J. HAWORTH.

Tension-Regulator for Calico Printing-Machines.

No. 196,296. Patented Oct. 23, 1877.

Fig. 3.

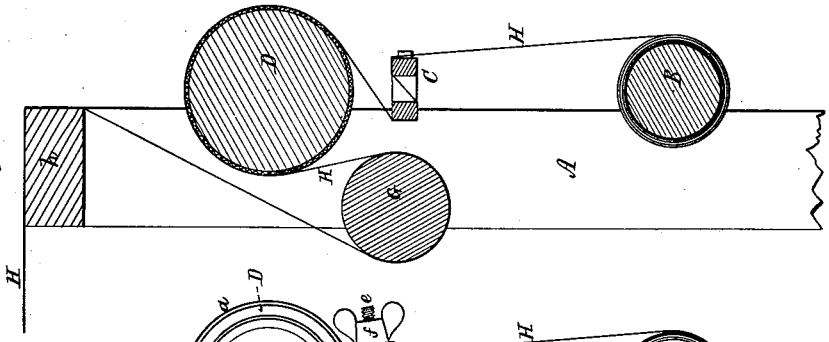


Fig. 2.

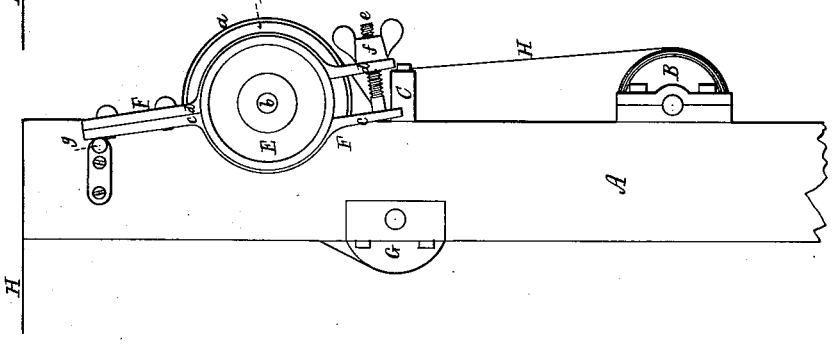
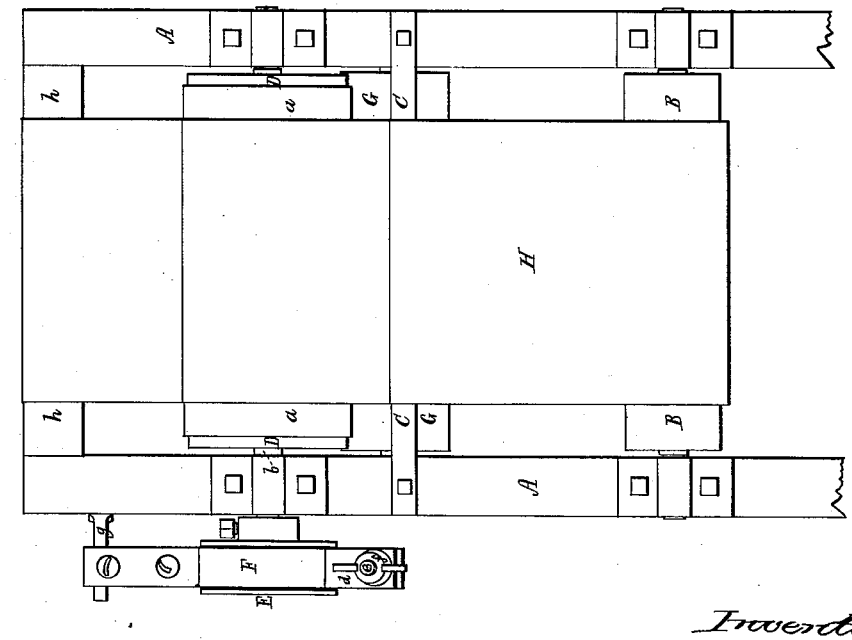


Fig. 1.



Witnesses.

