W. E. WINE.

PRECIPITATOR.

APPLICATION FILED MAR. 6, 1920.

1,377,996.

Patented May 10, 1921.

2 SHEETS—SHEET 1.

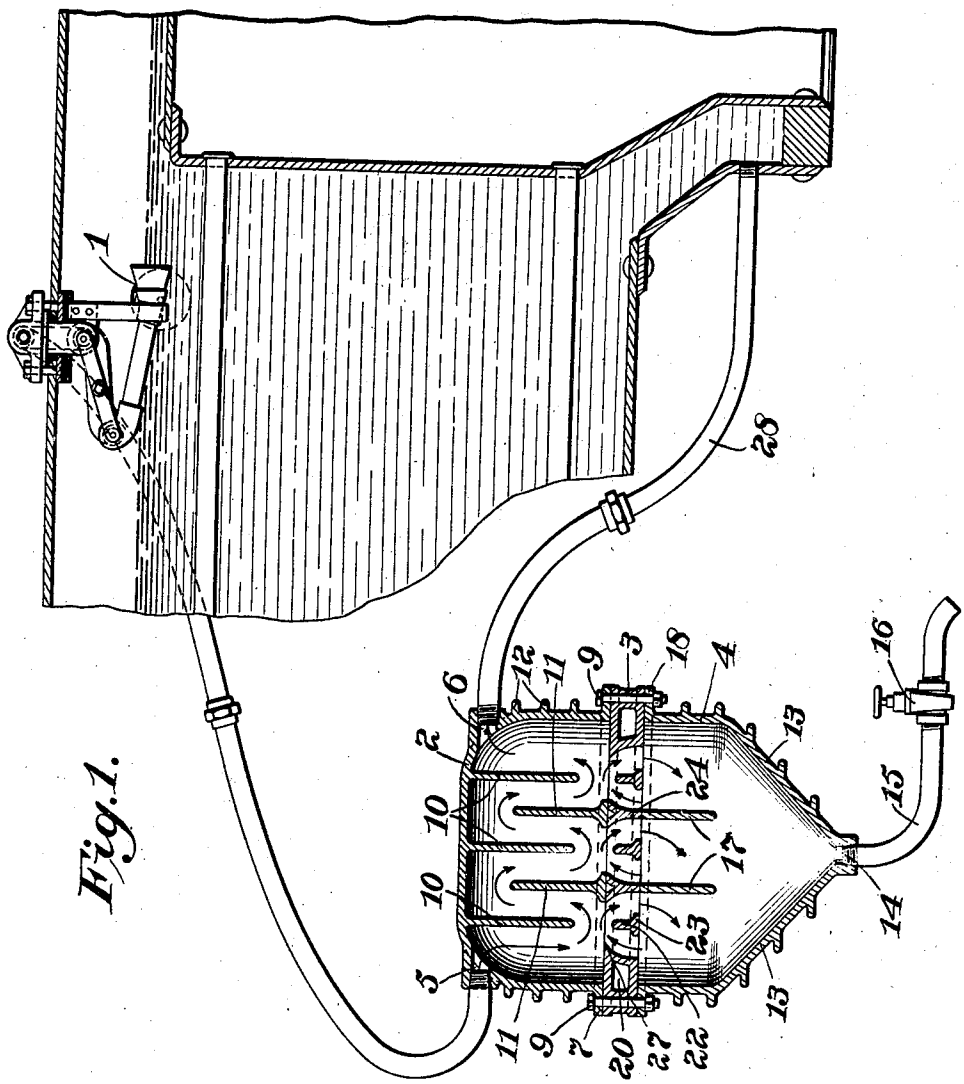


Fig. 1.

Inventor:

William E. Wine,

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2 SHEETS—SHEET 2.

Fig. 2.

