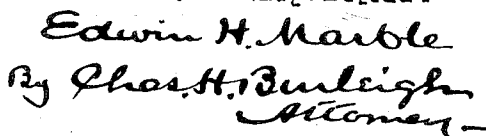


APPLICATION FILED OCT. 18, 1909.

3 SHEETS--SHEET 1.



E. H. MARBLE.
CLOTH FINISHING MACHINE.
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1,049,248.

Patented Dec. 31, 1912.

3 SHEETS—SHEET 2.

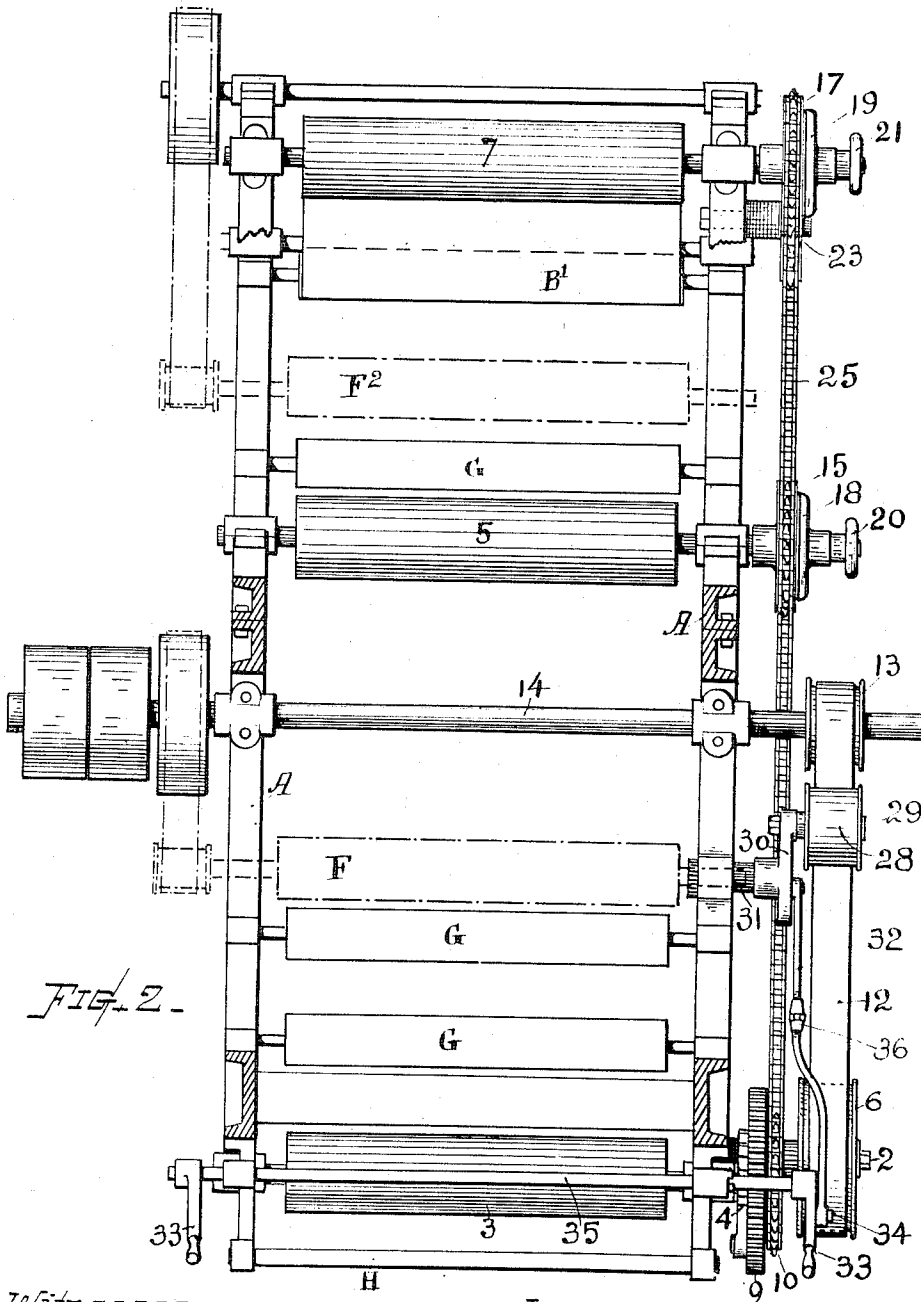


FIG. 2.

