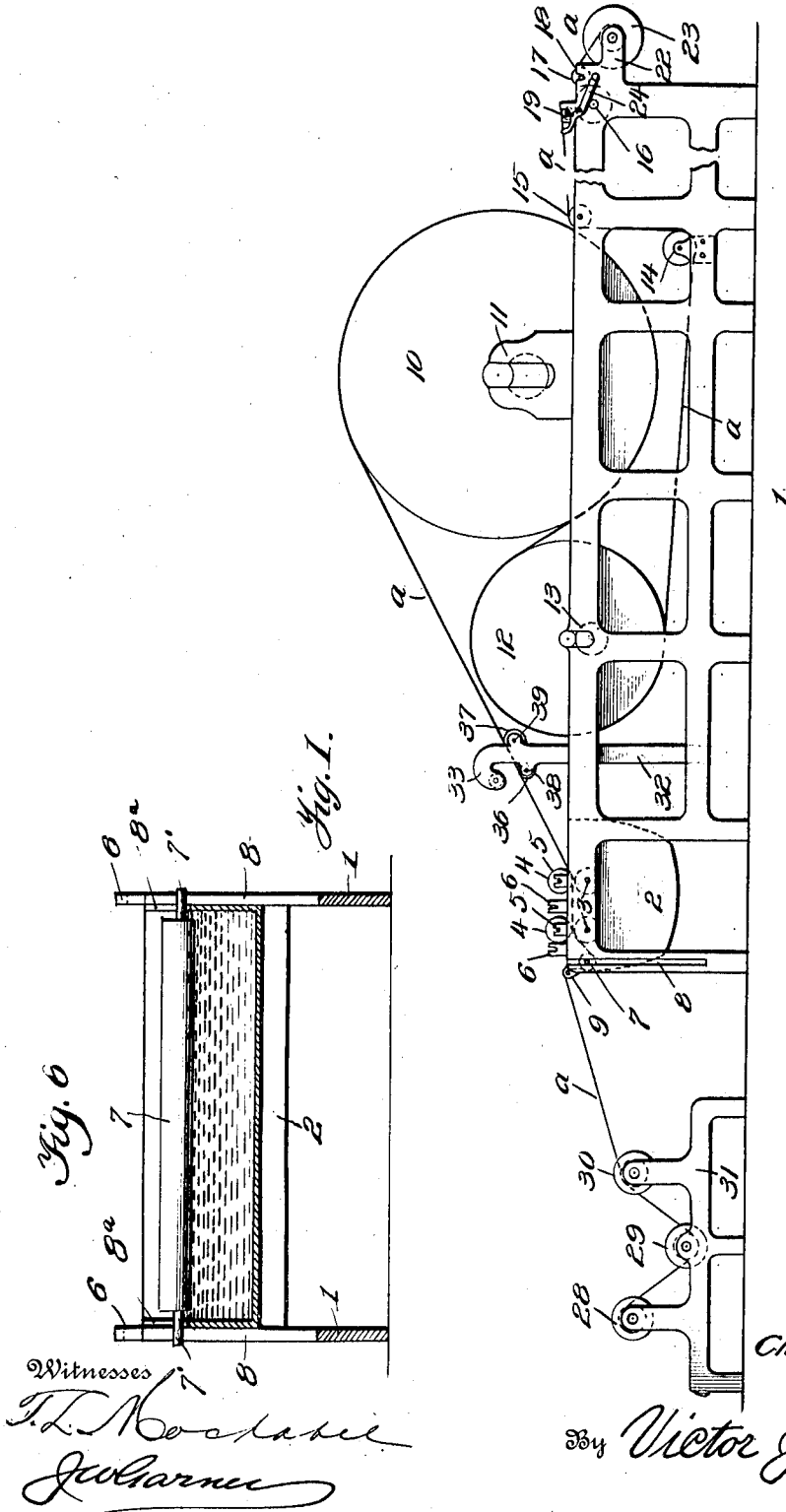


C. E. CLARK.
YARN SIZING MACHINE.
APPLICATION FILED NOV. 27, 1909.

1,020,343.

Patented Mar. 12, 1912.

3 SHEETS—SHEET 1.



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3 SHEETS-SHEET 2..

Fig. 2.

