(No Model.)

A. YOUNG

MACHINE FOR PRINTING HOSIERY.

No. 585,945. Patented July 6, 1897.

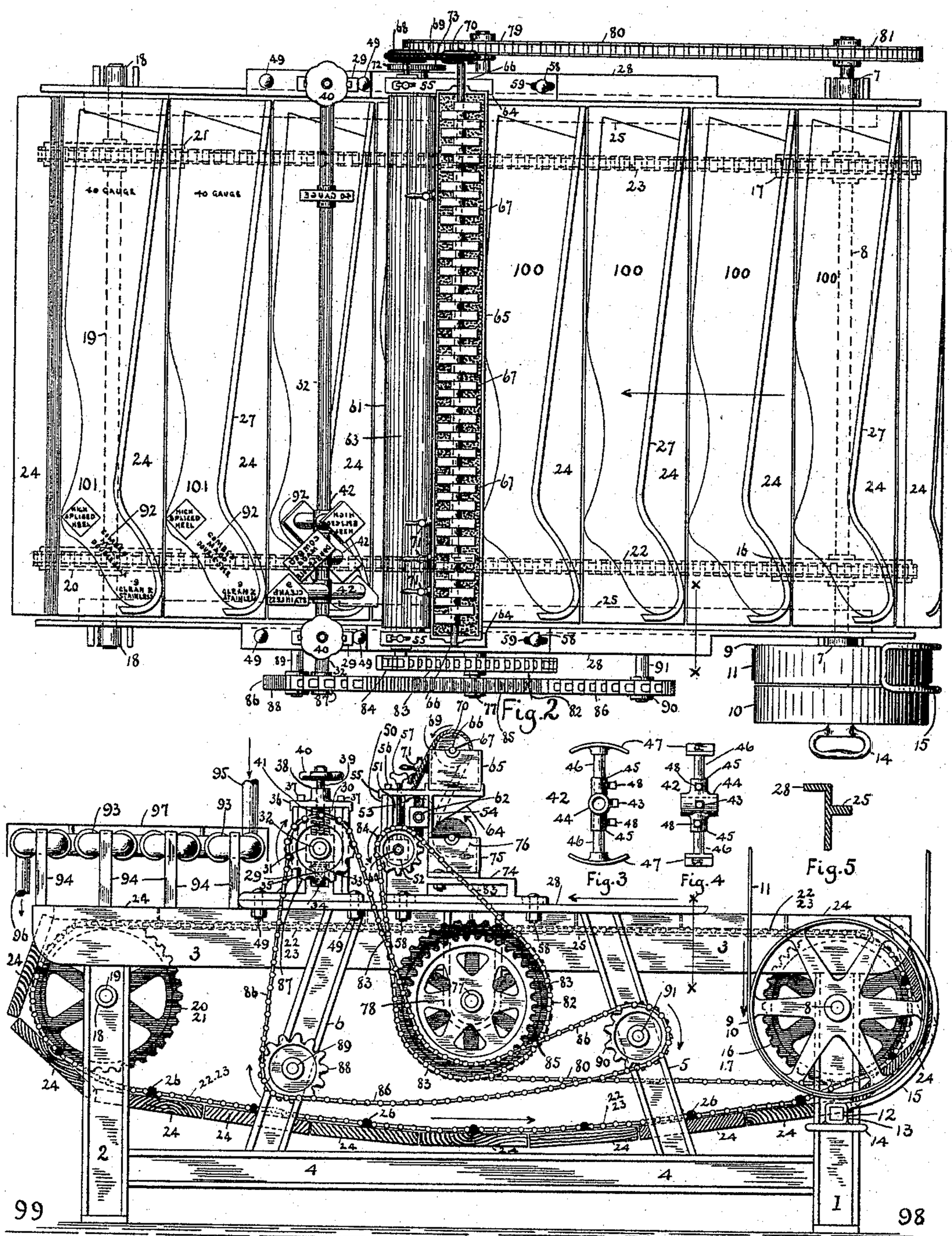

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 1

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MACHINE FOR PRINTING HOSIERY.

SPECIFICATION forming part of Letters Patent No. 585,945, dated July 6, 1897.

Application filed February 11, 1897. Serial No. 622,948. (No model.)

To all whom it may concern:

Be it known that I, ALBERT YOUNG, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Printing Hosiery; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in machines for printing or marking hosiery, and is designed to do the work now imperfectly and slowly done by hand-stamps, two attendants with my machine accomplishing as much as heretofore has been done by ten persons with hand methods, and with much more satisfactory and artistic results.