Witnesses—

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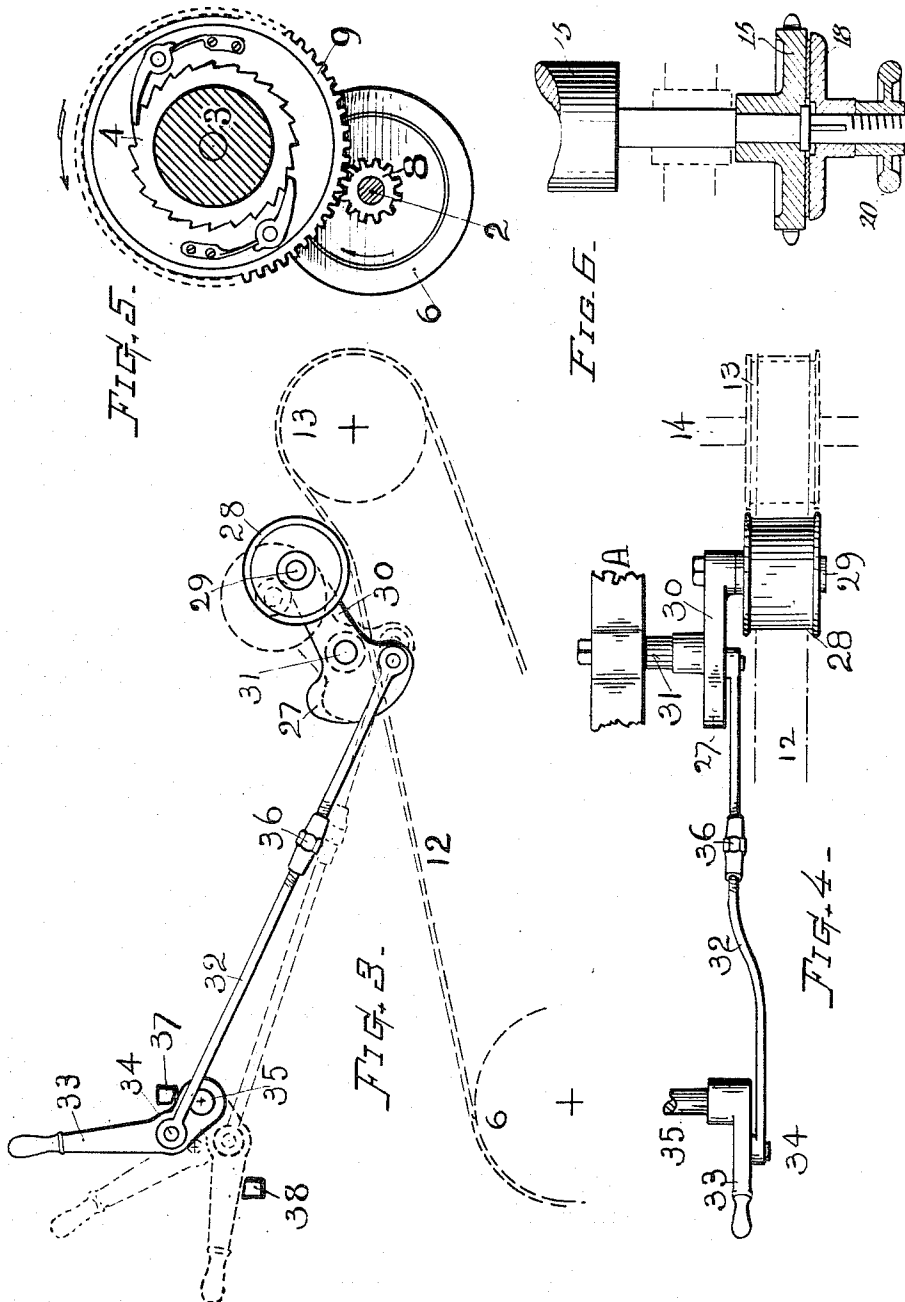
Edwin H. Marble
By Chas. H. Burleigh
Attorney

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UNITED STATES PATENT OFFICE.

