Oct. 22, 1929. E. PLAYER 1,733,101

MEANS FOR MIXING GASES AND LIQUIDS

Filed June 21, 1927 2 Sheets-Sheet 1

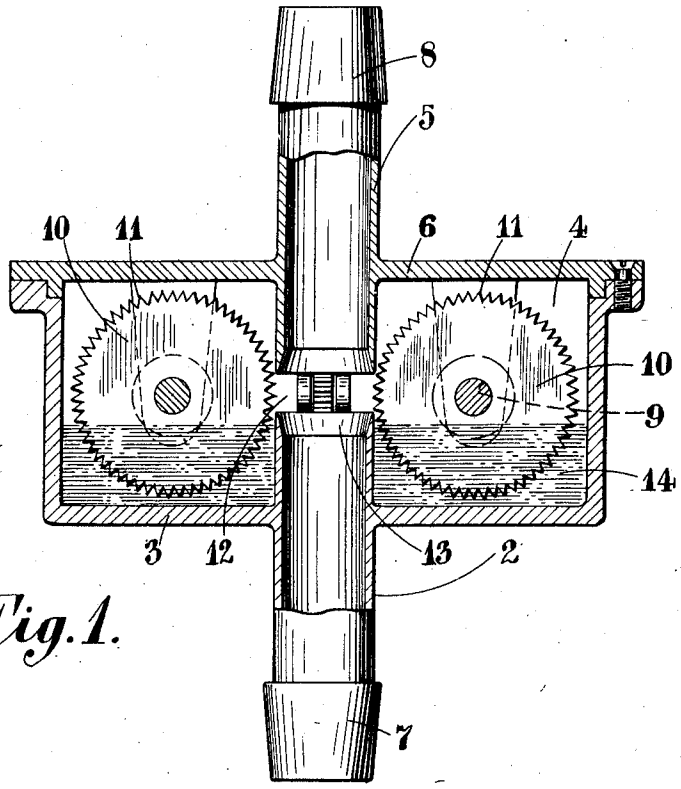
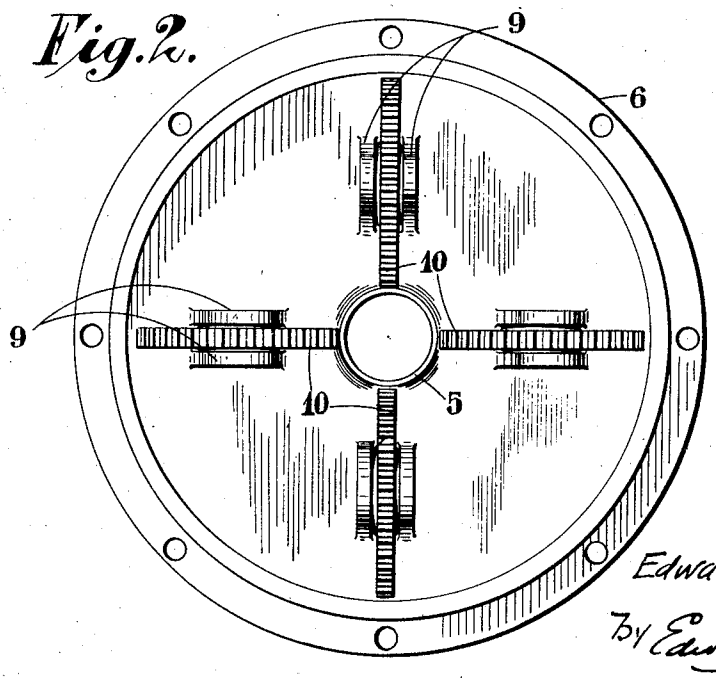


Fig. 1.

Fig. 2.



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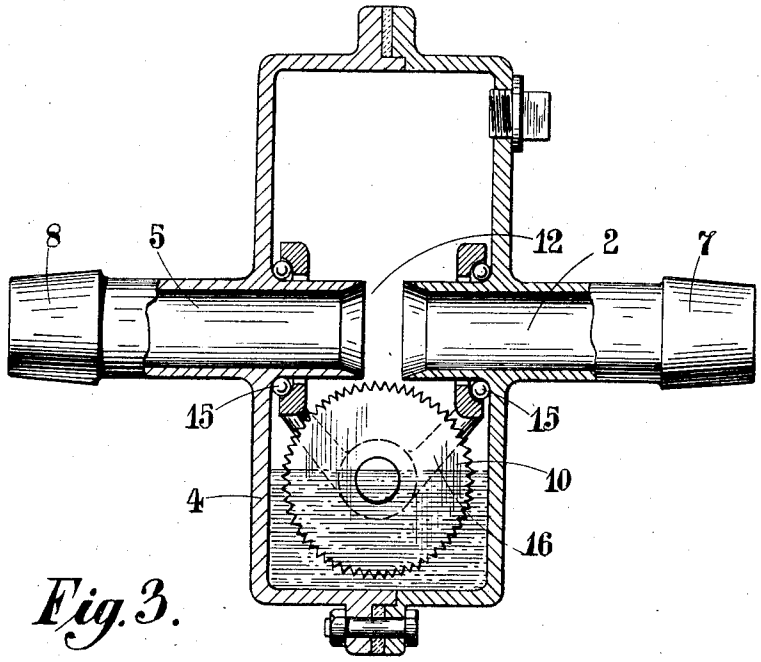
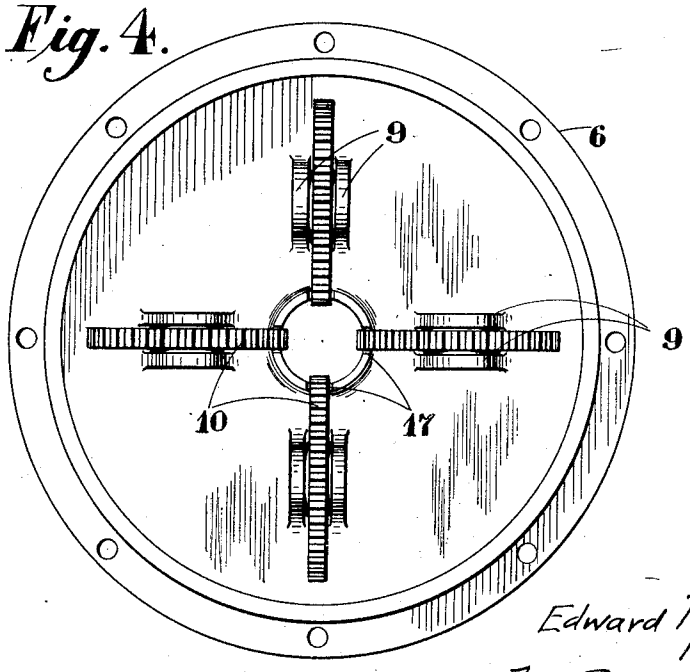


