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H. J. COSTER & N. R. DIKE.
INTERMIXER FOR MISCIBLE LIQUIDS.

APPLICATION FILED NOV. 13, 1906.

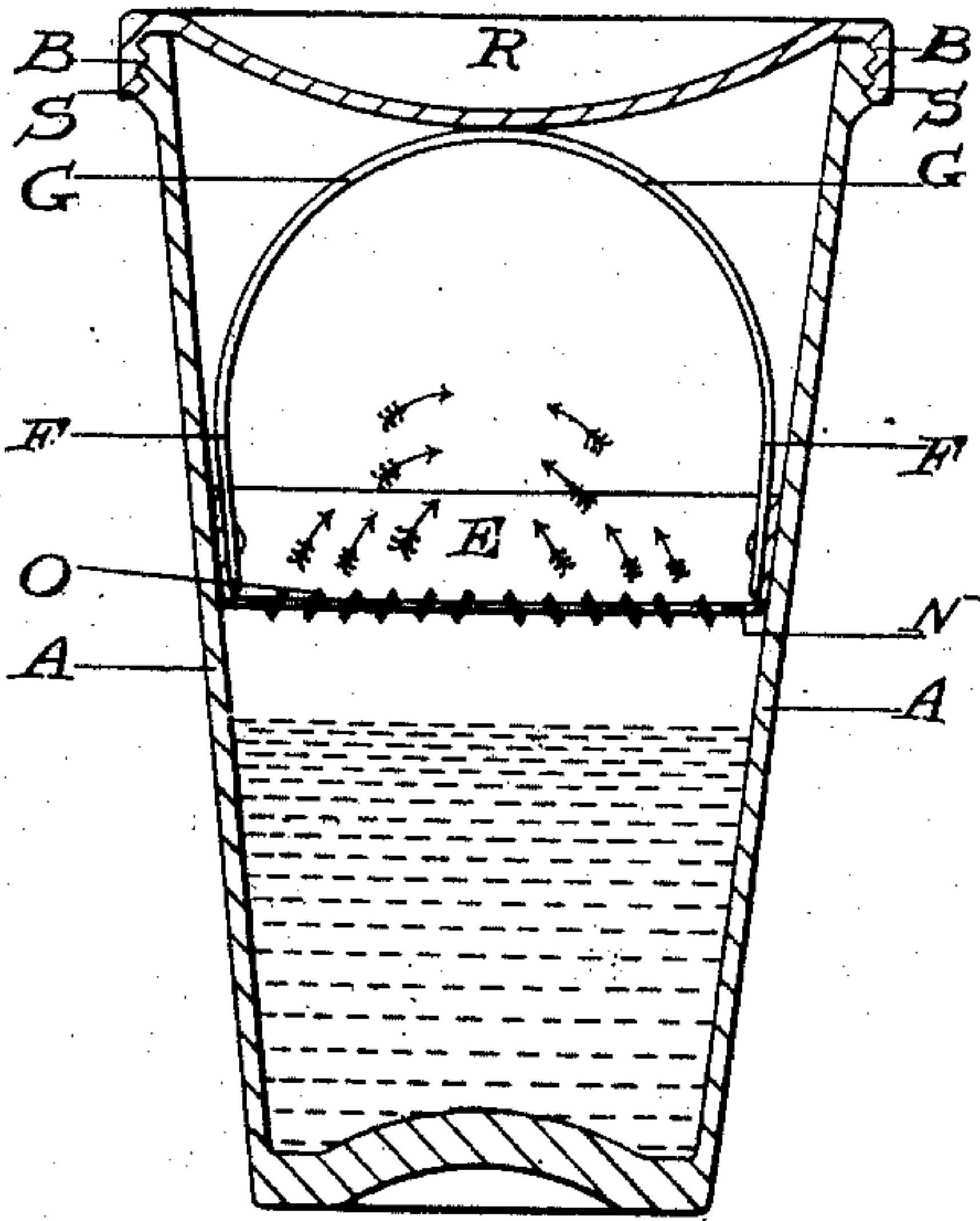


Fig. 1.

