

Jan. 2, 1923.

D. H. BENJAMIN.
HOSIERY PRESS.
FILED JAN. 14, 1918.

1,440,862

2 SHEETS-SHEET 1

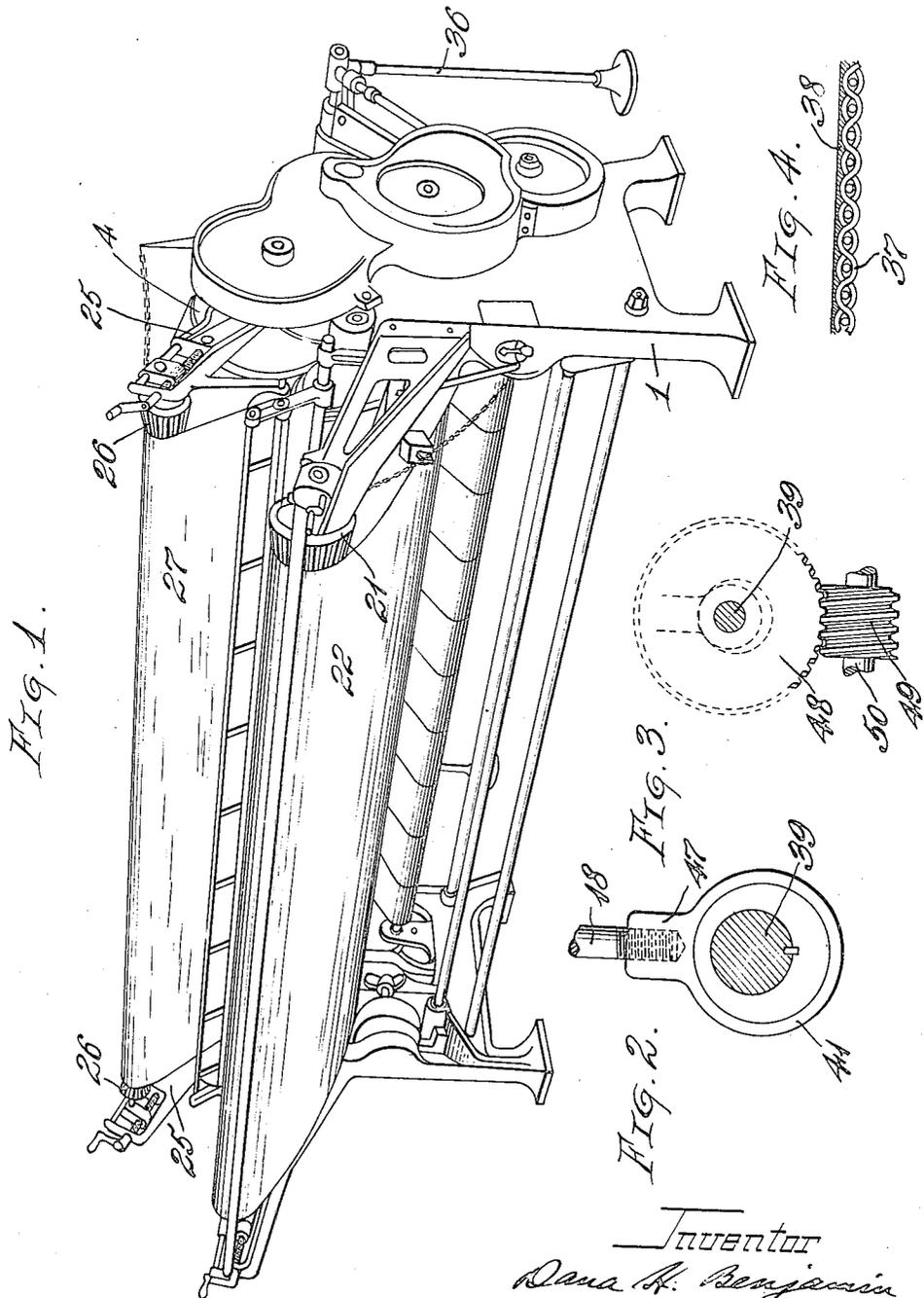


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Inventor
Dana H. Benjamin
By Brockett and Hyde
Attys.

