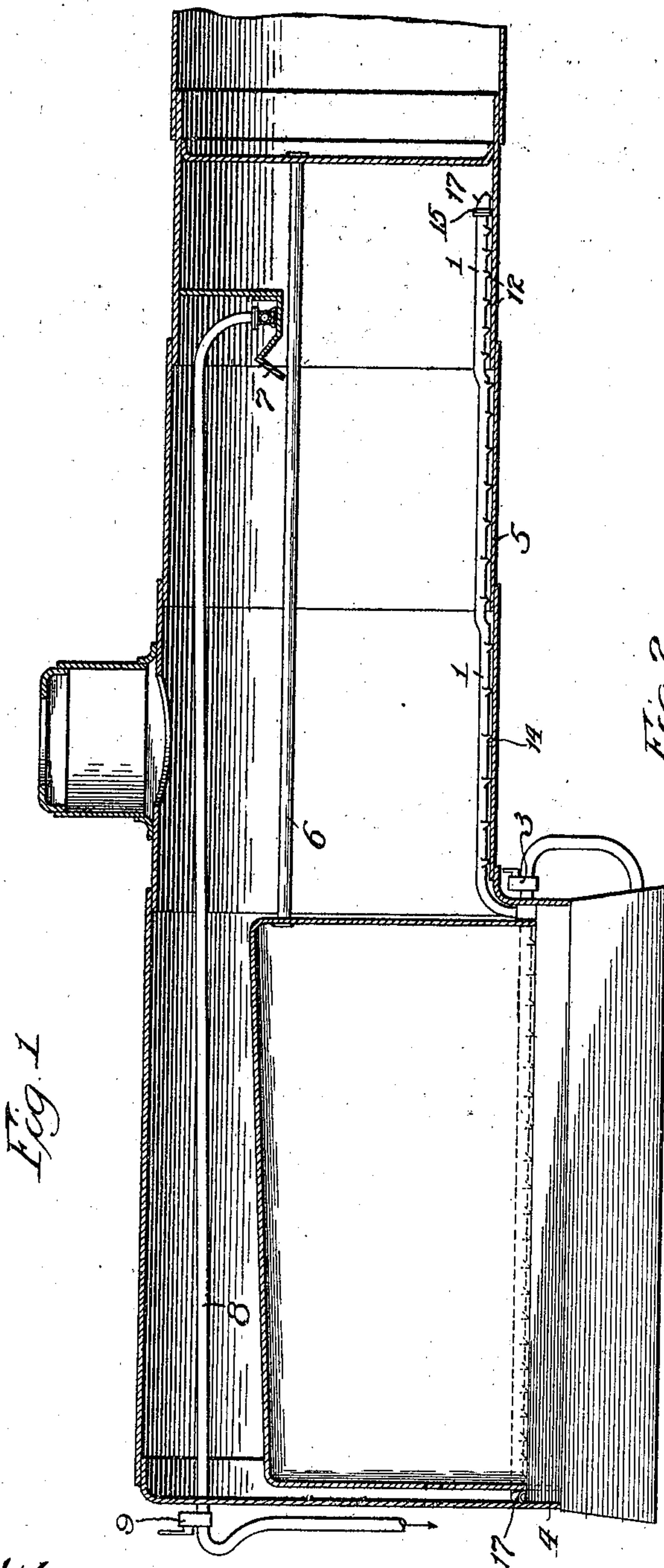


975,328.

