

No. 625,357.

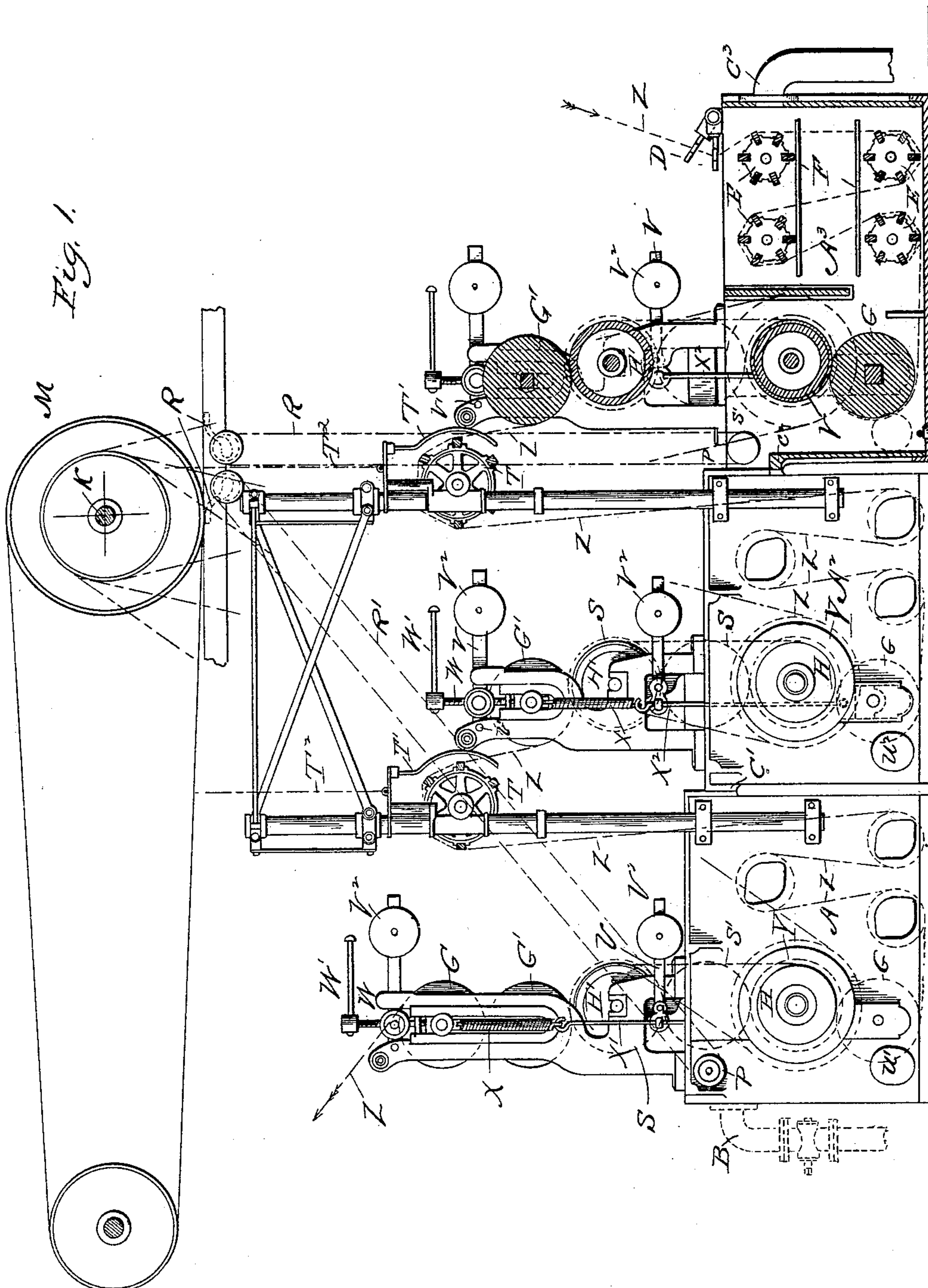
Patented May 23, 1899.

