

(No Model.)

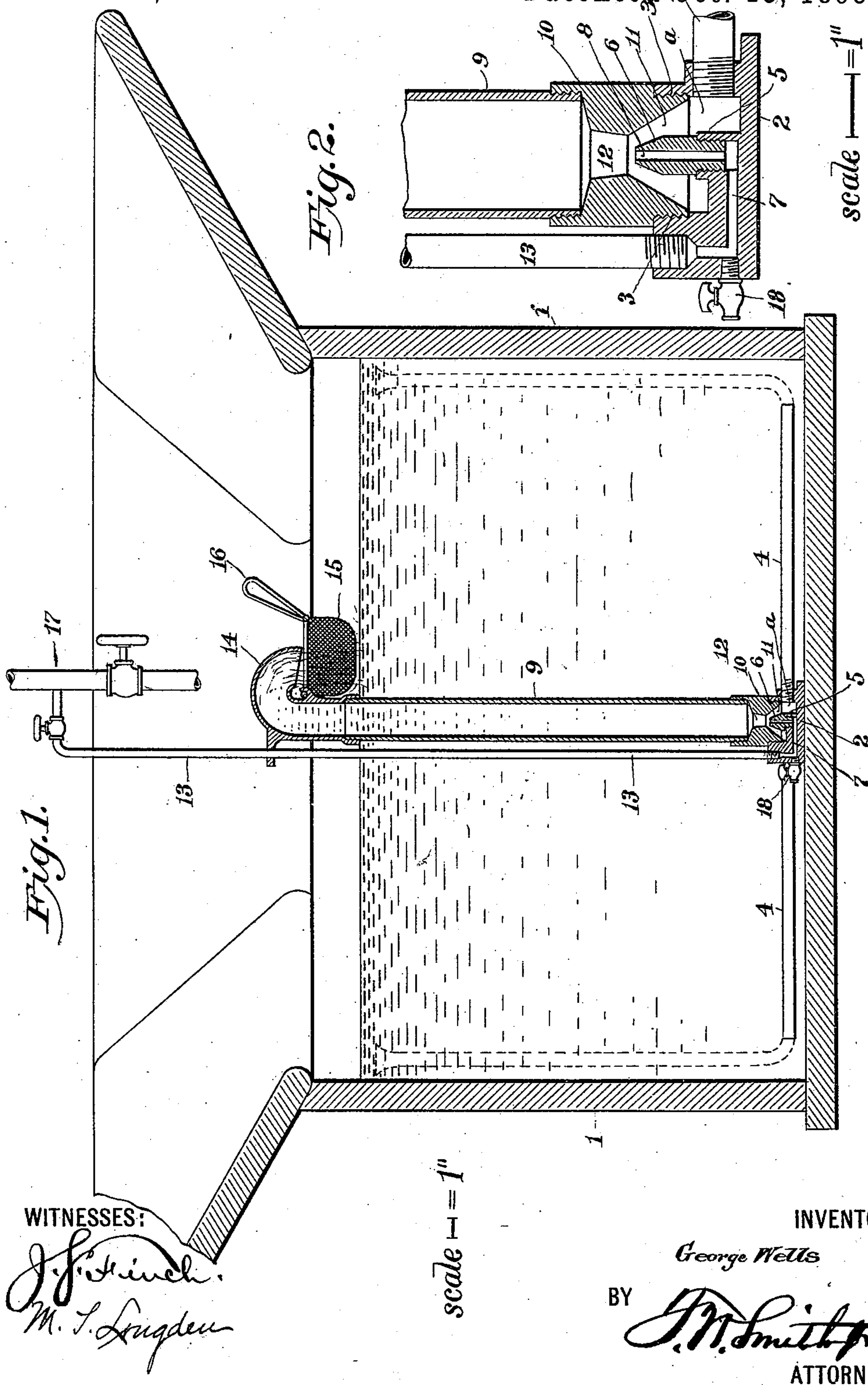
2 Sheets—Sheet 1.

G. WELLS.

WATER PURIFIER FOR HAT SIZING TANKS.

No. 547,978.

Patented Oct. 15, 1895.



