

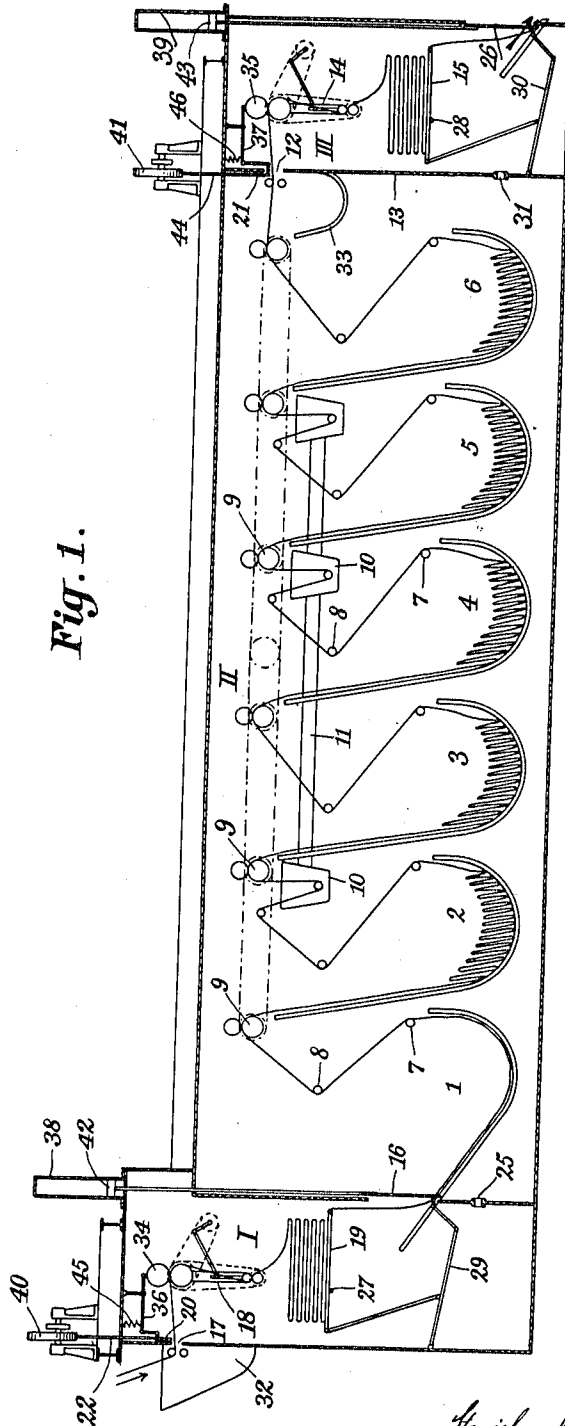
S. M. KROSNOWSKI.  
 APPARATUS FOR TREATING COTTON FABRICS.  
 APPLICATION FILED AUG. 16, 1911.

1,020,294.

Patented Mar. 12, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



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Fig. 2.

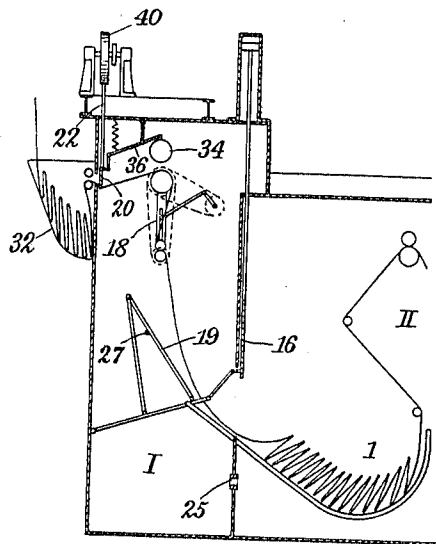
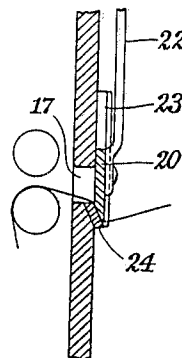


Fig. 3.



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# UNITED STATES PATENT OFFICE.

STANISLAW MICHAILOWITSCH KROSNOWSKI, OF ST. PETERSBURG, RUSSIA.

APPARATUS FOR TREATING COTTON FABRICS.

1,020,294.

Specification of Letters Patent.

Patented Mar. 12, 1912.

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*To all whom it may concern:*

Be it known that I, STANISLAW MICHAILOWITSCH KROSNOWSKI, a subject of the Czar of Russia, and residing at St. Petersburg, Russia, have invented certain new and useful Improvements in Apparatus for Treating Cotton Fabrics, of which the following is a specification.