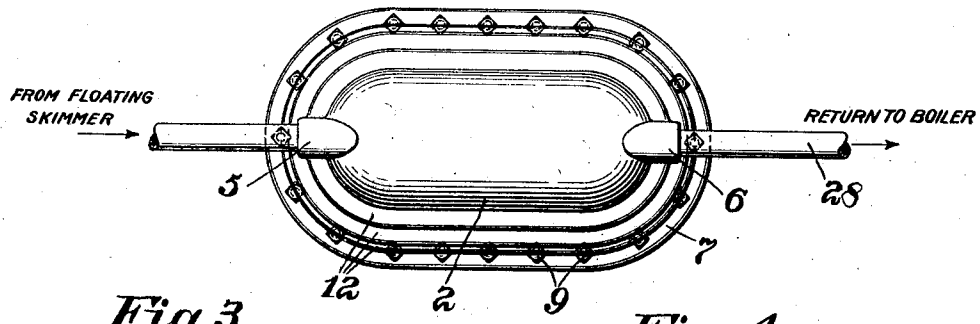


Fig. 3.

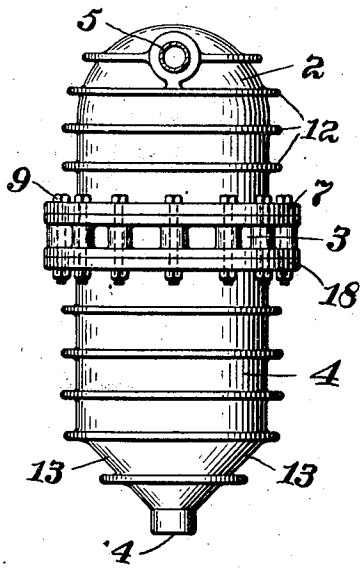


Fig. 4.

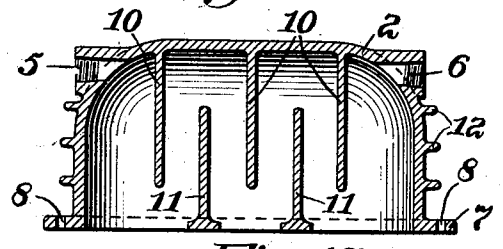


Fig. 4a

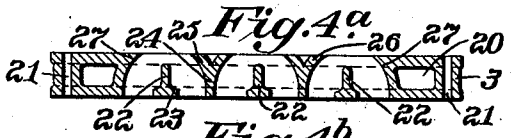


Fig. 4b

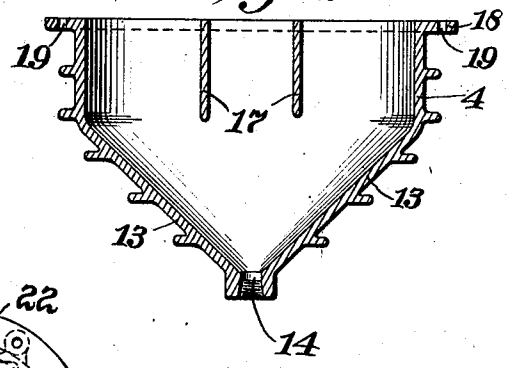
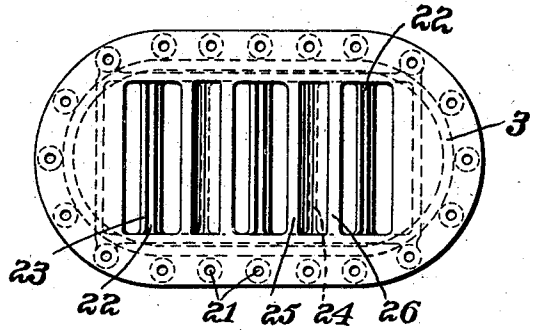


Fig. 5.



Inventor:

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UNITED STATES PATENT OFFICE.

WILLIAM E. WINE, OF TOLEDO, OHIO.

PRECIPITATOR.

1,377,996. Specification of Letters Patent. Patented May 10, 1921.