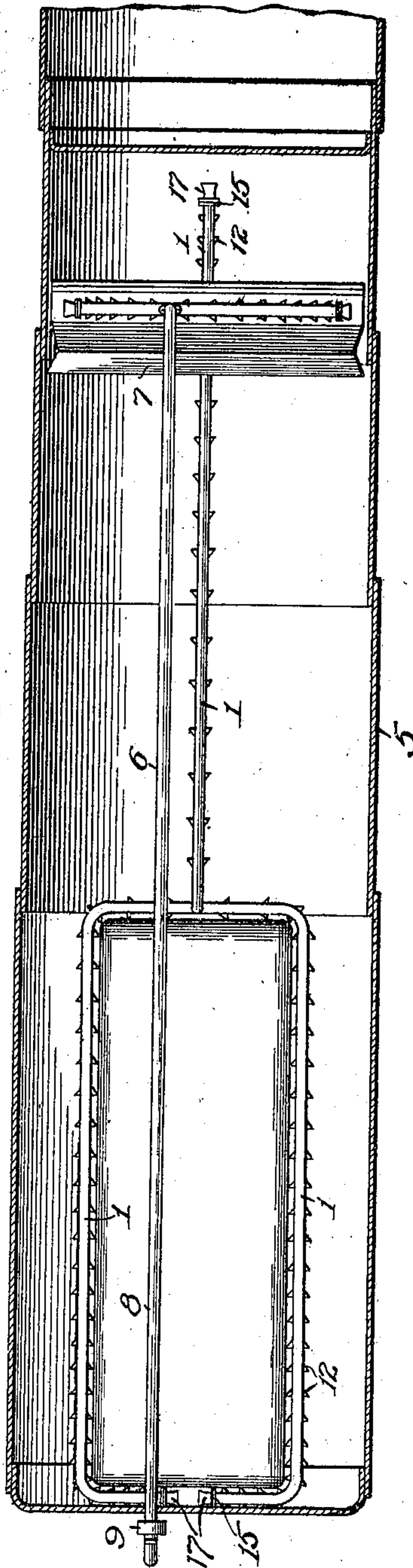
A. C. CLARK.  
MECHANICAL BOILER CLEANER.  
APPLICATION FILED MAR. 10, 1909.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.



*Fig. 2*



Witnesses:  
*Ed. C. Darrow*  
*Robert H. Dohleman*

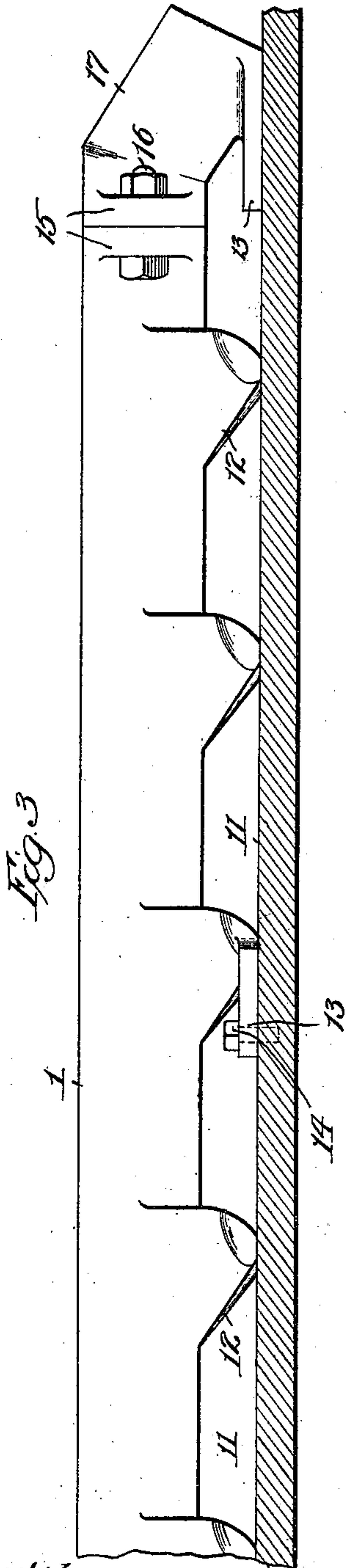
Inventor  
*Albert C. Clark*  
By *Rector, Hibben & Davis*  
*His Attys.*

