

(No Model.)

2 Sheets—Sheet 1.

J. H. HENRY.  
Cylinder Machine for Making Paper.

No. 232,031.

Patented Sept. 7, 1880.

Fig. 1.

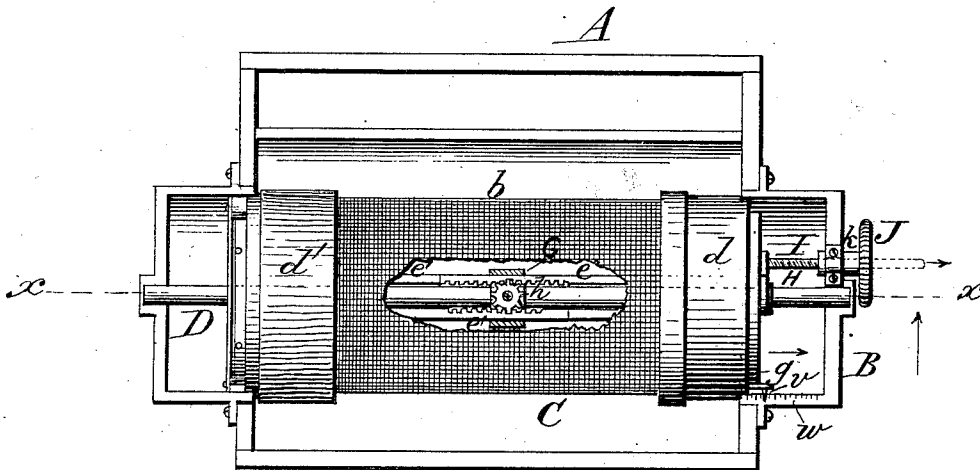


Fig. 2.

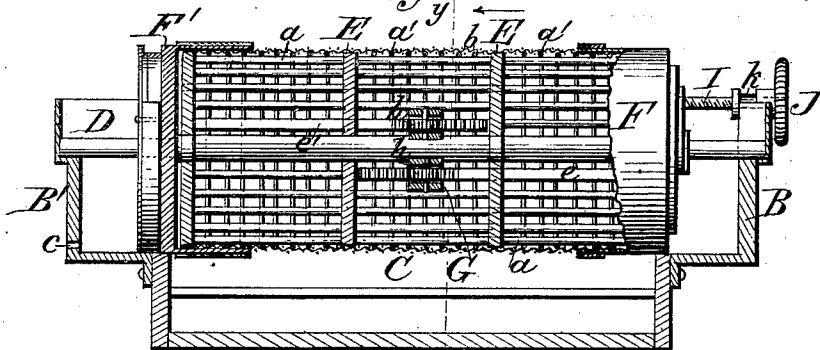
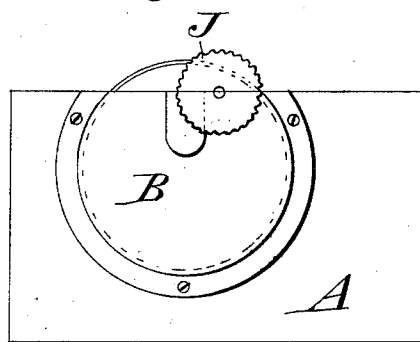


Fig. 3. y A



Attest:

H. H. Schott.  
A. P. Cowe

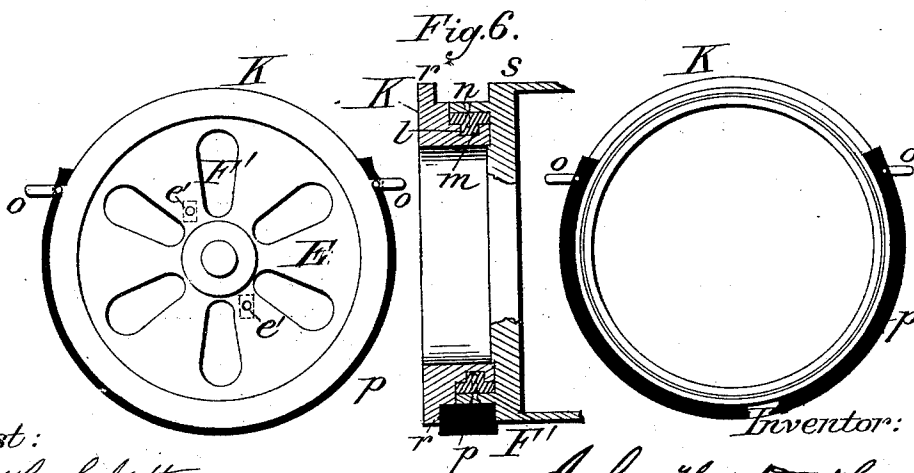
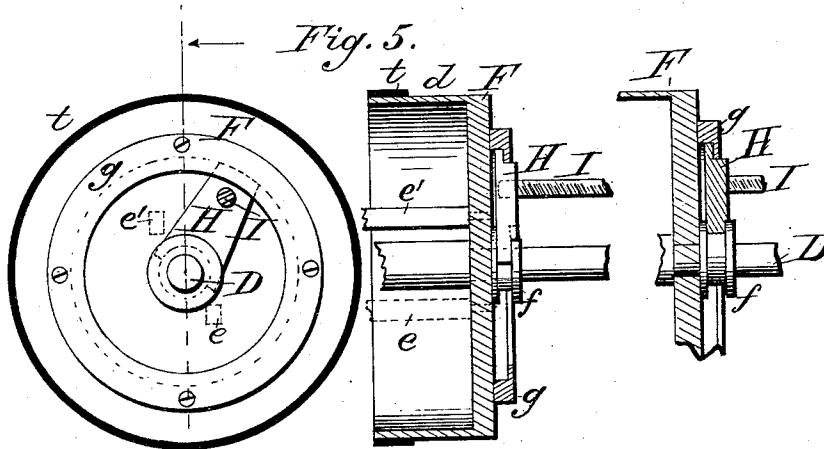
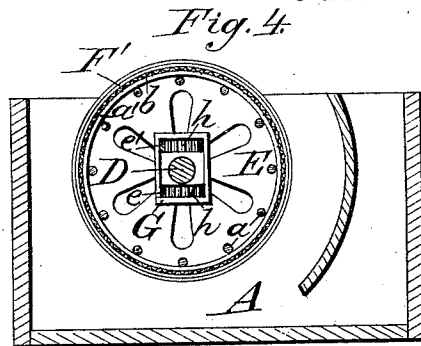
Inventor:

John Hartford Henry  
per J. H. Schott

2 Sheets--Sheet 2.

**No. 232,031.**

**Patented Sept. 7, 1880.**



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# UNITED STATES PATENT OFFICE.

JOHN H. HENRY, OF HINSDALE, NEW HAMPSHIRE.

## CYLINDER-MACHINE FOR MAKING PAPER.

SPECIFICATION forming part of Letters Patent No. 232,031, dated September 7, 1880.

Application filed June 12, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HARFIELD HENRY, a citizen of the United States, residing at Hinsdale, in the county of Cheshire and State of New Hampshire, have invented certain new and useful Improvements in Cylinder-Machines for Making Paper; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in cylinder paper-making machines; and it consists in certain devices, which will be hereinafter fully described, by means of which the width of the paper manufactured upon the machine may be changed without stopping the machine.

In the drawings, Figure 1 is a plan of the pulp tank or vat and cylinder. Fig. 2 is a vertical longitudinal section of the same on the line *xx* of Fig. 1. Fig. 3 is an end view of the tank. Fig. 4 is a transverse vertical section on the line *yy* of Fig. 2. Fig. 5 shows enlarged detail views, in plan and section, of the rotating cylinder-head and means of operating the same; and Fig. 6 represents similar enlarged detail views of the non-rotating head and its packing.

As the method of constructing paper-making machines using cylinders instead of a wire-cloth belt, as in the Fourdrinier machine, is well known to the trade, a detailed description of its construction is not necessary. I will therefore confine the description to the vat and cylinder which contain my improvements. It has long been a desideratum in machines of this class to possess some means of controlling the width of the paper being manufactured while the machine was in motion; but, so far as my knowledge extends, the search has hitherto met with little or no success.

The device generally used consists of a covering of some textile fabric applied to each end of the cylinder, and made to project partially over the wire screen; but it was found very difficult to change the position of this

covering—in fact, almost impossible to do so without stopping the machine, and this caused a delay of at least half an hour, as well as a loss from the uneven paper produced when the machine again started up. To overcome these difficulties I have invented the improved devices which will now be described.

A represents the pulp-vat, in which the cylinder C revolves. This vat is of the ordinary construction, except that the ends are provided with extensions or cases B and B', of semi-cylindrical form, corresponding to that of the ends of the cylinder, and provided with flanges, by which they are firmly bolted or otherwise secured to the ends of the vat.

The cylinder C is formed by placing upon the shaft D, which revolves in suitable bearings in the extensions B and B', a suitable number of perforated heads, E E, the peripheries of which support the longitudinal bars *a a*, which in turn carry the encircling wires or hoops *a' a'*, the whole forming a strong open frame-work for the support of the wire screen *b*, which surrounds the whole and forms the surface upon which the fibers of the pulp are deposited, while the water therefrom runs through the screen, its supporting-frame, and the perforations of the heads E into the extension-case B', from which it is withdrawn through the opening *e*.

