Dec. 1, 1942. L. B. CASE 2,303,612

WEB WASHING APPARATUS

Filed Sept. 20, 1940 2 Sheets-Sheet 1

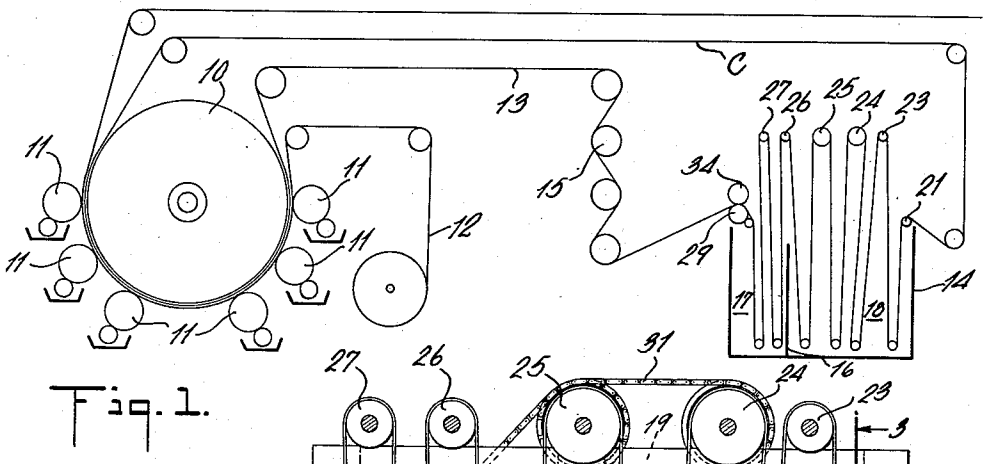


Fig. 1.

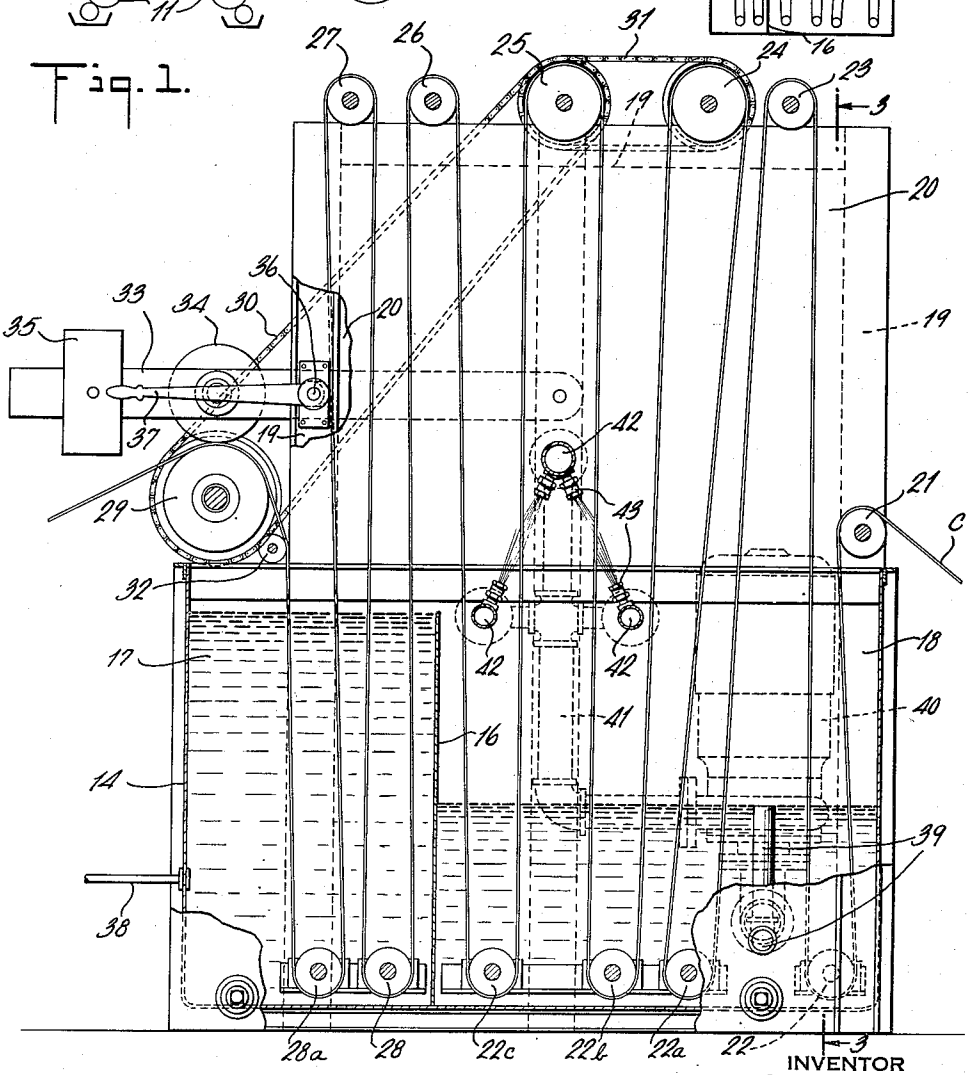


Fig. 2.