Jan. 2, 1923.

D. H. BENJAMIN.
HOSIERY PRESS.
FILED JAN. 14, 1918.

1,440,862

2 SHEETS-SHEET 2

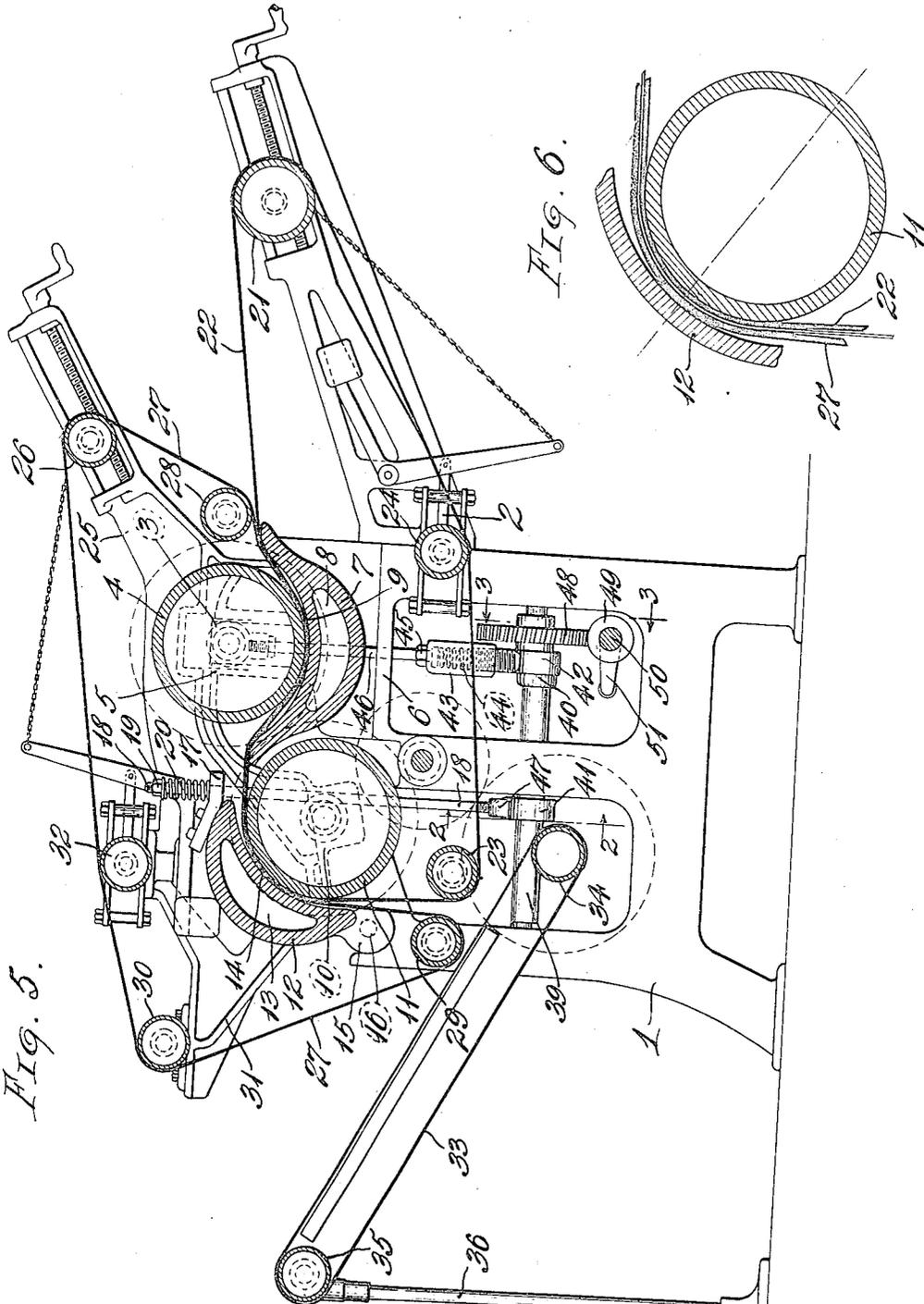


FIG. 5.