C. SCHLAEPFER & M. WALTON.  
DYEING MACHINE.

(Application filed May 3, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses  
*Donaldson*  
*Matthew Walton*

Inventors.  
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by *Richard C. Allen*

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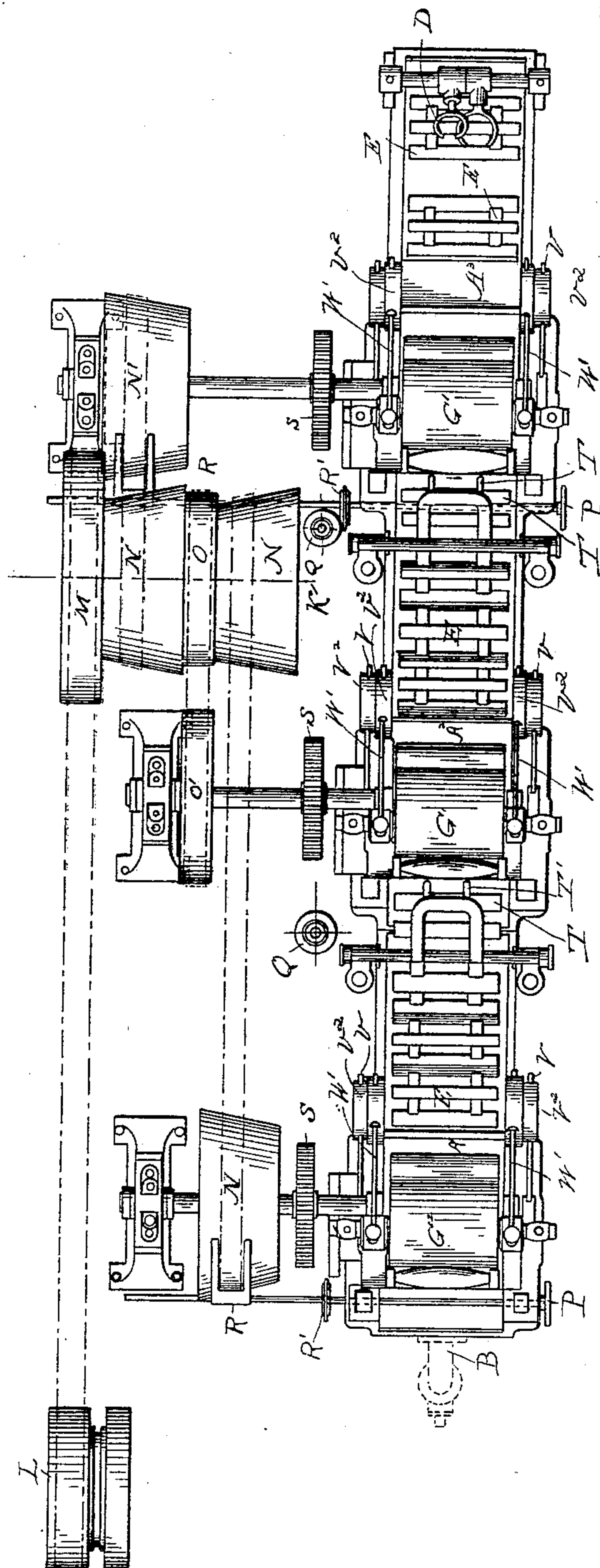
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(No Model.)

3 Sheets—Sheet 2.

Fig. 2.



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No. 625,357.