EDWIN H. MARBLE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CURTIS & MARBLE MACHINE COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CLOTH-FINISHING MACHINE.

1,049,248.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed October 18, 1909. Serial No. 523,307.

To all whom it may concern:

Be it known that I, EDWIN H. MARBLE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Cloth-Finishing Machines, of which the following is a specification, reference being made therein to the accompanying drawings.

My present invention relates to certain improvements applicable to cloth-finishing machines, such as shearing machines, brushing machines, polishing machines, and similar machines, wherein the fabric is drawn through the machine by continuous feed, while acted upon by the shearing cutters, or other finishing device, at one or more positions in the machine.

A prime object of my invention is to provide, in a machine of the class named, a positively driven delivery-roll having a forward release, in combination with a frictionally driven feed-draft roll, and means for imparting motion to said feed-draft roll by an operating connection from the mechanism driving the delivery-roll; the cloth or fabric being more uniformly maintained under the required tension, and the stretch of the fabric properly taken up, while passing through and being acted upon by the finishing mechanism.

A second object of my invention is to provide, in a machine of the class named, a positively driven delivery-roll having a forward release, a frictionally driven feed-draft roll, and means for imparting motion to said feed-draft roll operating from the driving mechanism of said delivery-roll; and in combination therewith, means for starting and instantly stopping the action of the driving mechanism of the delivery-roll.

A third object is to provide, in a machine of the character specified, a positively driven delivery-roll having a forward release; a plurality of frictionally driven feed-draft rolls severally operated by a unitary connection, from the delivery-roll driving mechanism; in combination with a plurality of surface-finishing mechanisms disposed to act intermediate to the delivery-roll and feed-draft rolls.

I attain these objects by mechanism the nature, organization and mode of operation of which is hereinafter more fully described, the particular subject matter claimed as of

my invention being definitely set forth in the summary; and an example thereof illustrated in the accompanying drawings (three sheets) wherein—

Figure 1 represents a side view of such parts of a cloth-finishing machine as will show the nature of my invention. Fig. 2 is a horizontal sectional plan view showing the fabric-feeding rolls and the arrangement of means for driving the same in accordance with my invention. Fig. 3 is a detail side view of the means for starting the fabric-feeding mechanism into action and for instantly stopping the same. Fig. 4 is a plan view of the parts included in Fig. 3, Fig. 5 is a sectional view showing the delivery-roll driving means and its forward release devices, and Fig. 6 is a sectional detail view of the friction-disk clutch employed upon the feed-draft roll axle.

It will be understood that some parts commonly employed and necessary in a fully equipped fabric-finishing machine in practice, have been omitted in the present drawings, such parts being well known; and I have herein shown only those portions of the machine as will sufficiently illustrate the nature of the invention claimed. Portions of the machine which are not shown and specifically described herein may be considered as being of usual well known or any suitable construction.

Referring to the drawings, A indicates the main frame, upon which are mounted suitable bearings for the various rolls and working parts; said parts being in general disposed for operation in substantially the order shown, and as heretofore employed; excepting the matter which constitutes the invention herein described and claimed.

F indicates the fabric-finishing means, which can be of any approved kind, as for shearing, brushing, polishing, or otherwise finishing the face of the cloth or fabric; since my present invention does not relate to the detail of the surface-finishing means. In the present instance the finishing means is illustrated as a cloth-shearing mechanism of usual kind, comprising a cloth-guide *c*, ledger-blade *f* and shearing revolver *r*.

F² indicates a second fabric-finishing means of like nature to the first, or of any desired kind, as my improvements are applicable to a cloth-finishing machine employing a single or a plurality of forms of well

known fabric-finishing or surface-treating means, instead of shearing devices; or with shearing devices as well.

