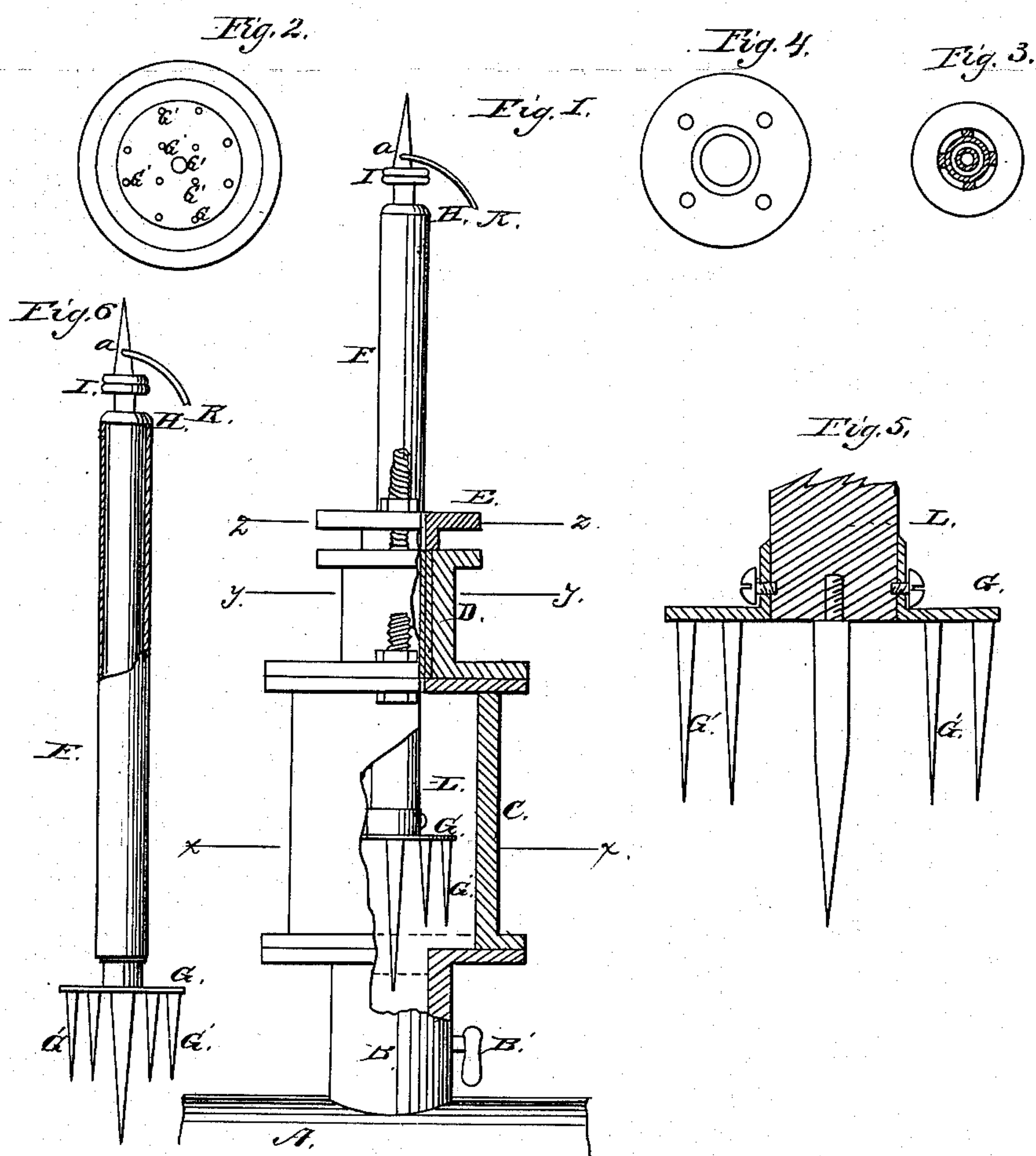


*S. G. Cabell.*

### *Preventing Incrustation in Boilers.*

*N<sup>o</sup> 68,041.*

*Patented Aug. 27, 1867.*



*Witnesses,*

W. Morris Smith  
Edmund E. Smith

*Inventor*

S. G. Cabell  
by his attys  
Boron Counts & Co

# United States Patent Office.

SAMUEL G. CABELL, OF QUINCY, ILLINOIS.

