H. GERNSBACK.

ELECTROLYTIC INTERRUPTER.

APPLICATION FILED FEB. 12, 1910.

988,767.

Patented Apr. 4, 1911.

Fig. 5.

Fig. 4.

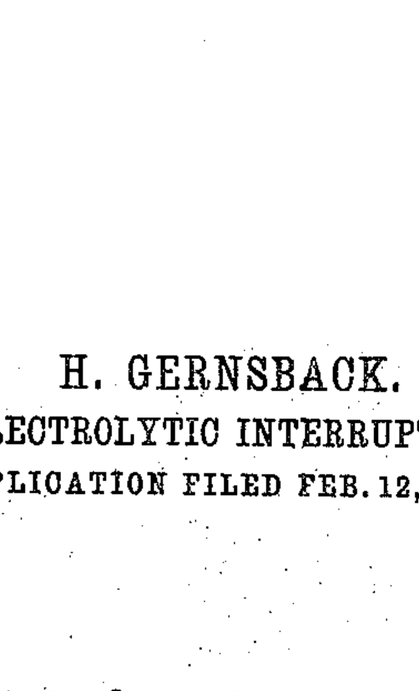


Fig. 6.

Fig. 1.

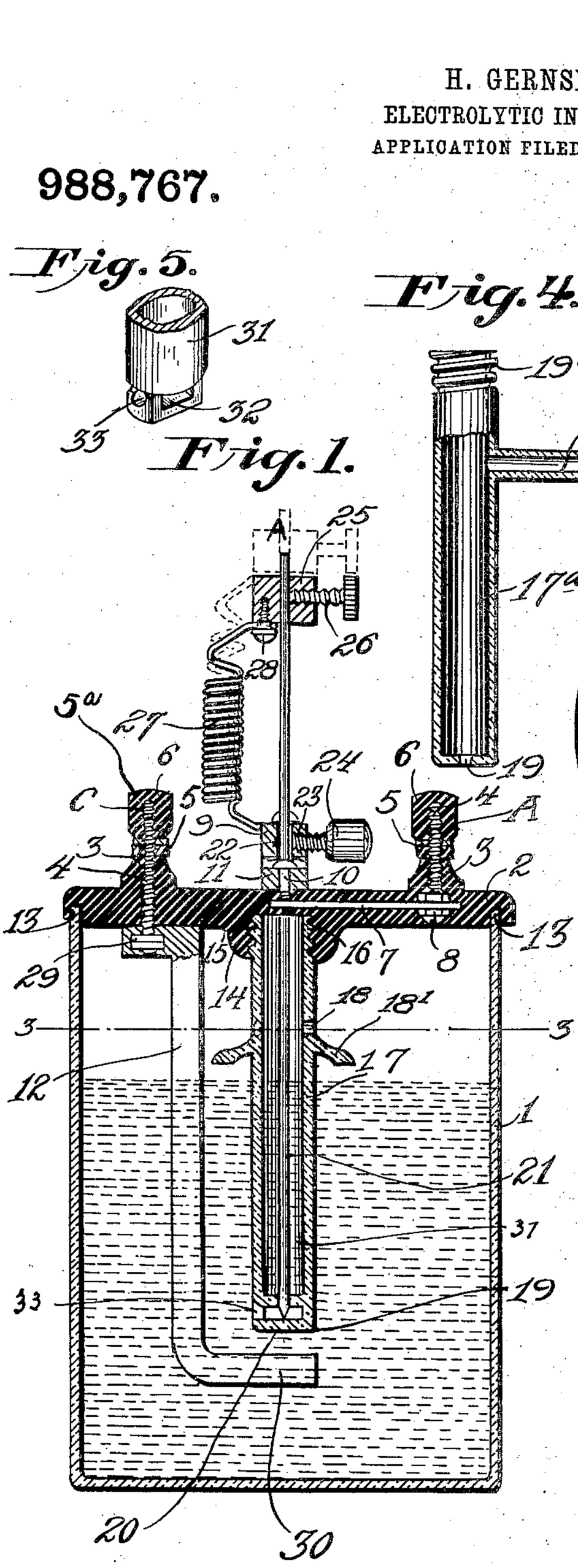


Fig. 2.