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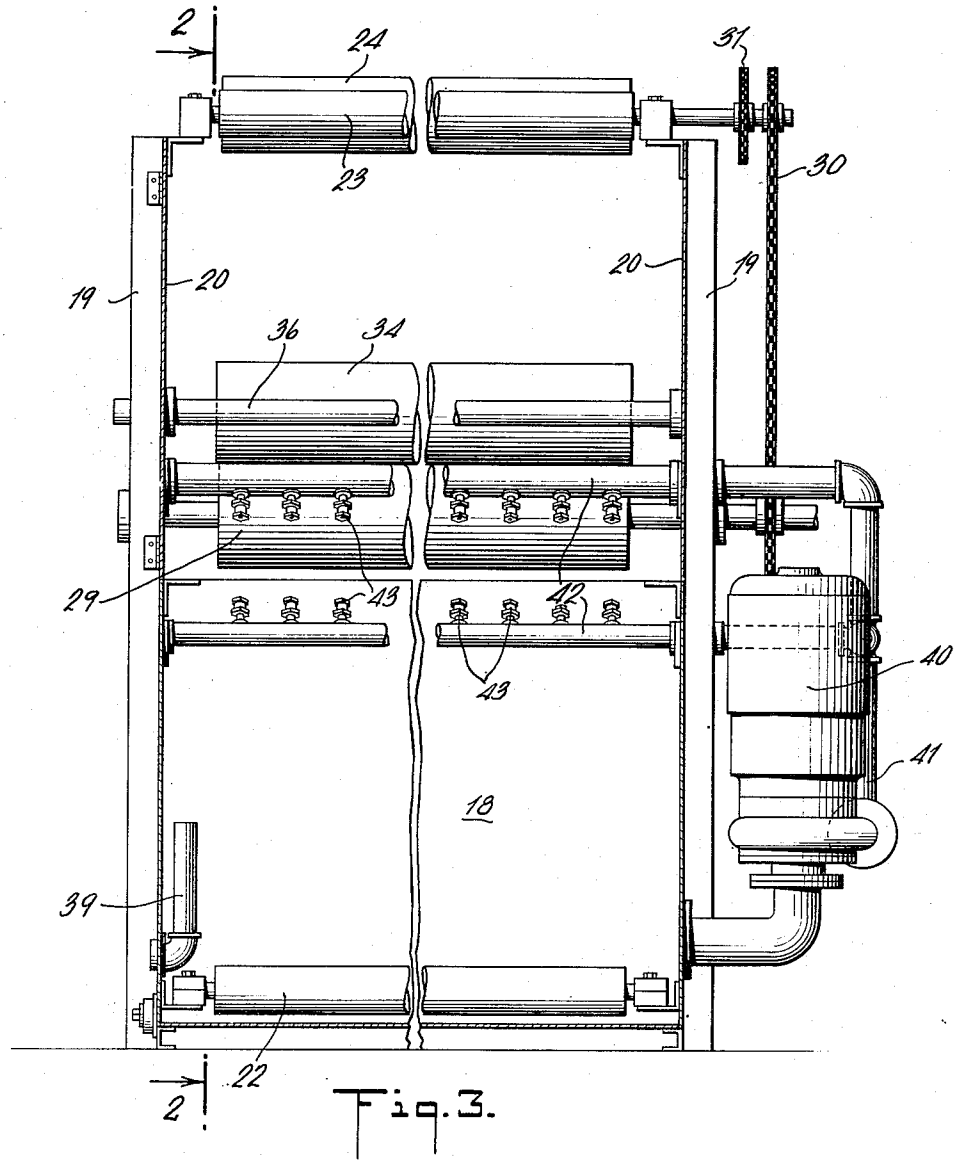


Fig. 3.

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UNITED STATES PATENT OFFICE

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WEB-WASHING APPARATUS

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Application September 20, 1940, Serial No. 357,585

1 Claim. (Cl. 68—205)

This invention relates to web-washing apparatus and more especially to apparatus for use in conjunction with a cloth printing machine as shown in the patents to Jenkins, No. 2,080,133 and Bromley, No. 2,175,051 for cleaning the gray cloth used in such machines in such manner that it is unnecessary to slow down or interrupt the normal operation of the machine for the introduction of a clean gray cloth.

An object of this invention is a highly efficient, low cost washing apparatus which can be easily and quickly associated with a cloth printing machine to thoroughly clean the gray cloth after passage through the printing machine and prepare it for return to such machine.

Other objects, novel features and advantages of this invention will become apparent from the following specification and accompanying drawings, wherein:

Fig. 1 is a diagrammatic view illustrating the washing apparatus connected up to the printing machine;

Fig. 2 is a vertical section through the washing apparatus, and

Fig. 3 is a section on the line 3—3 of Fig. 2, partially broken away.

In Fig. 1, 10 represents the impression cylinder of a cloth printing machine while each printing roller is designated by 11. The cloth to be printed is designated 12 while the gray cloth is designated 13. The washing apparatus of this invention is designated generally by 14 and the gray cloth 13 is passed through the washing machine and then around the drying apparatus 15 before it is returned to the printing machine.