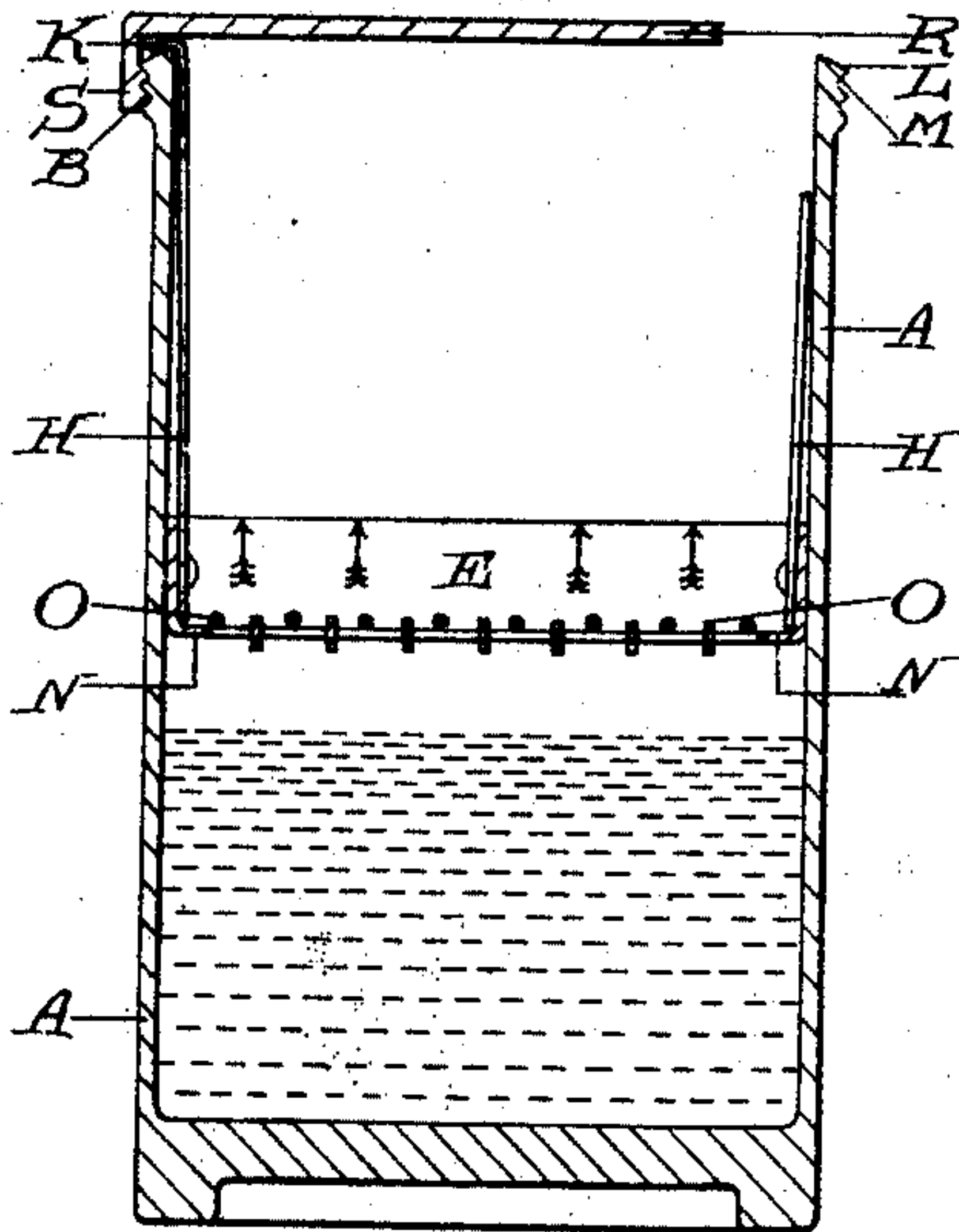


Fig. 2.

