Dec. 29, 1925. 1,567,948

R. B. HEYS

PAPER MAKING AND OTHER MACHINE WHEREIN SUCTION IS TO BE USED

Filed Feb. 28, 1925 3 Sheets-Sheet 1

Fig. 1.

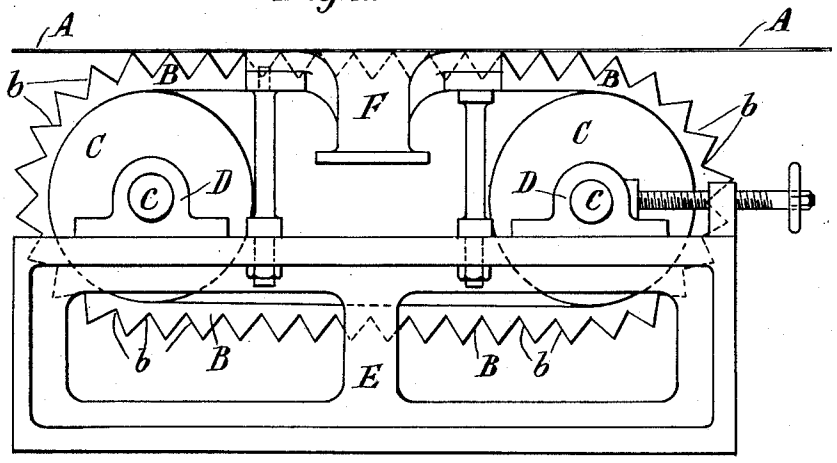
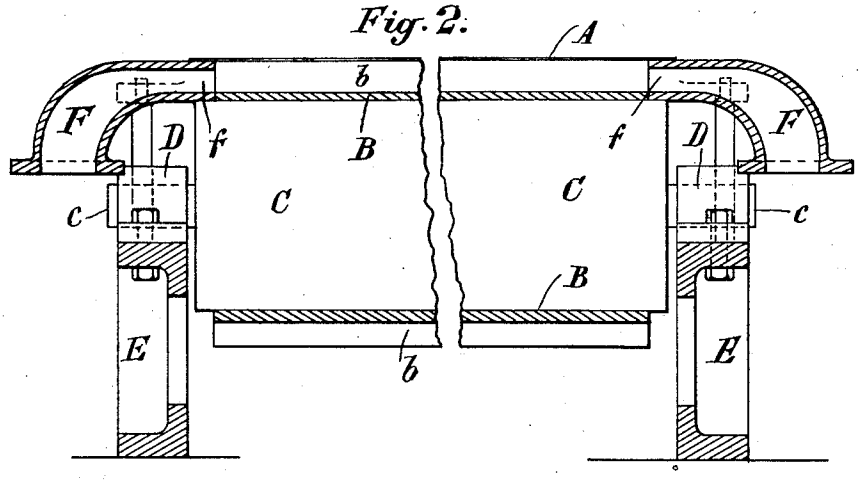


Fig. 2.