A. C. CLARK.  
MECHANICAL BOILER CLEANER.  
APPLICATION FILED MAR. 10, 1909.

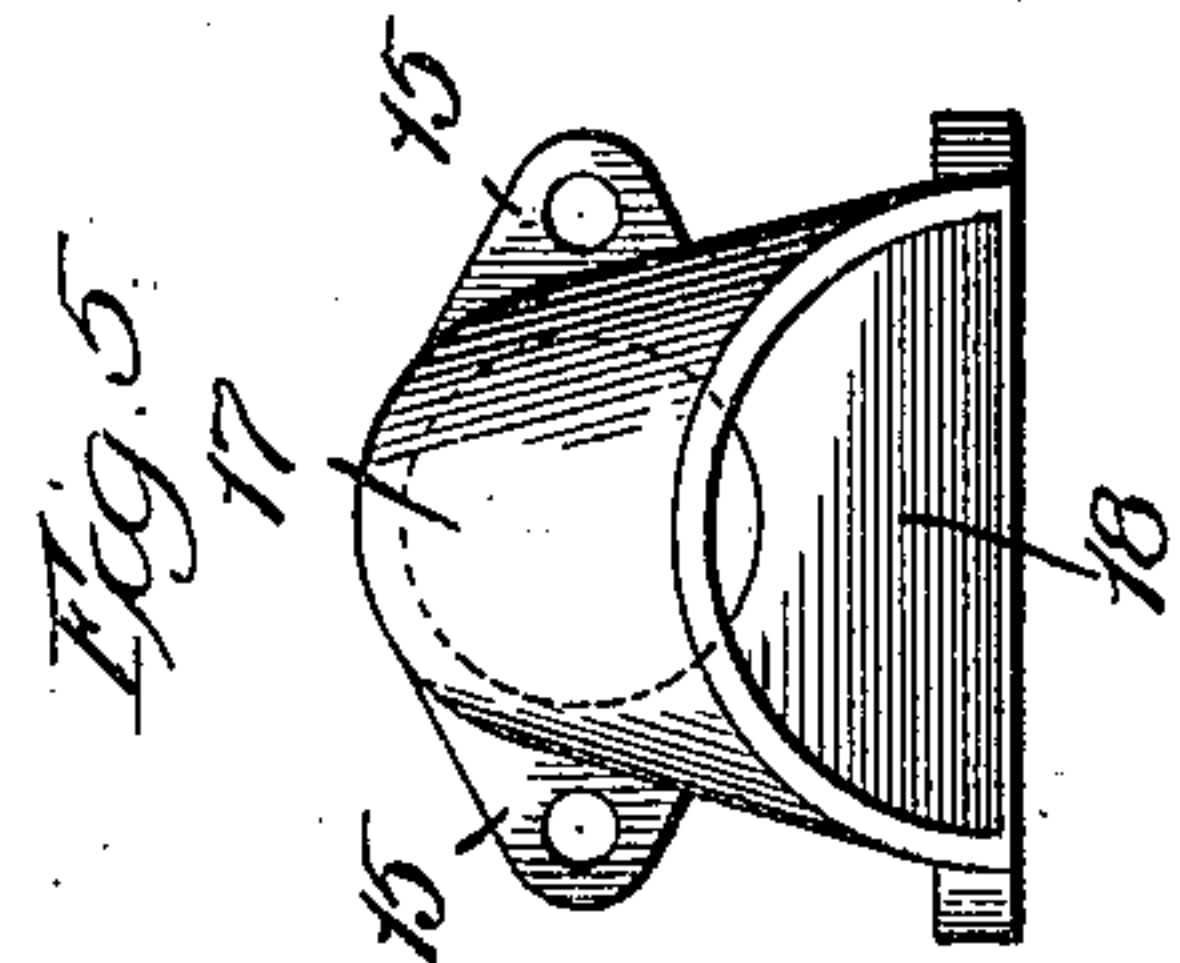
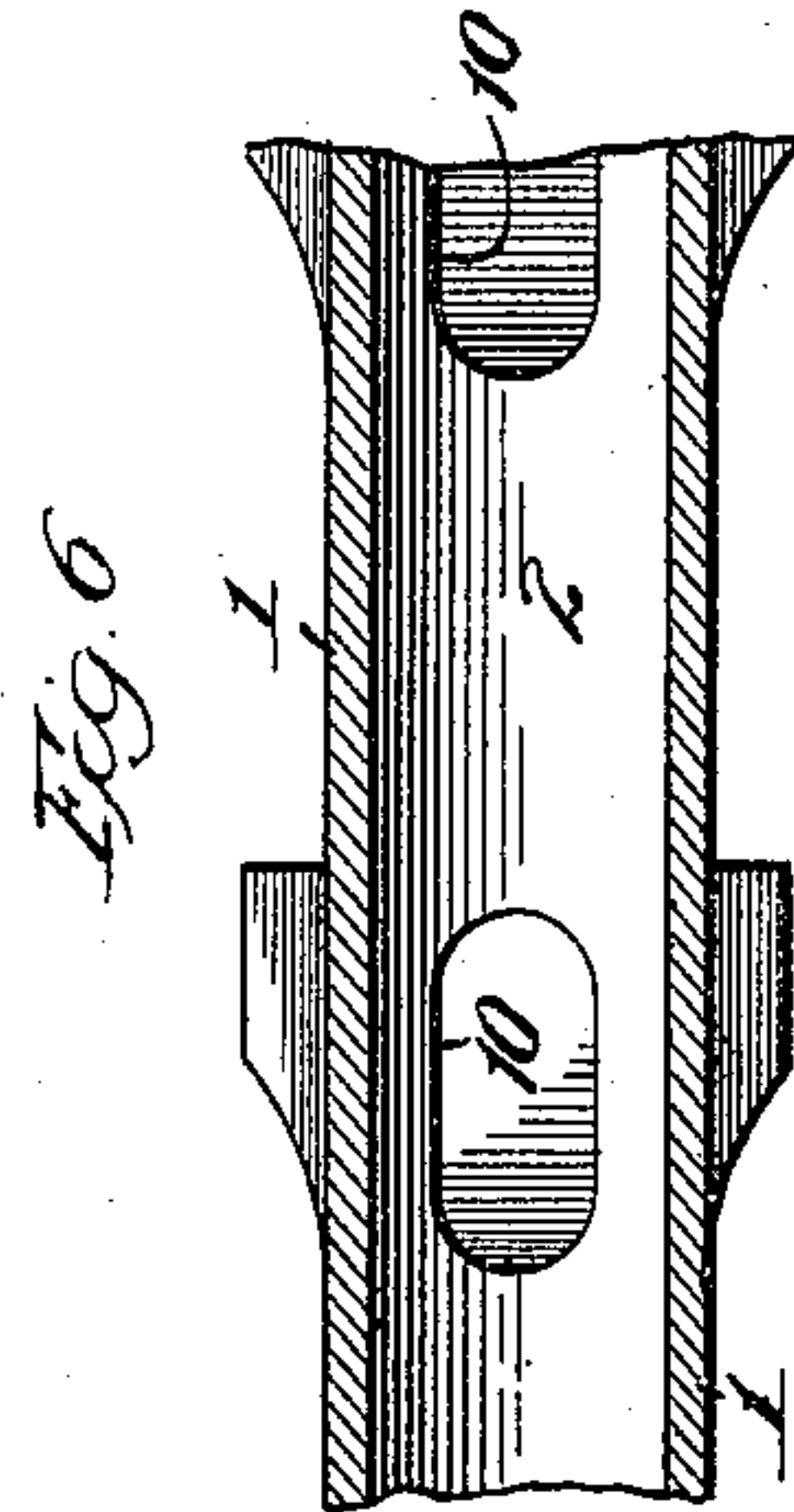
