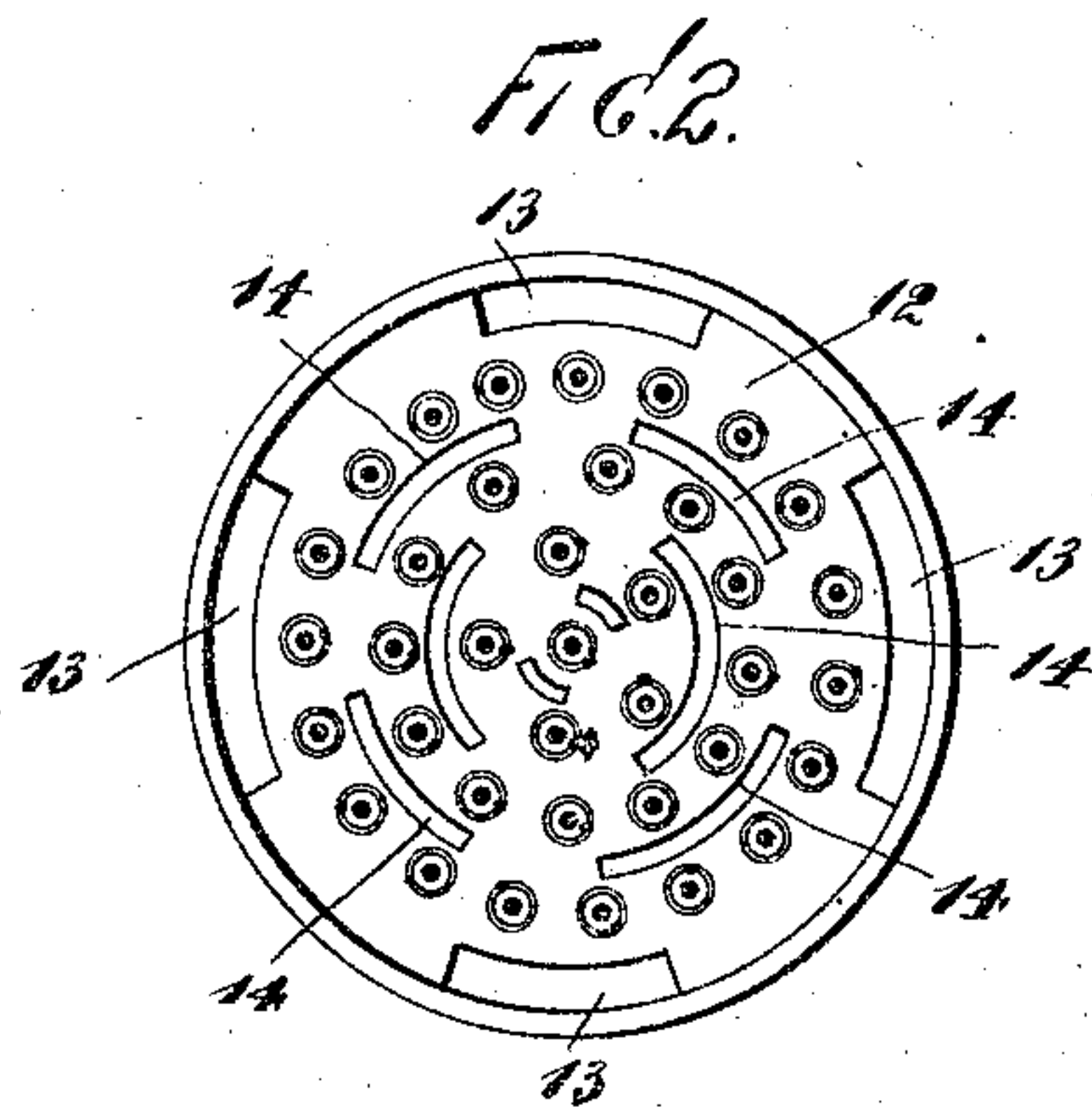
