S. W. WILDER.

MACHINE FOR DAMPING PAPER.

No. 187,790. Patented Feb. 27, 1877.

Fig. 4.

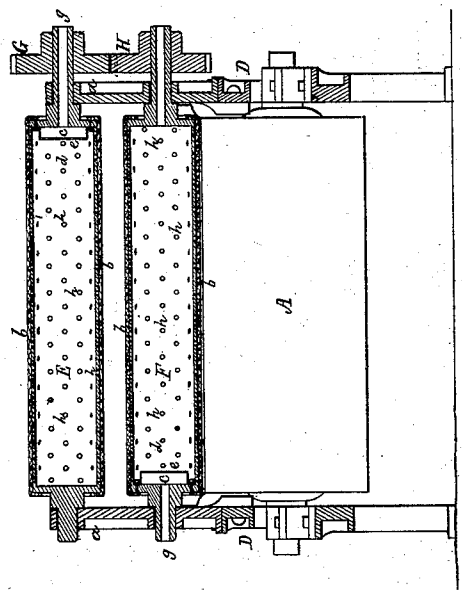


Fig. 3.

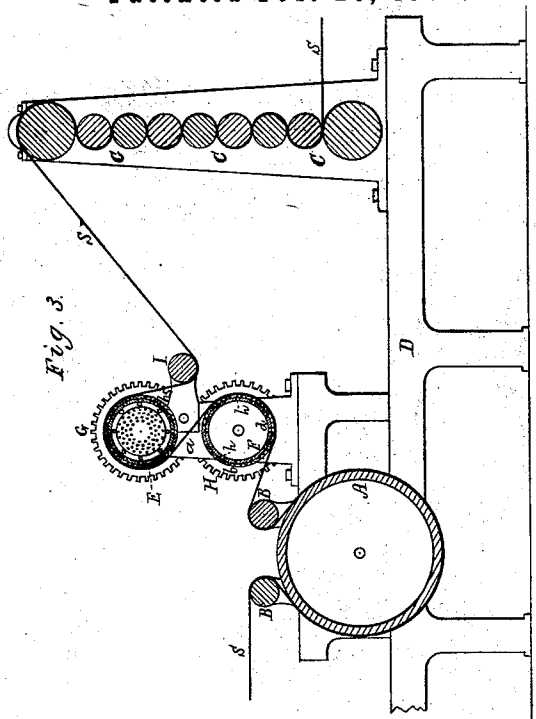


Fig. 1.

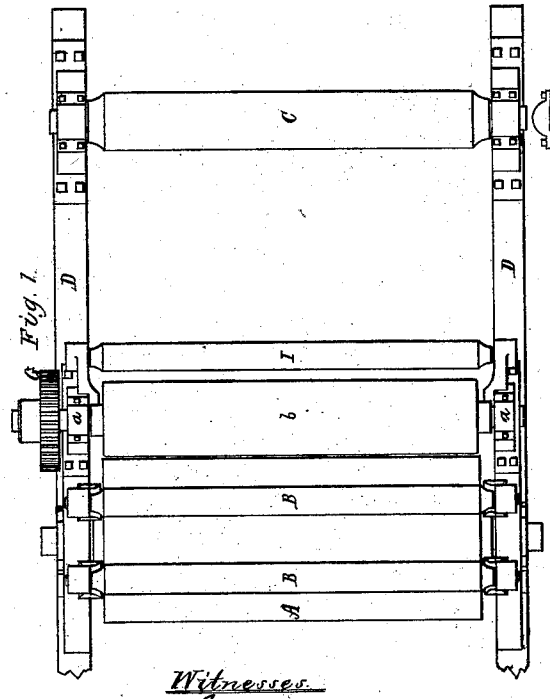
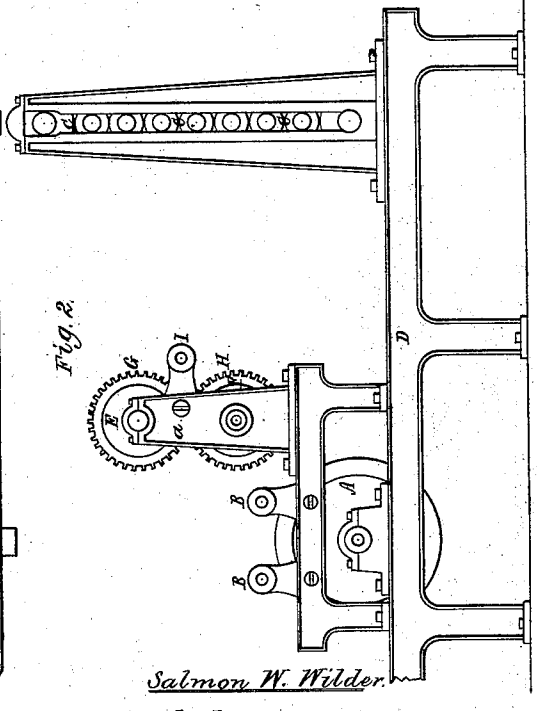


Fig. 2.



