

J. A. WATSON.
WALL PAPER PRINTING APPARATUS.
APPLICATION FILED APR. 1, 1903.

NO MODEL.

Fig. 1

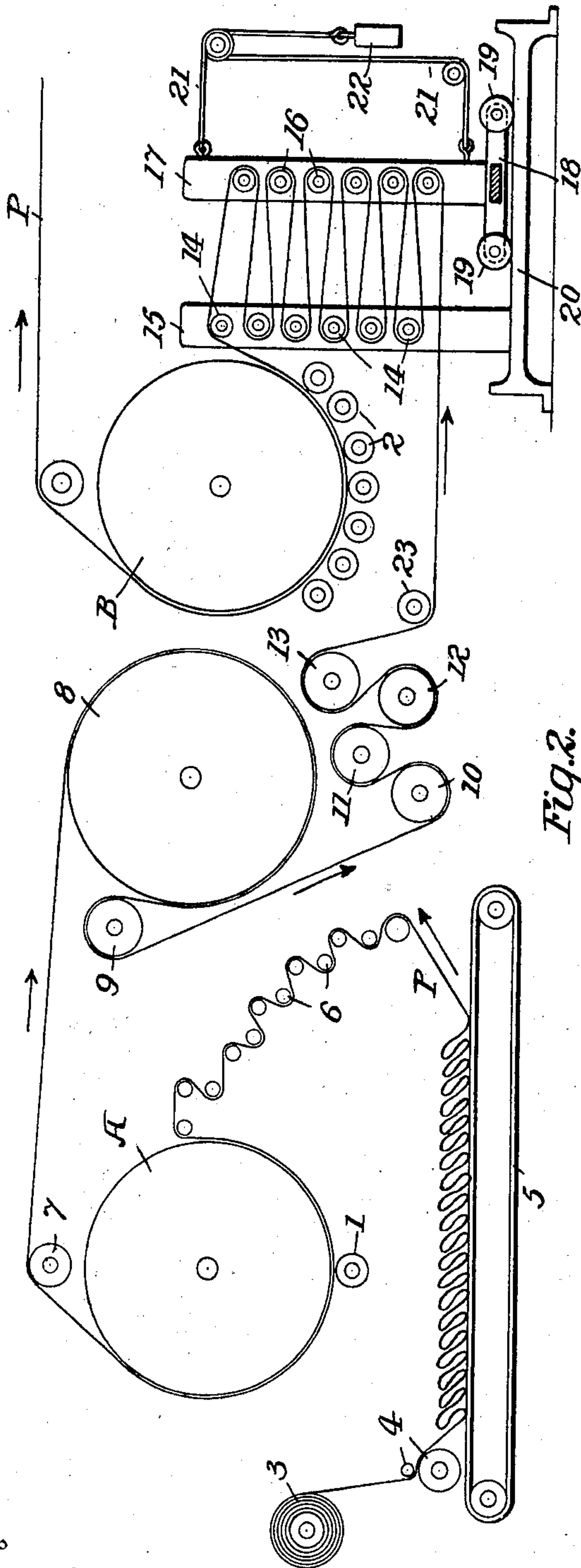
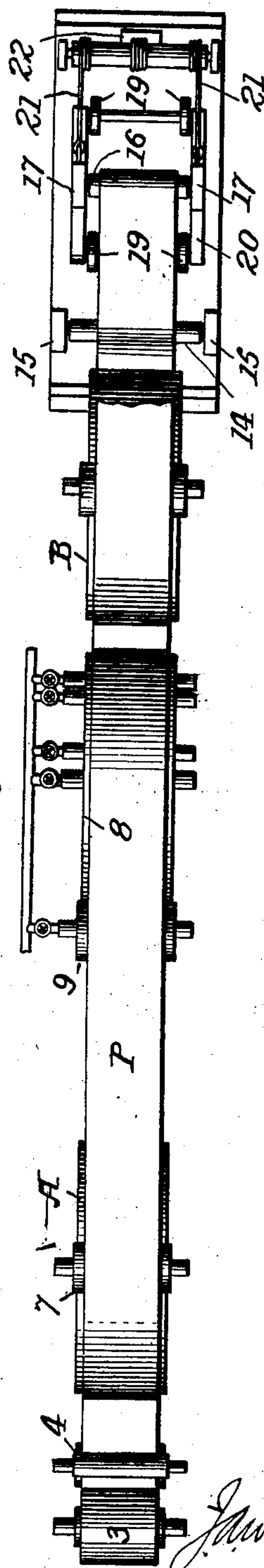


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES A. WATSON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
TO THE YORK CARD AND PAPER COMPANY, OF YORK, PENNSYLVANIA.

WALL-PAPER-PRINTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 736,044, dated August 11, 1903.

Application filed April 1, 1903. Serial No. 150,589. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. WATSON, a citizen of the United States, and a resident of Washington, in the District of Columbia, have
5 invented certain new and useful Improvements in Wall-Paper-Printing Apparatus, of which the following is a specification.

In printing wall-paper the strip of paper is usually passed first over a grounding-machine, which lays on the ground color, then
10 over a second printing-machine, which prints the patterns, and sometimes over a third printing-machine for laying on lines or additional patterns to produce tapestry and other
15 effects. In each printing-machine the paper absorbs a large amount of moisture, and it is the object of the present invention to rapidly dry the paper as it comes from the printing-machines without smearing or blurring the
20 colors, so that the paper may be immediately taken up by the succeeding machine, whether the latter be a second printing-machine or a mechanism for calendering, embossing, or reeling.