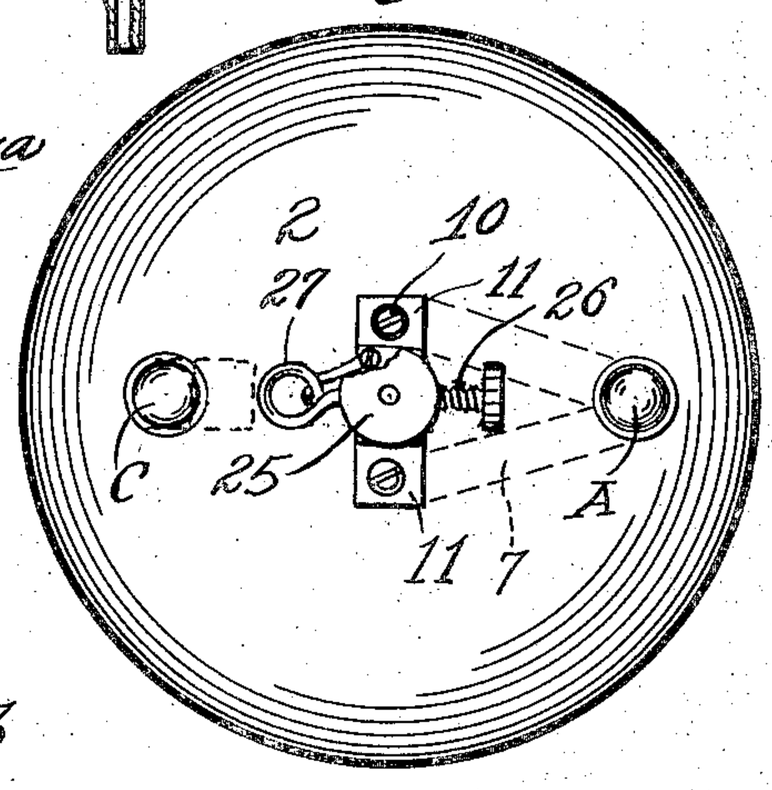
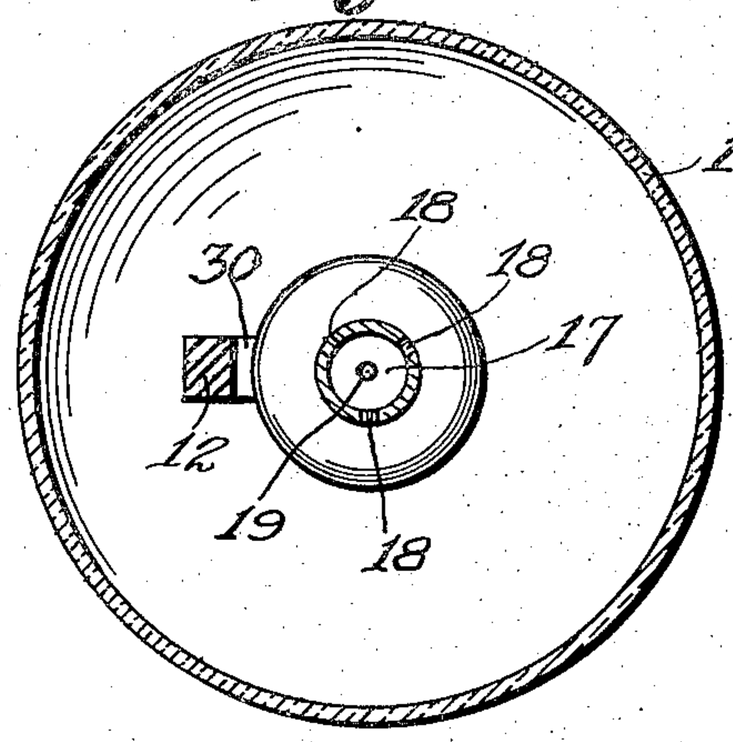


Fig. 3.



WITNESSES

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ELECTROLYTIC INTERRUPTER.

988,767. Specification of Letters Patent. Patented Apr. 4, 1911.

Application filed February 12, 1910. Serial No. 543,430.

To all whom it may concern:

Be it known that I, HUGO GERNSBACK, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electrolytic Interrupters, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to high frequency-interrupters, generally known as electrolytic interrupters, and has for its object the production of an interrupter, which can be adjusted so as to regulate the frequency of the breaks therein.

Another object of this invention is the provision of means for facilitating the holding of the anode in its proper place within the insulated tube.

With these and other objects in view this invention consists of certain novel constructions, combinations, and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings: Figure 1 is a vertical section of the interrupter. Fig. 2 is a top plan view of the same. Fig. 3 is a transverse section taken on line 3—3 of Fig. 1. Fig. 4 is a modification of the insulated tube adapted to be carried within the interrupter. Fig. 5 is a perspective view of the lower end of another embodiment of the insulated tube which may be coupled in connection with the present invention. Fig. 6 is a vertical section of the same.