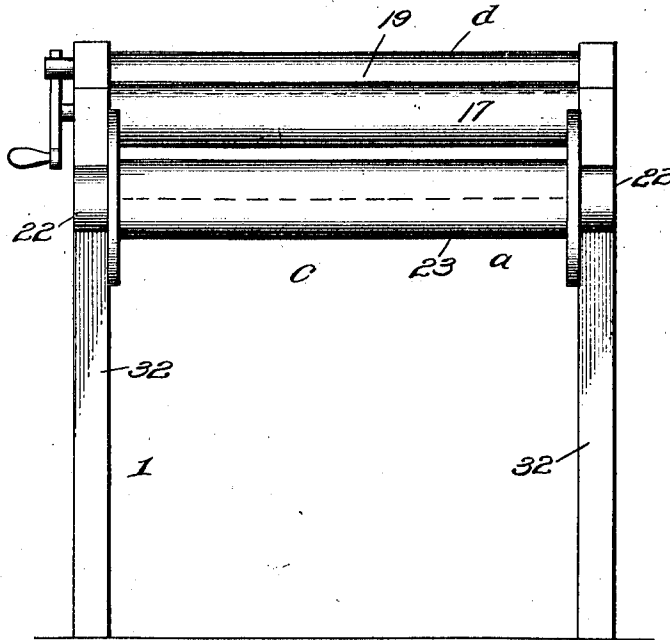
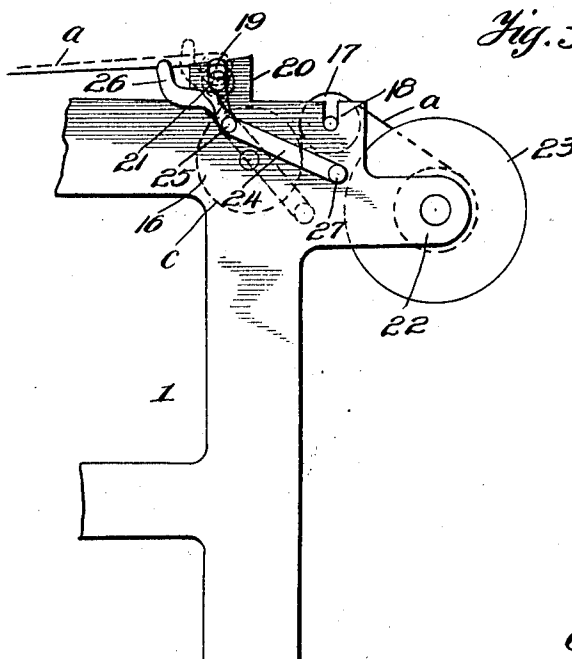


Fig. 3.



Witnesses

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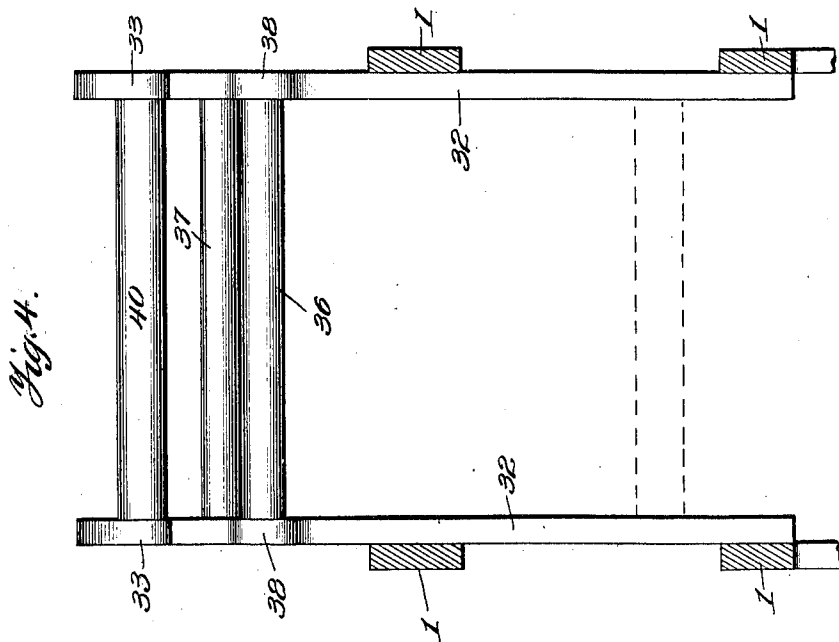
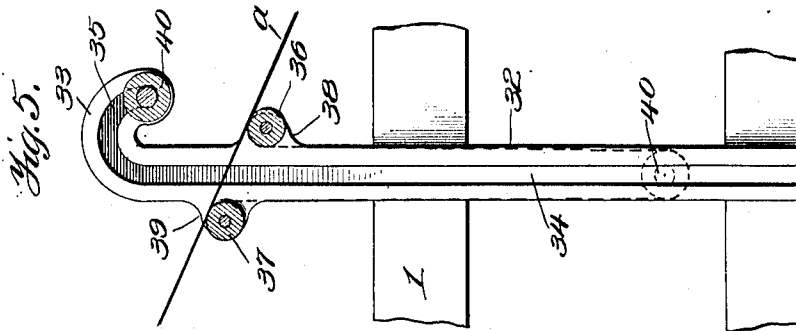
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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YARN-SIZING MACHINE.

1,020,343.

Specification of Letters Patent.