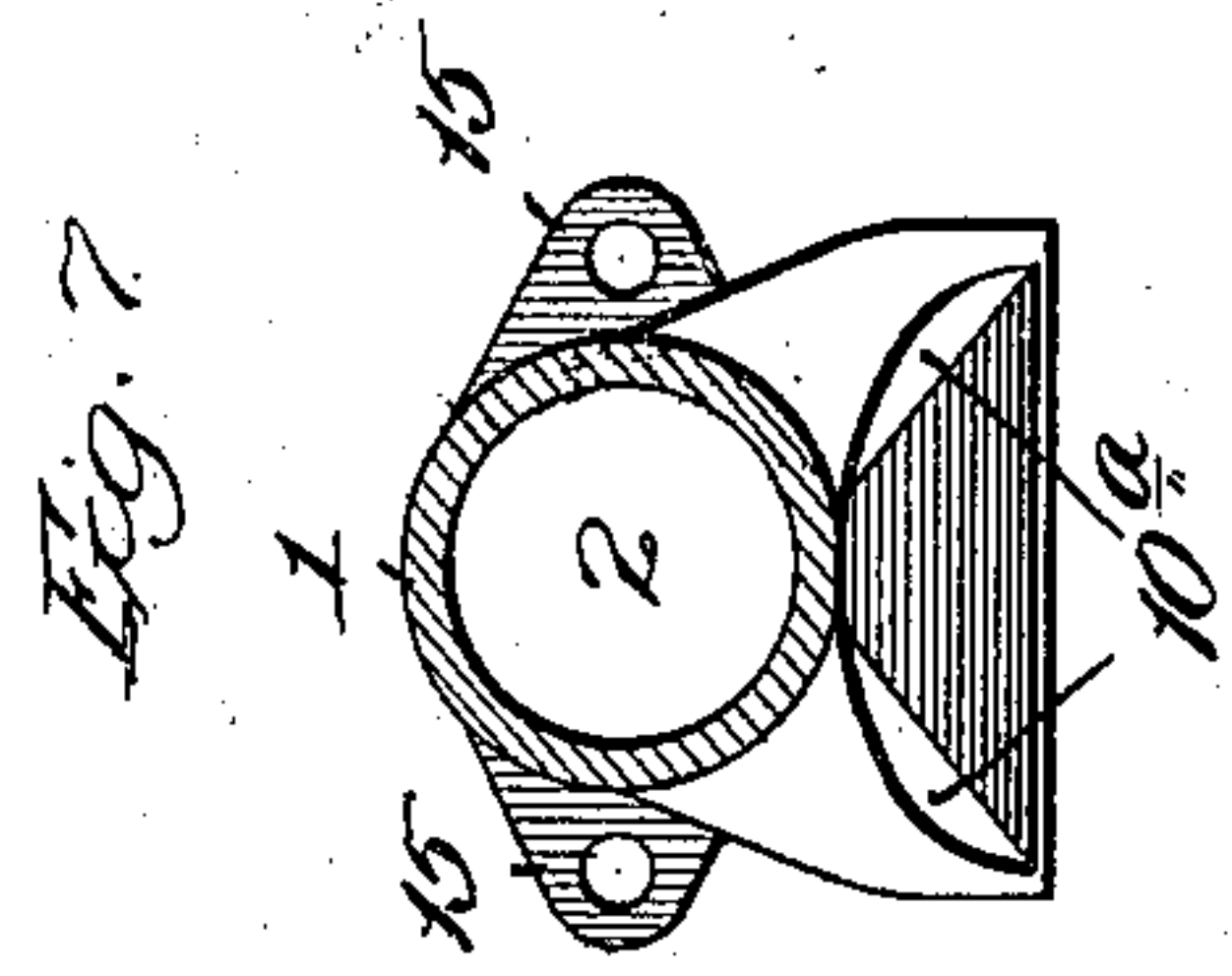
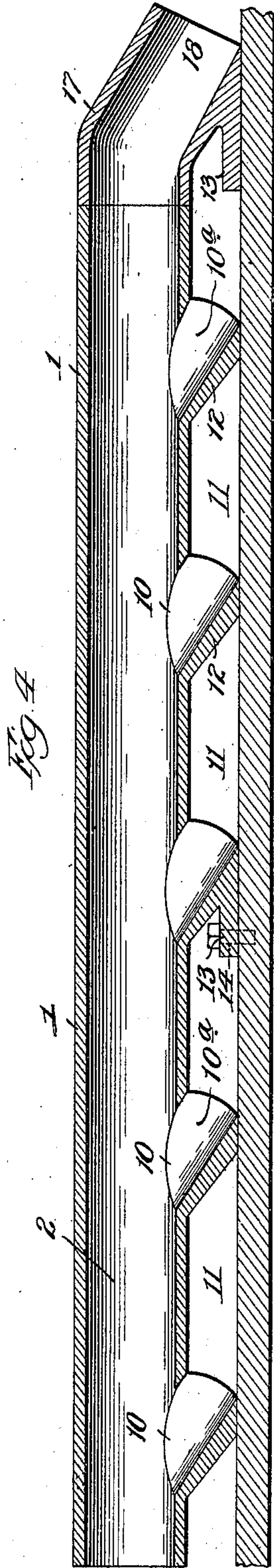
Patented Nov. 8, 1910.

