

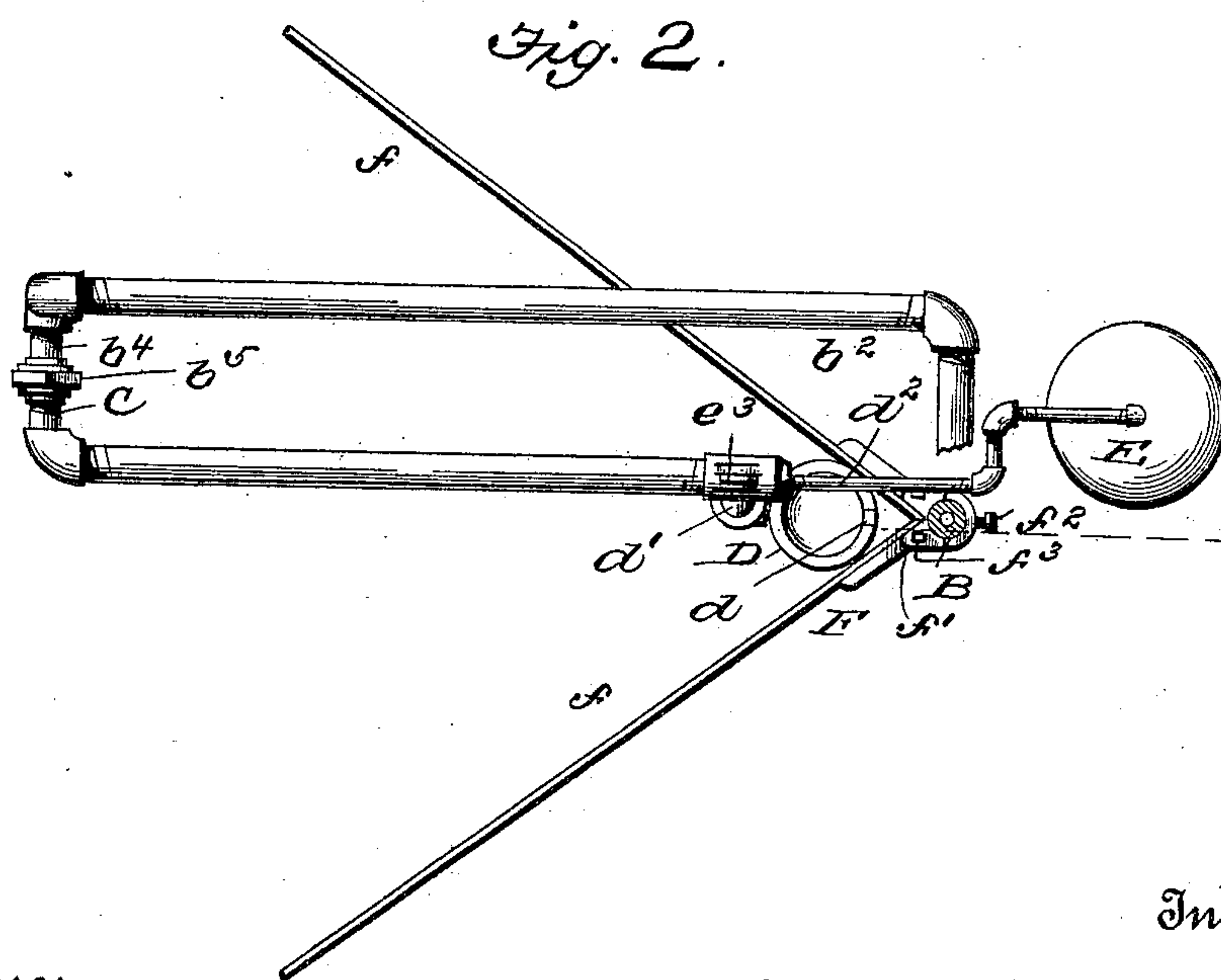