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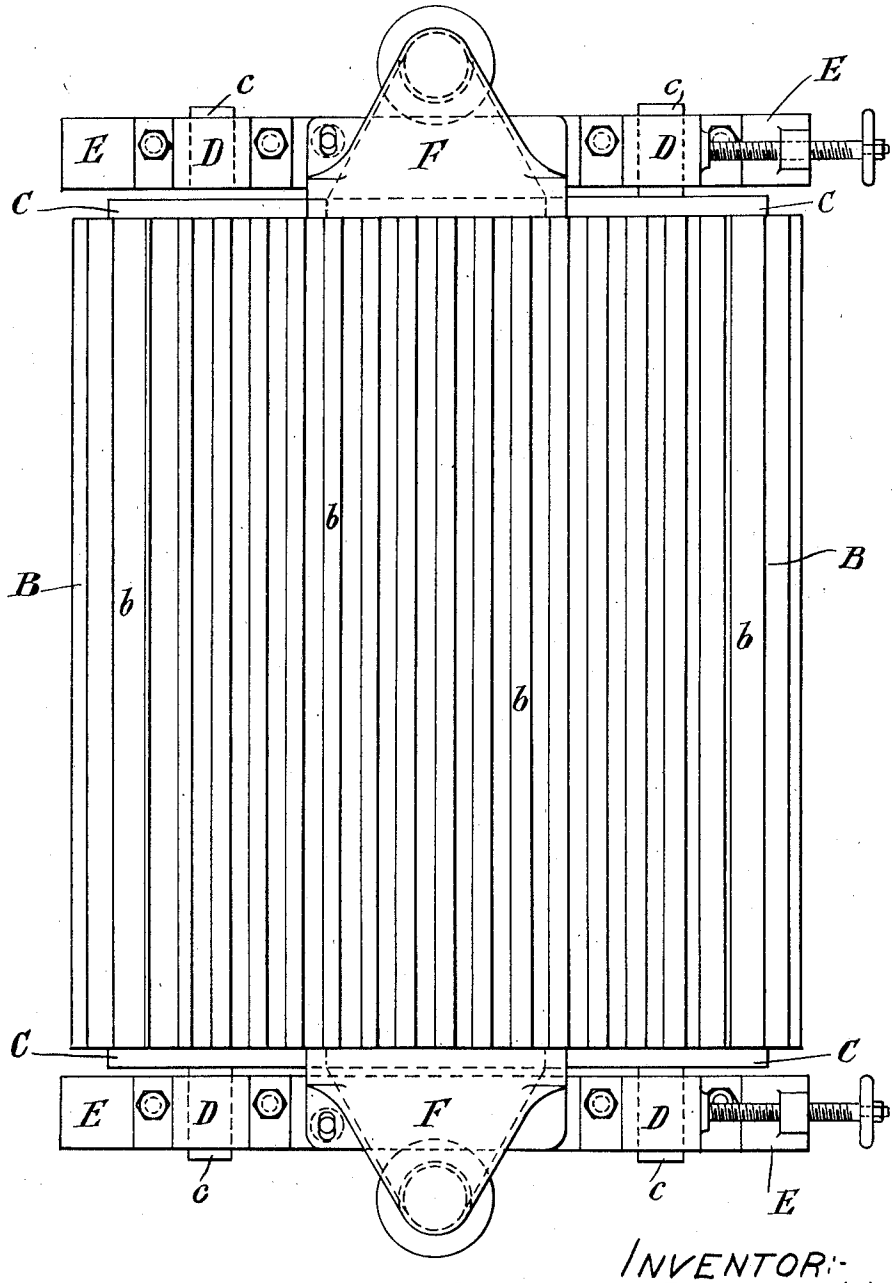
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Fig. 3.



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Fig. 4.