The means by which I accomplish the results are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a plan of the machine. Fig. 3 is an end elevation of the type-carrier, and Fig. 4 an edge view of the same. Fig. 5 is a section of the frame on lines *x x*, Figs. 1 and 2.

The same figures of reference are used for the same parts in every view.

The machine has a framework composed of uprights 1 2, horizontal members 3 4, and diagonal brace members 5 6 on each side, united by cross members. (Not shown on the drawings, such showing not being considered as essential.) On the upright 1 are bosses 7, forming bearings for the driving-shaft 8, on which are placed loose pulley 9 and tight pulley 10, run by belt 11 from the source of power. A stud 12 is attached to upright 1, over which a shipper 13 slides, it being provided with a handle 14 and belt-guide 15; but this construction is not essential, as any well-known or suitable means of shipping and unshipping a belt to start or stop the machine may be employed. Shaft 8 carries sprocket-wheels 16 17 within the frames. Upon uprights 2 are bosses 18, forming bearings for a shaft 19, carrying sprocket-wheels 20 21 and set in line with sprocket-wheels 16 17, and over these wheels run endless-chain belts 22 23. Secured to belts 22 23 is an endless table, composed of multiple independent sections 24, which reach across the machine within frame members 3, and their outer ends ride upon ledges 25, constructed upon the inner sides of 3. At about the center of each end of each section 24 they are secured to belts 22 23 by connections 26, which compel their movement with the belt while permitting them to pass freely around the wheels 16 17 and 20 21. Each section 24 is wide and long enough to flatly lay a pair of full hose on, and a guide 27 is secured on each section to insure the hose being quickly and correctly laid upon each section as it comes up over wheels 16 17 to a flat position over shaft 8.

Above the frame of my machine, somewhat in advance of its longitudinal center and secured to ledges 28 of frame members 3, are standards 29, having vertical openings 30, in which are placed bearings 31, carrying a shaft 32. The bearings rest upon cone-headed adjusting-screws 33, screwed into the standards 29 at 34, and spanner-holes 35 provide means for turning them to permit the bearings 31 to be raised or lowered. Caps 36 surmount standards 29 and are held thereto by tap-bolts 37, and a central hub 38 is tapped to receive an adjusting-screw 39, carrying a hand-wheel 40. Spiral springs 41 are inserted in openings 30, one end resting on bearings 31 and the other end under cap 36, which provide means to permit the bearings 31 to yield automatically upwardly when screws 39 are backed off after the proper adjustment of bearings 31, shaft 32, and the attached type mechanism.

Adjustable type-carriers 42 are placed on shaft 32, in positions to suit the work to be done, they being movable along the shaft 32 and held firmly, when properly located, by screws 43. The type-carriers 42 have a hub 44, which bears on shaft 32, and hubs 45, which are bored to receive the shanks 46 of types 47, on which are the inscriptions desired to be marked upon the hose. The types are adjustable toward or from the shaft 32 by means of the shanks 46, which enter hubs 45, and when set are held by set-screws 48.

Types 47 are properly curved to have rolling contact with the hosiery over which they are passed. Standards 29 are held in place by bolts 49. At the rear of standards 29 are standards 50, having slots 51, carrying bearings 52, and slots 53, guiding bearings 54. Caps 55 are secured to standards 50 by tap-bolts 56, and screws 57 hold bearings 52 firmly to their places. Bolts 58 secure standards 50 to ledge 28 of frame member 3, and slotted holes 59 in their bases permit the standards to be adjusted toward or from standards 29. Bearings 52 carry a shaft 60, on which is mounted a color-roll 61, and bearings 54, freely guided in vertical slots 53, carry a shaft 62, on which is mounted a distributing-roll 63, the rolls 61 63 being preferably made of glutinous composition, such as is generally used for printing purposes. Caps 55 of standards 50 have brackets 64 formed upon their rear ends, and thereon rests a color-receptacle 65, carrying a shaft 66 in bearings formed on its upper ends, the shaft 66 having mixing-blades 67 secured to it throughout its length within the receptacle 65, each alternate blade extending outward from the shaft in opposite directions and all being revolved by a grooved pulley 68 on shaft 60, having a belt 69, running upon a grooved pulley 70, secured to shaft 66. Secured in the front side of the receptacle 65 and opening into it are feeders 71, directly opposite types 42, they being provided with means for closing and opening to any desired extent a passage for the flow of color from the receptacle 65 to fall upon the distributing-roll 63. Gear-wheel 72 on shaft 60 and 73 on shaft 62 are run together and cause the roll 63 to be driven by roll 61, but in an opposite direction. Resting on parts 74 of standards 50 is a drip-box 75, in which is an idler-roll 76, running in contact and with the distributing-roll 63. Centrally across the machine, below parts 3, is placed a shaft 77, carried by bearings formed in brackets 78, pendent from parts 3. Shaft 77 carries a sprocket-wheel 79, secured outside of the framework of the machine, run by chain belt 80 from a sprocket-wheel 81, placed on the end of shaft 8 outside of the framework, and oppositely to sprocket-wheel 79 on shaft 77, outside of the framework, is a sprocket-wheel 82, under which runs a chain belt 83, which goes over a sprocket-wheel 84, secured on color-roll shaft 60. Outside of sprocket-wheel 83 is sprocket-wheel 85, secured to shaft 77, and which turns a chain belt 86, in contact with its lower side, thence and thereafter goes up and over sprocket-wheel 87, secured to shaft 32, thence downwardly and under sprocket idler-wheel 88, secured to stud 89 on part 6 of frame, thence back and upwardly around sprocket idler-wheel 90, secured to stud 91 on part 5 of frame, and thence forward to the starting-place.