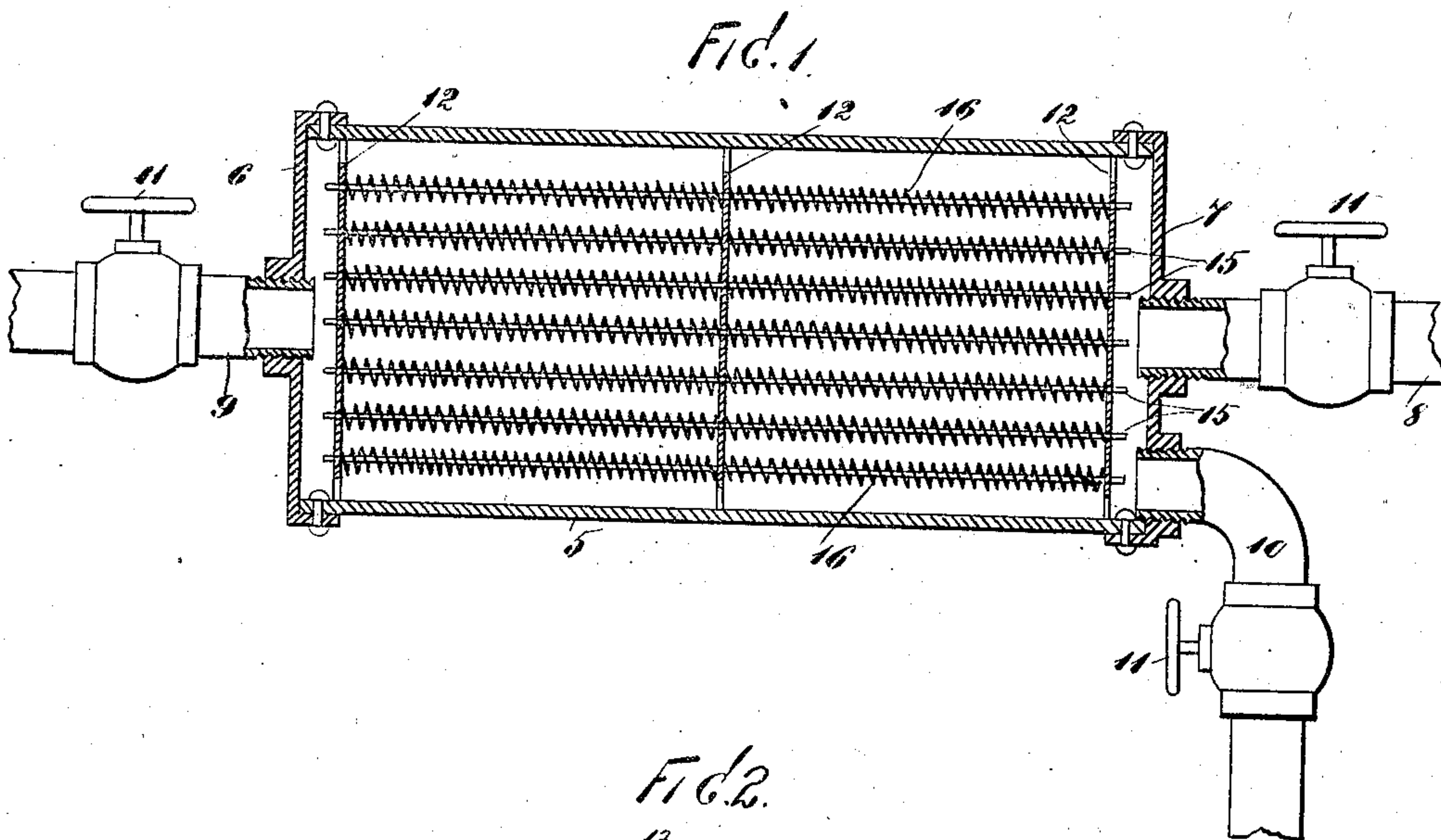