Application filed March 6, 1920. Serial No. 363,738.

To all whom it may concern:

Be it known that I, WILLIAM E. WINE, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Precipitators, of which the following is a specification.

My invention relates to a new and useful improvement in precipitators to be used with boiler skimmers and especially to one that is particularly adapted to be used with a locomotive boiler skimmer as shown and described by me in an application filed of even date herewith and bearing Serial No. 363,737, filed Mar. 6, 1920.

An object of the present invention is to provide an efficient precipitator that will occupy but a minimum of space, as it is to be used on a locomotive.

Another object of my present invention is to provide a precipitator that is made up of but three parts, which may be readily and quickly locked together when the precipitator is assembled.

Still another object of my invention is to provide a precipitator comprised of a plurality of parts which may be readily bolted together, each of said parts being provided with a series of baffle plates so that as the water flows into the same from the skimmer it will strike against the baffle plates in the upper portion, the central portion and the lower portion of said precipitator, thereby causing the mud, impurities and matters in suspension and solution to drop to the bottom of the precipitator.

Still another object of my invention is to provide a precipitator having an inlet passage in its upper portion and at one end thereof, through which the water will pass from the boiler skimmer; will then be impeded in its progress against the specially arranged baffle plates in the different portions of the precipitator, and after being clarified again rise to the surface of the precipitator and flow out through an outlet in its upper portion and then to the lower portion of the boiler of the locomotive.

Still another object of my invention is to provide a precipitator formed of several parts that may be locked tightly in their set position provided with an inlet and outlet passage and also with a drain passage at its lower portion so that the mud and impurities may be blown therefrom when desired.

Still another object of my invention is to provide a precipitator with a central portion provided with curve-shaped passageways which tend to split up the currents of the water as they pass through the precipitator, causing the heavier particles carried in suspension to be thrown into the bottom section of the precipitator.

Referring now to the drawings, which show a preferred form of my improved precipitator;

Figure 1 is a sectional view of the precipitator as used and operated when connected to a boiler skimmer, a portion of a locomotive boiler being shown in section;

Fig. 2 is a top plan view of my improved skimmer;

Fig. 3 is an end elevation of the same;

Figs. 4, 4^a, and 4^b are sectional views of the three parts of the skimmer, and

Fig. 5 is a top plan of the central section shown in Fig. 4^a.

It is to be understood that the precipitator might be used with other forms of boiler skimmers, and in the present embodiment is shown in conjunction with a skimmer 1, the said skimmer forming the subject matter of a separate application.

The precipitator is preferably formed in three parts, an upper portion 2, a central portion 3 and a lower portion 4. The precipitator in shape is nearly rectangular in top plan and the top portion 2 is dome-shaped and provided with an inlet passage 5, and an oppositely located outlet passage 6. Extending outwardly and encircling the lower portion of this upper portion 2 is the flange 7 which is provided with a plurality of openings 8 for the reception of bolts 9.

Extending downwardly from the upper inner surface of this upper portion 2 are the baffle plates 10, which extend completely across its internal dimension.

Interspaced between these downwardly extending baffle plates 10 are the upwardly extending baffle plates 11.

Encircling the outer surface and at spaced intervals are the cooling ribs 12.

The lower portion of the precipitator 4

is somewhat in the shape of an inverted dome, it having the converging sides or lower walls 13.

Formed in the bottom of this portion 4 is an outlet 14 into which is to be fastened a drain pipe 15 which is to be provided with a valve 16.

This lower portion 4 is also provided with two baffle plates 17 which are slightly spaced and extend completely across the interior dimension. A rim 18 is formed at the top of this lower portion 4 and likewise provided with a plurality of openings 19 for the reception also of the heretofore mentioned bolts 9.

Referring now to the central portion of the precipitator 3 it will be seen that it comprises a body portion of much less depth than either the upper portion 2 or the lower portion 4 and is provided with two cored portions 20, located at its opposite ends. A plurality of openings 21 around its outer edge are also provided so that the openings 8, 21 and 19 will all register when the precipitator is assembled.

