1

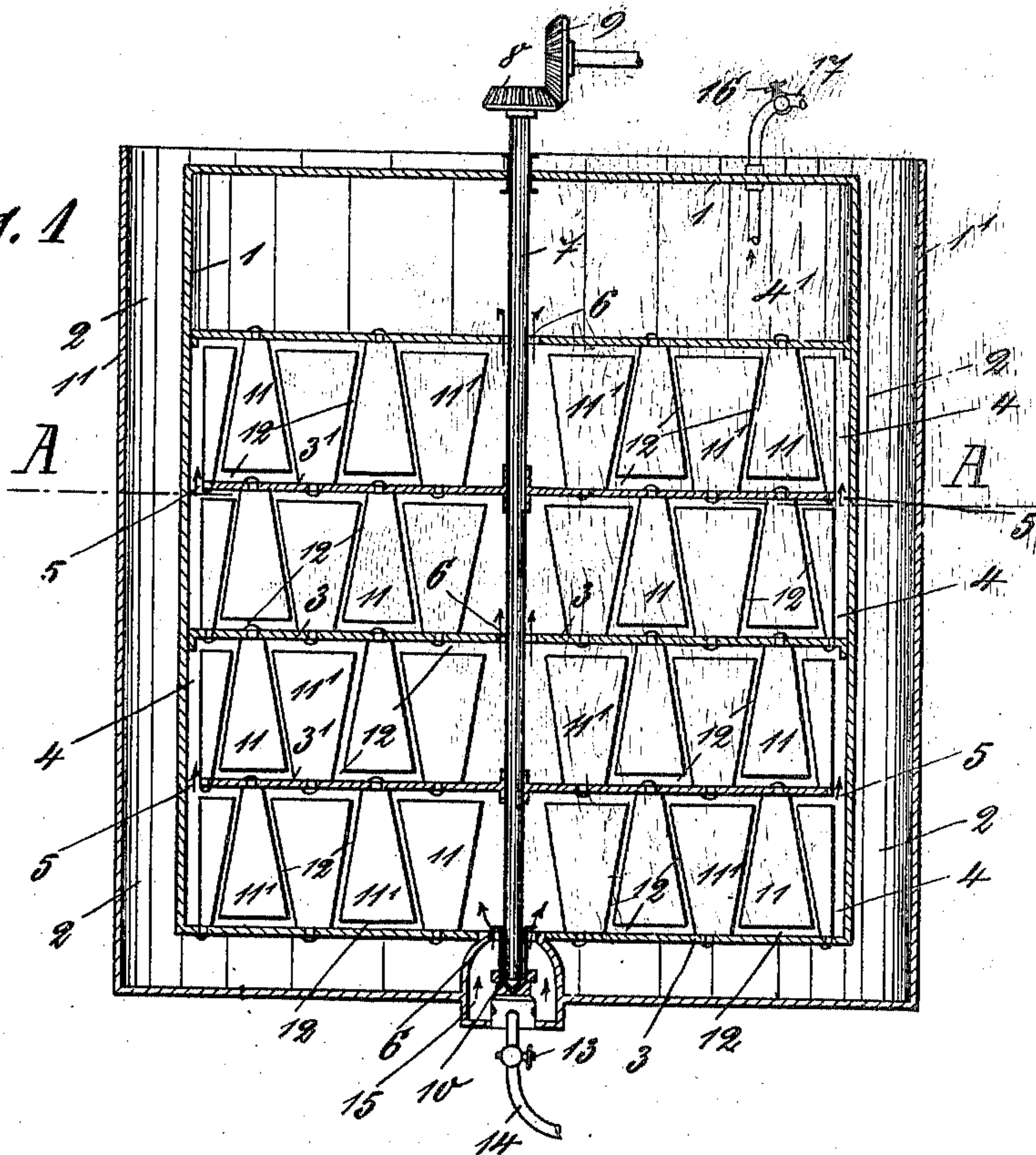
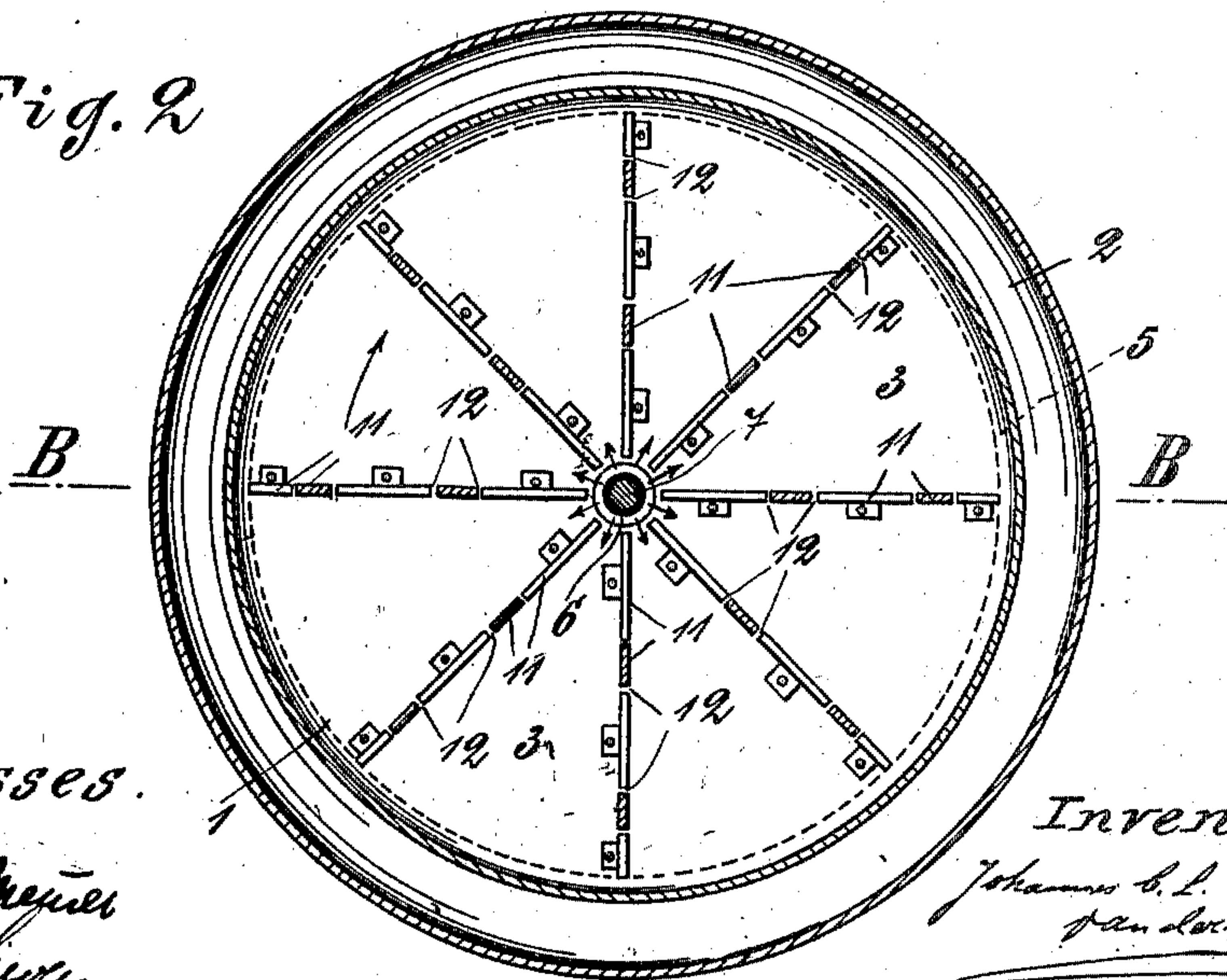