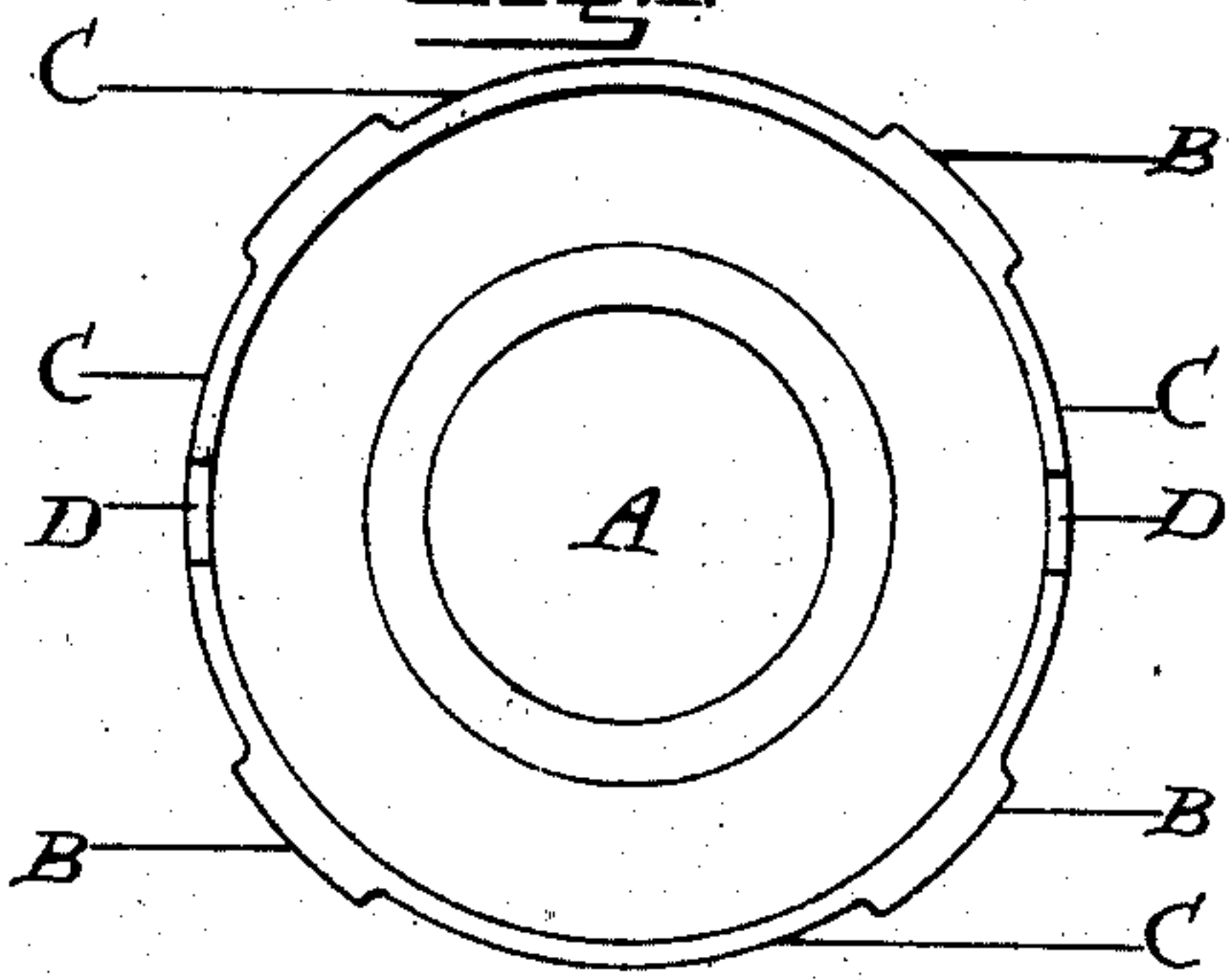


Fig. 3.