Extending across this central portion are also a plurality of baffles 22 which are widened slightly at their bottoms as shown at 23. Also further baffles 24 are shown which diverge at their upper portions, forming arms 25 and 26. These diverging portions 25 and 26 are arcuate and the inner circular wall 27 of the central member 3 is also arcuate so that the spaces between the wall 27 and the baffle 24 form circular passages for the water when passing through the central portion, these passages in turn being divided by the aforementioned baffles 22.

When the precipitator is assembled as shown in Figs. 1 and 3, the bolts 9 will be passed through the aforementioned openings 8, 21 and 19 and the parts securely locked by placing the nuts on the opposite ends of the bolts 9.

The water will enter the precipitator through the inlet opening 5 in the upper portion 2 and will follow the direction of the arrows as shown in Fig. 1, and it will be seen that the water will be baffled by both the baffles in the upper section and in the central section and in the lower portion, thereby permitting time for the heavier particles to sink or drop to the bottom of the precipitator.

It is well understood that these particles will be precipitated as the water in the precipitator is cooler than the water in the locomotive boiler, and the constant flow from the top of the boiler to the cooler precipitator will allow the particles to be precipitated, and the water again rising in a clarified condition in the precipitator will flow out of the top portion and into the lower portion of the boiler through the pipe 28, where it will again rise and flow to the precipitator through the skimmer, the above flow being constant.

The precipitator is one that takes up a minimum of space, which is of course desirable when installed on a locomotive, will cause the currents of water to be split up many times, thereby allowing the heavier particles and impurities time to sink to the bottom of the precipitator, from which they may be blown by opening of the valve 16.

The precipitator is one that may be easily cast and quickly bolted in its assembled position, and if for any reason one part should become damaged a new part could be quickly and readily substituted.

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

1. A precipitator comprising an upper dome-shaped portion provided with a plurality of spaced baffle walls, a plane central portion also provided with a plurality of baffles and a lower portion also provided with baffle walls, the bottom walls of the lower portion converging and said precipitator provided with inlet, outlet and drain passages.

2. A precipitator provided with inlet, outlet and drain passages, baffle walls depending from the top of said precipitator, baffles extending from the bottom of the upper portion of said precipitator and interspaced between said aforementioned baffles and relatively small baffle plates located centrally of the precipitator.

3. A precipitator provided with inlet, outlet and drain passages, baffles depending from the upper portion of said precipitator, further baffles extending from the bottom of the upper portion of said precipitator and restricted central openings between the upper and lower portion of said precipitator.

4. A precipitator provided with inlet, outlet and drain passages, baffle walls depending from the top inner surface of the precipitator, further baffle walls extending upwardly from the bottom of the upper portion of said precipitator and said precipitator provided with restricted central openings and a third set of baffles interspersed between said central openings.

5. A precipitator formed of three portions, and having inlet, outlet and drain passages formed therein, depending baffle walls in the upper portion, further baffle walls extending across the same, baffle walls extending across the central portion and further baffle walls extending across the lower portion, the baffles extending across the upper portion, those across the central portion and those across the lower portion all registering to form two continuous baffles.

6. A precipitator comprising three portions, the upper portion provided with inlet and outlet passages and the lower portion

having a drain passage for cleaning the same, the upper portion provided with depending baffles, further baffles extending across the same, the lower portion provided with baffles extending across the same and the central portion provided with arcuate openings and baffles extending across the said openings.

7. A precipitator comprising three body portions all provided with flanges to register when the precipitator is assembled and means for locking the body portions together through said flanges, baffles in all of said portions a number of which register to form two baffles when the precipitator is in its locked position and the central portion provided with openings having further baffling means extending across them.

In testimony whereof I affix my signature.

WILLIAM E. WINE.