Witnesses.

S. W. Pepper

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UNITED STATES PATENT OFFICE.

SALMON W. WILDER, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR DAMPING PAPER.

Specification forming part of Letters Patent No. **187,790**, dated February 27, 1877; application filed October 9, 1876.

To all whom it may concern:

Be it known that I, SALMON W. WILDER, of Lawrence, of the county of Essex and State of Massachusetts, have made a new and useful Improvement in Apparatus for Damping Paper on its way from the Drying Mechanism to the Calendering-Rollers; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a side elevation, Fig. 3 a longitudinal section, and Fig. 4 a transverse section, of a set of calender-rolls and a paper-making engine drying-cylinder, as provided with my invention, the plane of section of Fig. 4 being through the axes of the dampening-rolls

The drying-cylinder of a paper-machine generally dries the paper somewhat unequally, whereby, when in such state it is passed through the set of calendering-rollers, it becomes unevenly calendered or finished. Furthermore, the desiccation of the paper as it leaves the drying apparatus is generally or occasionally greater than that of the atmosphere. It is desirable, for good reasons, to have the desiccation of the two correspond as nearly as possible, in order to properly carry on various other operations connected with the paper.

My invention enables the paper, as it leaves the drying-cylinder, or just before passing through the set of calendering-rolls, to be dampened, more or less, and evenly, whereby it can be worked or calendered to better advantage.

In carrying out my said invention, I combine with the paper-machine drying apparatus or roll, or with the set of calender-rolls, or with both drying and calendering rolls, mechanism, as described, for dampening the sheet.

In the drawings, A denotes the hollow drum or drying-roll of a paper-making machine. B B are guide-rolls, arranged over the said roll A. C C C, &c., are a series or set of calender-rolls, such, with the rolls A and B B, being arranged within, and suitably supported by, a frame, D. The roll A is to be heated by the usual means, viz., steam, let into it through one of its journals. In advance of the roll A, and placed one above the other, are two dampening-rolls, E F, having their journals duly supported in bearings in two standards, *a a*. A gear, G, fixed on the journal of one roll, E, engages with a gear, H, of like size, fastened on the next adjacent journal of the roll F, such being to enable the two rolls to travel or revolve at equal speeds. Each roll, E or F, is a hollow metallic cylinder, having numerous perforations or holes, *h*, leading radially out of its bore, the cylinder being covered by a tubular cloth or absorbent sleeve or jacket, *b*, fitted closely to it. Within the cylinder, at one end of it, is a narrow steam-receiving chamber, *c*, separated from the bore *d* of the cylinder by a foraminous partition, *e*, having its holes arranged mostly near the inner periphery of the bore. This partition is arranged near that end of the roll at which the steam is to enter through its journal. I prefer to have the steam pass through one roller in one direction and through the other in the opposite direction, in which case the inducts and the distributing-partitions will be arranged as shown in Fig. 4, such inducts being marked *g g*. In this case I find that there is a better or more even distribution of the moisture upon the sheet of paper—a matter of much importance.

The sheet of paper S, after having been passed about the drying-roll A and the guide-rolls B B, in manner as represented, is carried forward, under and partly around the lower dampening-roll, thence between it and the upper one, thence partially around the latter, and thence under and partially around a third guide-roll, I, and thence through the set of calender-rolls, all being as represented.

In its passage from the drying-roll to the upper of the calender-rolls, the paper becomes moistened on opposite sides of it by contact with the sleeves of the dampening-rolls, which are rendered more or less moist by the steam that may escape into them from the bores of such rolls.

On entering either dampening-roll by a conduit leading from a steam boiler or generator to the induct of such roller, the steam will impinge directly against the foraminous partition *e* of such roll. This partition will check the velocity of the steam, or cause it to flow in numerous streams lengthwise through the cylinder and close to the periphery of the

bore, in order that the steam may be discharged into the sleeve or jacket so as to evenly moisten it.

I do not claim a set of drying-cylinders, steam-boxes, and calender-rollers constructed and arranged in manner and to operate as represented in United States Patent No. 24,377.

What I claim is—

1. The combination of the perforated dampening-rollers E and F, provided with the jackets *b b*, inlets *g g*, and steam receiving and distributing reservoirs *c c*, all constructed and operating as specified.

2. The dampening-rolls E and F, provided with the steam-inlets *g g*, located in their opposite ends, for the purpose of causing the steam in said rolls to flow in opposite directions, so as to equalize the heating and moistening of the sheet of paper, as specified.

SALMON W. WILDER.

Witnesses:

R. H. EDDY,
J. R. SNOW.