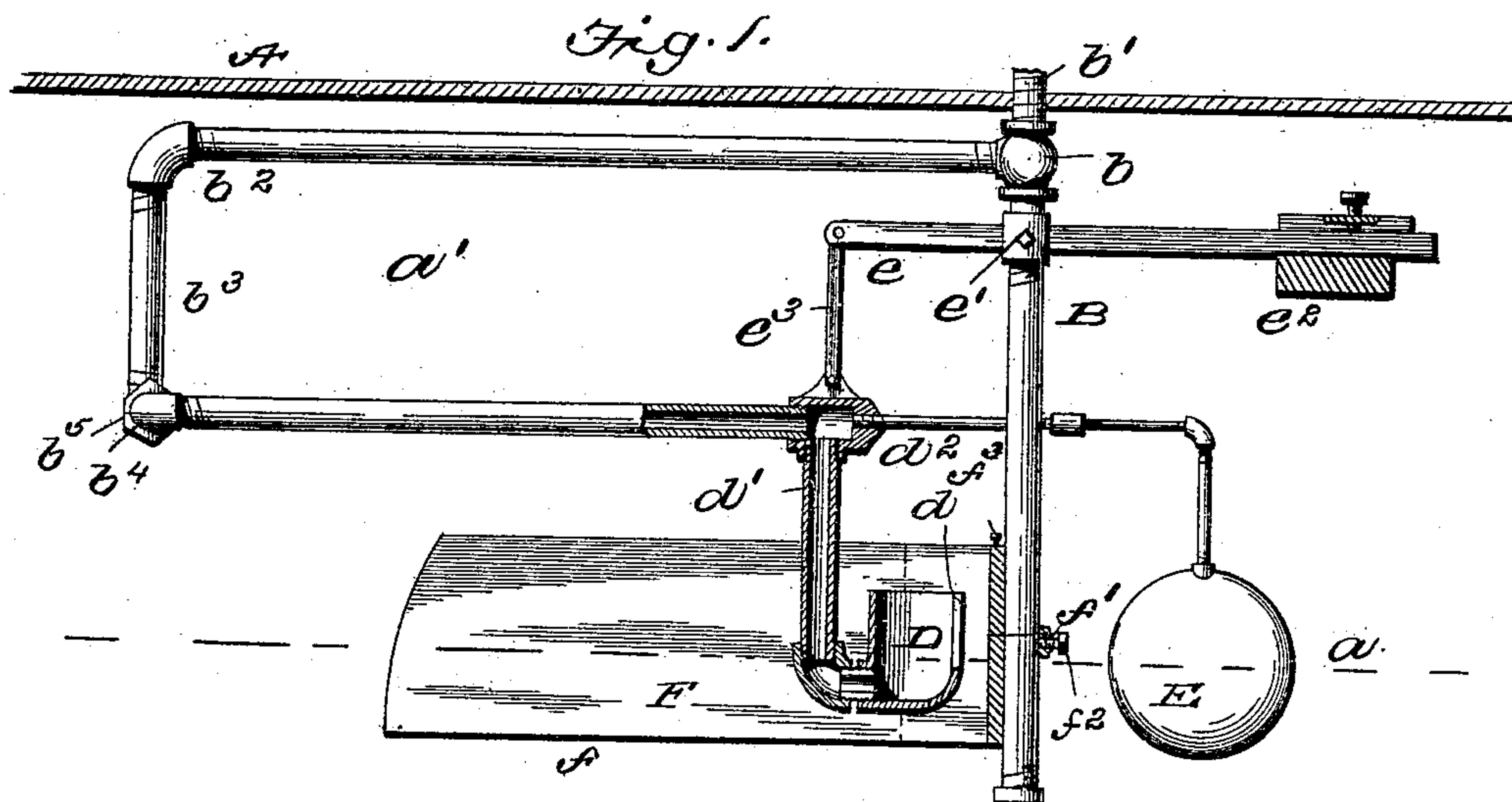
(No Model.)

