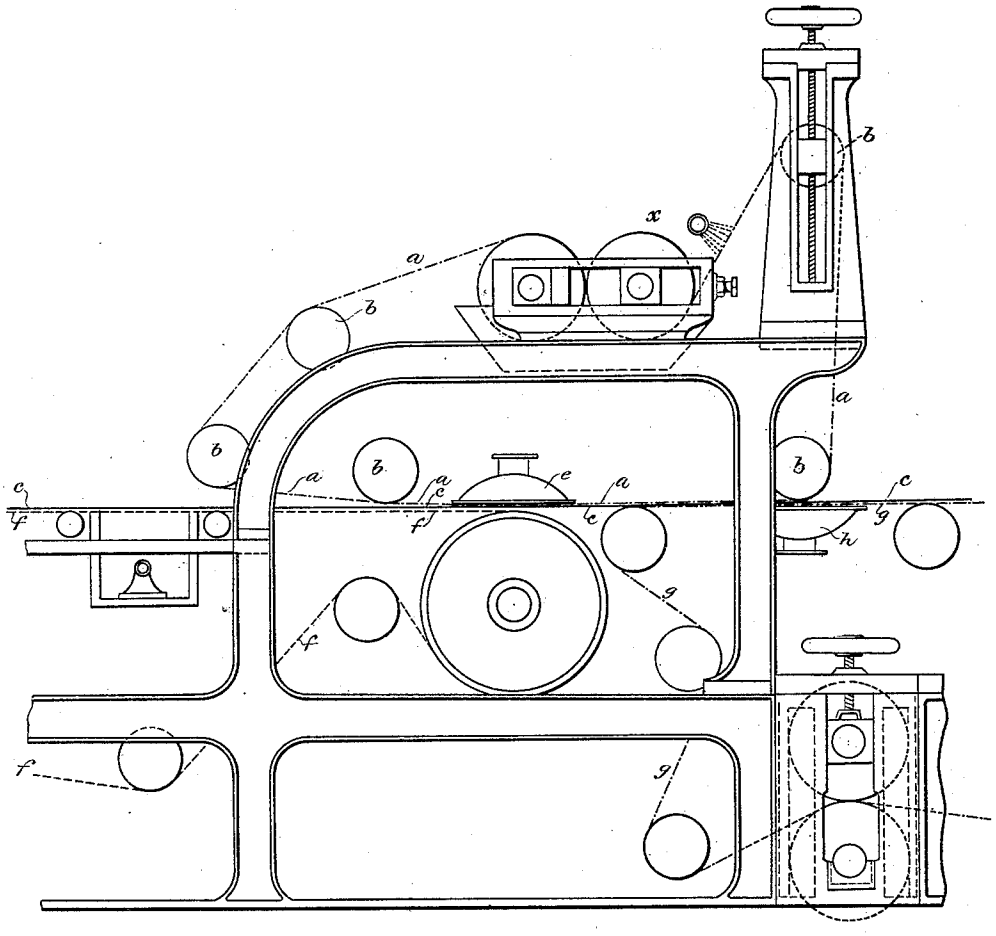
(No Model.)

W. LEISHMAN.

PAPER MAKING MACHINE.

No. 318,378. Patented May 19, 1885.



Witnesses
Harry C. Knight
Edward Stevens

Inventor
Wm. Leishman
By Knight Bros. Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM LEISHMAN, OF TWO WATERS MILL, HEMEL-HEMPSTEAD, COUNTY OF HERTS, ENGLAND.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 318,378, dated May 19, 1885.

Application filed January 19, 1885. (No model.) Patented in England March 24, 1884, No. 5,360.

To all whom it may concern:

Be it known that I, WILLIAM LEISHMAN, paper-maker's foreman, a subject of the Queen of Great Britain and Ireland, and residing at Two Waters Mill, Hemel-Hempstead, in the county of Herts, England, have invented certain Improvements in Paper-Making Machines, (for which I have made application in Great Britain, No. 5,360, dated March 24, 1884,) of which the following is a specification.

