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E. MUKASA

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ADVERTISING SIGN OF ELECTRIC LIGHTS

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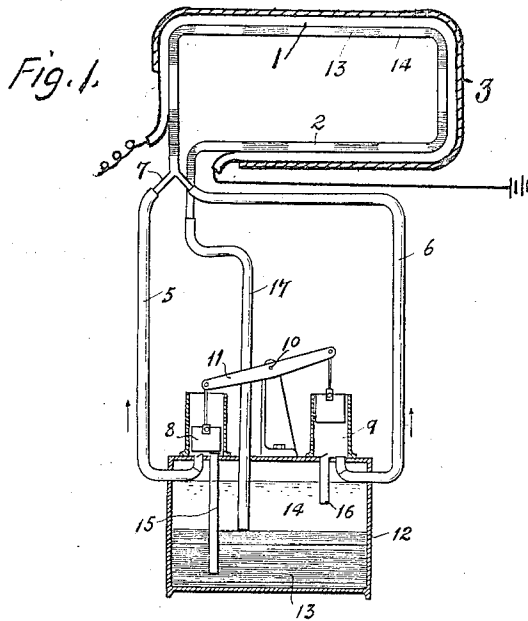


Fig. 2



Fig. 3



Fig. 4

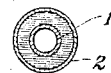


Fig. 5

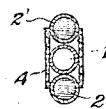


Fig. 6



Fig. 7

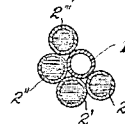


Fig. 8

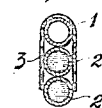
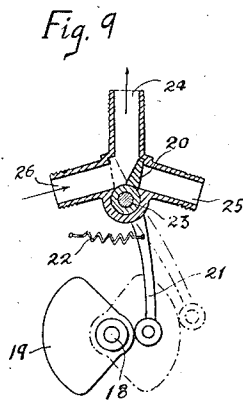
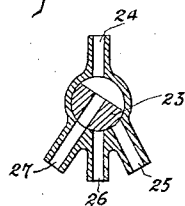


Fig. 10



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UNITED STATES PATENT OFFICE

2,029,183

ADVERTISING SIGN OF ELECTRIC LIGHTS

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Application December 29, 1933, Serial No. 704,578.

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2 Claims. (Cl. 40—130)

My invention relates to an electric lighting sign which is constructed with liquid pipes overlapped on an electric lamp or gas discharge tube, and in which two or more kinds of liquids having different specific gravities, and different colours, flow alternately in said liquid pipes in such a manner that said flowing liquids may produce various colours.

My invention consists in the novel construction and combination of elements for the purpose described and claimed.

My invention will be better understood from the following description when considered in connection with the accompanying drawing and its scope will be pointed out in the appended claims.

Fig. 1 is a front view of an example of my invention shown partly in cross-section.

Figs. 2, 3, 4, 5, 6, 7 and 8 are sectional views of a luminous lamp or tube and liquid pipes in various arrangements.

Fig. 9 is a sectional view of an example of liquid controlling device.

Fig. 10 is a sectional view of other example of controlling valve through which three kinds of liquids flow out alternately.

Referring to the characters and numerals on the drawing, in Fig. 2, 1 is a luminous lamp such as tubular electric lamp or neon tube which is shown in cross-section. 2 is a liquid pipe which is overlapped on the said luminous lamp or tube and preferably made of glass. If necessary, said luminous lamp is provided with a reflecting surface 3 of U-shaped plate on its rear surface, thus the light of a luminous lamp or tube is reflected on the liquid pipe 2. The liquid pipe 2 and luminous lamp or tube may be formed in various shapes or letters and in Figure 1, these pipes show as an example a frame.