The type-bearers 42 may have various types 47 at various times by loosening screws 48 and substituting others as needed or desired, and they may be adjusted to print upon an angle, as at 92.

As the color to be applied needs to quickly dry, it is apt to become somewhat thickened. Therefore the necessity of the mixers 67 to keep it of the proper consistency, and to further insure such quick drying I support steam-pipes 93 upon the front end of part 3 of the frame by brackets 94 or other more convenient or suitable means and introduce steam by the pipe 95 to the pipes 93, which are preferably return-coils, having a drip-pipe 96 at their outer end and a cover 97 to deflect the heat downward. I have not shown the steam-pipes in plan on Fig. 2, as they will readily be understood and such showing would tend to obstruct other parts.

The color-box 65 will be provided with a cover to exclude air and dust, but I have thought best not to show it, as its use can readily be understood without illustration.

I have indicated the direction of movement of the various movable parts by arrows placed in proximity thereto.

The operation of my machine is as follows: An attendant to feed the machine stands at end 98 and another attendant to take away the printed hose stands at end 99. The belt 11 being shifted to pulley 10 starts the machine. The hose 100, in pairs, are placed upon the sections 24 as they come in place over shaft 8, when they are then carried forward under shaft 32 and types 47, which move in the same direction, and are printed, as shown, on hose 101 and pass under the hot pipes 93 to the attendant at 99, who removes them. As the types 47 roll downward, they touch color-roll 61 and receive the proper amount of color, which has been permitted to flow from receptacle 65 by opening the feeders 71, which carry the color to distributing-roll 63, which runs in unison with roll 61 by means of the gears 72 73, but in an opposite direction, thereby distributing the proper amount of color. Should any excess of color accumulate, it is taken off by idler-roll 76 and drips into box 75. Shaft 8 moves the sprocket-wheel 81, which in turn moves the sprocket-wheels 79, 82, 84, and type-shaft 32 and distributing-roll 63.

My machine is constructed with more sections 24 in front of the types than shown in the illustration, which insures enough time to thoroughly dry the printing before the attendant handles them for removal, but restriction as to space would not permit the illustration to be lengthened to the extent I have practiced it.

Having described the means I have thus far employed to accomplish my purpose and reserving the use of equivalent means for the same purpose, which will be suggested by an examination of my specification or machine, I claim—

1. In a hosiery-printing machine, a framework, a movable sectional-jointed endless

table, standards above the table having adjustable means for securing a type-shaft for automatic vertical adjustment, type-carriers adjustable upon the shaft, types secured thereto adjustably held in relation to the table, and means from the table-driving mechanism to revolve the type-shaft and types, substantially as and for the purposes set forth.

2. In a hosiery-printing machine, a framework, a movable sectional-jointed endless table, a hosiery-guide upon each section, means to mount a type-shaft adjustably above the table, types attached thereto, a color-roll also mounted above the table-sections and for contact with the types as they revolve, means to drive the type-shaft and the color-roll in opposite directions by means from the same shaft located below the table and moved by the table-moving mechanism, in manner and form substantially as described.

3. In a hosiery-printing machine, a framework, a movable sectional-jointed endless table, means to mount a type-shaft upon the framework adjustably as to distance above the table, means to positively rotate the shaft in the same direction as the table, means to permit its self-adjustment above the surface to be printed, multiple type-bearers upon the shaft at different points of its length and means to adjust them to or from the shaft, also on the shaft transversely of the machine, and at an angle to the center line thereof, and a color-roll positively rotated in an opposite direction from the type-shaft and set to have contact with the types as they revolve, substantially as set forth.

