

July 4, 1933.

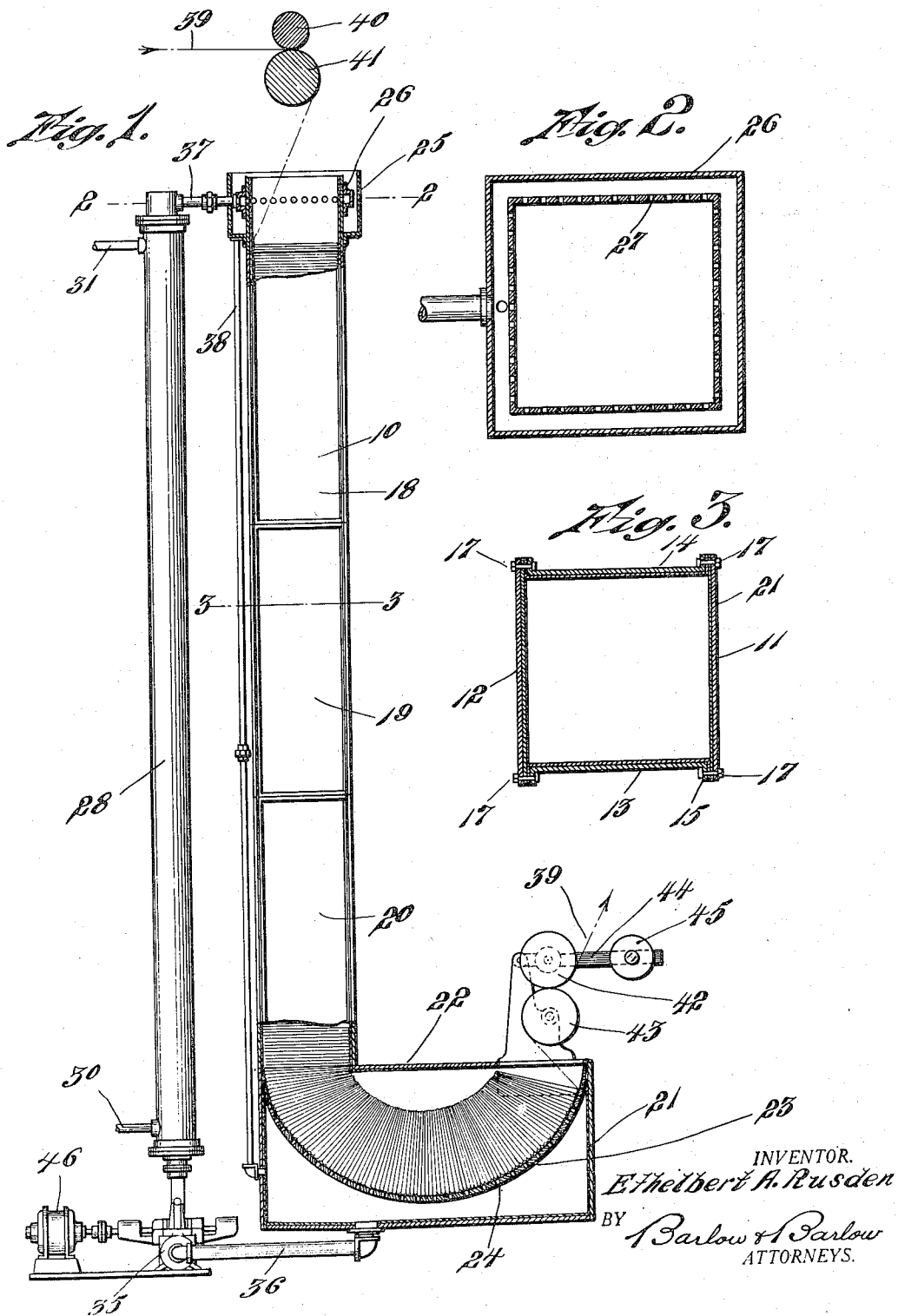
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APPARATUS FOR DYEING OR OTHERWISE TREATING FABRICS