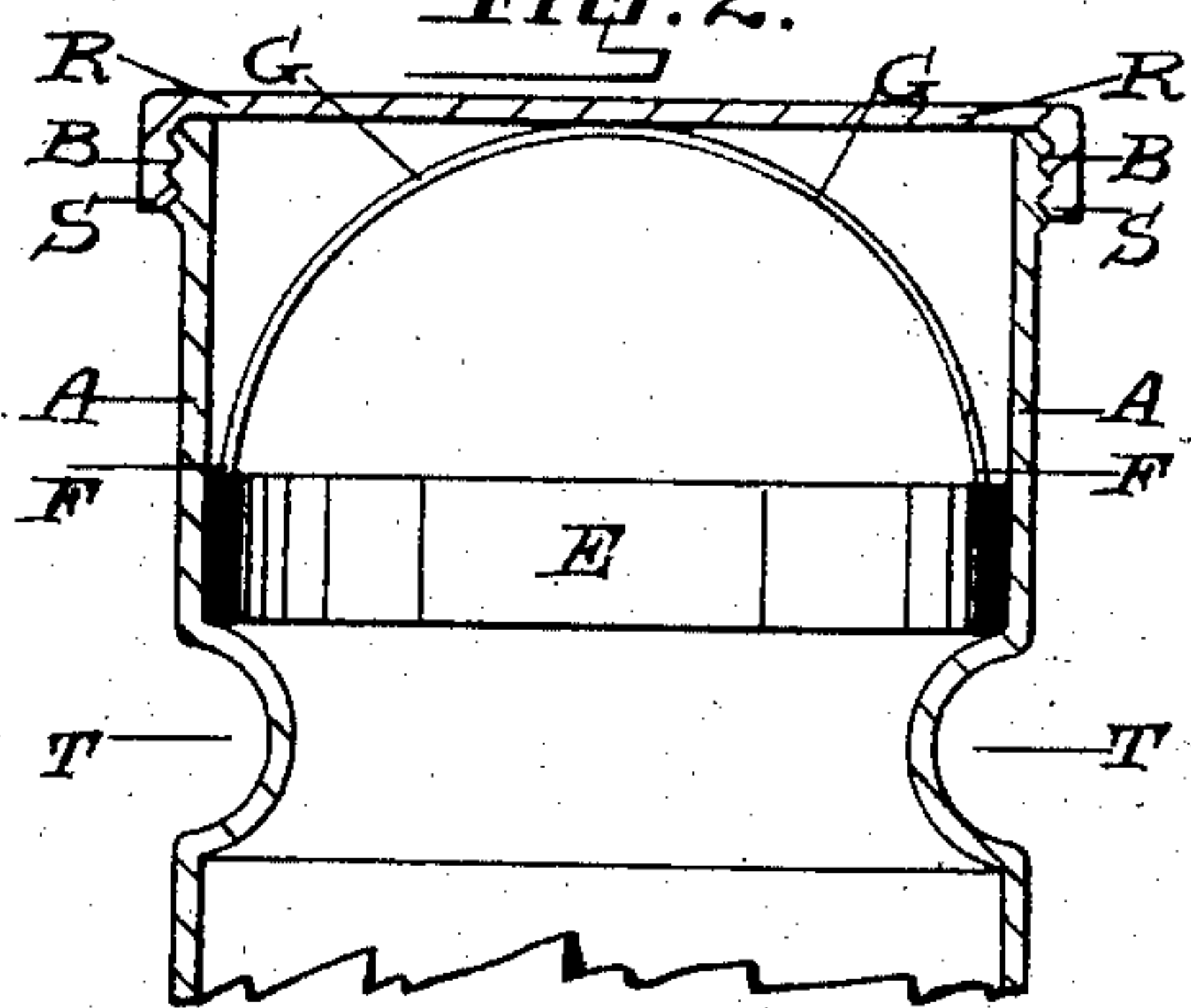


Fig. 4.