2 Sheets—Sheet 1.

C. S. GARRIGUS.
BOILER CLEANER.

No. 543,527.

Patented July 30, 1895.



Witnesses

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

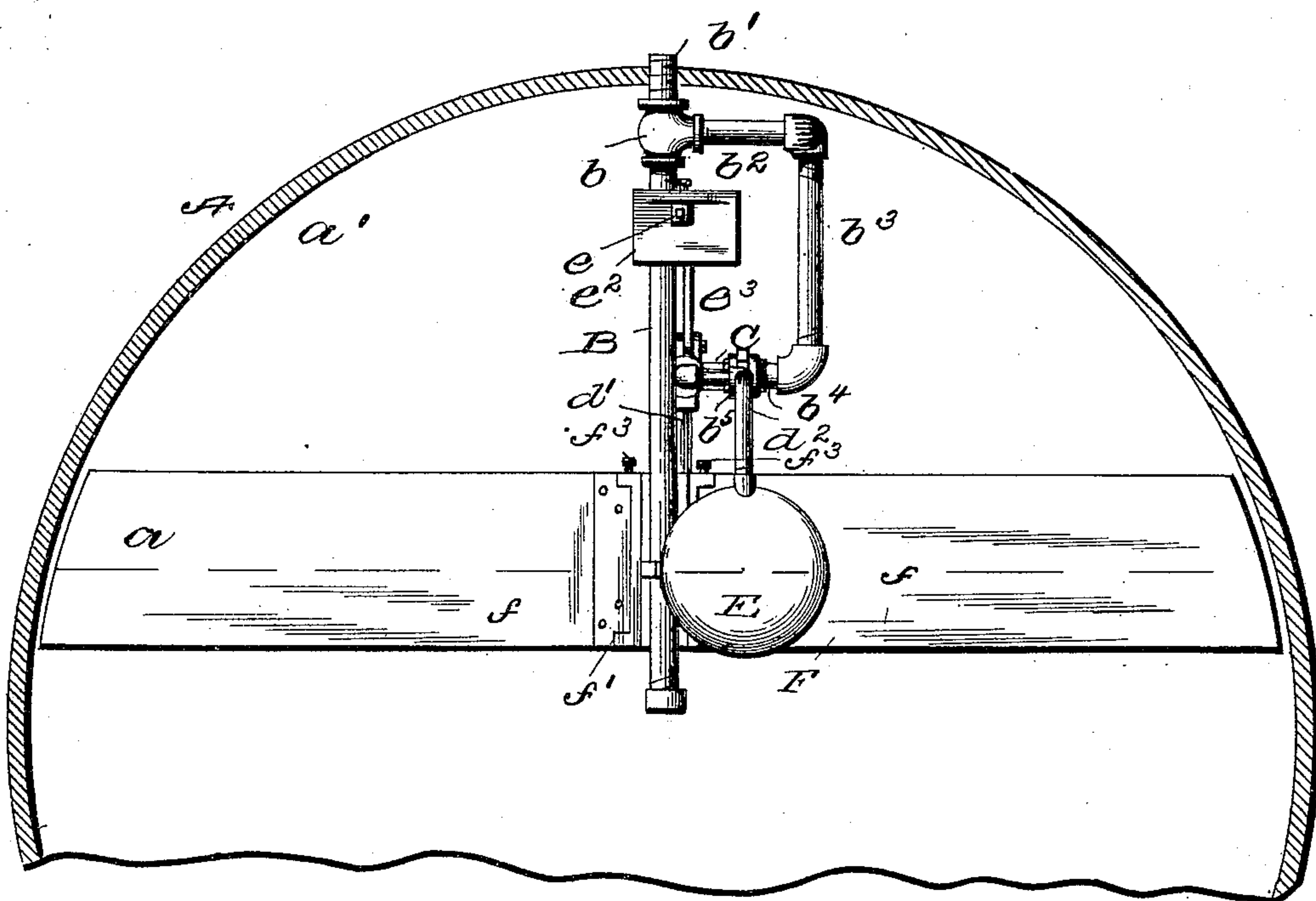


Fig. 3.

