J. BUTLER.

Paper-Making Machines.

No. 158,400. Patented Jan. 5, 1875.

Fig. 1.

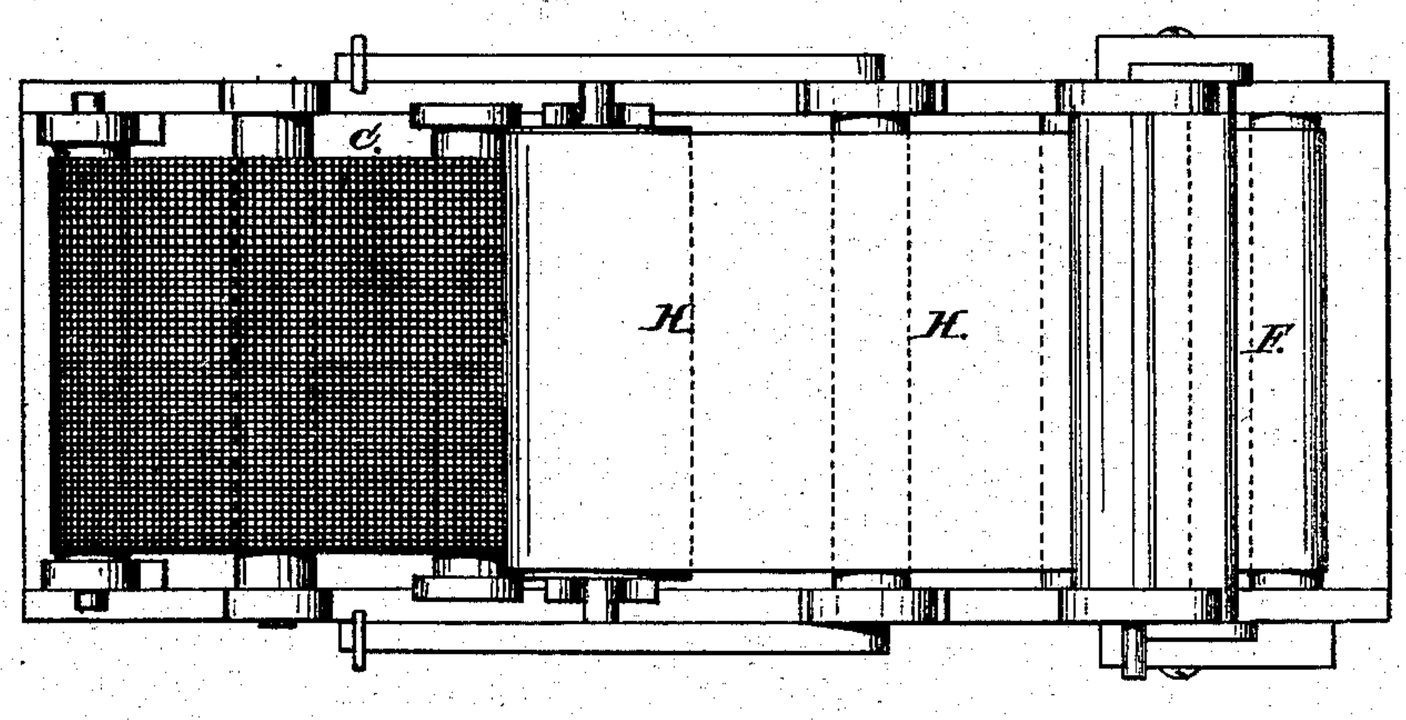
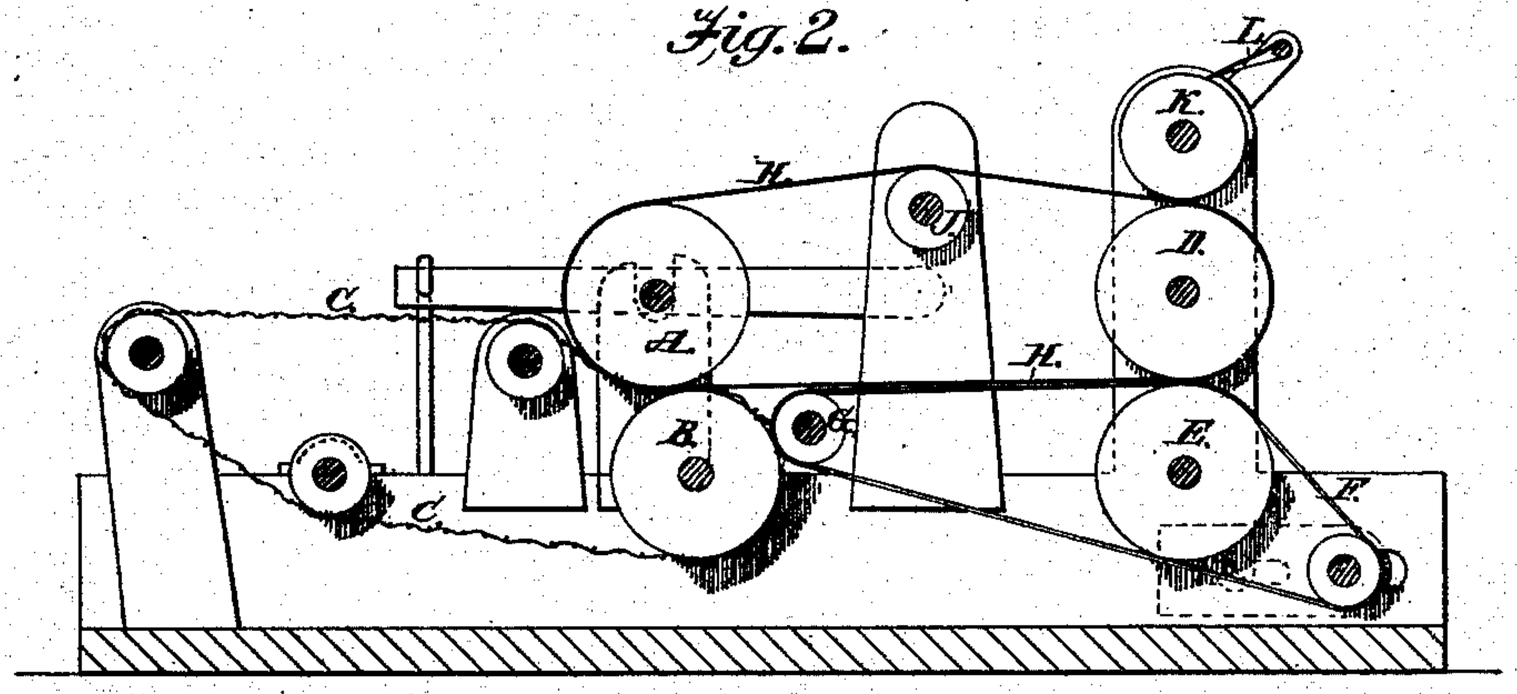


