

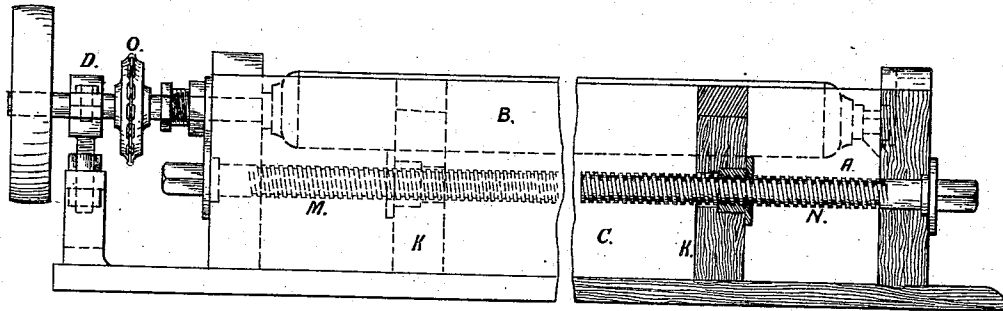
(No Model.)

H. MARSDEN & H. SCHOFIELD.

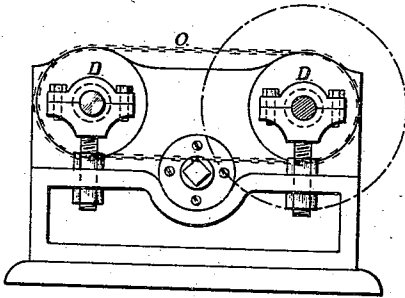
VACUUM BOX USED IN PAPER MAKING MACHINERY.

No. 289,675.

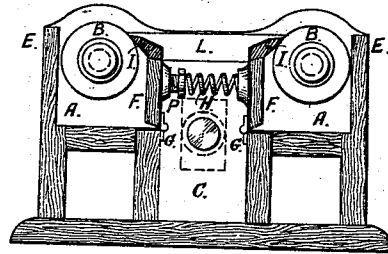
Patented Dec. 4, 1883.



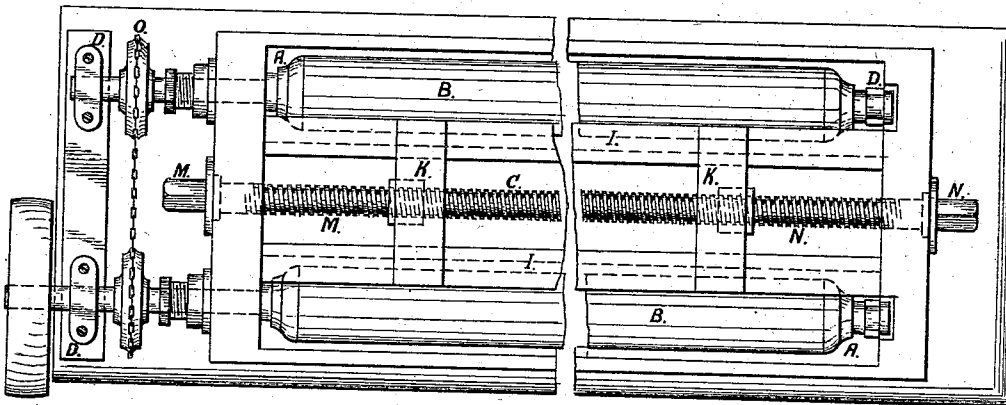
— Fig 1. —



— Fig 2. —



— Fig 3. —



— Fig 4. —

Witnesses.

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UNITED STATES PATENT OFFICE.

HORATIO MARSDEN AND HENRY SCHOFIELD, OF SHEFFIELD, COUNTY OF YORK, ENGLAND.

VACUUM-BOX USED IN PAPER-MAKING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 289,675, dated December 4, 1883.

Application filed September 25, 1883. (No model.) Patented in England July 13, 1883, No. 3,447.