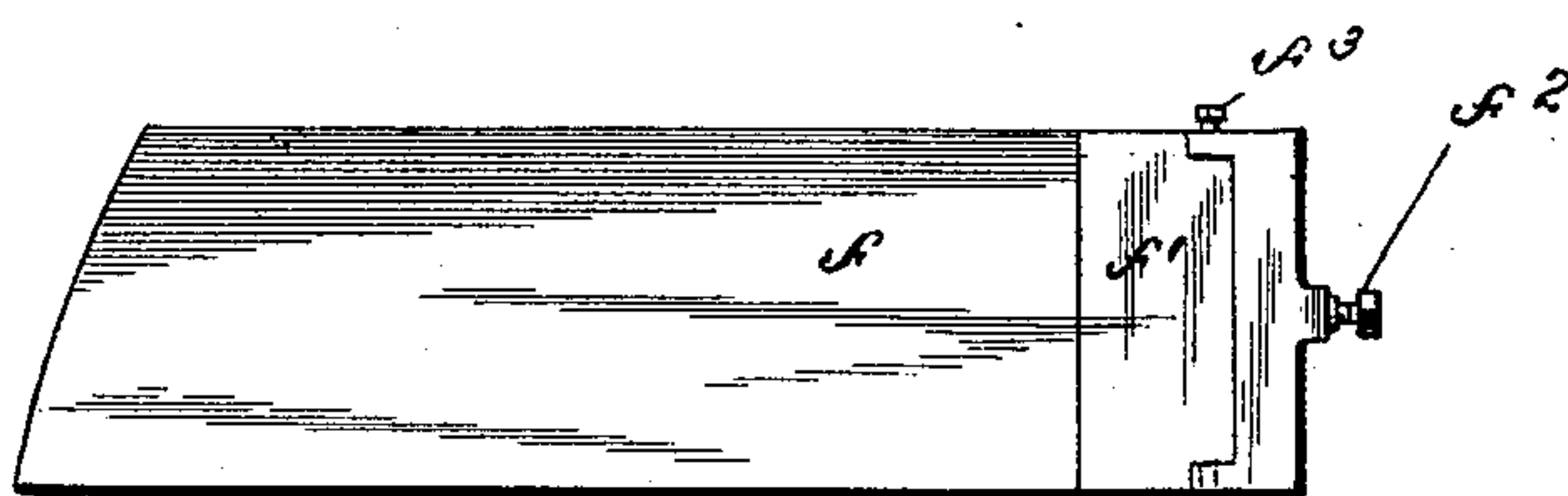
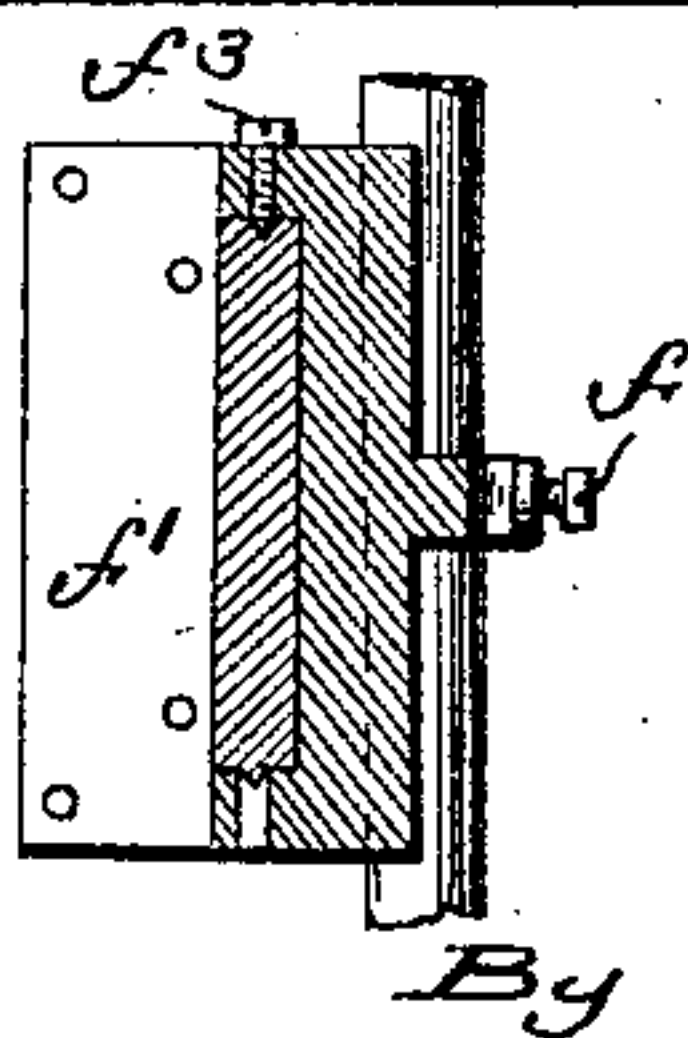


Fig. 5.