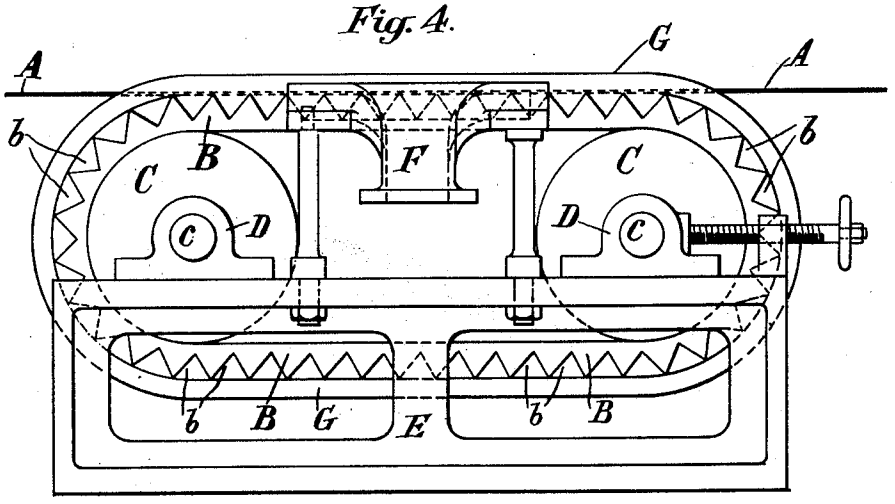
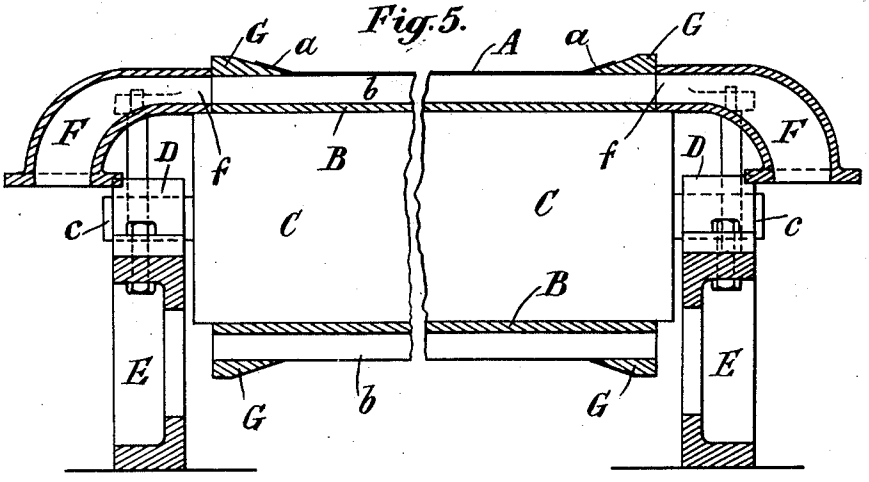


Fig. 5.



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Patented Dec. 29, 1925. 1,567,948

UNITED STATES PATENT OFFICE.

ROLAND BLYTH HEYS, OF BRISTOL, ENGLAND, ASSIGNOR TO ST. ANNE'S BOARD MILL COMPANY LIMITED, OF BRISTOL, ENGLAND.

PAPER-MAKING AND OTHER MACHINE WHEREIN SUCTION IS TO BE USED.

Application filed February 28, 1925. Serial No. 12,330.

To all whom it may concern:

Be it known that I, ROLAND BLYTH HEYS, a subject of the King of Great Britain, residing at 5, First Avenue, St. Anne's Park, in the city of Bristol, England, have invented new and useful Improvements in Paper-Making and Other Machines Wherein Suction is to be Used, of which the following is a specification.

This invention is principally intended for use in place of suction boxes, or to supplement suction boxes in paper making machines, for withdrawing moisture from the pulp as it passes along upon the wire on its way to the dry end of the machine and I will, for the purposes of description, presume that it is so applied from which its analogous applications to cases in which suction is required otherwise to act upon webs, sheets, or layers of paper, or other material, will also be understood. It will of course be realized that where the word "moisture" is employed in the claims that moisture, air other fluid is included, or moisture and air or other fluid, or any combination thereof.

According to this invention a band, or belt, of rubber or other suitable material, is arranged beneath the wire and is carried by rollers in such manner that it will travel with the wire upon which the web of wet pulp is carried towards the dry end of the machine by the movement of the wire, or by the rollers, or one of the rollers, being driven, or by a combination of these means. The said band, or belt, is grooved, or channelled, transversely to its line of travel and, as the said band, or belt, travels the open ends of those of the grooves, or channels, which successively comes beneath the wire carrying the wet pulp, will come opposite the mouths of passages leading to suction devices so that at that portion of the travel air and moisture is drawn through the pulp and wire into the grooves, or channels, as they successively come into communication with the suction devices the moisture being drawn in by the suction, any moisture which may not be so delivered being retained in the grooves, or channels, until it is discharged therefrom when the ends of the said grooves, or channels, leave the position opposite the suction devices.