Patented Mar. 12, 1912.

Application filed November 27, 1909. Serial No. 530,187.

To all whom it may concern:

Be it known that I, CHARLES E. CLARK, a citizen of the United States, residing at Durham, in the county of Durham and State of North Carolina, have invented new and useful Improvements in Yarn-Sizing Machines, of which the following is a specification.

This invention relates to improvements in machines for slashing or sizing warp yarns or threads prior to the use of the same in a loom, the object of the invention being to provide means to enable the machine to be stopped at any time prior to the filling of the loom beam with sized yarn without causing the sizing or starch on those portions of the yarns between the sizing roller and the drying cylinder of the machine to harden and render it necessary to cut out such portions of the yarn; and the said invention consists in the construction, combination and arrangement of devices herein-after described and claimed.

In the accompanying drawings:—Figure 1 is a side elevation of a yarn sizing or slashing machine provided with my improvements. Fig. 2 is an elevation of the front end of the same. Fig. 3 is a detail side elevation of the front end of the same. Fig. 4 is a detail elevation of the slack take up mechanism for raising the sizing or slashing roll and causing the arm engaging in the immediate vicinity of such roll to be run between the squeeze rollers when the machine is stopped so as to prevent the sizing from hardening on the yarn and rendering it unfit for use in the loom. Fig. 5 is a vertical sectional view of the same. Fig. 6 is a vertical transverse section through the sizing tank, showing the mode of mounting the sizing roller therein.

The frame of the sizing or slashing machine is indicated at 1. The said machine, as is usual, is provided at its rear end with the usual kettle or tank 2 which contains the starch or sizing material. Above the said tank and having their bearings in the sides of the frame 1 are the lower squeeze rollers 3. The upper squeeze rollers 4 which are adapted to bear on the upper sides of and coact with the lower squeeze rollers are normally, during the operation of the machine mounted in bearings 5 on the sides of the said frame 1, said bearings opening upwardly so as to permit the upper squeeze rollers to be unshipped therefrom. In ac-

cordance with my invention, I provide the frame of the machine with bearings 6 which extend upwardly to a higher point than the bearings 5 and which are adapted to receive the journals of the upper squeeze rollers 4 when the latter have been unshipped from their bearings 5, the said bearings 6 enabling the said upper squeeze rollers to be mounted at such an elevation that they will not engage the lower squeeze rollers 3. A slashing or sizing roller 7 has its journals mounted in vertical grooves 8 in the sides of the tank so that the said roller 7 is rendered capable of vertical movement, said roller when lowered, operating to cause the yarns to be sized or run through the starch or sizing material in the tank 2, and when raised permitting the yarns to be run without coming in contact with the starch of the sizing material. A direction roller 9 is mounted on the rear end of the frame 1.

The usual drying cylinder 10 has its bearings as at 11 on the sides of the frame 1 and at a suitable distance from the front end thereof. Somewhat in rear of the drying cylinder 10 is a smaller drying cylinder 12, the bearings of which are indicated at 13. A lower direction roller 14 is mounted in the sides of the frame 1 at a point below the front side of the drying cylinder 10 and an upper direction roller 15 is mounted at a higher point in the sides of the frame 1 and slightly in advance of the lower direction roller 14. A roller 16 has its bearings near the front end of the frame 1. A roller 17 of less diameter than the roller 16 is mounted near the latter, the bearings being indicated at 18 somewhat in advance of those of the roller 16. A tension or friction roller 19 has vertical slotted bearings 20 on the sides of the frame 1 near the front end thereof, the journals 21 of roller 19 operating in said slotted bearings and the latter enabling said roller 19 to be raised and lowered. Said roller when lowered bears on the roller 16. The usual bearings 22 are provided at the front end of frame 1 for the loom beam 23 or that beam on which the warp yarns are wound that have been sized by the machine. In connection with the vertically movable friction or tension roller 19, I provide a lever 24 which is fulcrumed on the frame 1 as at 25 and is provided with a bent arm 26 which bears under the spindle or journal of said roller. When the lever is in the position shown in full lines in Fig. 3, the roller

19 bears on the roller 16 but by lowering that end of the lever provided with a handle 27 the arm 26 of the lever will run under the spindle of said roller 19 and raise and support the latter at a point above the roller 16 as indicated in dotted lines in Fig. 3.

A section of beams 28—29—30 are shown in Fig. 1 mounted, as usual, on a frame 31, spaced from the rear end of the frame 1 and in line therewith. The yarns, indicated at *a*, from the beams 28—29—30, pass forwardly over the roller 9, then downwardly under the vertically movable sizing or slashing roller 7, then upwardly and forwardly over the lower squeeze rollers 3 and under the upper squeeze rollers 4, then forwardly and upwardly to the drying cylinder 10, then around the under side of said cylinder, rearwardly and over the rear side of the cylinder 12, then forwardly and under the roller 14, then upwardly over roller 15 forwardly over the roller 19, then between said roller and the roller 16, under said roller 16, over the roller 17 and to the loom beam 23 or that beam on which the sized yarns are wound. When the said beam is full, it is removed from the frame 1 and taken to the drawing-in room for drawing in into the harness for the loom.