The letters B, b and B¹ indicate the revolving brushes, in their usual positions, and G indicates the several guides, rolls or bars for directing the fabric C on its way through the machine and to the several finishing means as it is advanced by the fabric-feeding rollers, in its passage from the breast or spreader bar H to the place of discharge K. The course of the fabric is indicated by the dot-and-dash line C on Fig. 1.

The fabric-feeding means consists of a positively driven delivery-roll 3, a frictionally driven feed-draft roll 5, and second frictionally driven feed-draft roll 7 which, in accordance with my invention, are combined and organized for operation in the following described manner.

The operating parts that constitute the delivery-roll-driving mechanism comprise a drive-wheel or gear loose-mounted upon the delivery-roll shaft, with auxiliary connecting devices, and an independently controlled belt-driven pulley and pinion combined therewith in the manner substantially as shown. Said drive-wheel 9 for the delivery-roll 3 is connected therewith by a ratchet-device 4 that positively drives the delivery-roll forward or in its delivering direction, but permits a forward release of the roll in case there are reasons for its moving faster than the movement of the driving mechanism; but it cannot move slower than its driving mechanism. The drive-wheel or gear 9 also has a sprocket-wheel 10 connected to rotate therewith. The wheel 9 is actuated by a pinion 8 combined with a pulley 6 rotatably mounted on a suitable axis 2; the pinion meshing with the teeth on the wheel 9. The gear-wheel 9, its ratchet and pawl devices, the pinion 8, shaft 2 and pulley 6, constitute an independently controllable driving-mechanism for operating the delivery-roll; and by separate connection the feed-draft roll or rolls. The pulley 6 is driven by a direct belt 12 from an operating-pulley 13 mounted on the main or drive-shaft 14 of the machine. The power and motion are imparted to the delivery-roll-driving mechanism by said belt. The feed-draft rolls 5 and 7 are provided with sprocket-wheels, 15 and 17, upon their respective shafts or axles, and frictional connecting devices, 18 and 19, preferably comprising annular friction disk surfaces upon or between the side of the sprocket-wheel, and a plate or disk keyed to the axle of the shaft, and adapted for driving the rolls; also with means for adjusting the degree of friction for causing the sprocket or drive-wheel to frictionally rotate the feed-draft roll with the desired amount of force or resistance. The friction-adjusting devices,

as shown, consist of the hand-wheel nuts 20 and 21 respectively fitted upon a threaded end of the roll axle, so as to screw against the friction-disk and force it against the side face of the sprocket-wheel, or vice versa. A band, chain or sprocket-belt 25 is arranged around the sprocket wheels 10, 15 and 17, and suitable guiding sprockets 22 and 23, said chain forming a connection whereby the feed-draft rolls 5 and 7 are operated from the mechanism that drives the delivery-roll 3; so that the fabric-feeding rolls are all actuated by power transmitted through the single belt 12 that operates the delivery-roll-drive mechanism. By reason of this arrangement of a positively driven delivery-roll 3 having a forward release, and feed-draft roll, or rolls, 5 and 7 frictionally driven and operated by the chain 25 from the driving mechanism of the delivery-roll, it will be seen that any desired degree of tension can be put upon the fabric, and the stretch of the fabric properly disposed of while said fabric is passing through and being acted upon by the finishing mechanism; and this too whether the stretch occurs between the delivery-roll and first feed-draft roll, or between the first feed-draft roll and the subsequent feed-draft roll or rolls; also, that the starting and stopping of the delivery and feed is effected through the agency of the delivery-drive mechanism and single controlled belt 12, thereby avoiding irregular or jerky movements, but giving a quick, smooth and easy starting and stopping effect, thus rendering the operation very perfect, and adapting the machine for practical and efficient use upon a greater variety of fabrics; and for fabrics of a greater diversity in texture and quality.