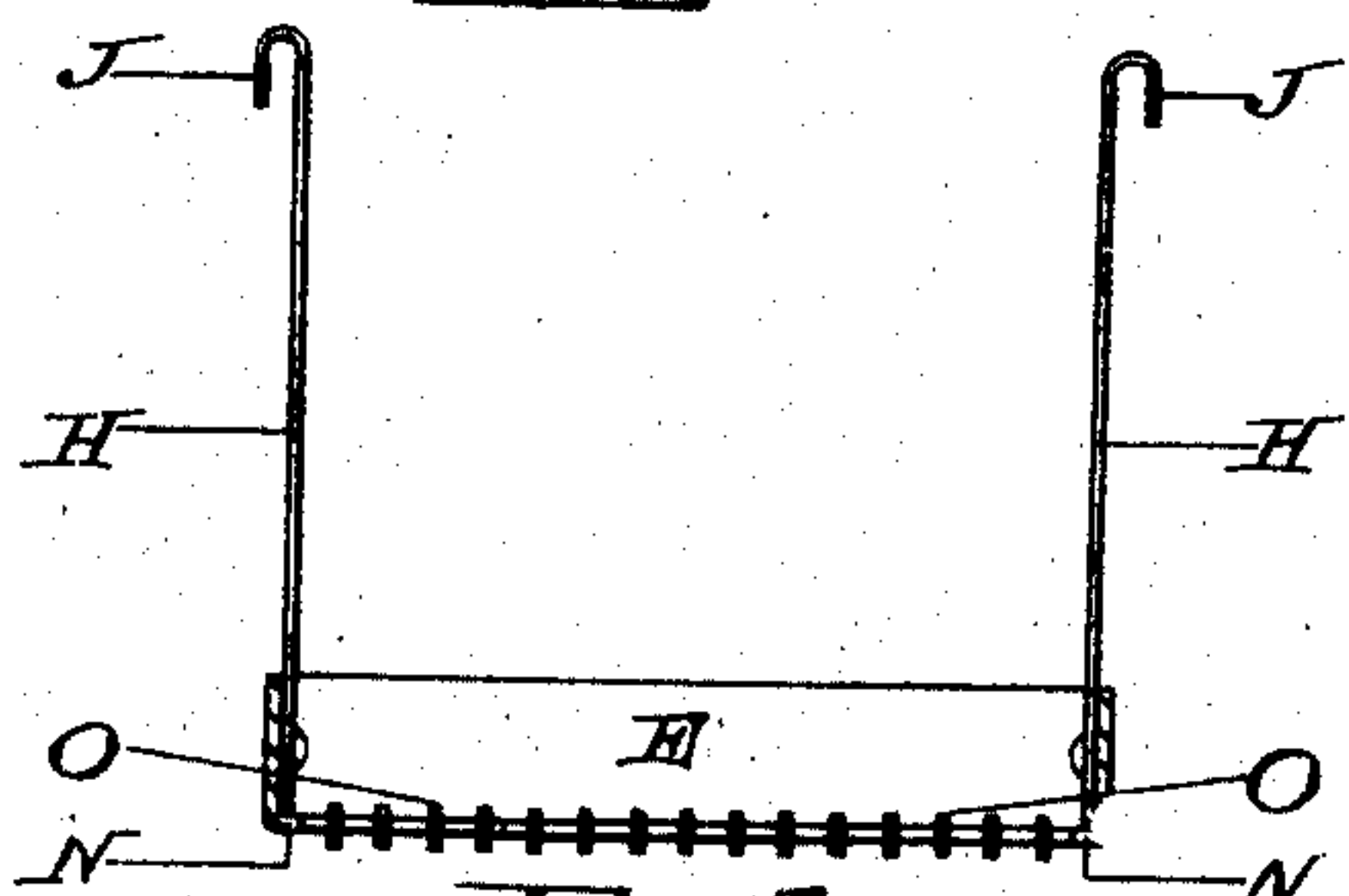


Fig. 5.