Referring to the drawings by numerals, 1 designates the jar or receptacle upon which is mounted the insulated top 2. The top 2 is provided with integral upwardly-extending binding posts 3, which have embedded or otherwise placed therein conductor screws 4, which carry a conductor washer 5, and nut 5^a, and upon the upper end of the screw 4 is threaded an insulated thumb nut 6. A connection from an electrical source of supply is made through the binding posts and the conductor is positioned between the nut 5^a and the washer 5. A conductor plate 7 is embedded or otherwise placed within the insulated top 2 and is directly connected to the screw 4 as indicated at 8. The conductor plate 7 is connected to the bracket 9 by means of screws 10, which engage the laterally-extending feet 11 of the bracket 9 and also one end of the conductor plate 7. The other binding post is electrically connected to the cathode 12 which is, preferably, formed of lead as hereinafter described.

The top 2 is provided upon the under surface thereof and around the outer edge with a groove 13, which is adapted to engage the upper edge of the jar 1, so as to prevent the lateral displacement of the top from the jar 1. The top is also provided upon the under surface thereof with a depending portion 14, which is formed centrally thereof, and said depending portion 14 is provided with a threaded socket 15. Within the threaded socket 15 is adapted to be positioned or threaded the upper threaded end 16 of the insulated tube 17. Therefore, it will be obvious that by having the insulated tube 17 threaded within the threaded socket 15 of the top that the tube can be readily detached from the top and a new one can be placed therein in case one of the tubes should become broken or otherwise damaged. The tube 17 is, preferably, provided with a plurality of apertures 18, which are formed near the upper end thereof and the tube 17 is also provided with an aperture 19 formed in the bottom thereof, and said aperture tapers toward the bottom of said tube. The tube 17 is preferably provided below the apertures 18 with an integral laterally extending hood-shaped flange 18′, which causes the liquid, after it flows through the apertures to break up, thereby preventing the overflow from entering the liquid contained within the receptacle 1 in streams but causing only drops to fall into the liquid. The lower end 20 of anode 21 is adapted to fit in said aperture and adapted to normally close the same as hereinafter described.

As stated before a bracket 9 is secured to the top 2 and said bracket 9 is provided with a centrally arranged aperture 22 through which is adapted to pass the anode 21 before mentioned. A threaded aperture 23 is formed upon the side of the bracket 9 and communicates with or intersects the aperture 22, and within the aperture 23 is positioned a thumb screw 24, which is adapted to engage the anode 21, when it is desired to hold the same in an adjusted position or hold the lower end 22 out of engagement with the aperture 19 in the lower end of the tube 17 so as to cause slow breaks within the interrupter. When the anode 21 is drawn from the aperture 19, the liquid will gradually rise within the tube 17 and as the same rises and reaches the apertures 18 the

liquid will flow out through the apertures thereby preventing the overflow of the receptacle 1, or preventing the flow of liquid out over the top 2. When the lower end 20 of the anode 21 is withdrawn from the aperture 19, the breaks within the interrupter will not be as frequent as when the lower end 20 is positioned within the aperture 19, so as to bring the same into close proximity with the cathode 12. Therefore, it will be obvious that by the regulation of the anode 21 that the breaks can be made slow or very frequent. When the anode is in the aperture 19, the breaks occur between the anode and the electrolyte, composed, preferably, of one part of acid and four parts of water, or any other electrolyte which may be found suitable. However, if the anode is removed from the aperture 19, and clamped tightly by means of the thumb screw 24 upon the metal supporting bridge 11, the breaks will occur between the electrolyte in the inner vessel and the electrolyte in the outer vessel, which will be comparatively slow with the breaks gotten from the arrangement when the lower end 20 of the anode is within the aperture 19. A weight 25 is adapted to be carried by the anode 21 and said weight is clamped in an adjusted position upon said anode by means of a thumb screw 26, which passes through the weight 25 and engages said ānode 21. A conductor wire coil 27 is connected at one end to the bracket 9 and at the other end to the lower face of the weight 25 by means of a screw 28, thereby electrically connecting the anode 21 and weight 25 with the bracket 9 which is electrically connected to the binding post 3 and to the source of the electrical supply. It will be obvious that by having the wire coil connected to the weight and bracket as before specified that the weight can be adjusted to any position upon the anode 21 through the expansible quality of said wire coil.

In Fig. 4, I have shown a modification of the insulated tube 17, which constitutes a tube 17ª, which is provided with an integral spout 18ª, which is adapted to allow the liquid to flow out therethrough into the main receptacle 1, when the liquid reaches such a height within the tube 17ª. The tube 17ª is also provided with an upper screw-threaded end 19ª, which is adapted to engage the screw-threaded socket 15 formed in the top thereof.