The washing apparatus 14 comprises a tank having a vertical partition 16 dividing it into two chambers 17 and 18 of which the chamber 18 is considerably larger than the chamber 17 and the partition terminates a short distance below the top of the tank. A frame 19 extends above the top edge of the tank and is provided with side plates 20. A roller 21 is journalled in the frame 19 above the chamber 18 near one wall thereof. In the bottom of the chamber 18 are journalled a plurality of rollers 22, 22*a*, 22*b* and 22*c* and rollers 23, 24 and 25 are rotatably supported by the frame 19 at a considerable distance above the top of the chamber 18. The rollers 24 and 25 are equal in size and larger than the roller 23. Additional rollers 26 and 27 of the same size as the roller 23 are rotatably supported by the frame 19 above the chamber 17 and in the bottom of the chamber 17 are provided a pair of rollers 28 and 28*a*. A roller 29 is journalled above the chamber 17 and is connected to driving means (not shown).

A chain 30 in combination with sprocket wheels on the rollers 29 and 25 comprises means for driving the roller 25 by the roller 29 and a chain 31 co-operating with sprockets on the rollers 27 and 28 constitutes means for driving the roller 24 by the roller 25. A roller 32 is supported by the tank 14 adjacent the roller 29 and the rollers 29 and 32 are equipped with intermeshing gears, by means of which the roller 32 is rotated in the opposite direction to the direction of rotation of the roller 29. A pair of arms 33 are pivotally supported by the frame 19 and a roller 34 is journalled in said arm directly above the roller 29 and the arms 33 are provided with an adjustable weight 35 tending to press the roller 34 against the roller 29. Means comprising a crossbar 36 rotatably supported by the frame 19 and provided with an actuating handle 37 are provided for effecting movement of the roller 34 away from the roller 29.

A water inlet pipe 38 leads into the chamber 17 and a vertical outlet pipe 39 leads from the chamber 18, the liquid level in the chamber 18 being controlled by the height of the pipe 39. A pump 40 has its inlet connected to the lower portion of the chamber 18 and has its outlet connected to a header 41. Three horizontal pipes 42 are connected in parallel with the header 41 and each pipe is provided with a plurality of nozzles 43. The pipes 42 are arranged at the corners of a triangle with two pipes at the same elevation and the third pipe at a higher elevation. The nozzles 43 of the two lower pipes are directed toward the upper pipe, while half the nozzles of the upper pipe are directed at each of the remaining two pipes. The pump 40 withdraws water from the tank 18 and supplies it to the nozzles 43. Fresh water is supplied to the chamber 17 through the pipe 38 and water from the chamber 17 flows over the edge of the partition 16 into the chamber 17. The level of water in the chamber 18 is maintained constant through operation of the overflow 39.

A soiled gray cloth C is introduced into the chamber 18 over the roller 21 from which it passes down through the chamber 18 and around one roller 22, after which it passes over the roller 23 and then is passed in succession around rollers 22*a*, 24, 22*b*, 25, 22*c*, 26, 28, 27 and 28*a* as clearly shown in Fig. 2, thereby making several passes through the liquid in the chamber 18 and also several passes through the liquid in the chamber 17. From the chamber 17, the gray cloth passes over the roller 32 which is rotating

reversely to the direction of travel of the gray cloth and serves to spread the gray cloth which then passes between the squeegee rollers 29 and 34 which co-operate to remove substantially all the moisture therefrom after which the gray cloth is supplied to the dryer 15. On two of its passes the gray cloth is led between opposed sets of nozzles 43 and is subjected to water under pressure thoroughly to clean it, the gray cloth previously having been soaked in the liquid in the container 18. In the chamber 17, the gray cloth is thoroughly rinsed in clear water.

In order not to multilate the fibres forming the gray cloth, and thereby impairing its life, a large volume of washing water at relatively low pressure is used. The pump is so designed that the water passing from the spray nozzles is delivered to the gray cloth at a pressure not exceeding fifty pounds and a sufficient number of nozzles are provided with sufficient volume of water at this pressure projected against the cloth to effect the desired washing. With this arrangement, the life of the standard gray cloth is unimpaired by continuous washing and the use of a washer such as herein described is justified from a financial viewpoint.

It is of course understood that various modifications may be made in the apparatus above described without in any way departing from the spirit of the invention as defined in the appended claim.

I claim:

A web-washing apparatus comprising a tank, a first and second horizontal pipe at the same level and a third horizontal pipe at a different level, a first web guide roller above said tank and two web guide rollers at the bottom of the tank for passing the web first between the first and third pipes and then between the second and third pipes, a row of nozzles on each of said first and second pipes directed at the axis of said third pipe and a first and a second row of nozzles on said third pipe directed respectively at the axes of said first and second pipes, whereby the streams from said nozzles are inclined to said web and the streams from said first and second rows of nozzles of said third pipe are respectively in opposed alignment with the streams from the nozzles of said first and second pipes to produce maximum turbulence of the streams at the web and avoid application of force by said streams to said web tending to vary its rate of travel, and means for supplying liquid to said nozzles under pressure.

LYNN B. CASE.