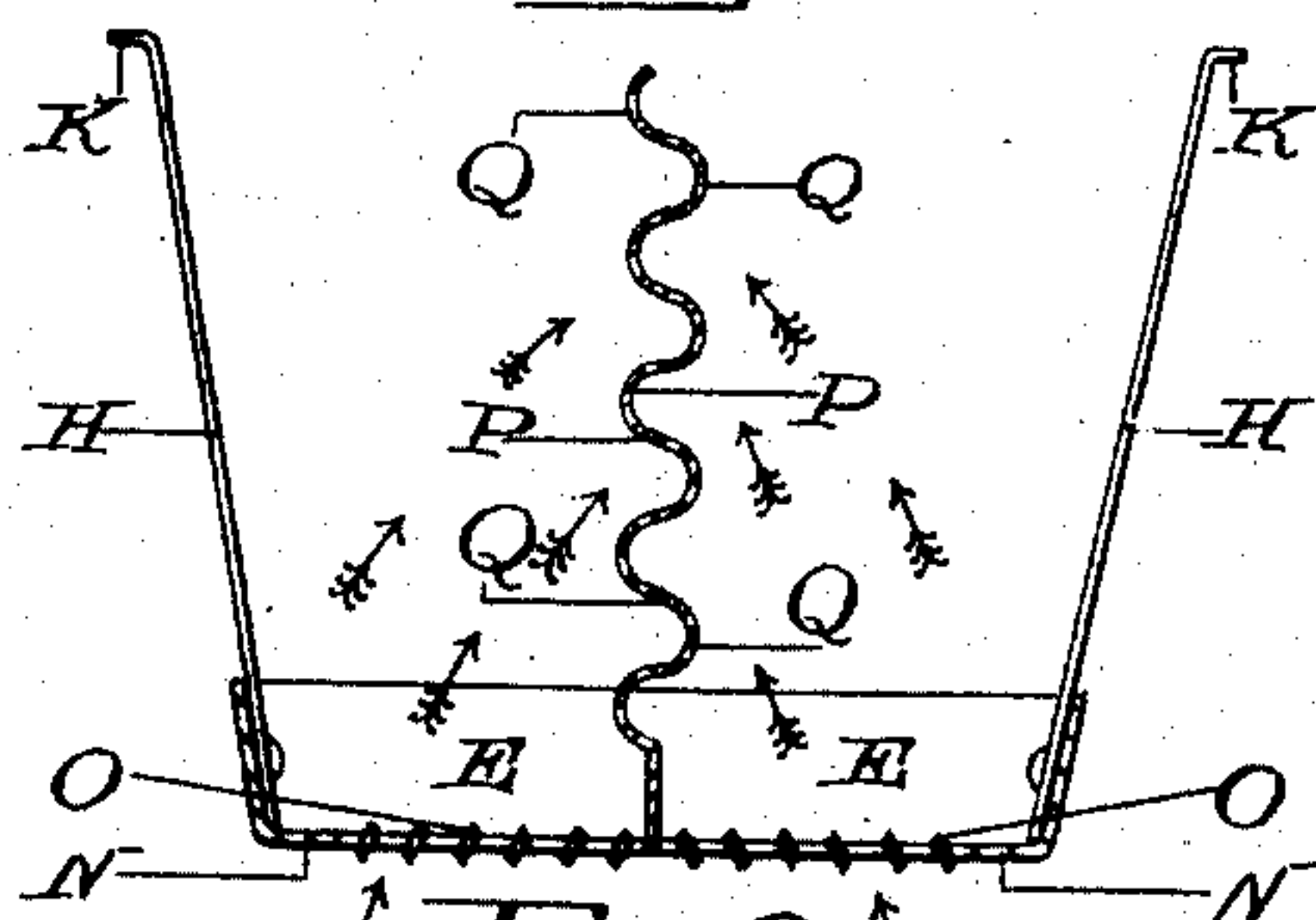


Fig. 6.

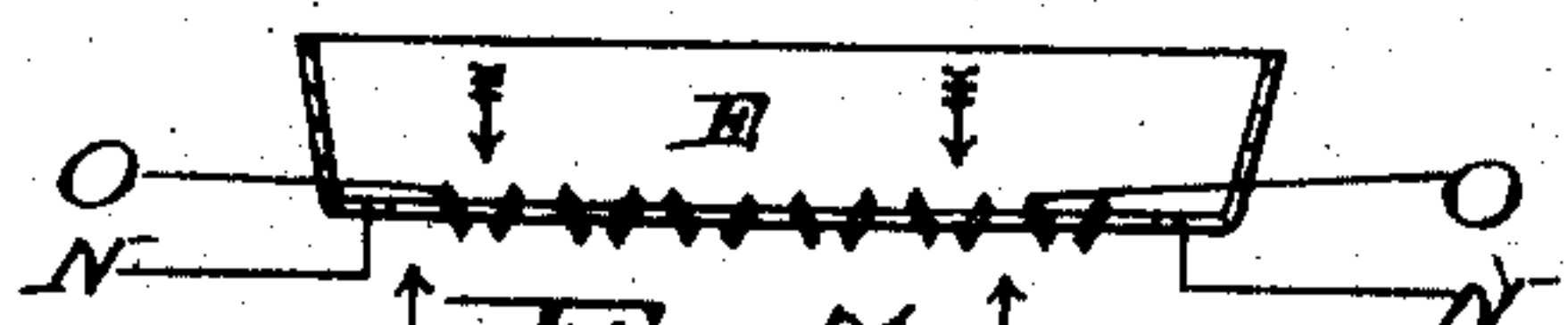


Fig. 7.