Fig. 2



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHANNES CHRISTIAAN LEBUINUS VANDER LANDE, OF DEVENTER, NETHERLANDS
OIL DECOLORING, BLEACHING, AND THICKENING APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHANNES CHRISTIAAN LEBUINUS VANDER LANDE, a subject of the Queen of the Netherlands, residing at Deventer, in the Kingdom of the Netherlands, have invented a new and useful Oil Decoloring, Bleaching, and Thickening Apparatus, of which the following is a specification.

There are known apparatus for decoloring, bleaching and thickening oils, in which the oil contained in a heated boiler is agitated by means of ladles rotating in opposite directions and is subjected to the action of compressed air. Such apparatus present the defect, that the path of the compressed air through the oil in the apparatus is comparatively short, so that the compressed air can act upon the oil only for a comparatively short period. Therefore a larger quantity of compressed air is required for accomplishing the work, which means an increase of driving power, so that the useful effect of the apparatus is thereby reduced. In such apparatus the compressed air can not be sufficiently distributed over the whole mass of the oil, as neither the agitator nor the introduction of the compressed air in several jets prevent the particles of air from collecting together to form larger bubbles, whereby both their action and their surfaces are reduced.

My invention relates to improvements in such apparatus, whereby the said defect is avoided, as the compressed air is obliged to describe a much longer path through the oil in the apparatus and to come into intimate contact with every particle of oil and to act upon the oil for a longer period, before it is permitted to escape from the apparatus.

I will now proceed to describe my invention with reference to the accompanying drawing, in which—

Figure 1 is a vertical cross-section through an improved apparatus on the line B—B in Fig. 2, and Fig. 2 is a horizontal section through the same on the line A—A in Fig. 1.

Similar characters of reference refer to similar parts in both views.

