Sept. 13, 1932. F. C. FULCHER 1,877,450

FILTERING OR FINE STRAINING APPARATUS FOR LIQUIDS

Filed Feb. 25, 1932

Fig. 1.

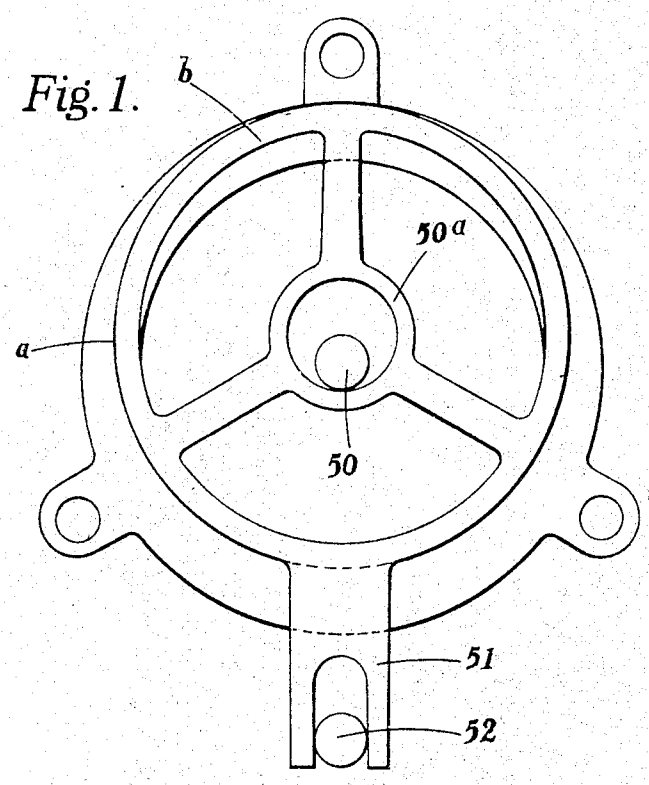


Fig. 2.

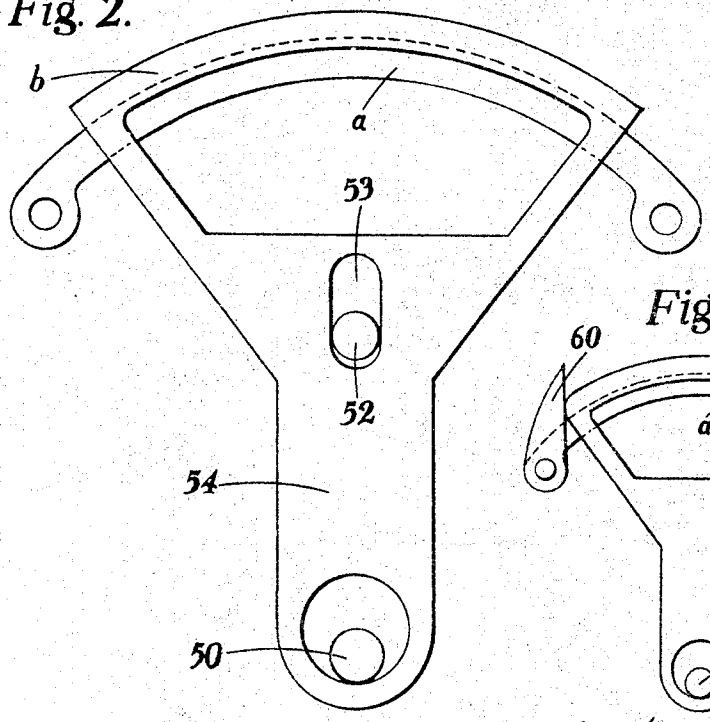


Fig. 3.

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FILTERING OR FINE STRAINING APPARATUS FOR LIQUIDS

Application filed February 25, 1932, Serial No. 595,057, and in Great Britain August 15, 1930.

The present invention relates to improvements in or relating to filtering or fine straining apparatus for fluids of the kind in which the fluid is passed through a series of fine slots, slots of 2/100″ or less width for example serving well for the fine straining of such liquids as petrol, paraffin, fuel oil, lubricating oil, oil paint, varnish, water, etc.

In my co-pending application No. 595,056 I have described a construction of filter comprising two or more sets of members in non-contacting relation, arranged in staggered formation so that the larger impurities are trapped before they arrive at the location where filtering proper takes place, whereas the finer impurities are removed in the latter position, the apparatus being so constructed that the sets may be given a relative movement inter se, such movement being substantially directed towards or away from the slot through which the liquid enters, since this removes the impurities more effectually than movement parallel to the slot.