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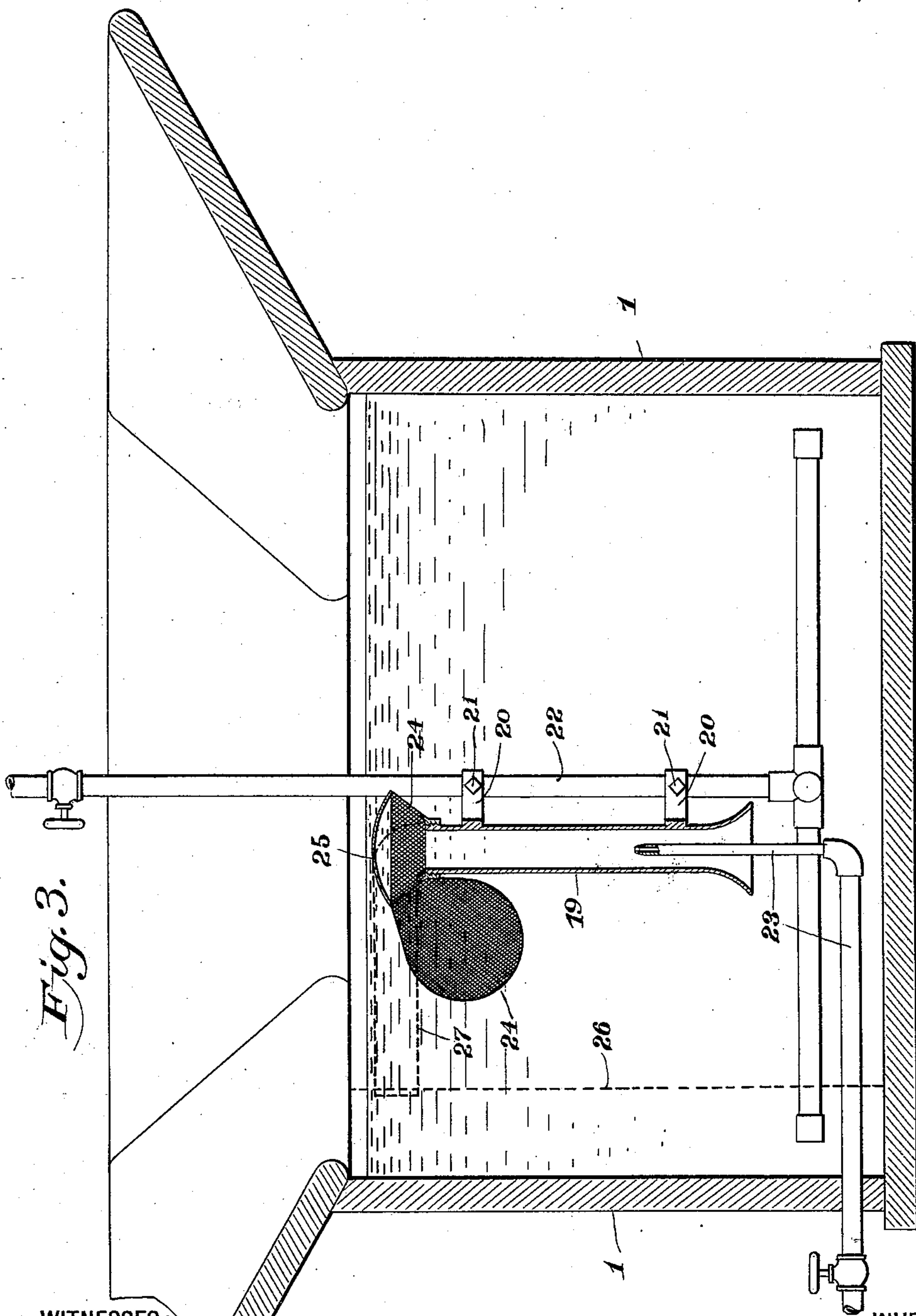
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WITNESSES:

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BY

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UNITED STATES PATENT OFFICE.

GEORGE WELLS, OF SOUTH NORWALK, CONNECTICUT, ASSIGNOR TO THE
WELLS AUTOMATIC SKIMMER AND WATER PURIFYING COMPANY, OF
SAME PLACE.

WATER-PURIFIER FOR HAT-SIZING TANKS.

SPECIFICATION forming part of Letters Patent No. 547,978, dated October 15, 1895.