Filed Oct. 7, 1930

2 Sheets-Sheet 1



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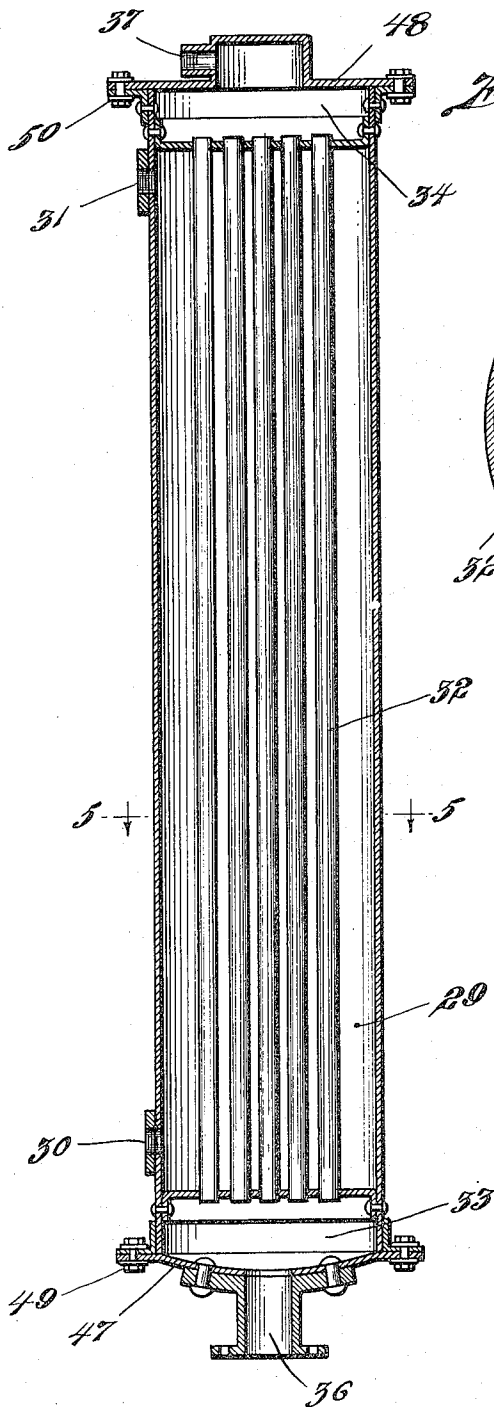


Fig. 4.

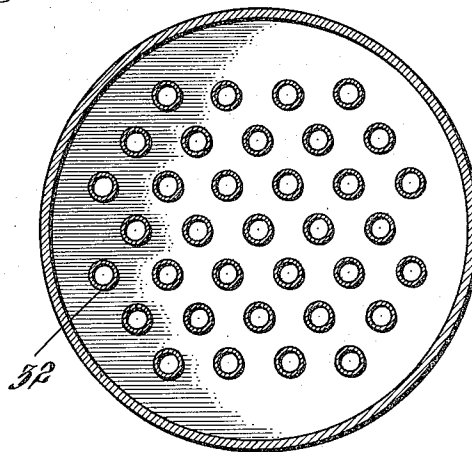


Fig. 5.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR DYEING OR OTHERWISE TREATING FABRICS

Application filed October 7, 1930. Serial No. 486,941.

This invention relates to an apparatus for treating textile fabrics, more particularly a so-called J box used in cloth finishing; and has for its object to produce an apparatus for boiling or treating the work in a hot liquor which is heated outside of the compartment thru which the work travels and of spraying the heated liquor upon the work as it enters the apparatus.

A further object of the invention is the provision of a so-called J box having an upright stack with a curved chute communicating with its lower end and circulating the treating liquor thru the upright stack to cause the liquor to act upon the fabric as it enters and passes thru the stack, and thus shorten the time necessary for the fabric to remain in the apparatus for proper action of the liquor thereon.

A still further object of the invention is the provision of a box so constructed that it may be lined with a material which will resist corrosion.

With these and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more particularly set forth in the appended claims.

In the drawings:

Fig. 1 is a side elevation, partly broken away and in section at its upper and lower ends showing the construction of the same;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a section of the heater; and

Fig. 5 is a section on line 5—5 of Fig. 4.

In order that the usual pot type of kier in which cloth is packed for boiling, may be eliminated, a so-called J box is used thru which the treated fabric is continuously fed and which contains the hot-treating liquor. This J box comprises a stack arranged generally in vertical position altho the same may be inclined if desired so long as it provides sufficient head to feed the work and a chute to communicate with the lower end of the stack, which chute is so directed as to cause the folds of the cloth to be guided from a

downwardly directed path to an upwardly directed path that it may be more easily withdrawn, the curved chute is contained within a chamber or the like, which receives the treating liquor, and the fabric as it is moved by its own weight in the stack along the chute thru the liquor is thus treated prior to its being withdrawn from the chamber. J boxes of such general construction are arranged in series and the material is fed and withdrawn at various rates depending upon the desired amount of treatment to which it is to be subjected, and in order that the time for processing the work in the apparatus may be shortened, I have provided a construction for causing the liquor to contact with the fabric as it enters the upper end of the stack to keep the stack substantially filled with the treating liquor that the work as it passes down the stack may be acted upon by the treating liquor to shorten the time that it is necessary for the goods to remain in the apparatus; and I have found it of advantage to heat the liquor outside of the path of the travel of the goods and circulate the liquor thru the stack to provide for better treatment of the goods by the liquor and less liability of damage to the goods by reason of the location of the heating medium; and I have also lined the stack and liquor-containing chamber with a non-corrosive material to resist the action of the alkaline or caustic solution with which the goods are frequently treated; and the following is a detailed description of the present embodiment of my invention, illustrating the preferred means by which these advantageous results may be accomplished.