2 SHEETS—SHEET 2.

975,328.



Witnesses:  
Geo. G. Davis  
Robert H. Dobberman



Inventor  
Albert C. Clark  
By Rector, Hibben & Davis  
His Attys



# UNITED STATES PATENT OFFICE.

ALBERT C. CLARK, OF CHICAGO, ILLINOIS.

MECHANICAL BOILER-CLEANER.

975,328.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed March 10, 1909. Serial No. 482,552.

*To all whom it may concern:*

Be it known that I, ALBERT C. CLARK, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Mechanical Boiler-Cleaners, of which the following is a specification.

My invention relates to what are known as mechanical boiler cleaners and the object thereof is to provide a novel, efficient and reliable device of this character, for the mechanical removal of sediment, etc., in a boiler, thereby keeping the boiler in its most efficient condition to avoid the frequent washing out thereof.

My invention is designed as an improvement upon the boiler cleaner described and claimed in United States Patent No. 632,785, issued on September 12, 1899, to myself and to Frank W. Hornish, on the invention of the latter. While in the present instance my invention is shown in connection with a locomotive boiler, as in said Hornish patent, it will be understood that the same may be applied to any of the different types of boilers, whether stationary or portable, and that I therefore contemplate using my invention wherever applicable. Moreover, my boiler cleaner is adapted and designed to be located in any desired portion of the boiler or in a tank for that matter, wherever the sediment is deposited or collects, all as clearly indicated in said Hornish patent.

In the drawings, Figure 1 is a sectional elevation of a boiler of the locomotive type showing my new boiler cleaner applied thereto; Fig. 2 a sectional plan thereof, the upper portion of the boiler shell being practically removed to expose the arrangement of the boiler cleaner therewithin; Fig. 3 an elevation on a larger scale of a portion of the draw-off head of the boiler cleaner; Fig. 4 a longitudinal section of the draw-off head illustrated in Fig. 3; Fig. 5 an end elevation of such head; Fig. 6 a detail view illustrating the opening from the sucker space into the passage in the head; and Fig. 7 a detail section of the draw-off head.

In the present instance I have, for the sake of a clear and definite description illustrated my invention as applied to a boiler of the locomotive type, although it will be understood that I do not desire to limit my-

self in this respect. Moreover, inasmuch as the invention relates to the particular construction of the draw-off head, I do not intend to limit myself to the location of such head in any particular portion of the boiler. However, in the present instance I have illustrated the draw-off head as located in the water legs of the boiler and also in the belly thereof and have in addition employed a draw-off head in a skimmer-basin located in the forward upper portion of the boiler, as seen in Figs. 1 and 2, in the same manner and for the same purpose as set forth in the Hornish patent aforesaid.

As shown in the drawings, the draw-off head is in the general form of a pipe and is by preference made in separate sections joined or clamped together in suitable manner, each section comprising a body or pipe portion 1, having the longitudinal draw-off passage 2, the passages of the different sections communicating to form a continuous passage adapted to communicate with a blow-off cock shown more or less diagrammatically at 3. In the present instance, this blow-off cock communicates at the front end of the water legs with the draw-off heads which, as illustrated in Fig. 2, extend in the water legs on both sides of the fire box, although, obviously, two separate blow-off cocks may be employed, one for each draw-off head. The same character of draw-off head may be located in a skimmer-basin 7, as clearly described in the Hornish patent aforesaid, which draw-off head may be connected by means of a discharge pipe 8 controlled by means of a blow-off cock 9 adapted to be arranged in the cab of the locomotive within convenient reach of the engineer for blowing off the boiler at this point while the locomotive is on the run.

As hereinbefore stated, my boiler cleaner is an improvement upon that of said Hornish patent and the difference resides more particularly in the location relatively of the inlet openings into the passage 2 of the draw-off head. In said prior boiler cleaner the inlet openings were spaced equidistantly but the same were made of a size increasing from the blow-off cock to the opposite end of the draw-off head. However, I have discovered that in order to effectually prevent the clogging of said inlet openings and the passage in the draw-off head by the sediment and particularly the scale, and in order that



the movement of the sediment or sludge may take place simultaneously along the length of the draw-off head, it is necessary or at least highly desirable that these inlet openings should be spaced unequal distances apart, the distance decreasing from the blow-off cock to the ends of the draw-off head. However, said inlet openings may be of the same size or carrying capacity.