Letters Patent No. 68,041, dated August 27, 1867.

## IMPROVEMENT IN ELECTRICAL APPARATUS FOR PREVENTING INCRUSTATION OF STEAM-BOILERS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, SAMUEL G. CABELL, of Quincy, in the county of Adams, and State of Illinois, have invented a new and useful Improvement in Apparatus for Preventing the Formation of Scale in Boilers, and removing such incrustation as may have been already formed at the time of its application; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation (partly in section) of the apparatus as constructed with a permanently magnetized steel bar employed.

Figure 2 is a horizontal section on the line *x x* on fig. 1.

Figure 3 is a similar section on the line *y y*.

Figure 4 is a similar section on the line *z z*.

Figure 5 is a sectional view, showing the method of attaching the plate *G* to the magnet *L*.

Figure 6 is an elevation of a galvanic rod partly in section, which may be substituted for the magnet represented in fig. 1.

The same letters are employed in all the figures in the indication of identical parts.

The object of my invention is to provide means whereby to conduct off the electricity generated in a steam-boiler, for the purpose of preventing incrustation therein, by means of a series of magnetized points attached to a permanent magnet, a simple conductor or a rod composed of dissimilar metals arranged within a chamber attached to the boiler, and provided with a stop-cock, in such manner that said action may be regulated or suspended at pleasure.

The following description will enable one skilled in the art to make and use my apparatus:

*A* represents part of the shell of a cylindrical boiler, to which are attached the pipes *B* provided with a stop-cock, *B'*. This pipe may be constructed with flanges, as shown in fig. 1, by which the cylindrical chamber *C* may be attached to it. On the upper end of this chamber is bolted the stuffing-box *D* with its follower *E*. The bar *F*, of permanently magnetized steel, passes through the stuffing-box *D*, where it is surrounded and insulated by gutta-percha or other suitable non-conductor, and in the collar *E* and lower part of the stuffing-box it is sustained by strips of gutta-percha or other suitable insulators, arranged as shown in fig. 3, the packing in the stuffing-box being steam-tight, as well as a non-conductor. About midway of the packing in the stuffing-box the magnet is provided with a collar secured to it, which being firmly clamped by the packing prevents the steam from forcing up said magnet. This may also be accomplished by other means which it is not necessary to describe here. On the lower end of the rod *F* is fastened, suspended within (and not in contact with) the chamber *C*, the plate *G*, from the lower face of which the pointed pins *G'* project. These points are of soft iron, or other suitable material, gold plated and tipped with platinum, and being connected by means of the plate *G* of the same material with the magnet *F*, become magnetized thereby. On the upper end of the rod is a pointed tip, *I*, screwed into the cap *H*, and bearing upon and holding in place the wire *K*, which communicates with the earth, by which means the electric current received by the points *G* is conveyed off and discharged, or the ground connection may be made by passing a wire through the hole *a* in the upper pointed tip *I*. The other end of said wire communicating with the ground establishes the current, as before described. Instead of the permanently magnetized rod *F*, a rod composed of two dissimilar metals, as represented in fig. 6, so constructed and combined as to generate galvanic currents, may be substituted therefor.

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

1. The external chamber *C* attached to the steam-boiler, when provided with a stop-cock to cut off or regulate its communication therewith, for the purpose specified.

2. In combination with said chamber *C*, a rod, *F*, constructed with points *G*, arranged within the chamber and insulated therefrom, in the manner substantially as and for the purposes set forth.

3. In combination with the chamber *C*, a rod, *F*, constructed with points *G*, arranged within the chamber, and insulated therefrom, said rod being a simple conductor, a permanent magnet, or composed of two dissimilar metals, substantially as and for the purpose described.

S. G. CABELL.

Witnesses:

W. MORRIS SMITH,

SYDNEY E. SMITH.