With reference to the drawings, 10 designates the stack which is arranged substantially vertically in the present showing of the invention, altho an inclination of the stack from the vertical to vary the rate of settling or downward movement of the goods therein, may of course be used. The stack is formed in any suitable shape, that shown being substantially square with opposed side walls 11 and 12 and end walls 13 and 14. The walls 13 and 14 have outwardly-extending

portions 15 which receive the bolts 17 at the corners for securing the portions together. The side walls and end walls are made up of sections 18, 19 and 20 for convenience in construction. In order that corrosion of the stack may be retarded, a corrosion-resisting lining 21 is positioned along each of the side and end walls 10, 11 and 13, 14 and covers the entire inner surface of each of these walls and extends outwardly between the seams to be securely fastened, as indicated in Fig. 3, and held in this position by the clamping bolts 17 which hold the sections of the stack assembled.

A chamber 22 is located at the lower end of the stack, which is also lined with corrosion-resisting material 21, and is held in position in any suitable manner. Within this chamber 22 a curved chute 23 is positioned which communicates with the stack 10 and guides the work from its downwardly-traveling direction to a generally upwardly traveling direction by reason of its curvature. This chute is perforated as at 24 or otherwise suitably shaped to allow free circulation of the liquor contained in the chamber about the same and the work positioned thereon.

At the upper end of the stack there is mounted a header 25 of cross sectional area larger than the cross section of the chute and in which there is mounted a spray nozzle 26 which is shaped substantially square as is the stack in cross section with perforations 27 in its inner wall for directing discharge of the treating liquor on to both sides of the work as it enters the apparatus by passing thru the center thereof.

A heater 28 is positioned along the length of the stack and consists of a steam compartment 29 having communication with a suitable supply of steam thru conduits 30 and 31 and in this steam chamber 29 there are located a plurality of pipes 32 communicating with upper and lower chambers 33 and 34. The treating liquor is circulated by means of the pump 35 thru a conduit 36 into the lower chamber 33, thence thru the pipes 32 to the upper chamber 34 and discharged thru a conduit 37 to the spray nozzle and thence onto the work and into the upper end of the stack. Should the spray of treating liquor be greater than may be absorbed by the cloth and contained in the stack, an overflow pipe 38 will carry the liquor downwardly to the chamber 22 to prevent overflow or undue discharge from the apparatus.

The heater is so constructed that its bottom flanged plate 47 and top plate 48 may be removed by removing the bolts 49, 50 and the tubes 32 cleaned, replaced or repaired.

In operation, the work 39 is fed to the apparatus by feed rolls 40 and 41 and will dispose itself generally back and forth in a

folded pile in the stack 10, the weight of which will cause the material to be moved along the chute 23 to a position where it may be drawn from the device thru squeeze rolls 42 and 43, under pressure, thru the lever 44 and adjustable weight 45. The liquor which is in a predetermined, sufficient quantity is generally housed in the compartment 22, withdrawn therefrom thru the conduit 36 and thru the pump 35 driven by any suitable source of power such as an electric motor 46, forced upwardly thru the plurality of conduits 32 of the heater and discharged thru the sprayer nozzle on to the cloth as it enters the apparatus. Steam is supplied to the heater that the desired temperature of liquor may be maintained in the working operation of the apparatus.

While I have described certain construction forms which embody the principles of my invention, it is obvious that other desired changes in arrangement may be made within the spirit and the scope of the invention as defined in the appended claims.

I claim:

1. An apparatus for treating textile material, comprising a stack for receiving a pile of cloth, a header at the upper end thereof of a size larger than said stack, a liquid-containing chamber, a curved chute communicating with said stack and located in said chamber, means for withdrawing the treating liquor from said chamber and discharging it on the work in said header, and an overflow conduit between said header and chamber.

2. An apparatus for treating textile material, comprising a stack for receiving a pile of cloth, a header at the upper end thereof of a size larger than said stack, a liquid-containing chamber, a curved chute communicating with said stack and located in said chamber, means for withdrawing the treating liquor from said chamber and spraying it on the work as it passes thru said header, and an overflow conduit between said header and chamber.

3. In an apparatus for treating textile material, a stack for receiving a pile of cloth, said stack being enlarged at its upper open end to be of a greater diameter in each direction than the corresponding diameter of the stack below it, a spray nozzle for directing liquid inwardly from four sides located in said enlarged upper end and having an opening no less than the opening thru said stack, whereby to prevent obstruction to the passage of material thru said stack, a liquid-containing chamber at the lower end of said stack, and means for withdrawing the treating liquor from said chamber and discharging it into said nozzle.

In testimony whereof I affix my signature.

ETHELBERT A. RUSDEN.