The object of my invention is to avoid the formation of wire-marks on the back of the paper-web, which result from the pressure of the said web upon the wire-cloth carrying-apron, by the upper couch-roll in machines where such parts are employed in the ordinary manner, and, further, to avoid injuriously stretching the said paper web as it passes from the wire-cloth carrying-apron to the succeeding rollers.

In order that the invention may be fully understood, I will describe the same with reference to the accompanying drawing, which is an elevation of so much of a paper-machine as is necessary to illustrate my improvement.

In my improved machine I dispense with the upper couch-roller and employ in lieu thereof an endless felt, *a*, passing over a system of guide-rollers, *b*, arranged in any suitable or well-known manner, a cleaning device of any known construction being placed, as at *x*, so as to act continuously upon said felt. *d* is the lower couch-roller, over which is passed the wire-cloth *f*, said cloth being supported and guided over a system of rollers in the ordinary manner. *g* is the first press-felt, which takes the paper web *c* as it is delivered from the couch-rolls *d* and conveys it to the first press-rolls.

None of the parts thus far described form any part of my invention, and may be of the nature herein shown and described or any other.

My invention consists in the employment of a suction or exhaust box located above any one or all of the superposed endless felts or aprons of a paper-machine, whereby the paper-pulp web *c* is drawn or sucked against the surface of said superposed felt or apron. For example, *e* represents one of my exhaust or suction boxes, which is located over the wire-cloth *f*, just at or near the point where the web *c* leaves said cloth *f*, and passes on to the first press-roll felt *g*.

With machines as ordinarily constructed the paper-pulp web has nothing to support it in traversing the space between the two endless aprons, and consequently sags down between them, thereby stretching it to a greater or less extent and causing it to receive the imprint of the wire-cloth as it is deflected over it on the couch-roll *d*. By the employment of this suction-box the paper-pulp web is made to adhere to the outer surface of the felt *a*, and is thereby prevented from sagging. It is also advantageous to employ one of these boxes wherever a felt or apron leaves the paper-pulp web, as, for example, where the felt *a* leaves the web *c* to be carried on by the first press-felt *g*, it is well to place an exhaust-box behind the felt *g*, as illustrated at *h*.

It is not deemed necessary to give a minute description of these exhaust-boxes, as they are so simple in their nature that a variety of forms would readily suggest themselves to one skilled in the art. They may be simple boxes open at bottom or top, and communicating with an air exhaust mechanism of any construction.

I am aware that suction or exhaust boxes such as I employ have been employed in paper-making machines below the lower aprons over which the paper-pulp is spread for the purpose of extracting the water from said pulp; but such is not the equivalent of my invention.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a paper-machine, the combination, with a felt or apron, of an exhaust-box placed above said felt or apron with its opening in proximity thereto, as explained.

2. In a paper-machine, the combination, with a lower couch-roll and the first press-felt, of a superposed felt spanning the space between said couch-roll and first press-felt and an exhaust-box placed above said superposed felt, as and for the purpose set forth.

3. The wire-cloth *f*, the lower couch-roll *d*,

and the first press-felt *g*, in combination with the superposed felt *a* and the exhaust-box *e*, located above said felt *a* and over the couch-roll *d*, as and for the purpose set forth.

4. In combination, the wire-cloth *f* and the lower couch-roll *d*, the superposed felt *a*, and the exhaust-box *e*, placed above said felt, for causing the paper-pulp web to adhere to the under surface thereof and the first press-felt *g*, and the exhaust-box *h*, for drawing said paper-pulp web from the felt *a* onto the felt *g*, substantially as set forth.

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

WILLIAM LEISHMAN.

Witnesses:
J. W. WYATT,
C. E. Nash Mills, Hemel-Hempstead.
W. L. BYNE,
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