July 12, 1927.

1,635,281

C. M. LARSON

VISCOSOMETER

Filed April 2, 1923

Fig. 1.

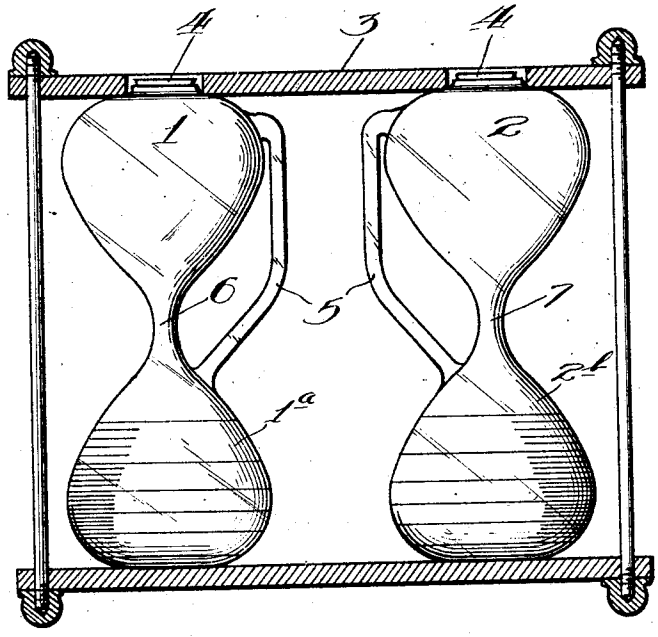
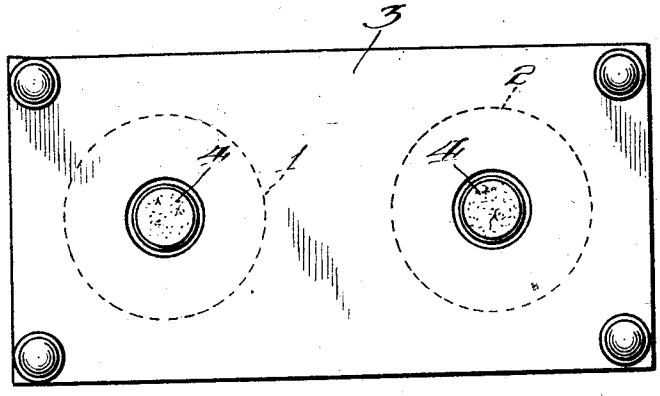


Fig. 2.



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UNITED STATES PATENT OFFICE.

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VISCOSOMETER.

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This invention relates to improvements in viscosometers, and refers more particularly to a device for ascertaining the relative viscosity of liquids.

Among the important objects of the invention are to provide a device in which a known fluid or flowing substance is used as a standard, and an unknown substance passes through a device of identically the same structure graduated in a like manner, whereby the characteristics of the substances as to their comparative viscosities may be ascertained.

Fig. 1 is a side view of the device.

Fig. 2 is a plan view.

Referring to the drawings, two hour glass shaped elements shown at 1 and 2 are mounted in a frame 3. The upper bowls of the elements have an orifice closed by stoppers shown at 4. The lower bowls of the separate elements, designated as 1^a and 2^b, are graduated in identically the same manner, and being of the same size and construction the substances contained in the bowl of either element may be accurately compared as to volume. The upper and lower bowls are connected by equalizing pipes 5.

In the element 1 is placed a given amount of a substance, the viscosity of which is a known factor. It is essential that this substance be flowable, and may be sand, oil, water or innumerable other materials or liquids which will flow from the upper bowl to the lower bowl through the restricted passage therebetween designated as 6, in a known period of time.

In the element 2 is placed the liquid the viscosity of which is to be ascertained. This liquid will flow from the upper bowl to the lower bowl through the constricted orifice 7, and during the same period the flowable substance of a known viscosity from the bowl 1 will flow into the lower bowl 1^a. The relative rapidity of flow during a known period of time will give the relative viscosities of the two substances, that is, the time which it will take for the different quantities designated by the graduated lower bowls 1^a and 2^b to pass through the restricted orifices of the separate elements will determine the relative viscosities of the two substances or liquids.

The equalizing pipes 5 serve to prevent the formation of unlike pressures in the upper and lower bowls. Thus, when a given amount of the substance of a known viscosity has passed from the upper to the lower bowl, and during the same period a relatively different amount of the unknown liquid has passed from the upper to the lower corresponding bowl of the element 2, the viscosity of the unknown substance can be readily ascertained from these factors of time and volume.

This device is especially adapted to use in ascertaining the viscosity of oils, and is important to use in ascertaining the dilution of crank case oil. By placing some of the crank case oil taken from the crank case of an internal combustion engine and placing it in the upper bowl 2 of this device and permitting it to flow simultaneously with the substance or liquid of a known viscosity in the corresponding element 1, it is possible to readily discover the amount of dilution of the crank case oil tested, as the flowing period of a given quantity, from the upper to the lower bowl will have a direct relation with the substance or liquid of a known viscosity in the adjoining element.

I claim as my invention:

A device for ascertaining relative fluid viscosity, comprising separated upright containers of similar configuration means whereby the containers are mounted so that the whole structure may be manipulated as a unit each container having upper and lower bulbous portions connected by a constricted orifice, each being also provided with an opening for receiving or discharging liquid, and pressure equalizing communicating means between the upper and lower bulbous portions.

CLIFFORD M. LARSON.