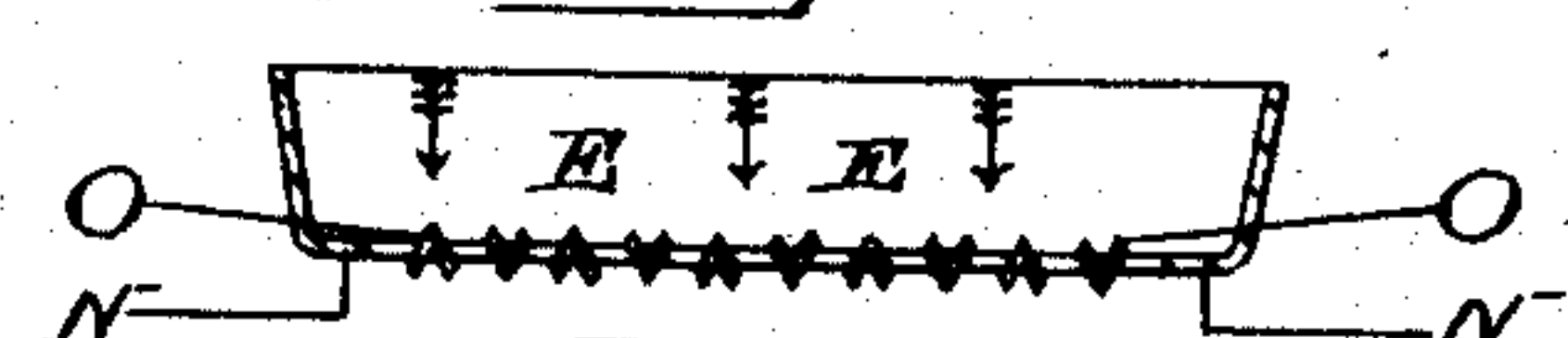


Fig. 8.

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INTERMIXER FOR MISCIBLE LIQUIDS.

No. 864,516.

Specification of Letters Patent.

Patented Aug. 27, 1907.

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To all whom it may concern:

Be it known that we, HENRY JOHN COSTER and NORRIS RICHARD DIKE, subjects of the King of Great Britain and Ireland, and residents of Meeniyman, South Gippsland, in the county of Buln Buln, State of Victoria, and Commonwealth of Australia, have invented certain new and useful Improvements in Intermixers for Miscible Liquids, of which the following is a specification.

- 10 The object of our invention is to provide a cheap, simple and effective hand intermixer for miscible liquids or semi-liquids. In the past a variety of devices have been used to this end, but with our invention an intermixer is produced, which is cheap in action, can be
15 easily cleansed, is eminently sanitary, and which effectually mixes various liquids with a minimum expenditure of labor. In addition to which the diffusion of the liquids is assisted by the particles thereof striking or beating against themselves.
- 20 Referring to the drawings which form a part of this specification Figure 1 is a sectional elevation of an intermixer having an external interrupted top thread, a bowed ring holder, concave cover and diffusers converging to the upper compartment. Fig. 2 is a sectional elevation of an intermixer in which wire diffusers are used. It has an uninterrupted external top thread, and ring
25 holders with outwardly protruding top lugs. Fig. 3 is a plan of a vessel of the character shown in Fig. 1, the cover bowed ring holder and ring and diffusers being removed. Fig. 4 is a side elevation partly in section of a parallel walled vessel having an inward groove therein. Fig. 5 is a view showing parallel diffusers and ring holders having hooked tops. Fig. 6 is a side view of a ring
35 and holders in which is seen a corrugated perforated atomizing rib and diffusers converging upwardly. Fig. 7 shows a view of diffusers so arranged that the effect on the liquid is the same on the up stroke as on the down stroke. Fig. 8 shows diffusers so designed that part of the liquid is pocketed or confined on both the up and
40 down stroke.

Similar letters of reference indicate similar or corresponding parts where they occur in the several views:—

- On reference to the drawings it will be seen that A is a vessel which is of any material. The walls of this may
45 diverge upwardly as shown in Fig. 1, or be parallel as shown in Fig. 2. The thickness of the said walls depends upon circumstances. Around the external top of the said vessel are threads B. The proportions of these threads and also their number will depend upon
50 circumstances. In one form as seen in Fig. 3, instead of the threads being continuous the said threads are interrupted as at C. The length of the interruptions will depend upon circumstances. The said interrupted portions C present a smooth surface for the lips when
55 drinking from the vessel. In the top edge of the said vessel may be opposite recesses D. The width of each

recess, as also its depth, will depend upon the width and thickness of ring holders hereinafter described.

In combination with the foregoing we use a cover R. This may be flat as seen in Figs. 2 and 4 or concave as
60 seen in Fig. 1. In the concave form it presents a greater modulus of elasticity to the crown of a bowed ring holder hereinafter described than what a flat one does. It is preferably made of metal, the nature of which depends upon conditions. Around it is an in-
65 ternally threaded depending flange S.

Inside the vessel we place a ring E. This is preferably of metal. In the vessel having diverging walls (Fig. 1), it has attached to it the lower ends of legs F of a bowed ring holder G. The said legs may be attached
70 to the ring in any well known way. As seen in Fig. 1 the crown or top of the bowed ring holder G is pressed upon by the center of the concave cover R. The said ring E is pressed downwardly inside the vessel and being locked therein cannot reciprocate vertically in the
75 vessel with the reciprocation of the vessel. We may also use a bowed ring holder with a vessel having a flat cover and parallel walls as shown in Fig. 4.