To all whom it may concern:

Be it known that we, HORATIO MARSDEN and HENRY SCHOFIELD, citizens of Great Britain, residing at Sheffield, in the county of York, England, have jointly invented a new and useful Improvement in Vacuum-Boxes Used in Paper-Making Machinery, (for which we have obtained British Letters Patent No. 3,447 of 1883, dated July 13,) of which the following is a specification.

Our invention relates to improvements in vacuum-boxes, such as are used in paper-making machinery for drawing the superabundant moisture out of the wet pulp as it passes from the strainer to the rolls, the object being to extend the life of the wire-gauze upon which the pulp is carried, and thereby reduce the cost of manufacture. The principal cause of the short life of the wire-gauze above mentioned is the friction caused by its being drawn over the stationary edges of the vacuum-box sides, while at the same time it is being pulled tightly against them by the suction or exhaust of the vacuum-chamber. We are aware that to avoid this destructive friction it has been proposed to use rollers to support the wire-gauze above the edges of the vacuum-box; but by reason of the difficulty of preserving the vacuum when using rollers no such combination is in practical or successful use, so far as we are informed. Our invention overcomes the difficulty, and enables anti-friction rollers to be applied to vacuum-boxes, and to be used with great advantage and economy. We attain this result by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the vacuum-box, partly shown in section; Fig. 2, an end view of same with driving-gear; Fig. 3, a cross-section of box; Fig. 4, a top view of both ends of box.

Similar letters refer to similar parts in all the figures.

In carrying out our invention we form against the inner sides of the box two water-troughs, A A, and in each of the troughs is supported a roller, B B. The space between the troughs is the vacuum-chamber C. The said rollers

(which may be made of any suitable material) are free to revolve in bearings D D, and are raised sufficiently high so as to carry the wire-gauze clear of the sides E E. When in use, the troughs are kept full of running water, reaching nearly to the top of the rollers, for the double purpose of keeping the rollers clean and to enable the vacuum to be retained. The sides of the troughs F F next to the vacuum-chamber are either hinged at the lower edge, as shown at G, or are made sufficiently elastic so that they can be moved toward the rollers by the action of spiral or equivalent springs H, placed between the hinged sides. The tops of the hinged sides F are provided with removable strips or tongues I I, of india-rubber or other suitable elastic material, shaped on the under side to fit closely against the convex surface of the rollers, against which they are pressed by the action of the before-mentioned springs. The movable slide-blocks K K, for adjusting the size of the vacuum-chamber to suit the width of the required paper, have on each a top block of rubber, L L, which is shaped so as to fit closely over the strips or tongues I I, to preserve the vacuum. They are moved in the usual manner by means of screws M N, and the rollers are preferably driven by chain-gearing O; but this is not a material part of our invention, and other means may be adopted. We make the power of the springs H adjustable by means of an expanding or contracting bearing or socket, P, so that equal pressure may be given from end to end of the strips or tongues I against the anti-friction rollers B, and by this arrangement of the various parts of the vacuum-box, as herein-before described, the vacuum is effectually retained, and the friction and consequent abrasion of the endless web of wire-gauze are avoided.

As before stated, we are aware that prior to our invention rollers have been adapted and applied to the sides of vacuum-boxes; and we therefore do not claim such a combination, broadly; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. In vacuum-boxes as used in paper-mak-

ing machinery, the combination, with anti-friction rollers, of water-troughs partly inclosing said rollers, and having "inner sides" which are movable toward said rollers, and adjustable
5 springs tending to so move said inner sides, the upper edges of said inner sides being provided with rubber strips or tongues in contact with the rollers, substantially as hereinbefore described, for the purposes set forth.
10 2. In vacuum-boxes as used in paper making machinery, the within-described hinged

inner sides of the water-troughs, substantially as shown, for the purpose specified.

In testimony that we claim the foregoing as our own we have affixed hereto our signatures 15 in presence of two witnesses.

HORATIO MARSDEN.
HENRY SCHOFIELD.

Witnesses:

ROBT. F. DRURY,
ROBERT DRURY.