S. W. Pipes

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UNITED STATES PATENT OFFICE.

JOHN HAWORTH, OF DOVER, NEW HAMPSHIRE.

IMPROVEMENT IN TENSION-REGULATORS FOR CALICO-PRINTING MACHINES.

Specification forming part of Letters Patent No. **196,296**, dated October 23, 1877; application filed November 24, 1876.

To all whom it may concern:

Be it known that I, JOHN HAWORTH, of Dover, in the county of Strafford and State of New Hampshire, have invented a new and useful Tension-Regulator for Calico-Printing Machines; and do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front elevation, Fig. 2 an end view, and Fig. 3 a transverse section, of the said tension-regulator.

In calico-printing much difficulty is frequently experienced in accomplishing what is termed the "fitting," in consequence of the variation of the tension on the cloth.

The object of my machine is to effect a regularity of tension on the cloth while it is being printed, or on the blanket-protector or "grey cloth," as termed by calico-printers.

In carrying out my invention, I make use of a roller, a friction-wheel, and a brake thereto, such brake having a means of increasing or diminishing its pressure on the periphery of the wheel.

These devices I employ in combination with the cloth beam or roller, and also use one or more guides, all being arranged substantially as hereinafter explained.

In the drawings, A denotes the frame for supporting the operative parts. Within the lower part of the frame is the beam or roller B, upon which the cloth is wound, and from which it is to be drawn for the purpose of being fed to the tension-roller, from which it passes to the printing-machine.

Above the cloth-beam B is the tension-roller D, below which is a slotted plate or guide, C. The tension-roller I usually provide with a sleeve or cover, *a*, of cloth or some other suitable material. On the shaft *b* of the said roller a friction-wheel, E, is fastened, such wheel being provided with a brake, F.

This brake, as shown, is composed of two bars, *c d*, bent as represented, so as to clasp the periphery of the wheel, the said bars, where above the wheel, being laid together and connected by screws. Where below the wheel the bars are provided with a screw, *e*, and a nut, *f*, the screw being extended from one bar through the other, and into the nut, all being as shown.

The friction-brake at its upper part rests against a stud, *g*, extending from the frame.

In advance of the slotted guide is another guide or roller, G.

The grey cloth H passes from the cloth-beam down through the slotted guide, thence upward over and partially around the tension-roller, thence downward and partially around the guide-roller, thence upward and across the upper girt *h* of the frame A, from whence it is led to the printing-machine.

By means of the screw and nut of the brake the friction of the latter on its wheel may be increased or diminished, as occasion may require, to vary the tension on the cloth.

I do not claim, for producing tension in the cloth, a brake applied either to the cloth-roller or to another roller in advance of it.

In connection with the brake F, as described, and the pulley or wheel E, the roller D, and the cloth-beam B, I use, in carrying out my improvement, not only the additional roller G, but the slotted friction-guide C, arranged with the beam and the roller D in manner as shown.

While the guide C properly guides or directs the cloth in its passage across the upper edge of it, (the said guide,) such guide also performs other functions—that is, it causes the cloth to be passed backward through, and thence forward under, it, whereby not only is the cloth kept from wrinkling and rising out of place off the guide, but is preserved in due relation with the roller D, and prevented from slackening in front of, or being drawn too freely off, the beam.

It will be seen that the roller G and the slotted guide, by their arrangement with the roller D, cause the cloth to extend nearly around the entire periphery of the roller, and thereby enable the friction-brake mechanism to operate to better advantage than would be the case were the roller G dispensed with.

What, therefore, I claim as my invention is—

The combination and arrangement, sub-

stantially as shown and described, of the upper roller D and lower roller B, with the intermediate slotted guide C and roller G, arranged in proximity to the guide C, and a little below and to one side of the roller D, which has its axis provided with a friction-wheel, E, to which is applied a clamp or tension-regulator, F *v d*, substantially as and for the purposes set forth.

JOHN HAWORTH.

Witnesses:
R. H. EDDY,
J. R. SNOW.