Covering each end of the cylinder, and attached to the movable hands F and F', are the cylindrical telescopic sliding covers *d d'*, which, together with the heads F and F', are made longitudinally adjustable upon the shaft D by means of the rack-bars *e* and *e'*, the first of which is attached to the sliding head F and the last to the head F'. These rack-bars engage with pinions *h h*, revolving in the guide G, secured to the shaft D about mid-length of the cylinder.

It is evident that this arrangement of rack-bars and pinions will cause the heads F and F' to have an equal movement toward or from the ends of the cylinder, causing the sliding covers *d d'* to approach and recede from each other, thus covering a greater or less portion of the cylinder, as may be desired, and consequently limiting the surface upon which the pulp-fiber is deposited. In order to produce this movement of the sliding covers without

interfering with the continuous rotation of the cylinder, the head F is provided with an annular flange, the inner edge of which projects so as to afford beneath it a bearing for the outer end of the carrier H, the inner end of which has a bearing in a groove surrounding the collar *f*, which forms a part of the head F adjacent to the shaft D. It will therefore be apparent that the head F can rotate freely without disturbing in any way the position of the carrier G. To this carrier is attached the screw I, extending outward and entering the nut J, which revolves in a suitable bearing, *k*, attached to the extension B. By rotating this nut J upon the screw I the carrier will move the head F, which, through the rack-bars and pinions, imparts a contrary movement to the head F', and of course causes the sliding covers *d* and *d'* to cover or uncover a portion of the cylinder as the nut J is turned to the right or left.

In order to prevent leakage and consequent loss of material through the space surrounding the cap F' and sides of case B, a packing is placed therein, which is constructed as follows: A stationary ring, K, having an outer diameter nearly equal to that of the case B and an inner diameter something less than that of the cylinder, is provided with the groove *l*, in which is placed a metallic ring, *m*, the periphery of which fits the internal diameter of the annular projection *n* of the head F', and to which it is securely fastened by screws or other suitable means, as is clearly shown in Fig. 6 of the drawings. By this arrangement it will be seen that the cylinder, together with the head F', may rotate freely without imparting such rotation to the ring K, which is held in place and prevented from revolving with the cylinder by means of the projecting lugs *o o*, which protrude from opposite sides of the ring and rest upon the upper edges of the case B', thus allowing it to have a free longitudinal movement, but preventing its rotation. To insure a perfectly-tight joint between the sides of the case and the ring K, a strip of rubber or other suitable packing, *p*, is inserted in the groove formed by the flange *r* of the ring and shoulder *s* of the head, and may be an annulus completely filling the groove all around, or simply a strip with its ends secured to the lugs *o o*, as shown.

If desired, bands *tt*, of rubber or other suitable material, may be placed over the sliding covers, as shown in Figs. 1 and 2 of the drawings.

In order to determine the width of the pa-

per manufactured, or to set the machine for producing paper of a certain width without the trouble of measuring the uncovered length of the cylinder, an index or pointer, *v*, may be attached to one of the movable heads, which, in connection with a graduated scale, *w*, upon one of the extensions which receive the ends of the cylinder, enable the operator to at once determine, by an inspection of the position of the pointer upon the scale, the length of cylinder uncovered. As the covers at both ends of the cylinder move simultaneously, it will be evident that the distance between the marks upon the scale will be doubled on the cylinder, rendering it necessary to make the figures on the scale count two inches for each inch of movement by the pointer.

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

1. In a cylinder paper-making machine, the combination, with the cylinder, of movable covers and means for adjusting the same upon the cylinder without stopping its rotation, substantially as set forth.

2. The combination, in a cylinder paper-making machine, of the rotating cylinder, the non-rotating ring, its packing, and the case attached to the end of the vat, within which the rings slide, all arranged substantially as and for the purpose set forth.

3. In a paper-making machine, the combination of a rotating cylinder provided with sliding covers at each end, the cover-receiving cases attached to the pulp-vat, and means for preventing leakage of fiber from the vat, all arranged and operating substantially as described.

4. The cylinder C, sliding heads F and F', racks *e* and *e'*, and pinions *h*, in combination with the carrier H, screw I, and nut J, all arranged substantially as and for the purpose described.

5. The ring K, provided with lugs *o o*, in combination with packing *p* and heads F', as and for the purpose shown and described.

6. The semi-cylindrical cases B and B', provided with the bearings for the shaft D, in combination with the pulp-vat A, all arranged in the manner and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HARFIELD HENRY.

Witnesses:

LUCIAN R. LAMSON,  
HENRY H. BLACK.