FIG. 6.

Inventor
Dana H. Benjamin
By Brockwell and Smith
Attos.

UNITED STATES PATENT OFFICE.

DANA H. BENJAMIN, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO THE AMERICAN LAUNDRY MACHINERY COMPANY, OF NORWOOD, OHIO, A CORPORATION OF OHIO.

HOSIERY PRESS.

Application filed January 14, 1918. Serial No. 211,825.

To all whom it may concern:

Be it known that I, DANA H. BENJAMIN, citizen of the United States, residing at Cleveland Heights, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hosiery Presses, of which the following is a specification.

This invention relates to pressing machines and particularly to that type of such device known as fabric pressing machines.

In the embodiment of the invention shown in the drawings apparatus is provided for ironing fabrics such as cloth and knit goods including hosiery and in treating these fabrics it is essential that the material be subjected to extreme pressure and heat to produce the required finish without in any measure subjecting such materials to a stretching or distorting action. Materials of this character have been treated heretofore in plate presses and also in rotary presses but these presses possess certain disadvantages which are entirely overcome in the present invention. In the second type, i. e., the rotary press, materials are stretched or distorted so that the product is extremely unsatisfactory especially for high grade work. In the present instance these difficulties have been overcome in a rotary type of machine by the use of special aprons and an alternate arrangement of roller and bed. The construction of the roller and bed differs from that usually previously employed in that there is substantially a line contact between each bed and its corresponding roller whereby the material treated is gradually compressed between the finished feeding aprons before it is subjected to extreme pressure and then gradually released thereby producing the required finish and preventing the distortion of the material and yet permitting the natural shrinking.

The invention may be further briefly summarized as consisting in the construction and combination of parts hereinafter set forth in the following description, drawings and claims.

Referring to the drawings Fig. 1 is a perspective view of the machine; Fig. 2 is a detail view of one of the pressure cams; Fig. 3 is a detail view of the worm gear for adjusting the pressure; Fig. 4 is an enlarged detail sectional view of a portion of one of the aprons; Fig. 5 is a sectional view of the

press and Fig. 6 is a diagrammatic view showing the construction of a bed and roller wherein the line contact feature is illustrated, the relative curvature of the bed and roller being exaggerated for clearness.

In the embodiment shown 1 represents the main frame provided with forwardly extending brackets 2 and suitable bearings and other brackets for supporting the several parts as will appear hereinafter. Mounted in the frame, preferably near the top, are suitable bearings 3 adapted to support the trunnions of a roller 4 which extends from one end of the machine to the other. The bearings 3 are slidably mounted in suitable guide ways 5 in the frame, as shown in dotted lines in Fig. 5, and are controlled by suitable pressure adjusting mechanism to be described. Below this roller and rigidly secured to a cross member 6 of the frame is a hollow bed 7 provided with a heating chamber 8 and having a curved face 9 of substantially the curvature of the roller except that the curvature of this bed face is constructed upon an arc having a radius, with respect to the radius of the drum, such that there is substantially a line contact between the roller and the bed.

Secured to the main frame to the left of the roller and bed construction just described, as shown in Fig. 5, are suitable bearings 10 supporting the trunnions of a roller 11 similar to the roller 4 and holding it against movement. Cooperating with this roller is a hollow bed 12 having a steam chamber 13 and a pressing face 14 of a curvature similar to that of the bed 7 so that in this instance a longitudinal line contact is produced between the bed and the corresponding roller. This bed 12 is provided with suitable ears 15 mounted upon a shaft 16 supported in the frame. One material suitable for the purpose is cooked starch, a solution of about twelve ounces of which dissolved in one gallon of water is applied to the apron after which the apron is run through the ironer to produce the glazed surface thereon. These ears are along one lateral edge of the bed while at the opposite edge are suitable brackets 17 secured to the bed and receiving rods 18 provided with nuts 19. Between these nuts and the brackets 17 are suitable springs 20. These rods 18 are connected to a pressure regulating device which will be described later.