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CULBERSON S. GARRIGUS, OF LOUISVILLE, KENTUCKY.

BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 543,527, dated July 30, 1895.

Application filed August 9, 1894. Serial No. 519,835. (No model.)

To all whom it may concern:

Be it known that I, CULBERSON S. GARRIGUS, of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Boiler-Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in boiler-cleaners, having reference to that class which gather the scum from the surface of the water in the boiler and from which it is conveyed to a precipitator and the water returned to the boiler after it is freed from the collected scum.

In boiler-cleaners as heretofore constructed it has always been necessary to preserve the water-line in the boiler at a fixed or established point, at which it must be maintained in order to produce the proper or desired results. In many instances it has been found difficult to attain the results desired, as it is impossible to always keep the water at the same or proper level.

The object of my invention is to overcome the objections above noted and provide a boiler-cleaner which will effectively carry off the scum on the water in the boiler at any and all variations which may occur in the height thereof.

A further object is to provide for directing the flow or passage of the scum on the surface of the water to the skimmer.

These objects I attain by so mounting the skimmer-cup within the boiler that it will always be located at the water-surface, a vertical slot in said cup allowing the passage of the scum thereinto. To the lower end of one side of this cup, opposite to the slot therein, is connected a branch of the outlet-pipe. A float is attached to one end of a swinging member of the outlet-pipe, so that the position of the cup is regulated to conform to the height of the water in the boiler at any and all variations therein. The skimmer-cup is located at the vertex of a V-shaped guide, with its slot facing said vertex, said guide being composed of two divergent adjustable skimming-wings secured at their inner convergent ends. The outer or divergent ends of these wings

extend to the sides of the boiler and serve to direct the flow or passage of the scum to the skimmer-cup. The guide-wings are capable of adjustment and are of such width that they will always extend below and above the water-line. The convergent end of this guide is located near that end of the boiler farthest from the fire-box, and in rear of said convergent end the float is designed to be located. Thus the float is in comparatively pure water, and the accumulation of sediment thereon, which would serve to weight it down, is successfully avoided.

The invention comprises the novel features of construction and also the detail combination and arrangement of parts, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of a portion of a boiler, showing my improved cleaner, parts thereof being in section and others in side elevation. Fig. 2 is a plan view of the cleaner and its adjuncts removed from the boiler. Fig. 3 is a detail view of a portion of the skimming-guide. Fig. 4 is a vertical transverse sectional view of a portion of the boiler, the cleaner being shown in end elevation. Fig. 5 is a sectional detail view.

Referring to the drawings, A designates a portion of a shell of a steam-boiler; *a*, the water-line therein, and *a'* the steam-space.

B is a standard or support perpendicularly located within the boiler, the same being connected by a T-coupling *b* to a threaded pipe-section *b'* screwed into a hole in the top of the boiler-shell. To this pipe-section is designed to be connected a pipe (not shown) leading to a precipitator, (also not shown.) The standard or support B is preferably made of a tube closed at its lower end. From the T-coupling *b* extends a horizontal pipe *b*², having at its other end a downward branch *b*³, which is connected by a lower right-angular branch *b*⁴ to a horizontal swinging or movable pipe C. This pipe C is connected to said lower horizontal branch *b*⁴ by a union or swinging joint *b*⁵, which is locked slack, so that one portion of said branch *b*⁴ is capable of a swiveling or hinged motion with reference to the other portion.