The subject-matter of this invention relates to an apparatus for treating cotton fabrics in such manner that while the fabric is being treated it remains spread out, but not tensioned, and runs continuously through the chamber in which the treatment takes place. The manifold apparatus heretofore employed for this purpose are not entirely free from defects even if some of them have been largely used in practice. The known steam chambers in which the fabric passed between rollers into and out of the atmosphere of steam, traveling in the form of folds through the chamber, have the defect that the pressure of the steam which, for the purpose of intensively treating the goods, should amount to two atmospheres must be kept at a considerably less pressure, because a perfectly good joint can not be made where the fabric enters and leaves the chamber. Recently it has been attempted to introduce the web of fabric into the treating chamber and lead it away therefrom with perfectly tight joints by introducing and removing the web of fabric through a slot which is covered by a roll and provided in a trough. This arrangement has not, however, proved satisfactory because the fabric is considerably strained by the pressure in the trough and many kinds of material, *e g.* printed fabrics, which are to be steamed, can not be subjected to any pressure. Also, Taglian's process did not fully come up to the expectations, because the columns of liquid located in front of and behind the machine, forming the closure of the treating chamber from the outer air and through which the fabric travels, must have an exceedingly great height when the pressure is to be considerable. Under such circumstances the old steam chests have been preferred to the newer methods of operation with which only unpleasantnesses were connected if, in order to utilize the advantages of high steam pressure, refuge was not taken in the intermittent mode of working,

which consisted in the web of material being run in the form of sheets into a vat and here subjected to steaming while being unwound from one roll and wound up on the other.

Now a primary object of my invention is to provide new apparatus which admits of both continuous working and the employment of a high pressure, the web of fabric being led in a loose, untensioned state through the apparatus and impregnated on its way several times with the necessary solutions.

My apparatus comprises three chambers, to wit a treating chamber always under pressure, a charging chamber at the inlet end thereof, and a discharging chamber at the outlet end thereof, the latter chambers being under pressure only intermittently while they are connected with the middle or treating chamber, and being intermittently shut off from the middle chamber and at atmospheric pressure when they are connected with the atmosphere. The goods are moved only intermittently in the charging and discharging chambers, whereas they continuously pass through the treating chamber proper. The charging chamber is generally connected with the atmosphere, and after it has been filled with the goods is closed from the atmosphere, whereupon after being subjected to pressure the chamber is temporarily connected with the treating chamber for the purpose of delivering the goods to it. The discharging chamber, on the contrary, is generally connected with the treating chamber and is shut off from the same and connected with the atmosphere only when the stock of goods therein are to be conveyed out of the apparatus. Consequently, the fabric is moved continuously in front of and at the rear of the apparatus and in the treating chamber, whereas its motion is periodic in the charging and discharging chambers.

One illustrative embodiment of my invention is represented by way of example in the accompanying drawings, wherein:—

Figure 1 is a longitudinal section through the apparatus, Fig. 2 is a section through the charging chamber showing how the material is conveyed therefrom to the treating chamber, and Fig. 3 is a sectional detail view showing a suitable closure device

adapted to be employed where the goods are introduced into the charging chamber and removed from the discharging chamber.

My apparatus comprises three chambers 5 I, II, III, of which the first is herein termed the charging chamber, the middle one the treating chamber, and the last the discharging chamber. The treating chamber which, when employed for bleaching purposes, is 10 constantly kept at two atmospheres pressure contains a plurality of troughs 1, 2, 3, 4, 5, 6, in which the goods are stored in order to be exposed loose during a long time to the action of steam. When changing from one 15 trough to another the fabric passes the guides 7, 8 and the squeezing rolls 9. It is soaked with a suitable liquid in the vats 10 of which three are shown in the drawing. These vats 10 are connected together by the 20 pipe 11 and the liquid in them can be kept at a certain level by means of an automatic regulating device not shown. The chambers I and III are for storing the fabric when charging and discharging the apparatus. 25 During the time when no fabric is passing either into the chamber I or out of the chamber III the two chambers II and III are connected. The slot 12 in the partition 13 between the two chambers II and III is 30 open and the fabric moves out of the treating chamber from the left to the right in order to be placed in folds in the discharging chamber on the table 15 by the folding apparatus 14. Simultaneously, a new charge 35 is prepared in chamber I which can be shut off from the chamber II by the slide 16. The web of fabric passes in through the slot 17 temporarily open for this purpose and is piled on the table 19 by means of the 40 folder 18 of known construction. After a sufficient quantity of fabric has been stored in the chambers I and III it is transferred out of the chamber I into chamber II and out of chamber III as follows:—The slots 12 45 and 17 are simultaneously closed by means of the slides 20 and 21, respectively. One form of slide is shown in Fig. 3 on an enlarged scale. The slide 20 is moved up and down in a guide 23 by means of the rod 22. 50 The fabric is pressed by the slide 20 against a preferably elastic strip 24 so that when the fabric is stationary the slot is closed steam-tight. The chamber I is hereupon connected by means of a suitable valve, not shown, 55 with the boiler so that it is filled with steam, while the chamber III is connected with the atmosphere by opening a blow-off valve not shown. After the pressure, which may be regulated by the valve 25, has become equal at both sides of the slide 16 to 60 the pressure of the chamber II, and the pressure at both sides of the slide 26 to atmospheric pressure, the steam admission valve of chamber I and the steam blow-off valve of chamber III are closed, the slides