The invention further consists in means for compensating for any expansion or shrinkage of the paper as it passes from one machine to the next, the machines being run at the same rate of speed. The invention will be
25 particularly described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic side elevation showing so much of the wall-paper-printing
35 mechanism as is necessary to illustrate the present invention, and Fig. 2 is a plan view of the same.

Referring to the drawings, A indicates a primary printing-machine, and B a secondary
40 printing-machine. As illustrated, the primary printing-machine is supplied with a single-color roll 1 for putting on the "ground" color on the otherwise blank paper, and the secondary printing-machine is supplied with
45 a plurality of pattern-rolls 2 for laying on the patterns in various colors. The blank paper is supplied from a roll 3, being drawn from the roll by a pair of feed-rolls 4 and delivered upon a slowly-moving belt 5, which forms a
50 reservoir to contain a quantity of slack paper. From the belt 5 the paper passes over

tension-rolls 6 and then around the main cylinder of the grounding-machine A. After the ground color is laid on the paper passes
over a guide-roll 7 and then around a large
55 heated drum 8 and then successively over smaller rolls 9, 10, 11, 12, and 13. The roll 9 is so placed that the paper must pass almost entirely around the drum 8 before leaving it, thus exposing the paper for a considerable
60 time to the drying influence of said drum. If the drum 8 were small, the paper would not be sufficiently dried to set the colors before it runs onto the first roll 9 and the colors would adhere more or less to said roll, as the
65 paper must run over the roll 9 face inward. By constructing the drum 8 of a suitable diameter—say five or six feet—the paper is in contact with it for a sufficient length of time to thoroughly set the colors, so that they will
70 not adhere to the succeeding rolls 9, 10, &c.

In this specification I shall designate the large heated cylinder 8 by the term "drum" and the smaller heated cylinders 9, 10, &c., by the term "rolls." In some instances the
75 rolls 9, 10, &c., need not be heated, and some of them may be omitted. I prefer, however, to use several heated rolls in combination with the drum to complete the drying of the
80 paper.

It is desirable to run the paper as directly as possible from the grounding-machine to the printing-machine. Owing to the expansion and contraction of the paper as it is wet and dried by the grounding-machine and the
85 drying-drum it is difficult to run the paper directly from the drying drum or rolls onto the secondary printing-machine B, and I have therefore introduced between them a compensating device which will compensate for
90 expansion and contraction and at the same time produce the proper tension on the paper passing to the printing-machine B. As illustrated, the compensating device comprises a series of rolls 14 on a fixed frame or support 15
95 and a second series of rolls 16, arranged upon a frame or support 17, which is movable toward and away from the frame 15, being constantly under tension to move away. The frame 17 is shown supported on a base 18, having
100 wheels 19, which travel on rails 20. The frame 17 is preferably connected at its upper and

lower portions by cords 21 with a roll driven by a weight 22, which tends to draw the frame 17 away from the frame 15 and at the same time to preserve the parallelism of said frames. From the roll 13 the paper passes around a guide-roll 23 and thence alternately around the rolls 14 and 16 until it reaches the upper roll 14, from which it passes around the secondary printing-machine. The paper strip is indicated by P and the direction of motion by the arrows.

It will be obvious that the compensating device will permit of considerable expansion or contraction of the paper between the two printing-machines without producing any slack in or rupturing the paper. The paper will always be smooth and under tension. By mounting the rolls 14 and 16 so that they will run freely and properly proportioning the weight 22 the amount of tension may be regulated to suit the strength and quality of paper.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a wall-paper-printing apparatus, the combination of a primary printing-machine, a large heated drum around which the paper passes after leaving the printing-machine, means for holding the paper in contact with said drum throughout the larger part of its periphery, a compensating mechanism adapted to hold more or less of the paper and compensate for expansion or contraction, and a secondary printing-machine, the paper passing successively and continuously over said primary printing-machine, heated drum, compensating mechanism, and secondary printing-machine.

2. In a wall-paper-printing apparatus, the combination of a primary printing-machine, a large heated drum about which the paper

passes after leaving the printing-machine, a series of smaller heated rolls, a compensating mechanism and a secondary printing-machine, the paper passing successively and continuously over said primary printing-machine, heated drum and rolls, compensating mechanism, and secondary printing-machine, in the order mentioned.

3. In a wall-paper-printing apparatus, the combination of a primary printing-machine, a large heated drum around which the paper passes, means for holding the paper in contact with said drum throughout the larger part of its periphery, a compensating mechanism comprising two relatively movable series of rolls, and a secondary printing-machine, the paper passing successively and continuously over said primary printing-machine, said drum, said compensating mechanism and said secondary printing-machine.

4. In a wall-paper-printing apparatus, the combination of a primary printing-machine, drying-rolls, a compensating device comprising two relatively movable series of rolls, and a secondary printing-machine the paper passing successively and continuously over said devices in the order mentioned.

5. In a wall-paper-printing apparatus, the combination of a primary printing-machine, drying-rolls, a compensating device, comprising a series of rolls on a stationary frame, and a second series of rolls on a movable frame, and a secondary printing-machine receiving the paper from said compensating device.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES A. WATSON.

Witnesses:

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J. SEAGRIST.