According to the present invention I attain a similar result by mounting one of the sets of members on an eccentric or the like which gives such set a species of orbital motion and effects a similar cleansing of the plates from impurities. The motion communicated by the eccentric may either be continually in the same direction, or it may be a reciprocating motion and the members carried by the eccentric may further be caused to turn by means of a slot working in conjunction with a pin or equivalent mechanism. As a variant of the invention both sets of members may be movable. The relative movement may be continuous or intermittent, and may be effected by hand or power in any suitable manner.

By non-contacting relation above referred to I mean definite general clearance between the members of the different sets, without however excluding local contact such as is made by well defined ribs or like scraping elements. In this way a more open and rigid order of the members may be adopted with constructional and manufacturing advantages, without sacrificing the fineness of the filtering or straining at which the invention aims.

The cleansing due to the relative movement of the members may be assisted by washing from ingoing or outcoming fluid.

The drawing accompanying this specification illustrates various ways of carrying out the present invention. The figures are in diagrammatic form.

In the drawing:—

Fig. 1 shows a ring-like construction, and Fig. 2 a construction in which the fixed members are curved strips and the movable members of triangular form. Fig. 3 is a view of a modified form of Fig. 2.

Fig. 1 shows a pair of members, namely, a fixed member *a* and a movable member *b*, of a circular ring-like form of filter or strainer, in which the movable members are given an orbital movement by an eccentric 50. The movable members have forks 51 working over an anchor pin or spindle 52, and hubs 50*a* embracing the eccentric 50. The forks 51 and spindle 52 may be omitted.

The members *a* may be arranged to be movable, by an eccentric.

Fig. 2 illustrates a construction in which the fixed members *a* are curved strips, and the movable members *b* of triangular frame form. In this construction the positions of the anchor pin or spindle 52 and the eccentric 50 are reversed to that shown in Fig. 1. 53 is a slot in the member *b* working over the anchor pin 52, and 54 is an extension of the member *b* embracing the eccentric 50.

Fig. 3 shows fixed members *a* and movable members *b* of triangular frame form. 50 is the eccentric. The movable members *b* are guided by side guides 60.

It is to be understood that the slots in the actual constructions are fine slots as previously defined in the opening paragraph of the specification.

Filters or fine strainers under the present invention may conveniently take the form of ranks or piles, in single or multiple and in parallel or in series as desired.

The fixed members may consist of stretched wires.

I claim.

1. Filtering or fine straining apparatus for liquids comprising in combination, a series of alternate moving and stationary members arranged in spaced relation so that a series of fine slots is formed between opposed adjacent surfaces of said members, said members being so staggered that a graduated trapping of any foreign matter is obtained as the liquid passes through the filter; a crank mechanism for moving said movable series of members; and means including a guide cooperable with the said crank mechanism to effect a combined oscillatory and reciprocatory movement to the movable members across the stationary members, the guide being so positioned that the reciprocatory motion is effected in a direction substantially perpendicular to the length of the slots formed between the stationary and movable members.

2. A filtering or fine straining apparatus for liquids comprising, a series of alternate movable and stationary members arranged in spaced relation so that a series of fine slots is formed between opposed adjacent surfaces of said members, said members being so staggered that a graduated trapping of foreign matter is obtained as the liquid passes through the filter, characterized by means, including an eccentric mechanism, for imparting a combined oscillatory and reciprocatory movement to the leading edges of said movable members across said stationary members, said eccentric mechanism being located rearwardly of the leading edges of said members; and means intermediate said eccentric mechanism and the leading edge portions of said members for guiding said movable members.

3. A filtering or fine straining apparatus for liquids in which the filtering screen comprises a series of movable plate members and a series of stationary plate members alternately arranged in spaced relation so that a series of fine slots is formed between the adjacent faces of said two series of members, the members being so staggered that a graduated trapping or intercepting of foreign matter is obtained as the liquid passes through the filter, the combination of means including an eccentric mechanism for moving said movable series of members; and guide means cooperable with the said eccentric mechanism to effect a combined oscillatory and reciprocatory movement to the movable members across the stationary members, the said guide means being so positioned that the reciprocatory motion is effected in a direction substantially perpendicular to the length of the slots formed between said members.

4. A filtering or fine straining apparatus for liquids in which the filtering screen comprises a series of movable plate members and a series of stationary plate members alternately arranged in spaced relation so that a series of fine slots is formed between the adjacent faces of said two series of members, the movable members being arranged for movement across the slots, the combination of means including an eccentric mechanism for imparting a combined oscillatory and reciprocatory movement to the movable series of members across the stationary series of members; and guide means for the movable plate members, the said guide means being so positioned that the reciprocatory motion imparted to said movable plate members is in a direction substantially perpendicular to the length of the slots formed between the plate members.

In testimony whereof, I affix my signature.

FRANK CHRISTIAN FULCHER.