Application filed February 18, 1895. Serial No. 538,870. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WELLS, a citizen of the United States, residing at South Norwalk, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Water-Purifiers for Hat-Sizing Tanks; 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.

My invention has reference to certain new and useful improvements to be used in connection with hat-sizing tanks, but particularly relates to the provision of means whereby particles of fur and other foreign matter are removed from the water in the tank, whereby the formation of what are termed "dags" in the hat is prevented. In dipping the hats within the usual tank of hot water during the process of felting the water becomes filled with long hairs and loose particles of fur, which constantly attach themselves to the hat-bodies and are worked into the same by the felting operations, so as to form what I have termed "dags."

By the use of my improvement the water in the tank undergoes a constant process of purification, the result being that the quality of the hats is greatly improved.

In the accompanying drawings, which form a part of this application, Figure 1 is a sectional elevation showing a hat-sizing tank equipped with a preferred construction of my improvement; Fig. 2, a detail broken sectional elevation, on an enlarged scale, of the peculiar means which I employ to lift the water in its fouled condition up to the point where it is cleansed and again delivered into the tank; and Fig. 3, a view similar to Fig. 1, but showing a modification of my improvement.

Similar numbers and letters of reference denote like parts in the several figures of the drawings.

1 is the usual hat-sizing tank.

2 is a base which sits upon the bottom of the tank and may be bolted thereto or not, as desired, said base being cored out, as seen at *a*, and open at the top and interiorly

threaded at 3 for the purpose presently explained. Communicating with the hollow cored-out portion of this base are any suitable number of pipes 4, which extend outwardly and open into the tank below the level of the water therein. Cast with the base 2 and rising upwardly therefrom into the cored-out portion *a* is a nipple 5, which is interiorly threaded.

6 is a conical-shaped nozzle whose lower end is threaded and secured within said nipple, and 7 is a duct formed in the walls of the base 2 and communicating directly with the duct 8 through the nozzle.

9 is a pipe which rises upwardly through the tank, and 10 is a union-nipple by which the base 2 and said pipe are joined. The bottom of this nipple has a conical-shaped recess 11, into which the nozzle 6 projects, said recess leading into a contracted opening 12, which latter is slightly flared from the bottom toward the top and is immediately below the opening in the pipe 9. It will be observed that the opening in the pipe 9 has a far greater area than that of the opening 12, so that it will be obvious that when the water rises within the recess 11 up into the contracted opening 12 the force of live steam up through the opening 8 will lift the water into the pipe 9, and as the tendency of the water in the tank is to find its natural level within the pipe 9 it follows that the forced elevation of the water within said pipe will be exceedingly efficient and rapid.

13 is a steam-supply pipe which communicates with the duct 7, whereby live steam may be introduced up through the nozzle. The top of the pipe 9 at its discharge end is so formed that the water elevated will be discharged through any suitable strainer. At Fig. 1 I have shown the top of the pipe terminating in a goose-neck 14 above the level of the water, a strainer 15 being attached to said neck in any suitable manner, so that the water as it is elevated will pass through said strainer and fall back into the tank. The strainer is provided with any suitable bail 16, so that it may be readily removed for the purpose of cleaning. The steam-supply pipe 13 is tapped into a main steam-pipe 17,

which latter is utilized for the purposes of heating the water in the tank in any suitable and ordinary manner not herein shown. Instead of opening directly into the bottom of the tank the pipes 4 may lead upwardly, as shown in dotted lines, to a point immediately below the level of the water, if desired; or said pipes may be entirely dispensed with, it being merely necessary in this connection that the interior of the base portion 2 shall have communication with the water in the tank.

18 is a small cock tapped into the base 2 and communicating with the duct 7, whereby the water may be drawn off from within the said duct and opening 8 when the apparatus is not in use, this being advisable in order to prevent the freezing of the water.

In Fig. 3 I have shown a modification of my improvement which I will now describe.

19 is the pipe within which the water is elevated, which pipe is supported in any suitable manner. I have shown this pipe as provided with lugs 20, which are secured by bolts 21 to the steam-pipe 22, by which the water in the tank is heated; but of course there are many ways in which this pipe could be supported, all of which are within the range of ordinary mechanical skill.