In accordance with my invention, I provide a take up mechanism for the yarns which I will now describe.

A pair of vertically disposed standards 32 are secured to opposite sides of the frame 1 at a point between the sizing tank and the cylinder 12. Each of the said standards has at its upper end a rearwardly and downwardly curved arm 33 and is provided on its inner side with a groove 34 which extends from the lower to the upper end of the standard and terminates in a downwardly and rearwardly curved portion 35 in the standard arm 33. A pair of rollers 36—37 are mounted respectively in bearings 38—39 on the rear and front sides of the said standards, the roller 37 being somewhat higher than the roller 36. The warp threads pass over the rollers 36—37. I also provide a roller 40, the journals of which engage the grooves 34. Said roller is normally mounted above the rollers 36—37 and in the downturned end of the curved upper portions 35 of the grooves 34 so that under normal conditions, when the machine is in operation, the roller 40 is above and entirely out of engagement with the warp threads.

The operation in sizing or slashing the warp threads is as follows:—The cylinders 10—12 and the rollers 23 being in revolution in the directions indicated by the arrows in Fig. 1, the warp threads are drawn from the beams 28—29—30 and wound on the beam 23 and, hence, are caused to travel under the sizing roller 7 in contact with the sizing material in the tank 2 and from said sizing roll

between the upper and lower squeeze rollers 3—4 which serve to remove superfluous sizing material or starch from the yarns, the sized yarns being dried as they pass over the cylinder 10 and, hence, being delivered to the beam 23 in a dry and finished condition suitable for use in the loom. Heretofore, so far as I am aware, in machines of this class in the event that the machine is stopped before the beam 23 is full, even for a very short space of time, the yarn in the act of sizing and which has not passed through the squeeze rollers become hardened and injured by the drying of the sizing material thereon and rendered unfit for use in the loom and, hence, before the machine could be again started all of the yarn between the sizing roller 7 and the beam 23 has to be cut out and removed, causing the total loss of such lengths of yarn and also causing a great loss of time on the part of the attendant. My invention enables the machine to be stopped without injury to the yarns and without the necessity of cutting out the yarns. In the operation of the machine as provided with my improvements, when the machine is stopped at any time prior to the filling of the beam 23, the attendant unships the roller 40 from its elevated bearings in the curved portions 35 of the grooves 34 and permits the journals of said roller to pass downwardly in the vertical portions of said grooves 34, thus causing the said roller 40 to engage the yarns between the rollers 36—37 and in so doing make a bight in the yarns, as indicated in dotted lines in Fig. 5. The said roller 40 being heavier than the sizing roller 7 in thus making the bight in the yarn takes up the slack in the yarns between the squeeze rollers and the roller 9 and, hence, causes the yarns to raise the sizing roller 7 out of the sizing tank and those portions of the yarn to which size has been applied and which had not been reached by the squeeze rollers will be caused by the taking of the slack therein by the roller 40 to be drawn between the squeeze rollers and, hence, relieved of superfluous sizing material or starch so that they will not become hardened and injured by drying. Having thus caused the roller 40 to take up slack in the yarns, the attendant then unships the upper squeeze rollers 4 from their lower bearings 5 and mounts them in their upper bearings 6 so that the yarns are entirely removed from contact with the lower squeeze rollers and he also by means of the lever 24 in the manner hereinbefore described raises the roller 19 from the roller 16 thus relieving the tension of said rollers on the yarn. He then turns the beam 28 backward so as to cause the yarns between such rollers and the roller 19 to be rewound on said beams 28—29—30 and all danger of hardening and injuring thereof is obviated.

Having thus described the invention, what is claimed, is:—

In a sizing machine of the class described, the combination of a sizing tank, a sizing roller movable vertically in the tank, a drying roll, squeeze rolls disposed in the line of feed of the threads between said sizing roller and the drying roll, grooved guide standards arranged in the line of feed of the threads between the squeeze rolls and drying roll and having offset supporting portions at their upper ends, transverse guide rolls journaled upon the guide standards on opposite sides of the guide grooves therein and below said offset supporting portions, and a weighted tension element normally held by

said supporting portions above and out of contact with the threads and adapted when released to travel in the guide grooves and engage and carry the threads downwardly between and below the guide rolls, whereby to form a bight or loop in the yarns and tension the same to raise the sizing roller and cause the yarns to pass between the squeeze rolls. 20 25

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES E. CLARK.

Witnesses:

C. W. BYRD,
E. J. HELLON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."