The interrupter is adapted to be connected in series with the line and in case the current is direct, the positive binding post or anode terminal indicated by A is connected to the positive wire or lead and the negative terminal is connected to the post C. When this connection is made and the current is direct, the positive current flowing through the post A, the current will then flow down through the screw 5, through the conductor plates 7, through the bracket 9, up through the coil 27, through the weight 25, down through the anode 21 and through the solution to the cathode 12 and out through the negative binding post C, thereby completing the circuit.

The cathode 12 is provided upon its upper end with a laterally extending portion 29, which is engaged by the screw 4 of the binding post C. The cathode is also provided with a lower angularly-extending end 30, which extends in an opposite direction to the upper angularly-disposed end and said angularly-disposed end 30 is positioned directly below the lower end 20 of the anode 21. Therefore, it will be obvious that as the current passes through the anode and out through the cathode, it will have a very short distance to pass through the solution thereby preventing the heating of the same to any great extent, as would be the case if the two elements were a great distance apart.

From the foregoing description, it will be readily obvious that I have provided an efficient interrupter, the parts of which can be readily and easily detached in case any of the same should become broken or mutilated in any way. It will also be obvious that by having the different elements constructed in accordance with the foregoing description, and in accordance with the structure as illustrated in the official drawing that I have provided means for regulating the frequency of the breaks within the interrupter.

The metal anode 21 is, preferably, formed of copper, brass, or aluminum, although any other analogous material may be used, and it will be obvious that by having the lower end of the anode 21 positioned in the aperture 19 and a weight carried by the anode, since the aperture 19 tapers toward the bottom thereof, that the anode will be fed down by force of gravity and will gradually wear away to a point.

In Figs. 5 and 6 I have shown an additional embodiment of the insulated tube wherein 31 designates the tube which is provided upon its lower end with a bridge or anode supporting portion 32. This bridge 32 is integrally connected with the tube as clearly shown in Fig. 6 and one end of the bridge is provided with an aperture 33 to allow the solution adapted to be contained within the receptacle 1 to freely circulate around the anode 21. The bridge 32 is adapted to prevent the lower end 20 of the anode 21 from forming a direct contact with the angularly disposed portion of the cathode 12. By employing the bridge structure 32, it will be obvious that the anode 21 will at all times be held out of direct engagement with the angularly disposed portion 30.

What I claim is:—

1. In a device of the character described, the combination with a receptacle, of an insulated cover thereon, said cover provided with a centrally arranged depending portion, said depending portion provided with a threaded socket, a tube of insulating material, said tube provided with an end threaded into said socket, said tube provided with an outlet formed near the upper end thereof, and with an aperture formed in the bottom thereof, an anode passing through said cover and having its lower end resting within said aperture and being adapted to normally close the same, and a cathode fixedly secured to said cover and provided with an angularly disposed lower end positioned directly below said anode element.

2. In a device of the class described the combination with a receptacle, an electrolyte contained therein, an insulated cover carried by said receptacle, said cover provided with a centrally-arranged integral-depending portion, said depending portion provided with a threaded socket, an insulated tube, said tube provided with a threaded end adapted to be threaded within said threaded socket, for holding said tube in engagement with said cover, said tube provided with a tapering aperture formed near the bottom thereof, an anode positioned within said tube and passing through said cover, said anode provided with a tapering end adapted to fit in said aperture and normally close the same, a cathode carried by said cover and provided with a laterally-extending end and adapted to be positioned below said anode for the purpose specified, and means electrically connecting said anode and cathode.

3. In a device of the class described the combination with a receptacle, an insulated cover carried thereby, of a supporting bridge carried by said cover and provided with laterally-extending feet, an anode passing through said cover and bracket, an insulated tube carried by said cover, said tube provided with an aperture near the lower end thereof, said anode adapted to normally engage said aperture and adapted to normally close the same, a weight adjustably mounted upon said anode, means electrically connecting said supporting bridge to said weight, said cover provided with a plurality of binding posts, means electrically connecting one of said binding posts to said supporting bridge, an anode supported by said cover and electrically connected to the other binding post, and means adapted to electrically connect said binding post for causing an electrical current to flow through said anode and cathode.

4. An electrolytic interrupter comprising a receptacle, a cover therefor, a tube of insulating material detachably secured to said cover, said tube provided with an aperture formed in the bottom thereof, an anode passing through said cover and having its lower end resting within said aperture and being adapted to normally close the same, and a cathode fixedly secured to said cover and provided with an angularly disposed lower end positioned directly below said anode element.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

HUGO GERNSBACK.

Witnesses:

A. C. AUSTIN, Jr.,

A. P. MORGAN.