Instead of the ring E being secured inside the vessel as described, it may, as seen in Fig. 5 be held by ring
80 holders H. The bottom ends of these are attached to the ring E and the top ends J are hooked. The said top ends pass over the top of the vessel and the outer portion of the hook passes into the interrupted portion C of the thread. The crown or top of the hook beds into
85 the opposite recesses D hereinbefore described.

In lieu of the ring E being held by the said hook holders H the upper ends of the said holders may have top outstanding lugs K as seen in Figs. 2 and 6. The vessel in this case has a plain thread around it and the
90 outer edge L of the top of said vessel is lower than the inner edge M. The outer ends of the lugs are therefore declined. By having the outer edge of the vessel top lower than the inner edge, the possibility of the top
95 ends of the ring holders being pressed inwardly, and released from the vessel top when the cap is screwed down, is removed.

In Fig. 4 is seen a vessel, the wall of which has an inward groove T. Upon the wall inside of this groove the ring E rests while into the outside of the groove the fin-
100 gers press. By this groove a better hold of the vessel is obtained when reciprocating it.

Around the bottom of the ring E is a flange N. Across this flange extend diffusers O. The said diffusers O may consist as shown in Fig. 2 of pieces of superimposed
105 wire and alternate strips of metal or diffusers. These are placed parallel to each other and may, in some cases, have placed above them cross wires.

In Fig. 1 it is seen that the diffusers O consist of strips of metal. These may be formed integrally with the
110 flange N and ring E, or they may be independent of either, and attached to the flange. The said diffusers

converge towards the upper compartment so that on the down stroke the liquid beats against itself.

In Fig. 5 the diffusers are seen parallel with each other. The liquid, therefore, meets with no resistance 5 in passing through the said diffusers except from the cutting edges of the same and the skin or wall friction of the said diffusers.

In Fig. 7 each diffuser O is inclined to its fellow. None of the said diffusers meet each other either on the 10 top or the bottom edges.

In Fig. 8 the top edges of each alternate pair of diffusers and the bottom edges of each alternate pair of diffusers meet. Portions of the liquid on both the up and the down stroke is thereby confined within the said dif- 15 fusers while other portions of it pass between the same.

In Fig. 6 is seen a modification in which is introduced a corrugated perforated atomizing rib P. The said rib is of any material and the corrugations may be of any depth and width. The area of the said rib de- 20 pends upon circumstances. The diffusers below and on each side of the same are so directed that on the down stroke they converge the liquid against the said rib. As it strikes the rib it is resisted by the corruga- tions and the edges of the perforations Q, and is thereby 25 completely atomized.

The cycle of operations with our invention is as follows:—The liquids to be treated are placed within the vessel A and the ring E is dropped in place. The cover R is then screwed downwardly and it thereby, by the 30 bowed ring or other holder, locks the said ring within

the vessel. The said vessel is then taken in one hand and reciprocated rapidly and vigorously. The liquid then passes between the diffusers O and in so doing, especially as shown in Figs. 1 and 6 is beaten against itself. When the correct degree of diffusion has been 35 reached the cover is removed and the vessel drank from or the contents used for other purposes.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In intermixers for miscible liquids, a vessel having an interrupted external top thread, a ring having a plurality 40 of openings therein and a cover having a depending threaded flange in engagement with the external thread aforesaid, said cover holding said ring within the vessel in position for intercepting liquid when the vessel is 45 shaken.

2. In intermixers for miscible liquids, a vessel, a ring connected with the legs of a bowed spring and having a plurality of openings therein, and a cover pressing upon 50 the bowed spring and holding the ring within the vessel in position for intercepting liquid when the vessel is shaken.

3. In intermixers for miscible liquids, a vessel, a ring provided with spring legs and having a plurality of open- 55 ings therein, and a cover in constant engagement with said spring legs and constantly holding the ring in desired position within the vessel for intercepting liquids when the vessel is shaken.

In testimony whereof we affix our signatures in the presence of two subscribing witnesses.

HENRY JOHN COSTER.
NORRIS RICHARD DIKE.

Witnesses:

JNO. LANG,
CECIL LE PLASTREO.