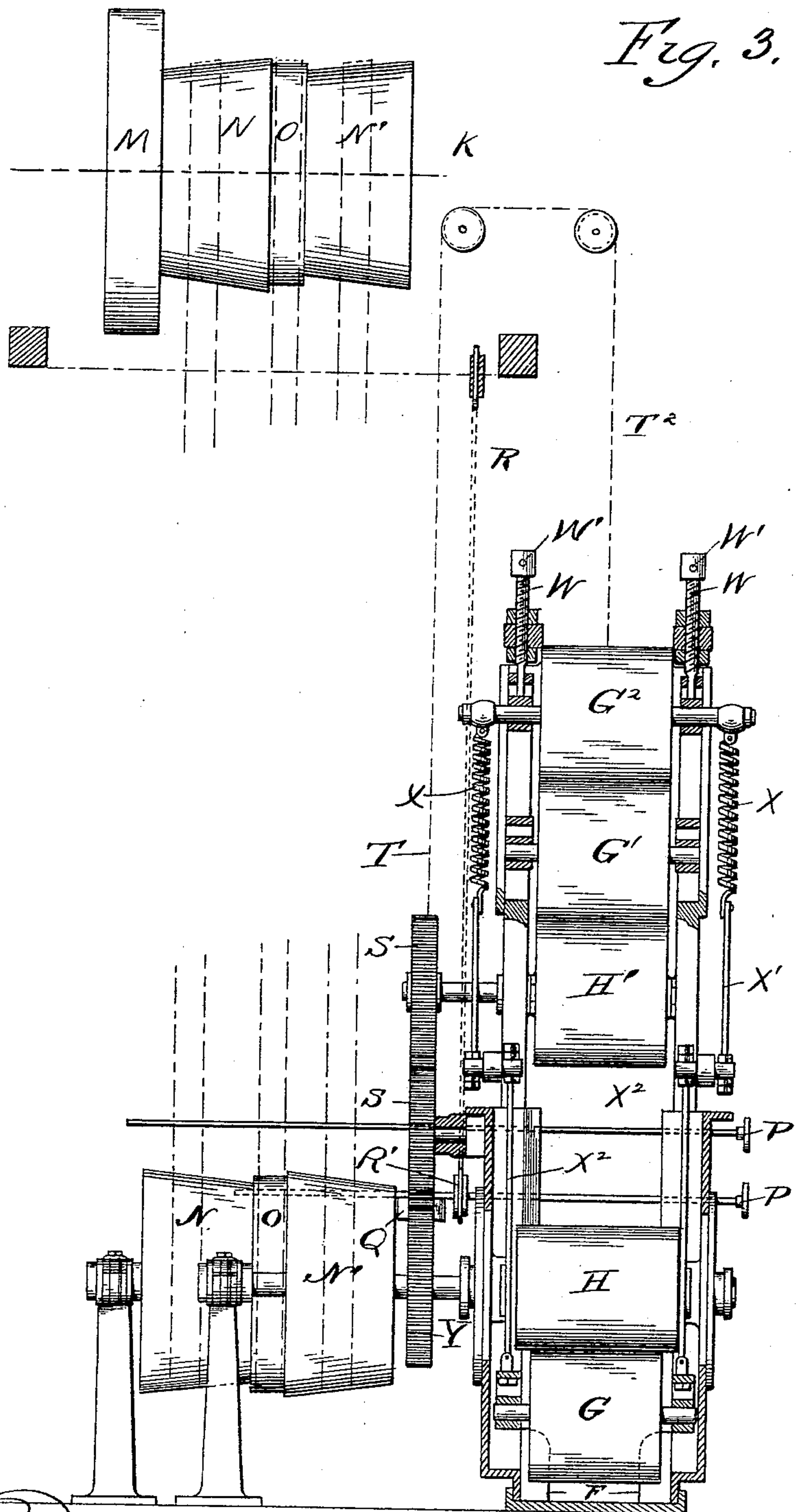
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(No Model.)

3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

CHARLES SCHLAEPFER AND MATTHEW WALTON, OF FRATTE-DI-SALERNO,  
ITALY.

## DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 625,357, dated May 23, 1899.

Application filed May 3, 1898. Serial No. 679,658. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES SCHLAEPFER, a citizen of the Republic of Switzerland, and MATTHEW WALTON, a subject of the Queen of Great Britain, both residing at Fratte-di-Salerno, Italy, have invented certain new and useful Improvements in Machines for Washing Woven Fabrics and Yarns, (for which we have made application for Letters Patent in Great Britain, No. 3,169, dated February 8, 1898,) of which the following is a specification.

Our invention relates to improvements in machines for washing woven fabrics and yarns either in hanks or warps during the operations of bleaching, dyeing, and soaping; and the principal object of our improvements is to reduce the drag or tension on the fabrics or yarns to a minimum, whereby we gain efficiency in washing and are able not only to wash heavy fabrics, such as flannellet, but also the finest fabrics, even lace, without breakage or distortion.