The oil boiler 1 has the usual cylindrical shape and is surrounded with a mantle 1', whereby the known heating chamber 2 is formed. The boiler 1 is closed and is internally divided by several superposed partitions 3, 3' into compartments 4, 4, 4', which communicate with one another

through narrow annular openings 5, 5 on the periphery and 6, 6 in the center around the agitator shaft 7, these openings 5, 6 alternating with each other. Some of the partitions, viz. 3', 3', are fastened on the agitator shaft 7 and are therefore obliged to partake in the rotation of the latter, while the other partitions 3, 3 are stationary and are fastened on the inside of the boiler 1. The agitator shaft 7 is journaled in a foot step 10 of any known construction and in the cover of the boiler 1 and is arranged to be set in rotation from without by means of bevel wheels 8 and 9. In the compartments 4 of the boiler 1 ladles 11, 11' are disposed in radial planes (see Fig. 2), of which the ladles 11 are fastened on the bottom 3 of the boiler and on the upper and lower sides of the several stationary partitions 3, while the ladles 11' are fastened on the lower or upper sides of the rotary partitions 3', the stationary ladles 11 alternating with the rotary ladles 11' and all of them leaving narrow spaces 12, 12 between them and along the opposite partition or wall 3 or 3' or 3' at the moment that all the ladles are in the radial planes as is clearly shown at Fig. 1. A chamber 15 of any known construction surrounds the foot step 10 and communicates with the lowermost compartment 4 by a central annular opening 6'. The compressed air can be supplied from any source through a tube 14 to the chamber 15, after the stop valve 13 has been opened, and the wasted air can be discharged from the top of the boiler through a tube 17, after a stop valve 16 has been opened.

It will be seen that the compressed air entering the lowermost compartment 4 through the central opening 6' in the direction of the arrows is compelled to spread and to pass to the periphery, before it can enter the next following compartment 4 through the annular opening 5, whereupon it is compelled to pass inwardly toward the shaft 7, before it can enter the next following compartment 4 through the central opening 6 and spread therein to the periphery, and so on, until it is permitted to escape through the tube 17. During the rotation of the agitator shaft 7 the rotatory ladles 11', 11' passing through the spaces between the stationary ladles 11, 11 will strongly agitate the oil and produce whirls everywhere, the oil being pushed through

the said spaces and thrown in all directions on the rotatory ladles moving away from the respective stationary ladles and approaching the lines of the following stationary ladles, so that the compressed air is necessarily mixed intimately and thoroughly with the oil for acting upon the same. The fine particles of air distributed among the particles of oil will be prevented from collecting and forming larger bubbles, while the different particles of oil and compressed air will constantly rub against one another under a great pressure.

It is obvious, that in opposition to the old apparatus, in which the compressed air was permitted to at once pass upward from the bottom to the top of the boiler, in the improved apparatus the path of the several particles of compressed air through the mass of oil is extremely drawn out and the period during which each particle of compressed air is permitted to act upon the oil is in proportion lengthened, so that the useful effect of the apparatus will be a maximum.

The apparatus described may be modified in many respects without departing from the spirit of my invention. The ladles 11, 11' are shown as trapezoidal, but they may have any other shape. The partitions 3, 3', 3² are shown as plain, but they may be corrugated, conical, funnel-like, convex or concave or otherwise curved.

I claim:

1. In an oil treating apparatus of the class described, the combination with a vertical boiler circular in section and adapted to contain oil, of a vertical shaft mounted in the center line of said boiler to turn and adapted to be driven from without, rotary partitions fastened on said vertical shaft and leaving each a narrow space along the inside of said boiler, stationary partitions in said boiler alternating with said rotary partitions and leaving small central openings around said vertical shaft, so that the boiler is divided into superposed compartments,

stationary ladles in the several compartments and fastened on said boiler and said stationary partitions respectively while leaving narrow spaces at said rotatory partitions, ladles fastened on said rotatory partitions and adapted to pass snugly between said stationary ladles and said stationary partitions or the bottom of said boiler for agitating the oil, means for supplying compressed air to the bottom of said boiler, and means for discharging the wasted air from the top of said boiler.

2. In an oil treating apparatus of the class described, the combination with a vertical boiler circular in section and adapted to contain oil, of a vertical shaft mounted in the center line of said boiler to turn and adapted to be driven from without, rotary partitions fastened on said vertical shaft and leaving each a narrow space along the inside of said boiler, stationary partitions in said boiler alternating with said rotatory partitions and leaving small central openings around said vertical shaft, so that the boiler is divided into superposed compartments, stationary ladles in the several compartments and fastened on said boiler and said stationary partitions respectively while leaving narrow spaces at said rotatory partitions, agitating ladles fastened on said rotatory partitions and adapted to pass snugly between said stationary ladles and said stationary partitions or the bottom of said boiler for agitating the oil, all of said stationary ladles and said agitating ladles being for a certain position of said vertical shaft in the same radial planes, means for supplying compressed air to the bottom of said boiler, and means for discharging the wasted air from the top of said boiler.

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