The liquid pipe 2 is connected to pumps 8 and 9 through the branch pipe 7 and suction pipes 5 and 6. These pumps are to be operated alternately by a lever 11 pivoted at 10. A liquid tank 12 is arranged under these pumps, and said tank contains two kinds of liquids which have different specific gravities and will not mix with each other, for example, water 13 and oil 14. The suction pipe 15 of the pump 8 sucks water only and the suction pipe 16 of the pump 9 sucks oil only, therefore the pump 8 always delivers water and the pump 9 always delivers oil. When the lever 11 is operated at low speed by means of a small motor not shown, pumps 8 and 9 are alternately operated in such a manner that during the compression stroke of the pump 8, the other pump 9 is operated on the suction stroke and during the

compression stroke of said pump 9, the pump 8 is operated on the suction stroke. Therefore, the branch pipe 7 conveys water and oil alternately to the liquid pipe 2 through the pipes 5 and 6, thus water 13 and oil 14 in said liquid pipe 2 are moved alternately by the pumping action and are returned to the tank 12 through a pipe 17, the water goes to the bottom in the tank and the oil rises to the surface owing to the difference in specific gravities so that water and oil form divided layers in the tank. In the above described apparatus, if the water is coloured, said coloured water and transparent oil produce a two coloured sign and when black or opaque or semi-transparent colours are applied to the water, a running sign having alternate light and dark portions may be displayed.

In the above described apparatus, special pumps are used but in my invention, any other hydraulic machines or controlling valve devices may be used. For example, the valve as shown in Figure 9 may be employed. In this Figure 9, 18 is a shaft rotated at low speed by the proper driving means and 19 is a cam fixed to the shaft 18. 20 is a valve, 21 is an arm, 22 is a spring, 23 is a pivot of the valve, 24 is a pipe communicated with the pump or the liquid pipe 2; 25 is a suction or feeding pipe for light liquid and 26 is a suction or feeding pipe for weighty liquid. The cam is rotated by the shaft 18 and operated in such a manner that the pipes 25 and 26 are alternately opened or closed as shown by the solid line and the dotted line in Figure 9 and thus heavy and light liquids flow alternately in the pipe 24, and then these liquids are fed to the liquid pipe 2.

In above description, the tank contains two kinds of liquids but three or more kinds of liquids which have different specific gravities so that they can not be mixed with each other, may be used. For example, when water, mineral oil and castor oil are used, three layers of liquids are produced in the tank. In this case, three kinds of liquids are controlled by the valve device as shown in Figure 10 in such a manner that three kinds of liquids may flow alternately in the liquid pipe 2 through the pipes 25, 26 and 27, and thus a particularly attractive sign may be displayed by applying different colours to said liquids.

If the period of the oscillating motion of the valve 20 is comparatively long in the case of two or three colours running sign, one coloured light may be changed along letters or figures of the sign from one end to the other end gradually.

Figure 3 shows a cross-section of a luminous

lamp or tube 1 and a liquid pipe 2 which is formed as a flat tube and is attached to said luminous lamp or tube. Figure 4 shows a luminous lamp or tube 1 inserted concentrically in the liquid pipe 2. Figure 5 shows a modification of two liquid pipes 2 and 2' arranged on both sides of a separating luminous lamp or tube 1 in such a manner that the sign can be seen from the both sides. Figure 6 shows another modification consisting of one glass tube in which the luminous lamp or tube 1 and liquid pipe 2 are formed by a separating partition. Figures 7 and 8 show other modifications in which the luminous lamp or tube 1 and a plurality of liquid pipes 2, 2', 2'', 2''' are provided and other liquids, besides water and oil, may be employed.

What I claim as new and desire to secure by Letters Patent of United States is,

1. An advertising electric light sign characterized in that it comprises a liquid pipe overlapped on an electric luminous member and a liquid tank connected to said liquid pipe, said liquid tank

containing a plurality of liquids of different colors and different specific gravities, and means for causing the liquids of the layers in the tank to alternately flow through said liquid pipe.

2. An advertising electric light sign comprising a liquid pipe overlapped on an electric luminous member and a liquid tank connected to said liquid pipe, said liquid tank containing a plurality of liquids of different colors and different specific gravities, with means for causing the liquids of the layers in the tank to alternately flow through said liquid pipe, said means comprising a hydraulic pumping machine and leading pipes, and said liquid pipe being arranged in front of the luminous member with one end of said pipe in communication with the liquid of each layer in the tank through a branch pipe, suction pipes and pumps and the other end of the liquid pipe in communication with the tank through a common delivery pipe.

EIZO MUKASA.