March 13, 1934. J. KOBSEFF 1,950,494

METHOD OF PREVENTING THE INCRUSTATION OF BOILERS

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Fig. 3.

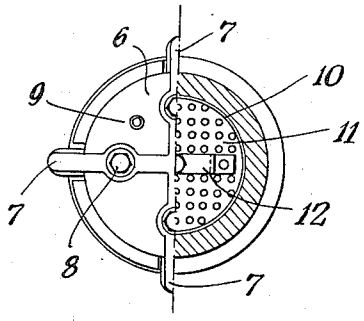


Fig. 5.

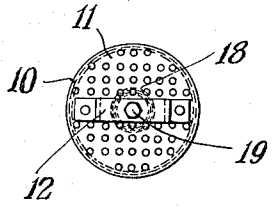


Fig. 2.

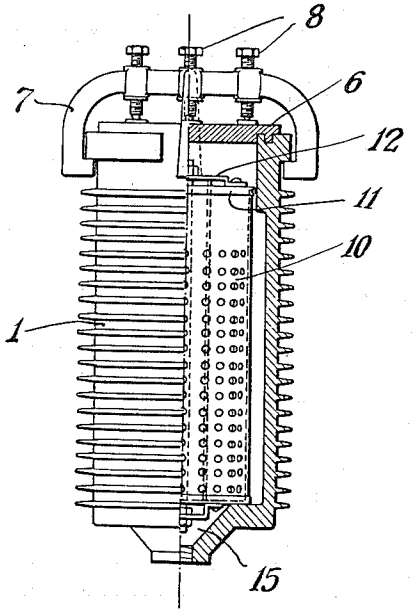
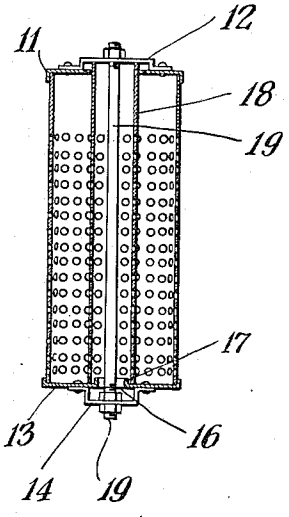


Fig. 4.



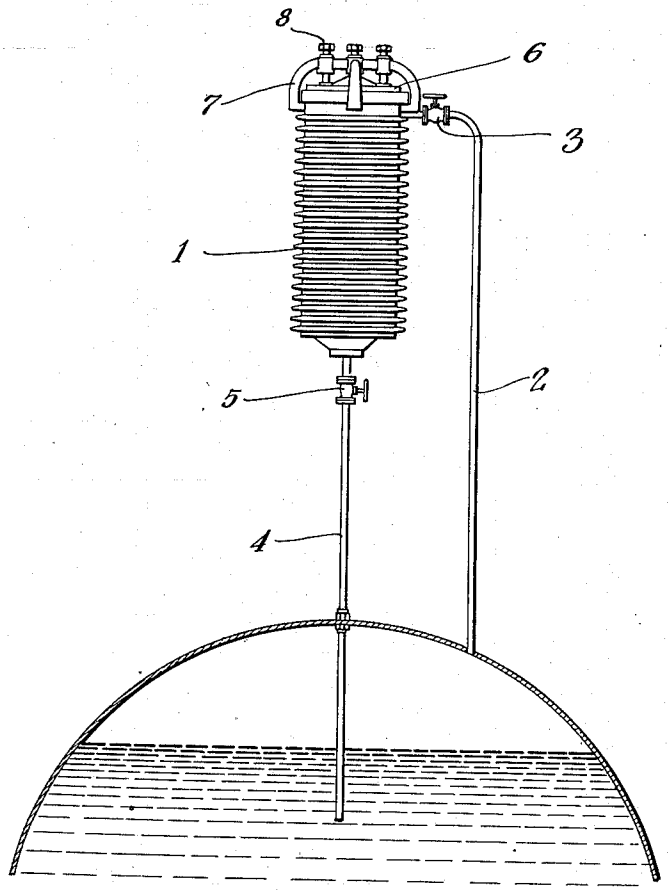
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METHOD OF PREVENTING THE INCRUSTATION OF BOILERS

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Fig. 1.



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UNITED STATES PATENT OFFICE

1,950,494

METHOD OF PREVENTING THE INCRUSTATION OF BOILERS

Joakime Kobseff, Soisy-Sous, France

Application April 3, 1929, Serial No. 352,073

3 Claims. (Cl. 87—27)

This invention relates to the method of preventing the incrustation of boilers and removing incrustations which have already formed.

This application is a continuation in part of application Serial Number 658,509, filed August 21, 1923, for Apparatus for preventing incrustation in steam boilers, now Patent No. 1,739,640, dated December 17, 1929, and also of application Serial Number 508,171, filed October 17, 1921

The invention consists broadly of the production of a mucilaginous substance and the introduction of the substance into the water of a boiler and, specifically, in the treatment of vegetable seeds, such as flaxseed, in such a manner that the mucilaginous substance of the seeds will be extracted without the extraction of oil from the seeds, and in introducing this mucilaginous substance so produced into the water of a boiler.

I have illustrated in the drawings one form of apparatus by means of which the method may be carried out, but this form is not essential to the successful operation of the method, as many modifications in the constructions and arrangements illustrated may be made.

In the drawings:

Fig. 1 is an elevation of the selected embodiment showing the same mounted on the boiler, the boiler being conventionally illustrated;

Fig. 2 is an enlarged elevation partly in section showing the relationship of the various parts;

Fig. 3 is a top plan elevation partly in section;

Figure 4 is a sectional view disclosing the interior perforated cylinder in which the mucilaginous substance is generated; and

Fig. 5 is a top plan view of said perforated cylinder.