16 and 26 drawn upward, the tables 19 and 15 tilted about their axles 27 and 28 by means of the arrangements of levers 29, 30 connected with the slides 16 and 26, and the fabric conveyed on the one side into the 75 trough 1 and on the other side out of the machine. The slides 16 and 26 thereupon are closed, the tables 19 and 15 brought into their original positions, the valve connecting chamber III with the boiler opened, and the valves connecting chamber I with the 75 atmosphere likewise opened. When the pressure in chamber III has become equal to that in chamber II and the pressure in chamber I equal to atmospheric pressure, 80 the steam blow-off valve of chamber I is throttled and the slides 20 and 21 raised.

31 designates a valve for connecting the chambers II and III similar to the regulat- 85 ing valve 25.

The troughs 32 and 33 are for storing the fabric still supplied after the slides 20 and 21 have been closed. If after the slides 20 and 21 have been raised, those rolls of the 90 folding apparatus recommence to work which did not work while the slides were closed, the troughs 32 and 33 are emptied in the interval between two charges. During this period, therefore, the folding apparatus 95 must operate so that not only the fabric stored in the troughs 32, 33 but also the constantly fed fabric is conveyed. The folders move continuously, but the fabric is not folded during the time when the chamber I is being charged and the chamber III dis- 100 charged. This is brought about by the upper, rotating rolls 34, 35 of the folders being connected in such manner by means of the levers 36, 37 with the slides 20 and 21 that, when the slides move downward, they 105 are lifted from the lower rolls and therefore cannot convey the fabric.

The moving mechanism can be divided into two groups, to wit continuously operating mechanism for moving the fabric and in- 110 termittently operating mechanism operating during the charging and discharging. To the former group belong the feed rolls 9 in the chamber II, and the folders in the cham- 115 bers I and III, while to the second group belong the steam cylinders 38 and 39 and their pistons for operating the slides 16 and 26, the eccentric gears 40, 41 for influencing the slides 20 and 21 and, lastly, the admis- 120 sion and blow-off valves, not shown, for the chambers I and III. Obviously the individual mechanisms may be influenced as desired for the purpose of bringing about the above working periods. Thus the valves 16 and 26 may be connected with the pistons 125 42, 43, as shown in the drawing, which open or close the valves according as steam is admitted above or below the pistons. The cams 40, 41 act on antifricition rollers provided at the top ends of the rods 22 and 130

44 in such manner that the slides 20 and 21 are closed thereby. The slides 20, 21 are opened by the weight of the rolls 34, 35 with the aid of the springs 45, 46.

I claim:

- 5 1. In an apparatus for treating broad cotton fabrics in one uninterrupted operation, the combination, with a treating chamber  
10 always under pressure, of a charging chamber at the inlet end thereof and a discharging chamber at the outlet end thereof, the  
15 said charging chamber being normally connected with the atmosphere for holding a certain quantity of goods, and temporarily shut off from the atmosphere for delivering  
the goods to the said treating chamber, and being adapted to be placed at the same pressure as and connected with the treating  
20 chamber, while the said discharge chamber is normally connected with and is at the same pressure as the said treating chamber  
and is adapted to be closed and brought to atmospheric pressure, means for continuously  
25 conveying a web of fabric from the charging chamber into the treating chamber and

into the discharging chamber, and means in the charging and discharging chambers for intermittently conveying the fabric.

2. In an apparatus for treating broad cotton fabrics in one uninterrupted operation, 30 the combination, with a treating chamber, of a charging chamber at the inlet end thereof and adapted to be connected therewith, a discharging chamber at the outlet end of the said treating chamber and adapted to be 35 connected therewith, means in the charging chamber for intermittently conveying a web of fabric extending through all the said chambers, means for continuously conveying 40 the web of fabric through the said treating chamber, and means for intermittently conveying the web of fabric out of the said discharging chamber.

In testimony, that I claim the foregoing as my invention, I have signed my name in 45 presence of two subscribing witnesses.

STANISLAW MICHAILOWITSCH KROSNOWSKI.

Witnesses:

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HENRY HASPER.