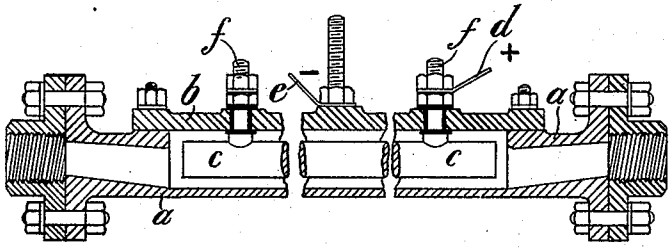
A. P. STROHMENGER.

APPARATUS FOR THE TREATMENT OF FLUIDS WITH COAGULANTS.

APPLICATION FILED SEPT. 30, 1914.

1,161,750. Patented Nov. 23, 1915.



Witnesses:
M. L. Pfeifer.
L. E. Barkley.

Inventor:—
Arthur Percy Strohmenger
by
Frank S. Ackerman
Attorney

UNITED STATES PATENT OFFICE.

ARTHUR PERCY STROHMENGER, OF WESTMINSTER, LONDON, ENGLAND, ASSIGNOR TO ESTER & CO., LIMITED, OF LONDON, ENGLAND.

APPARATUS FOR THE TREATMENT OF FLUIDS WITH COAGULANTS.

1,161,750. Specification of Letters Patent. Patented Nov. 23, 1915.

Application filed September 30, 1914. Serial No. 864,293.

To all whom it may concern:

Be it known that I, ARTHUR PERCY STROHMENGER, a subject of the King of Great Britain, and resident of Caxton House, in the city of Westminster, county of London, England, have invented certain new and useful Improved Apparatus for the Treatment of Fluids with Coagulants, of which the following is a specification.

This invention relates to apparatus for the treatment with coagulants of water which may contain matter in solution, for the purpose of accelerating the deposition of foreign matters from such impure water, and also for assisting in the filtration thereof by "filming" the filtering substance. The apparatus is primarily applicable to the purification of impure water, but it may also be applied to the treatment of other fluids containing a large proportion of water with foreign matters in suspension.

It is the object of the invention to provide an improved apparatus wherein a coagulant is produced in the fluid by the passage of a current therethrough, while an anode is employed consisting of a metal which yields a coagulant on the passage of the current. It is essential that the stream of fluid to be treated should be forced under pressure through the place where the electrolytic action takes place, in order that the stream of fluid may be sufficiently strong to carry away the coagulant as it is formed. Otherwise the coagulant would be deposited on the surface of the anode forming a layer which would act as a dielectric offering a high electrical resistance to the passage of the current.

The accompanying drawing shows in section the apparatus according to the invention.

In this drawing, *a* is a pipe or casing, one side of which is closed by a plate *b* carrying with suitable insulation a rod *c* forming the anode. For instance the rod *c* may be supported by insulated bolts *f*, to one of which a lead *d* is secured, connected to the positive terminal of a source of current. The pipe *a* is of conducting material and is connected by a lead *e* to the negative terminal of the source of current. The rod *c* consists of a metal which will form a coagulant when the current passes, while the fluid to be treated is forced under pressure through the pipe *a* around the rod *c*. If the rod *c* is formed of aluminium and the fluid consists of or contains water, hydroxid of aluminium will be formed, and this acts as an effective coagulant. The stream of the fluid under pressure removes the coagulant as it forms upon the anode *c*, the current being thus enabled to flow continuously and the quantity of hydroxid passing into the fluid will be proportional to the rate of flow and to the strength of the current. The strength of the current, apart from the resistance of the dielectric, will vary as the conductivity of the fluid, which varies with the total solid content in solution, so that the quantitv of coagulant introduced will depend upon the quantity of the fluid and upon the said solid content, which is just the condition required. It is necessary that a minimum head of 5 lb. per sq. inch above atmosphere be employed in order to effect the removal of the hydroxid. The diameter of the rod *c* is preferably only slightly smaller than the internal diameter of the pipe so as to leave only a small annular space for the fluid to pass through, in order that as large a proportion of the fluid as possible may come into actual contact with the surface of rod *c* which consists of aluminium or the like. The difference of potential may be varied with the amount of coagulant required. An apparatus which has been used with success consists of an inner rod such as *c*, $\frac{7}{8}''$ in diameter and 3 feet long arranged centrally in a casing such as *a* of $1\frac{3}{8}''$ interior diameter.

In an experiment wherein water was treated, and the rod *c* consisted of aluminium, the water was introduced under a pressure or head of 8 pounds per square inch, and approximately 100 gallons of water per hour were treated. With water containing 20 parts of solid matter per 100,000 of water, a difference of potential of 3 volts between the terminals *d* and *e* liberated .072 grams of aluminium hydroxid per 100 gallons of water. This is sufficient to attain the desired result with ordinary waters. The strength of current, the dimensions of the apparatus, and the pressure head may however be varied according to circumstances.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

Apparatus for use in adding a coagulant to a fluid consisting principally of water, the said apparatus comprising an anode in the form of a rod of aluminium, a cathode in the form of a hollow member surrounding said rod so as to leave a narrow circumferential space between the same, means for supporting the rod with insulation within said hollow member and means for introducing electric current into said anode and away from said cathode.

In witness whereof I have hereunto signed my name this 10th day of September in the presence of two subscribing witnesses.

ARTHUR PERCY STROHMENGER.

Witnesses:
H. W. BLAKE,
W. E. ROGERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."