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE

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MEANS FOR MIXING GASES AND LIQUIDS

Application filed June 21, 1927, Serial No. 200,389, and in Great Britain December 23, 1926.

This invention relates to means for mixing gases and liquids, being intended chiefly for supplying finely atomized lubricating oil to a column of air used in pneumatic machinery, or for moistening air or supplying disinfectant thereto, and it has for its object to provide a very simple apparatus which will start and stop functioning automatically with the movement of the air flow, and which will not be likely to get out of order.

According to this invention, there is provided around a gap or aperture in the air pipe a liquid container, and one or more freely rotatable collector discs are arranged in planes radial to the pipe with their edges, at one point, close to the gap. The liquid is supplied to the container, and, no matter what position the parts are in, one or more discs dip into the liquid, if the number and position of these is suitably chosen. As the air flows along the pipe it impinges upon the edges of the discs, revolving these and causing the one (or ones) which picks up the liquid to throw it in a finely divided state into the air stream.

In the accompanying drawings, which illustrate a preferred construction,

Figure 1 is an axial section through the container,

Figure 2 is an inverted plan view of the inside of the detachable cover thereof showing the collector discs mounted upon it,

Figure 3 is an axial section of a modified construction, and

Figure 4 is a view of a modification.

Like numerals indicate like parts throughout the drawings.

In the construction shown in Figures 1 and 2, there is a short piece of pipe 2 which projects through the bottom 3 of a liquid container 4. A similar length of pipe 5 is fitted through the lid 6 of the container, and the two outwardly projecting ends 7 and 8 are adapted to be connected up to the air pipe line. The container 4 is airtight, so that air admitted to the one pipe will flow through, without loss, to the outlet pipe, and so to the point required, which may be a pneumatic drill, or a chamber to be supplied with air.

Carried in bearings 9 supported from either part of the container, for example its cover 6, are collector discs 10, which are arranged in planes radial to the axis of the pipes 2 and 5 and preferably have their peripheries serrated as at 11. If three or four of these discs are employed and are spaced equally around the container, one or more will always be in contact with the liquid therein no matter to what position the container is tilted provided that the latter has in it a certain minimum quantity of liquid.

A suitable gap 12 is left between the adjacent pipe ends inside the container, say three-eighths of an inch wide, and these ends may be bevelled outwards as at 13, or may be otherwise suitably shaped to enable the air to act more effectively on the discs, and the collector discs, which are circular, are so placed that they lie close to or project into this gap.

To use the device, a supply of liquid 14 is admitted to the container and the air flow started. As the air traverses the gap 12 it impinges upon the adjacent edges of the discs 10, revolving these at high speed. As one or more of the discs dips into the liquid, it throws a continuous but small stream of finely divided liquid through the gap into the air stream, and in this way the liquid is very intimately mixed with the air or other gas passing along the pipe.

The container 4 may be arranged to receive a definite quantity of lubricant for a certain duration of running of some pneumatic machine, and the required rate of feed may be obtained in a number of different ways, as by varying the size, width, and number of the teeth on the periphery of the discs 10.

In some cases the adjacent ends of the pipes may be slotted as at 17, Figure 4, and the discs may project through these slots and thus break through into the pipes.

Any suitable number of discs may be used, and the larger the number the more certain is the pick up of the liquid irrespective of the position of the container.

In the construction shown in Figure 3, there is but a single collector disc 10, which is radial to the pipes 2 and 5 and is free to

revolve around the axis thereof. Each pipe end carries on ball bearings 15 part of a carrier 16 upon which the disc 10 is pivotally mounted.

The liquid in the container always gravitates to the lowest point, and, as the carrier for the single disc is perfectly free, it also gravitates to the same point, and therefore there is always the same accumulation irrespective of the position of the container, and the feed is therefore uniform no matter how much the container is displaced.

By making the container of suitable dimensions for its contents, it is impossible for the liquid to enter the pipe accidentally even if the container is moved, so that the correct operation is assured, which is important where the device is used to feed lubricant.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. Means for mixing gases and liquids, comprising a liquid container around a gap in a pipe through which the gas flows, in which container at least one freely rotatable collector disc is arranged in a plane radial to the pipe with its edge close to the gap, said gap, measured in the direction of the pipe line being narrower than the diameter of the disc, substantially as set forth.

2. Apparatus as claimed in claim 1, in which the adjacent ends of the pipes are bevelled inwardly, substantially as and for the purpose described.

3. Apparatus as claimed in claim 1, in which the disc is pivotally mounted upon a carrier free to revolve around the axis of the pipe.

In testimony whereof I have signed my name to this specification.

EDWARD PLAYER.