I will more particularly describe my invention with reference to the accompanying drawings in which Figure 1 shows in side elevation, Figure 2 in transverse section and Figure 3 in plan, a construction of apparatus in accordance with my invention as applied to withdrawing moisture from wet paper-pulp passing upon the wire towards the dry end of the machine, but I do not limit myself to the details of this construction, nor do I limit myself to the particular purpose for which I presume it is to be used as analogous arrangements can be employed for various other purposes wherein it is desired to act upon travelling materials by means of suction. Figure 4 shews in side elevation and Figure 5 in transverse section a modified construction of apparatus to that shown in Figures 1, 2 and 3.

Beneath the portion of the travelling wire A whereat suction is to take place is the upper run of a band of rubber B, or equivalent flexible material, with channels *b* therein extending from side to side of the band and preferably of triangular shape in cross-section the portions of the band which separate the channels being also of triangular shape in cross-section so that the apices of cross-sectional triangles formed by the said portions of the band present a maximum surface of suction to the wire A whilst the bases of the said triangles afford the maximum of strength of material between the channels. The band B is carried by rollers C whose axes *c* are mounted in bearings D carried by standards E at each side of the said band. On each side of the upper run of the band B are the mouths of passages *f* leading to the suction device, or devices, F the sides of the said band bearing against the lips, or flanges, of these mouths, which lips, or flanges, are such that there will, as the band travels along, only be communication between the suction devices F and those channels *b* and superposed portions of the wire A which successively come into coincidence with the said mouths of the passages *f* leading to the said suction device, or devices. In the modified apparatus shewn in Figures 4 and 5 closure of the parts of the channels *b* of the upper run of the band B not covered by the wire A and paper is effected by an endless strip of rubber G carried at each side of the said band, on the upper sides of which strips (which are preferably inclined downwards and inwards to a level with the tops of the channels) the edge portions *a* of the wire A bear whilst

the broad outward edges of the said strips G bear against the upper flange of the mouth of the passages *f*, the closure at the side flange and the lower flange of the said mouth being effected by the edges of the channelled band B bearing against them the said side flanges being sufficiently wide to ensure that the suction device F will, at no time, be in communication with a channel *b* which is not closed to the outer air, so that the suction draws only through channels which are covered by a part of the wire A carrying the paper.

If desired, an analogous construction of channelled device such as B and adjuncts can be applied to a roller of sufficient diameter especially where only a small area of suction is required.

What I claim is:—

1. In apparatus for withdrawing, by suction, moisture from wet material carried on a travelling wire; a belt, and means for supporting it so that it travels with and beneath said wire, the said belt having grooves, transverse to the line of travel, the open ends of which come successively opposite to the mouth of a passage leading to a suction device, so that, at that portion of the travel, air and moisture is drawn through said material and wire into said grooves, as they successively come into communication with the passage, leading to said suction device, substantially as hereinbefore described.

2. In apparatus for withdrawing, by suction, moisture from wet material in accordance with claim 1, a travelling belt, of flexible material having grooves therein of triangular shape in cross-section, the portions of the belt, which separate said grooves, being also of triangular shape in cross-section so that the apices of cross-sectional triangles formed by said portions of the band present a maximum surface of suction to the wire whilst the bases of said triangles afford the maximum of strength of material between the grooves, substantially as hereinbefore described.

3. In apparatus having a grooved traveling belt, in accordance with claim 1; a strip of rubber carried at each side of said grooved belt, on the upper sides of which strip the edge portions of the wire carrying the wet material bear, the outward edges of said strip bearing against the upper flange of the mouth of the passage leading to the suction device, substantially as and for the purpose hereinbefore described.

4. Apparatus for withdrawing by suction moisture from wet material carried on a traveling wire, said apparatus comprising a rotatable roller carrying upon its periphery a band having grooves transversely to the line of travel, the open ends of which come successively opposite to the mouth of a passage, leading to a suction device, so that, at that portion of the travel, air and moisture is drawn through said material and wire into said grooves, or channels, as they successively come into communication with the passage, leading to said suction device, substantially as hereinbefore described.

In testimony whereof, I have signed my name to this specification.

ROLAND BLYTH HEYS.