In the accompanying three sheets of drawings, Figure 1 is a side elevation, partly in section, Fig. 2 a plan, and Fig. 3 an end sectional elevation, of a washing-machine constructed according to our improvements.

In the machine illustrated in the views we show an arrangement of three tanks  $A^1 A^2 A^3$ , respectively; but it will be readily understood that any other convenient and suitable number of tanks may be employed.

The division-walls  $C^1 C^2$  of the tanks are of different heights to allow the water or other liquid admitted to the tank  $A^1$  through the pipe B to flow freely through all three tanks and escape out of the machine through the pipe  $C^3$ . The fabrics Z, generally two lengths at a time, are led into the machine through two pot-eyes D and pass into the tank  $A^3$ , under and over winches E, and guided by guide-rails F through the nip of the lower pair of squeezing-rollers G H, up out of the water in the tank  $A^3$ , through the nip of the upper pair of squeezing-rollers  $H^1 G^1$ , then through the winch-guide T' and over the tension-compensating winch T, down into the tank  $A^2$ , under and over winches E, and so on to the delivery end of the machine.

It will be observed from the drawings that

we have three squeezing-rollers  $H^1 G^1$ , and  $G^2$  in the upper set of range  $A^1$ , and this we prefer, in order to give the fabrics or yarns an extra squeeze before leaving the machine and going into the bleaching or other liquor when they are to be treated by a subsequent bleaching or similar operation.

We drive the three ranges of squeezing-rollers G H by the following or any other convenient and suitable arrangement of driving-gear: On the main shaft we mount a friction clutch-pulley L (see Fig. 2) for either rope or belt, from which we drive a corresponding pulley M on a counter-shaft K. The handle of the lever (not shown) for controlling the clutch L and starting and stopping the machine is placed in any convenient position for the attendant. On the counter-shaft K we secure three pulleys N O N', placed side by side. The middle pulley, O, is a plain pulley, which drives by a belt, at one constant speed, a corresponding pulley on the axle of the squeezing-roller H, range  $A^2$ . The other two pulleys, N N', are coned pulleys and drive corresponding coned pulleys on the axles of the squeezing-rollers H in ranges  $A^1$  and  $A^3$ . On the axle of each squeezing-roller H is a spur-wheel Y, which drives by a carrier-gear S' a spur-wheel S on the axle of the upper squeezing-roller  $H^1$ . The speed of the squeezing-rollers in the two ranges  $A^1 A^3$  is regulated by hand-wheels P, which shift the belts on the coned pulleys N N' by means of strap-forks R, actuated by screwed shafts when the hand-wheels P are turned, the upper sets of strap-forks R being caused to move exactly with the lower by means of chain-gearing R'.

The squeezing power is obtained by means of levers V, pivoted to the frame at  $V^1$  and provided with adjustable weights  $V^2$ . A screw W, worked by a handle  $W^1$ , passes through a swivel-nut in the lever V, and the end of the screw bears upon the slide-block, in which the upper squeezing-roller  $G^1$  is journaled. The lower squeezing-roller G is also journaled in slide-blocks, and these, as well as the slide-blocks of the upper roller  $G^1$ , are guided in open slots or slideways in the machine-frame. The upper slide-blocks are connected by springs X and rods  $X^1$  to a second pair of weighted levers V, which are also con-