D is normally held perpendicularly and is

the skimmer-cup, which is open at its top and provided at that side farthest from the fire with a vertical slot d , which extends to near the bottom of the cup. This cup is connected
 5 by a perpendicular pipe d' to the outer end of the swinging pipe C, a suitable coupling uniting said pipe d' to the cup. The pipe d' opens into the cup on a line with the bottom thereof opposite to the vertical slot. By extending the vertical slot in the perpendicular
 10 skimmer-cup to within a short distance of the bottom thereof and connecting the outlet-pipe to the opposite side of said cup on a line with said bottom the fall of the scum through said
 15 slot to the bottom of the cup aids in the draft or circulation through said outlet-pipe.

From the closed end of pipe C extends a rod or prolongation d^2 , (or it may be a closed tube,) to the lower or rear end of which is secured a float E, the same being supported by the water in the boiler. A lever e is fulcrumed at e' on the standard or support B, and upon its outer end is an adjustable weight e^2 , while its forward end is connected by a
 25 link e^3 to the closed end of swinging pipe C. This weight on the lever serves to counter-balance the weight of the parts suspended by link e^3 . In this way the float has to contend with but little unbalanced weight. The vertical position of the float with reference to the skimming-cup is such that when the float assumes its normal floating position on the water the cup will be at the most efficient skimming-level—that is, the bottom of the
 35 inlet-slot is a short distance below the water-level. Thus it will be seen that the position of the float controls and carries the skimmer-cup, the position of which is regulated by the float at any and all variations in the height of the water. The position of the skimmer-cup is thus automatically regulated and no shortening or lengthening of the depending supporting-standard is necessary.

F is a guide for directing the flow or passage of the scum to the skimmer-cup. It comprises two divergent wings f and a hinge-casting f' , which latter is vertically adjustable on the standard or support B and can be firmly held by a set-screw f^2 . The inner convergent ends of the wings f are hinged to this casting f' , set-screws f^3 in the latter forming hinge-pivots for said wings, and also means for tightening the hinges and securing the wings to the desired angular position. The
 55 outer forward ends of these wings extend to the sides of the boiler and together they form a V-shaped guide, at the vertex of which is the skimmer-cup, its inlet-slot being toward the extreme rear end of the guide. In this way the flow or passage of the scum is directed toward the slot in the cup, and hence the skimming is very effectively and quickly accomplished. The wings are of such width that a portion thereof is always extended through
 60 the water-line, the position of the wings being first regulated by the adjustment of the hinge-casting on the standard or support.

It will be observed that the float is located behind the vertex or convergent end of the guide, and hence is in contact with comparatively clean water. In consequence there is no likelihood of sediment accumulating on the float and serving to weigh the latter down, but the float will always keep the skimmer-cup in such position as to maintain the slot
 75 thereof so that it will intersect the water-line in the boiler and draw the scum at any level of water and allow of the variation of several inches in the depth of the latter.

From what has been said the operation and advantages of my invention are manifest. 80

As is well known, in the ordinary course of the circulation of the water within the boiler, the impurities rise to the top of the water and move rearwardly at the surface thereof. By
 85 my improvements the scum is intercepted by the divergent guide-wings and is gradually accumulated in the vertex of the V-guide, from whence it passes into the skimming-cup through the slot thereof, and thence through
 90 the series of pipes out through the pipe-section b' onto the precipitator. The skimmer-cup is free to rise and fall according to the height of the water in the boiler, the float serving to move the swinging pipe C on its
 95 union or swinging joint, the movement of the float being according to the variations in the water-level.

A boiler-cleaner constructed as herein described is extremely simple, and by means
 100 thereof highly satisfactory results are attained.

It will be observed that the guide-wings, being separable from their hinge-casting, can be easily inserted into or removed from the
 105 boiler and can be readily adjusted according to the size of the latter, so that their outer ends will be against the sides of the boiler.

I claim as my invention—

1. A boiler cleaner having an approximately
 110 perpendicularly disposed skimmer cup open at its top and provided with a vertical slot at one side extending to near the bottom of said cup, an outlet pipe opening into one side of said cup on a line with the bottom thereof,
 115 and a guide extending beyond the slot in said cup substantially as set forth.

2. A boiler cleaner having an approximately perpendicularly disposed skimmer-cup open at its top and provided with a vertical slot in
 120 one side extending to near the bottom of said cup, an outlet pipe opening into one side of said cup on a line with the bottom thereof, a guide extending beyond the slot in said cup and a float connected to said outlet pipe for
 125 normally keeping the said slot in said cup on a line intersecting the water line in the boiler said float being located in rear of said guide, substantially as set forth.