28 indicates a belt-tightener pulley running upon a stud 29 fixed in a swinging arm 30 fulcrumed on a support 31 suitably attached to the frame, so that the tightener can swing against and from the exterior of the belt 12. The arm is preferably made with a counterweighting end 27. Pivoted to said belt-tightener arm there is arranged a connection or rod 32 extending to a rocker or manipulating lever 33, at the front of the machine, and to which the connection is pivoted in such relation that in applying the tightener to the belt the connection pivot 34 moves past the dead-center line just far enough to render the mechanism self-locking or self-holding, while the feed-roll drive-mechanism is in operation; but it can be readily thrown off for releasing the tightener and instantly stopping the entire fabric-feed devices by merely striking the manipulating lever from its dead-center position.

It may be noted that this construction is simple and not encumbered with latching-

devices, weights, or springs; the belt-controlling-means is positively held to its working position while the belt 12 is operating the delivery-roll driving-mechanism and parts
 5 actuated therefrom; but is freed and the drive rendered innocuous as quickly as the manipulating handle-lever can be struck or knocked off from the dead-center position, and this without regard to the continued
 10 running of the cloth finishing appliances; the lapse of time between the strike-off of the handle-lever and the cessation of movement of the fabric is practically imperceptible or negligible in the management of the
 15 machine when in actual use.

The manipulating means preferably comprises a fulcrum shaft 35 that extends across the width of the machine, and is provided with handle-levers 33 at or near each of its
 20 ends; also at a central position thereon if desired, so that the starting and stopping of the fabric-feed can be conveniently controlled at whichever side of the machine the attendant may be standing at the time.
 25 Suitable stops 37 and 38 are preferably provided for limiting the movement of the manipulating lever to the desired arc, or distance of movement. The connection 32 is best provided with means, as a threaded
 30 turn-buckle 36, for adjusting its length to bring the tightener into proper working relation with the belt.

In the operating of cloth-finishing machines it is customary to sew the ends of
 35 the several pieces of fabric together to make a long or continuous length, so as to obviate the necessity of frequently rethreading the machine. It is usually desired to present each part of the fabric two, three, or more
 40 times to the action of the finishing means. As each seam approaches the finishing devices said devices are raised from action so as to prevent cutting or opening the seam. It is of course desirable, as a matter of
 45 economy and to avoid waste, to finish as close to the seam as possible; but the travel of the goods through the machine must be retarded, or in some cases entirely stopped, before the seam reaches the operating point
 50 of the finishing-means, and then carefully advanced while the seam is moved or "jockeyed" past the operating point. To do this successfully at a high speed of fabric yards per minute, requires a stopping and start-
 55 ing mechanism sensitive to a fine degree.

By the mechanism hereinbefore described, I provide a cloth-finishing machine with feed-driving and controlling means that effect quick starting and practically instan-
 60 taneous stopping of the fabric-feeding rolls, so that a fabric moving at a speed of eight to sixteen yards per minute can be conveniently and safely controlled to run the connecting seams closely adjacent to the con-
 65 tact-point of the finishing means; thus

avoiding a considerable percentage of waste or unfinished surface at the ends of the pieces; and also increasing the capacity of the machine for turning out good work; and for running the fabric at greater speed
 70 than heretofore practised.

While the drawings show an organization of two sets of fabric-finishing means, it will be understood that this improved method and mechanism for operating the feed-draft
 75 rolls from the driving mechanism of the delivery-roll may be advantageously employed with one, two or more sets of finishing mechanism and feed-draft rolls for carrying the fabric through the several sets, in
 80 the manner substantially as set forth.

I claim—

1. In a cloth finishing machine of the class specified, the combination, with mechanism for finishing the surface of the fabric; of a
 85 forwardly-driven delivery-roll having free forward release, and the frictionally driven feed-draft rolls that draw the cloth-fabric on its way from said surface-finishing mechanisms; means for regulating the friction
 90 drive of said feed-draft rolls, and means for imparting normal relative speed rotation to said delivery-roll and to the frictional driving means of said feed-draft rolls; said parts being combined and operating substan-
 95 tially as set forth.