The selected illustrative embodiment of the apparatus includes a cylinder 1 having circumferentially radiating ribs or fins thereon. This cylinder 1 has communication with the boiler, the incrustation of which is to be prevented, through a pipe 2 which extends from adjacent the upper end of the cylinder to the steam space of the boiler and is provided with a manually operable valve 3 by means of which the steam from the boiler may be permitted, at the desired intervals or continuously, to enter the cylinder. Communication is established between the lower end of the cylinder and the boiler by means of a pipe 4 which pipe extends below the water line of the boiler and is provided with a manually operable valve 5. The upper end of the cylinder is closed by suitable means which, in the embodiment selected for illustration, includes a plate 6 having a flange and groove engagement with the upper edge of the cylinder. This plate 6 is held in tight engagement with the upper edge of the cylinder to seal the latter by means of a yoke 7 and bolts 8 which extend through the yoke and are adapted to force the plate downwardly onto the upper edge of the cylinder.

This plate 6 is provided with a blow-off valve 9 through which communication is established between the interior of the cylinder 1 and the atmosphere.

A perforated cylinder 10 having a removable cover 11 with a yoke 12 thereon at one end and a similar cover 13 with a yoke 14 thereon at the other end, is mounted within the outer cylinder 1. These covers 11 and 13 are held in place on the cylinder 10 by a tie rod 19 which extends through the cylinder and the yokes 12 and 14 and is provided with tightening nuts which abut against the yokes 12 and 14.

A perforated tube 18 is arranged within the cylinder 10 and extends axially from end to end of said cylinder, the upper end of the tube extending preferably through the cover 11 and the lower end abutting against the cover 13. This latter cover is provided with an opening 16 having a flange 17 extending upwardly into the tube 18 to position the latter, through which opening communication is established between the tube 18 and the chamber 15 at the lower end of the cylinder 1, from which chamber the pipe 4 extends. It will be noted that the cylinder 10 rests upon the annular shoulder at the lower end of the cylinder 1, thus isolating the chamber 15 from the remainder or upper portion of said cylinder, and closely fits the upper portion of the cylinder but that surrounding the inner cylinder is a space defined by the wall of the cylinder 10 and the interior face of the ribbed portion of the cylinder 1. In the cylinder 10 is located the material from which the mucilaginous substance is generated.

I have found that vegetable seeds such as flax, hemp, or similar seeds may be used entirely successfully and I contemplate in certain instances the use of soda which may be mixed with the seeds to soften the husks of the same to facilitate the extraction of the gluten contained by the seeds. Furthermore, I have found that the use of fecula (starch) assists in the formation of the desired mucilaginous substance. A mixture of vegetable seeds, soda and starch wherein the soda is equal to about one one-hundredths of and the starch to about one two-hundredths of the weight of the seeds I have found produces the desired result. It is of course to be understood that I contem-

plate the use of the vegetable seeds either with or without the soda and starch.

In operation, the vegetable seeds or the mixture of vegetable seeds, soda and starch having been placed in the perforated cylinder 10, the valve 3 is opened permitting steam from the steam space of the boiler to enter the condensing cylinder 1. The steam entering the cylinder 1 fills the latter and is condensed because of the radiation afforded by the ribs or fins thereon and the condensed steam passes into the cylinder 10 through the perforations therein. This condensed steam on coming in contact with the vegetable seeds takes up the mucilaginous substance from the seeds, but does not extract the oily compounds from the seeds which of course are injurious to steam boilers. The mucilaginous substance thus extracted passes, upon the opening of the valve 5, which opening may either be periodic or continuous, through the pipe 4 to the water of the boiler. The mucilaginous mixture mixed with the water of the boiler envelops the nascent saline deposits which result from the evaporation of the water within the boiler and sinks with the deposits to the bottom of the boiler from which position removal may conveniently be carried out.

It will be noted that, in the treatment described, the seeds are not agitated but remain substantially motionless as the hot water from the condensed steam percolates through the mass of seed and the seeds are not "cooked", that is disintegrated, because either of these will be likely to free the oily content of the seeds and cause it to enter the boiler with the mucilaginous solution.

It will also be noted that, in the treatment described, the seeds are treated under pressure above atmosphere and the seeds and the water with which they are treated are out of contact with air, the tightly closed cylinder 1 maintaining the pressure and excluding atmospheric air.

Of course it is understood that the introduction of the mucilaginous substance into the water of the boiler not only prevents the formation of fresh incrustations but also removes the incrustations which have already been formed on the walls of the boiler and that the method and apparatus may be successfully employed in either boilers using fresh or sea water.

While I have described a particular form of apparatus by means of which the method may be carried out, it is to be understood that this apparatus may be varied in its details of construction without departing from the spirit of the invention or exceeding the scope of the claims.

What I claim is:

1. The method of preparing an emulsion from seeds containing mucilaginous material and oil which includes passing steam during its condensing stage through a mass of said seeds, while maintaining the seeds in a quiescent state.

2. The method of preparing an emulsion from seeds containing mucilaginous material and oil, which includes passing steam, during its condensing stage, through a mass of said seeds, while maintaining the seeds in a quiescent state, and continuously withdrawing the emulsion, formed by the water of condensation and the mucilaginous material, from said seeds.

3. The method of preparing an emulsion from seeds containing mucilaginous material and oil, which includes passing steam, during its condensing stage, through a mass of said seeds, while maintaining the seeds in a quiescent state and under a super-atmospheric pressure.

JOAKIME KOBSEFF.