23 is the steam-supply pipe, which may enter the tank at any point, said pipe extending upward a short distance within the pipe 19.

24 is the strainer, which is secured to the top of the pipe 19 beneath the level of the water in the tank, the top wall of the strainer being constructed to form a baffle-plate 25, against which the water is driven and is deflected down through the strainer. The water will rise to find its level within the pipe 19, and the steam-jet through the pipe 23 will induce an upward current of the water and act to force the latter through the strainer into the surrounding water in the tank. If desired, the strainer may be located at the side of the tank by putting in a strainer-gauze partition in the tank, as shown at 26 in dotted lines, the pipe 19 in this instance being led, as shown at 27, also in dotted lines, into the partitioned portion of the tank. The hollow base 2 and nipple 10 (shown in Figs. 1 and 2) are in effect a continuation of the pipe 9, so that in both the construction shown therein and in Fig. 3 the steam-nozzle extends upward within the pipe and is inclosed thereby. I prefer, however, to use the construction shown at Figs. 1 and 2, since it is especially well adapted to force a great quantity of water very rapidly through the strainer in a given time. It is essential that the lower end of the pipe should be submerged in the water in the tank and that the steam-nozzle should be inclosed by the pipe so that the water in the latter is at all times around and above said nozzle, since the water in the tank must be changed very rapidly, and must therefore be elevated in a column impregnated with as little steam as possible. It would therefore not answer the pur-

poses of my invention to have the bottom of the pipe above the level of the water and to then attempt to force the latter up through the pipe by means of a steam-jet submerged in the water, for the result would be the blowing upward of a mixture composed of very little water and a great deal of steam.

In view of the modifications which I have shown and described I do not desire to be limited to the location of the strainer above or below the water-level in the tank, the gist of my invention resting in the broad idea of a water-elevator pipe whose lower end is below the water-level in the tank, so that the water normally rises in said pipe to find its level, a steam-injector nozzle near the bottom of said pipe, and a strainer into which the upper end of said pipe leads and through which strainer the water is delivered back into the tank.

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

1. In a hat sizing apparatus comprising a sizing tank containing hot water, the combination of the vertically supported pipe having its lower end below the water level in the tank whereby the water will normally rise in said pipe to find its level, a steam injector nozzle extending upwardly within the bottom of said pipe and normally submerged in the column of water within said pipe, supply pipes extending outwardly from said pipe to comparatively still water, and a strainer into which the upper end of said pipe leads through which strainer the water is delivered back into the tank, substantially as set forth.

2. In a hat sizing apparatus comprising a sizing tank containing hot water, the combination of the hollow base located in the bottom of the tank and having communication with the surrounding water and provided with a steam duct, the steam nozzle rising within said base from the bottom thereof and communicating with said duct, the water elevator pipe, the union nipple connecting said pipe and base and provided in its lower end with a conical recess into which said nozzle leads and having at its upper end an upwardly flaring contracted opening communicating with said recess, and a strainer into which the upper end of said pipe leads through which strainer the water is delivered back into the tank, substantially as set forth.

3. In a hat sizing apparatus comprising a tank containing hot water, the combination of the hollow base in the bottom of the tank and communicating with the surrounding water, a steam nozzle projecting upward within said base, means for supplying live steam through said nozzle, the water elevator pipe, the union nipple connecting said base and pipe and having in its lower portion a conical shaped recess into which said nozzle projects and provided in its upper portion with an upwardly flaring contracted opening into which said recess leads, and a strainer into which the upper end of said pipe leads

through which strainer the water is delivered back into the tank, substantially as set forth.

4. In a hat sizing apparatus comprising a tank containing hot water, the combination
5 of the hollow base located in the bottom of the tank and communicating with the surrounding water, a steam jet nozzle supported within said base, means for supplying steam to said nozzle, the water elevator pipe, the
10 strainer into which the upper end of said pipe leads through which strainer the water is delivered back into the tank, and the union nipple connecting said pipe and base, said nipple

being open from top to bottom the opening in the bottom being conical in shape and into 15 which said nozzle projects, while the opening in the top is contracted down to a point where it leads into the opening in the bottom and has an area much less than that of the interior of the pipe, substantially as set forth. 20

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE WELLS.

Witnesses:

F. W. SMITH, Jr.,

M. T. LONGDEN.