3. A boiler cleaner having an approximately
 130 perpendicularly disposed skimmer-cup open at its top and provided with a vertical slot in one side extending to near the bottom of said cup, a series of outlet pipes having a movable

or swinging member which opens into one side of said cup opposite said slot on a line with the bottom of the latter, and a float connected to said movable member for normally keeping the said slot in said cup on a line intersecting the water line in the boiler, substantially as set forth.

4. A boiler cleaner having an approximately perpendicularly disposed skimmer-cup open at its top and provided with a vertical slot in one side extending to near the bottom of said cup, a depending standard, an outlet pipe having a swinging member opening into one side of said cup on a line with the bottom thereof, a float connected to said swinging member, and a weighted lever fulcrumed on said standard and connected to said latter member, substantially as set forth.

5. In a boiler cleaner, an approximately perpendicularly disposed skimmer-cup having a slot in its rear side, an outlet pipe opening into said cup on a line with its bottom, a V-shaped guide having wings extended from the sides of the boiler to and beyond said slot in said cup, said slot facing the inner ends of said guide-wings, and a float in the rear of said inner ends of said guide wings connected to said outlet pipe, substantially as and for the purpose set forth.

6. In a boiler-cleaner, a skimmer-cup open at its top and having a vertical slot therein, means for automatically regulating the position of said cup according to the height of the water in the boiler, the V-shaped guide having divergent wings, said cup being at the vertex of said guide, with its slot facing the latter and means for adjusting said guide, substantially as set forth.

7. A boiler cleaner comprising a standard or support located within the boiler shell near that end thereof farthest from the fire, an approximately perpendicularly disposed skimmer-cup having a vertical slot therein, a V-shaped guide adjustably supported on said standard, said cup being located at or near the vertex of said guide, the series of outlet pipes having a swinging member connected to said cup, a float also connected to said swinging member and designed to be located beyond the vertex of said guide and between the latter and the adjacent end of the boiler, substantially as set forth.

8. A boiler-cleaner, comprising a skimmer-cup supported within the boiler at the water-surface and having pipe communication leading outside of the boiler, a vertical standard

supported within the boiler by the shell thereof, a hinge-piece supported by said standard and a pair of adjustable skimming-wings having their inner ends hinged to said hinge-piece and having their outer ends converging and extended to the sides of the shell, substantially as set forth.

9. A boiler cleaner, comprising a skimmer supported within the boiler at the surface of the water and having pipe communication leading to outside the boiler, a vertical standard rigidly supported within the boiler by the shell thereof, a hinge-piece secured to said standard and vertically adjustable thereon, and a pair of converging skimming-wings having their convergent ends pivoted to said hinge-piece and means for binding and holding said hinged ends of said wings, substantially as set forth.

10. A boiler-cleaner, comprising a vertical standard rigidly supported within the boiler by the shell thereof, a hinge-piece secured to said standard and vertically adjustable thereon, converging skimmer-wings having their convergent ends pivoted to said hinge-piece, a slotted skimmer-cup disposed within the vertex of the angle formed by said skimmer-wings and presenting its slot toward said vertex, and a series of pipes connected to the lower portion of said skimmer-cup and extending outwardly through the wall of the boiler, substantially as set forth.

11. The herein-described improved boiler-cleaner, comprising a vertical standard rigidly supported within the boiler by the shell thereof, a pipe leading from within the boiler to the outside thereof, a swinging horizontal pipe connected with said pipe, a slotted skimmer-cup supported by and in communication with the free end of said swinging pipe in a position near said vertical standard, a float connected with the free end of said swinging pipe, a lever pivoted upon said standard and having one end connected with said swinging pipe, a weight adjustably secured on the other end of said lever, and converging skimmer-wings having their inner ends supported by said standard exterior to and near said skimming-cup, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CULBERSON S. GARRIGUS.

Witnesses:

O. C. PUDAN,
LOUIS B. FULTON.