4. In a hosiery-printing machine, a framework, a movable sectional-jointed table, means to secure a type-shaft transversely above the table and adjustably, as to height and thereafter automatically adjustable as to height therefrom, multiple type-holders upon the shaft, adjustable transversely of the table, types secured to the holders and means for their adjustment toward or from the shaft, and at an angle to the center of the machine, a color-roll, means to secure it adjustably in its relation to the types, means to positively revolve it in a direction opposite to that of the types, a distributing-roll lying upon and revolved by the color-roll, a drip-box above the table and an idler-roll running therein and in contact with the distributing-roll, substantially as set forth.

5. In a hosiery-printing machine, a framework therefor carrying a movable sectional-jointed endless table, a type-shaft secured to the framework and moved from the means for moving the table, adjustable means for elevating or depressing the shaft, type-holders upon the shaft and means for their adjustment transversely of the machine, types adjustably secured to the holders for movement toward or from the shaft, and means to permit the types to be adjusted in the holders at an angle to the central transverse line of the machine, substantially as set forth.

6. In hosiery-printing machines, a framework therefor carrying a movable sectional-jointed endless table, means upon the framework for moving the table, a type-shaft adjustably mounted above the table, and means to positively revolve it in direction with the table, types carried thereby and adjustable as to vertical and angular position, a color-roll mounted above the table, adjustable in its relation to the type-shaft and types, and means to positively revolve the color-roll from the table-moving mechanism and oppositely to the type, and to a distributing-roll in contact with and revolved by it, a drip-box, an idler-roll therein in contact with the distributing-roll, a color-receptacle, a mixer therein and means for its revolving, and means for permitting the flow of color from its receptacle to the distributing-roll, substantially as set forth.

7. In hosiery-printing machines, a framework therefor carrying a movable sectional-jointed endless table, means upon the framework for moving the table, printing-types adjustably held and guided, a color-roll mounted above the table and adjustable toward or from the types, means to positively revolve the roll from the table-moving mechanism, a distributing-roll yieldingly supported upon the color-roll, an idler-roll mounted over a drip-box and in contact with and revolved by the distributing-roll, and means to revolve a mixer within a color-receptacle above the table, means for permitting the flow of color to the distributing-roll, and means to revolve the mixer from the color-roll, as and for the purposes set forth.

8. In hosiery-printing machines, a framework carrying a movable sectional-jointed endless table, a type-shaft and multiple adjustable types thereon, and above the table, a color-roll and a distributing-roll moved in unison and adjustable toward or from the types, means to move the table and from said means to move types in the same direction and the color-roll in an opposite direction, a color-receptacle mounted above the distributing-roll, and means to discharge the color from the receptacle to the distributing-roll, and means to gather any surplus color and deposit it in a drip-box, substantially as described.

9. In hosiery-printing machines, a framework, an endless table formed of jointed sections, means upon the framework to couple the sections, means to move the sections, a type-shaft and types, a color-roll mounted above the frame and run from the table-moving mechanism, a distributing-roll and an idler-roll revolved by means from the color-roll substantially as described, a color-receptacle mounted above the distributing-roll, a mixer within the receptacle and means to revolve the same, substantially as set forth.

10. In hosiery-printing machines, a framework, an endless table formed of jointed sections, a hosiery-gage upon each section, a

type-shaft and adjustable types, a color-roll, a distributing-roll, a color-receptacle and means for permitting the flow of color therefrom, a mixer in the receptacle and means for its driving, a drip-box under the color-box, and a roll therein bearing upon the distributing-roll, substantially as set forth.

11. In a hosiery-printing machine, a framework mounting an endless sectional-jointed table, means to move the table, standards upon the framework carrying a type-shaft and types, a color-roll, a distributing-roll, a color-receptacle, an idler-roll, and means for their operation from the table-operating mechanism substantially as described, and means to adjust the standards upon the machine-frame, as and for the purposes set forth.

12. In a machine for printing hosiery, a framework, a movable endless table, means for its moving, means to mount types adjustably above the table, a color-roll, means to run the roll in an opposite direction to the types and the table, a distributing-roll, and an idler-roll driven from the distributing-roll, means to hold and distribute color to the distributing-roll, means to hold the hose in place upon the table-sections, and means above the moving table to subject the hose to heat for drying the printing before their removal from the machine, all in substance as and for the purposes set forth.

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

ALBERT YOUNG.

Witnesses:

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