nected to the lower slide-blocks by rods  $X^2$ .  
 By this arrangement the pressure on the goods  
 is easily regulated and is much more uniform  
 and effective and the machine works more  
 5 smoothly and lightly than with the ordinary  
 dead-weight arrangements for applying pres-  
 sure. The squeezing-rollers  $H'$  in the upper  
 set of the three ranges  $A' A^2 A^3$  are, say, two and  
 a half millimeters (or more or less) smaller in  
 10 diameter than the corresponding rollers  $H$  in  
 the lower sets, and this is of great importance,  
 as it prevents too great a pull and stress on  
 the goods while stretched and passing be-  
 15 tween the lower and upper sets of squeezing-  
 rollers. The lower sets of rollers having to  
 pull the goods over the winches and from dif-  
 ferent parts of the bleach-house it follows  
 that the goods will slip a little in passing be-  
 20 tween the rollers  $G$  and  $H$ , and if this slip  
 were not compensated by the difference in  
 diameter of the rollers  $H H'$  the tension be-  
 tween the upper and lower sets of squeezing-  
 rollers in the same range would be too great.  
 25 The difference in the dimensions of the two  
 rollers as given above is not absolute and can  
 be varied according to the strength and qual-  
 ity of the goods. For example, in works where  
 only low quality or fine cloth is bleached the  
 difference between the two sets of rollers in  
 30 the same range would be greater. The ten-  
 sion-compensating winches  $T$  are balanced by  
 chains  $T^2$  and weights  $Q$ , so that the least ex-  
 cess of strain beyond that required for draw-  
 ing the goods over them will cause them to  
 35 descend and, vice versa, to rise if the goods  
 are too slack. These winches  $T$  have a rise  
 and fall of about four feet, so as to give the  
 attendant ample time for regulating by means  
 of the hand-wheels  $P$  the speeding of the  
 40 squeezing-rollers in ranges  $A'$  and  $A^3$ , and  
 thereby maintaining the winches  $T$  at about  
 middle height.

We consider it advantageous to make the  
 tanks  $A' A^2 A^3$  narrow, so as to economize  
 45 and thoroughly utilize all the water.

In the sides of the tanks we make hand-  
 holes fitted with movable covers, such as  
 $U' U^2$ , to enable the attendant to insert his  
 arm for convenience in threading the goods  
 50 through or other purposes.

Although we have shown and described  
 three tanks  $A' A^2 A^3$ , which is the number we  
 prefer and consider most advantageous, it  
 will be readily understood that we might em-  
 55 ploy any other convenient number in series,  
 and we might vary the means for driving and  
 regulating the driving of the several sets of  
 squeezing-rollers and for weighting them.

Again, we might dispense with all or some of  
 the upper sets of squeezing-rollers, in which 60  
 case the goods pass directly from the rollers  
 $H$  over the tension-compensating winches  $T$ ,  
 and thereby greatly simplify and reduce the  
 cost of the machine; but we do not recom-  
 mend this, as the extra cost is in our opinion 65  
 more than repaid by the increased efficiency  
 of the machine when the upper sets are em-  
 ployed in combination with the lower sets of  
 squeezing-rollers.

Having now particularly described and as- 70  
 certain the nature of our said invention and  
 in what manner the same is to be performed,  
 what we claim as our invention, and desire to  
 secure by Letters Patent, is—

1. In a machine for washing fabrics and 75  
 yarns, in combination, a series of washing-  
 tanks, means for guiding the goods into and  
 through said tanks, a set of weighted driven  
 squeezing-rollers adapted to be immersed in  
 the water in each tank, and an upper set of 80  
 weighted driven rollers for drawing through  
 and squeezing the goods after they have left  
 said tank, tension-compensating winches for  
 relieving the goods of any excessive strain,  
 and means for varying the speed of the squeez- 85  
 ing-rollers and so regulating the tension on  
 the goods being drawn through the machine,  
 all substantially as and for the purposes here-  
 in set forth.

2. In combination, a series of washing- 90  
 tanks, means for guiding the goods into and  
 through said tanks, a set of weighted driven  
 squeezing-rollers adapted to be immersed in  
 the water in each tank, tension-compensat-  
 ing winches for relieving the goods of any ex- 95  
 cessive strain and means for varying the speed  
 of the squeezing-rollers and so regulating the  
 tension on the goods being drawn through the  
 machine, all substantially as and for the pur-  
 poses herein set forth. 100

3. In combination, the end and intermedi-  
 ate squeezing-rollers arranged in series, driv-  
 ing mechanism for driving the intermediate  
 rollers at a constant rate of speed, and vari-  
 able operating means connecting said driving 105  
 mechanism with each of the remaining series  
 of rollers whereby the speed of each outer set  
 may be varied in respect to the intermediate  
 set, substantially as described.

In witness whereof we have hereunto set 110  
 our hands in presence of two witnesses.

CHARLES SCHLAEPFER.  
 MATTHEW WALTON.

Witnesses:

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 GIOVANNI NICOLAUS.