60

65

70

75

80

85

90

95

100

105

110

Secured in the brackets 2 is a suitable roller 21 for receiving a feeding and confining apron, 22 which passes between the roller 4, bed 7, the roller 11 and the bed 12, thence to a guiding roller 23 mounted in the frame and another guiding and adjusting roller 24. This lateral roller is adjusted back and forth for regulating the feed of the apron in a well known manner and therefore requires no further detail description.

Secured to the frame of the machine are forwardly extending brackets 25 arranged above the apron 22 provided with a guiding roller 26 supporting another apron 27 passing down to a guiding roller 28 near the apron 22 at the front of the machine and guiding the second apron against apron 22 between the alternate roller and bed structures. The second apron 27 passes down under a guide roller 29, thence up to a guide roller 30, mounted upon brackets 31, and thence over an adjusting roller 32 similar to the roller 24. It will be seen from the foregoing that when articles are laid upon the apron 22 at the front of the machine near the roller 21, they will be fed between the two conveyors and thence into the machine and will be discharged from between the aprons near the rollers 23 and 29. Below the rollers 23 and 29 is a discharge belt or apron 33 driven from a roller 34 and extending to a supporting roller 35 mounted upon suitable supports 36 secured to the floor.

The aprons used are of special construction in that they comprise a body of heavy duck 37 or other yielding fabric which is coated on the side engaging the work with a yielding filler or coating 38 forming a smooth finish which will impart a smooth lustre. The coating material must also be yielding in order to give with yielding of the work being treated.

Mounted in the frame near both ends of the machine is a transverse shaft 39 provided with two eccentrics 40 and 41, the former receiving a strap 42 forming a part of a spring cage or box 43 and receiving a spring 44, arranged between the box, and the nut 45 secured to the end of a rod 46 in turn secured in the corresponding bearing box of the roller 4. In like manner each eccentric

41 receives a strap 47 secured to one of the rods 18 whereby the bed 12 is forced down into engagement with the roller 11.

The shaft 39 is provided with a worm wheel 48 meshing with a suitable worm 49 mounted upon a shaft 50 secured in a frame and receiving an operating handle 51 or other manipulating device. It will be seen that by operating the handle and hence the worm 49 the cylinder 4 and the bed 12 may be brought freely into and out of pressing relation with respect to their corresponding beds or rollers as the case may be. This device is utilized for not only adjusting the pressure but also for relieving the pressure when the machine is not in use thereby preventing burning of the aprons.

It will be seen from the foregoing construction of beds and rollers and finishing aprons that the articles are first gradually compressed tightly between the aprons, are then subjected to extreme pressure and heat on one side and like treatment on the opposite side.

What I claim is:—

1. A fabric finishing press, comprising a bed and an opposing roller cooperating therewith, and conveying and finishing aprons passing between said bed and roller, each of said aprons comprising a yielding body and a coating thereupon having a smooth finishing surface for engaging the work.

2. In a fabric finishing press, a frame, a double arrangement of bed and roller, the bed in each case being curved to substantially conform to the configuration of the periphery of the corresponding roller but having its arc-shaped face described upon an arc having a greater radius than that of the roller whereby substantially a line contact between the two is produced, means for exerting pressure between each roller and its corresponding bed, and suitable endless aprons passing between said beds and rollers and adapted to receive the fabric to be treated between them, said aprons being provided with a yielding coating on their meeting faces forming a smooth surface.

In testimony whereof I affix my signature.
DANA H. BENJAMIN.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,440,862, granted January 2, 1923, upon the application of Dana H. Benjamin, of Cleveland Heights, Ohio, for an improvement in "Hosiery Presses," errors appear in the printed specification requiring correction as follows: Page 1, line 97, beginning with the word "One" strike out all to and including the word and period "thereon," line 103; page 2, after line 42 insert the following: *One material suitable for the purpose is cooked starch, a solution of about twelve ounces of which dissolved in one gallon of water is applied to the apron after which the apron is run through the ironer to produce the glazed surface thereon.*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 27th day of February, A. D., 1923.

[SEAL]

KARL FENNING,
Acting Commissioner of Patents.