(No Model.)

J. H. HARRISON.  
WATER PURIFIER.

No. 577,134.

Patented Feb. 16, 1897.



WITNESSES

John Buckler,

C. Gerst.

INVENTOR

BY

John H. Harrison.

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOHN H. HARRISON, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES BLONDEL  
AND ADOLPHUS E. BAYREUTHIER, OF SAME PLACE.

## WATER-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 577,134, dated February 16, 1897.

Application filed July 21, 1896. Serial No. 600,015. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. HARRISON, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Water-Purifiers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar numerals of reference indicate corresponding parts wherever found throughout both views.

This invention relates to electric purifiers for feed-water for steam-boilers; and the invention consists of an improved purifier for this purpose which involves a suitable casing, which is preferably cylindrical in form, and through which the water on its way to the boiler passes, said casing being composed of iron or any suitable metal and being provided with a water-purifier which consists of a voltaic pile constructed as herein described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a central longitudinal section of my improved purifier, showing the water supply and egress pipes connected therewith and also a blow-off or cleaning pipe therefor; and Fig. 2, an end view of the voltaic pile or purifier.

In the practice of my invention I provide a cylindrical casing 5, which is composed of iron or steel or any preferred metal and provided with caps or heads 6 and 7, and I also provide a water-supply pipe 8 and an exit-pipe 9, and it will be understood that this device is located, preferably, adjacent to the boiler or in any suitable place, and the exit-pipe 9 is designed to convey the water to the boiler, and communicating with the cap or head 7, near the lower side thereof, is a blow-off pipe 10, and each of the pipes 8, 9, and 10 is provided with a valve 11.

The voltaic pile or purifier which I employ consists of a plurality of circular metal disks 12, three of which are shown in the drawings, and said disks or plates are substantially of the same diameter as the inner diameter of the casing 5 and are provided at their perimeters with segmental ports or passages 13, and

similar ports or passages 14 are formed therein, as shown in Fig. 2, the object of this construction being to provide means for free circulation of the water from one end of the casing to the other. I also provide a plurality of rods 15, any suitable number of which may be employed, and these rods 15 are composed of zinc and are passed through suitable openings in the disks or plates 12, and wound on said rods between the disks or plates are spiral copper coils 16. As thus constructed, it will be seen that the water flows through the purifier in channels or currents parallel to the elements of the voltaic pile and that a free circulation or passage therefor is provided.

It will be understood that the rods 15 may be arranged as close together as is possible to place them, or in such manner that said rods and the copper coils 16 will occupy the entire space within the casing, and the ports or passages formed in the disks or plates 12 may be of any desired shape or form and may consist simply of perforations.

The operation will be readily understood from the foregoing description, when taken in connection with the accompanying drawings, by all those familiar with this class of devices, and it will be understood that a new purifier may be inserted into the casing whenever desired, or when by reason of the galvanic action which takes place within said casing the zinc rods 15 are consumed.

The water passing through the purifier and being subjected to its action, the affinity of the various scale-forming ingredients in the water for each other and also their affinity for the metal of the boiler is destroyed, and as no one ingredient can by itself form a scale the non-scaling water is delivered to the boiler, and this result being accomplished the old scale, if any has previously formed on the boiler, will, from the action of the water, rot and decompose and be disconnected from the boiler by the expansion and contraction thereof, will gradually drop off, and may be removed therefrom.

Any deposit which may collect at any time in the casing 5 may be blown off through the tube 10, and although I have described the rods 15 and the spiral coils 16 as composed of zinc and copper, respectively, any other two



metals which may constitute an effective voltaic pile may be employed.

Having fully described my invention, I claim as new and desire to secure by Letters

5 Patent—

1. In a water-purifier, the combination with a suitable casing, of a voltaic pile, consisting of a plurality of disks or plates, which are connected by a plurality of zinc rods which  
10 pass therethrough, said rods being provided between said disks or plates with spiral coils of copper wound thereon, substantially as shown and described.

2. In a water-purifier, the combination with  
15 a cylindrical casing, provided with water supply and egress pipes, of a voltaic pile, consisting of suitable metal disks or plates supporting a plurality of longitudinal rods of zinc which are passed therethrough, said rods  
20 being wound between said disks or plates with

spiral coils of copper wound thereon, and said disks or plates being provided with ports or passages for the water, substantially as shown and described.

3. In a water-purifier, the combination with 25 a casing adjacent to and connected with a steam-boiler, through which casing is passed the water-supply, of zinc rods passing longitudinally through said casing and supported therein, each of said rods being separately 30 and spirally wound with copper, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 20th 35 day of July, 1896.

JOHN H. HARRISON.

Witnesses:

CHARLES S. ROGERS,  
C. HARRIN.