Fig. 2.



Witnesses:

Frank F. Thompson

Walter J. Budd

Inventor:

Jas. Butler

by his atty.

Lloyd & Higgins

UNITED STATES PATENT OFFICE.

JAMES BUTLER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PAPER-MAKING MACHINES.

Specification forming part of Letters Patent No. **158,400**, dated January 5, 1875; application filed July 28, 1874.

To all whom it may concern:

Be it known that I, JAMES BUTLER, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Paper-Making Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The nature of my invention consists in the introduction of an endless moving belt of rubber or other flexible material, passing from the couch-rollers to the endless felt apron, passing between the pressure-rollers, holding by atmospheric pressure or capillary attraction, and conveying on its under surface the pulp from the endless wire apron, on which it is precipitated and strained, to the endless felt apron passing between the pressure-rollers; and, also, in combination therewith, a roller, by means of which the endless belt discharges automatically small fragments or broken sheets of pulp, which would otherwise obstruct the operation of the machine, and interrupt the continuity of the paper web.

The advantages derived from the use of this invention are, a diminution of waste of pulp and a saving in time and labor to the attendants of the machines.

Figure 1 shows a plan of the parts of a paper-making machine involved with my invention attached, and Fig. 2 a side elevation thereof.

The same letters of reference apply to the same parts in the several figures.

A and B, respectively, represent the upper and lower couch-rollers. C represents a portion of the endless wire-cloth apron on which the pulp is strained. D and E, respectively, represent the upper and lower pressure-rollers. F represents a portion of an endless band or apron of felt, passing around a roller, G, and between the pressure-rollers E and D. Around the upper couch-roller, A, and upper pressure-roller, D, I place an endless band, H, made, preferably, of india-rubber cloth. Inside of the upper part of the band H I place a roller, J, adjustable in height, to keep the band H tightly stretched. On the outside of the apron H a roller, K, is fixed so as to bear and roll against the band H near the pressure-roller D. Against the side of the roller K is a blade of metal, L, termed a "doctor," or "ductor," which skims and leads off any pulp or fragments of paper from the roller K.

The direction of motion of the machine when in operation is indicated by arrows in Fig. 2.

The operation of my invention is as follows: The pulp being precipitated on the upper side of the wire-cloth apron C, coming in contact with the under side of the apron H, adheres to it, and is carried between the pressure-rollers D and E. When the web or sheet of pulp is continuous it passes onto the band F beyond the rollers D and E, to be dried and calendered.

When the web of pulp is broken it wraps upon the roller K, and is then skimmed off and discharged by the "ductor" L.

I am aware that an endless apron of wire-cloth has been used upon the upper side of the pulp, to express the water therefrom, and conveying the web of pulp to a pair of pressure-rollers, but not overlapping the endless felt apron. This I distinctly disclaim; but

What I claim as my invention is—

1. The endless apron H, in combination with the rollers A, B, and D, and lapping upon both the wire-cloth apron C and felt apron F, as and for the purpose set forth.

2. In combination, the roller K, doctor L, apron H, and rollers A and D, arranged and operated as set forth.

JAMES BUTLER.

Witnesses:

JAMES P. PETIT,

W. FASSHAUER.