2. In a machine of the class specified, in combination as described, with mechanism for finishing the surface of the fabric, and suitable fabric-guiding members; the for-
 100 wardly rotated primary delivery-roll having free forward release, the driving-mechanism for said delivery-roll including a gear and roll-engaging means arranged for effecting positive forward rotation of said
 105 delivery-roll and permitting the free forward release thereof, and a sprocket or drive-wheel rotating with said gear, the frictionally driven feed-draft roll that carries the fabric on its way from the surface-
 110 finishing mechanism, said roll having the friction-drive member and friction-regulating device upon its shaft, the chain or band rotating said friction-drive member of the feed-draft-roll from the driving-
 115 mechanism for said delivery-roll, means for operating said delivery-roll driving-mechanism, and means for controlling the starting and stopping of the same, substantially as set forth.
 120

3. In a machine of the class specified, the combination as described, of a plurality of separately operating surface finishing mechanisms, the main driving-shaft and means for separately operating said finishing
 125 mechanisms, the forwardly operated delivery-roll having a forward release ratchet, a plurality of feed-draft-rolls for taking the cloth from the respective finishing mechanisms, said feed-draft-rolls each provided
 130

with a loose-mounted frictional-drive wheel, a keyed-on frictional-disk and a friction adjusting hand-nut, the delivery-roll driving gear carrying the forwardly engaging clutch for positively operating said delivery-roll, a sprocket or drive-wheel fixed to said gear, a drive-band or chain from and connecting said sprocket or drive-wheel to the frictional drive-wheels for rotating the respective feed-draft rolls, the gear-actuating pulley, its operating belt connecting from a pulley on the finisher-driving-shaft, and a tightener means for controlling the action of said belt.

4. In a cloth-finishing machine having a plurality of sets of surface-finishing mechanisms, and suitable fabric-guiding means, and in combination as described; the forwardly-releasing feed-delivery-roll preceding the first set of surface-finishing mechanism, driving mechanism for said delivery-roll, its engaging means being arranged therewith to impart positive forward rotation, but to permit free release of said delivery-roll in forward direction, a plurality of frictionally actuated feed-draft rolls severally located for taking the fabric through the respective sets of finishing mechanisms, and adapted for frictional automatic release of the individual rolls by excess of tension on the fabric, the feed-draft roll-actuating means, comprising frictional members with sprockets and regulating devices therefor upon the several feed-draft roll axles, a unitary drive-chain belt connecting and operating all of said sprockets from the delivery-roll driving-mechanism, and the manually actuated appliances for controlling the starting and stopping of said delivery-roll driving mechanism, in the manner set forth.

5. A cloth-finishing machine comprising a primary set of surface-finishing mechanism, a positively forward driven delivery-roll

that controls the delivery of the cloth thereto, a drive mechanism for said delivery-roll including a pulley, a sprocket-wheel and a forwardly-releasable ratchet, a frictionally driven feed-draft roll that takes the cloth from said primary surface-finishing mechanism, a second set of surface-finishing mechanism; a second frictionally driven feed-draft roll that takes the cloth from said second surface-finishing mechanism, each of said feed-draft rolls provided with an actuating sprocket-wheel, a frictional engaging device, and means for regulating the degree of frictional tension for operating said rolls, a sprocket-chain that operates the sprocket-wheels of said feed-draft rolls from the sprocket of the delivery-roll drive mechanism, a belt running from the cloth-finishing drive-mechanism to the delivery-roll drive-mechanism, a tightener mechanism for said belt adapted for instant release for stopping the feed-driving means.

6. In a cloth finishing machine having a plurality of sets of surface-finishing mechanisms, and suitable fabric-guiding means, a feed-delivery-roll preceding the first set of finishing mechanisms, a forwardly releasing driving means for said delivery-roll, a plurality of frictionally driven feed-draft rolls for taking the fabric away from the respective surface-finishing means, the frictional-drive means of said feed-draft rolls being adapted for giving either light or heavy tension, and independently regulatable for affording comparative regularity of tension and travel at front and rear of each of the said surface-finishing mechanisms.

Witness my hand this 13th day of October, 1909.

EDWIN H. MARBLE

Witnesses:

CHAS. H. BURLEIGH,
FRANK A. DRURY.