Referring to the details of this new construction as thus described in general, the draw-off head is provided with a series of inlet openings 10 which by preference are of the oval form illustrated in Fig. 6 in order to accommodate large pieces or flakes of scale which are enabled to pass edgewise and the long way through said openings. These inlet openings communicate between the draw-off passage 2 and spaces 11 formed on the under side of the draw-off head between adjacent and parallel inclined flanges or wings 12, here shown as forming an integral part of the draw-off head and extending downwardly therefrom, leaving spaces below the pipe which are subject to the action of the draw-off head and which being freely open at the sides gives considerable latitude for such action. As clearly shown in Fig. 4, the inlet openings communicate with the spaces 11 at the forward end thereof, that is the end toward the blow-off cock, such spaces being of course open to the water leg (or other portion of the boiler in which the draw-off head may be located) at their sides as described, to the end that when the blow-off cock is opened the surrounding area of the water legs or the like may be acted upon in the opening of the blow-off cock. In order to provide means for attaching each section to the boiler structure, one or more of the flanges or wings 12 may be provided with a foot or extended portion 13 whereby the same would be bolted or screwed to the boiler structure in suitable manner, as by means of the screw bolts 14. Also, each section of the draw-off head is provided with end flanges 15 for bolting them together, and also in respect to the last section, for the purpose of bolting it, as by means of the bolt 16, to a short end section or elbow 17 which is provided with an end opening 18 communicating with the draw-off passage 2 as clearly indicated in Figs. 3, 4 and 5. However, the sections may be otherwise secured together. By thus spacing the inlet openings 10 at varying distances in the manner described and in thus providing spaces between the wings, I find in practice that it is practically impossible for the sediment and scale to clog or choke the spaces 11, inlet holes or passage in the draw-off head, such result being evidently due to the fact that the provision of substantially the same size of inlet openings instead of the variable size thereof as in the Hornish patent gives

a swift movement or current at the spaces 11 and causes a quick lifting and forcible discharge of the sediment from the spaces and through the draw-off head. Moreover the oval or elliptical shape of inlet openings indicated in Fig. 6 is of advantage inasmuch as it permits of large particles of sediment, particularly scales, passing through the openings without unduly increasing the carrying capacity thereof. Furthermore, the described construction provides an efficient blow-off action upon the sediment and sludge not only along the entire length of the draw-off head, regardless of the distance from the blow-off cock, but for a considerable space laterally thereof, all of which is accomplished in a practically instantaneous manner upon the opening of the blow-off cock and consequently with a minimum waste of hot water.

I claim:

1. A mechanical boiler-cleaner comprising a draw-off head having a longitudinal passage and a series of openings communicating therewith, said openings being of substantially the same size and being spaced varying distances apart decreasing as the distance from one end increases.
2. A mechanical boiler-cleaner comprising a draw-off head having a longitudinal passage and a series of openings communicating therewith, said openings being elliptical in shape with the major axis running longitudinal of the head.
3. A mechanical boiler-cleaner comprising a draw-off head having a longitudinal passage and a series of openings communicating therewith, said head having depending portions located adjacent said openings and having spaces or cavities whose walls converge toward such openings.
4. A mechanical boiler-cleaner comprising a draw-off head having a longitudinal passage and a series of openings communicating therewith, said head having depending portions located adjacent said openings and having spaces or cavities whose walls converge toward such openings, certain of said depending portions having flanges forming means for attachment.
5. A mechanical boiler-cleaner comprising a draw-off head in the form of a pipe having a series of openings communicating with the interior of the pipe, said head having depending portions located adjacent said openings and having spaces whose walls converge toward such openings, said openings and depending portions being spaced apart varying distances decreasing as the distance from one end increases.
6. A mechanical boiler-cleaner comprising a draw-off head having a longitudinal passage and a series of openings communicating therewith, said openings being spaced varying distances apart decreasing as the



distance from one end increases and said head being made in separate sections with means for securing the sections together.

5 7. A mechanical boiler-cleaner comprising a draw-off head having a longitudinal passage and a series of openings communicating therewith, a valve for controlling the blow-off action of the head, said openings being spaced varying distances apart decreasing as the distance from one end in-

creases and said head being made in separate sections with means for securing the sections together, and having at its outer end an elbow communicating with the extreme end of the said passage.

ALBERT C. CLARK.

Witnesses:

E. R. HUNTINGTON,  
B. ERICKSON.