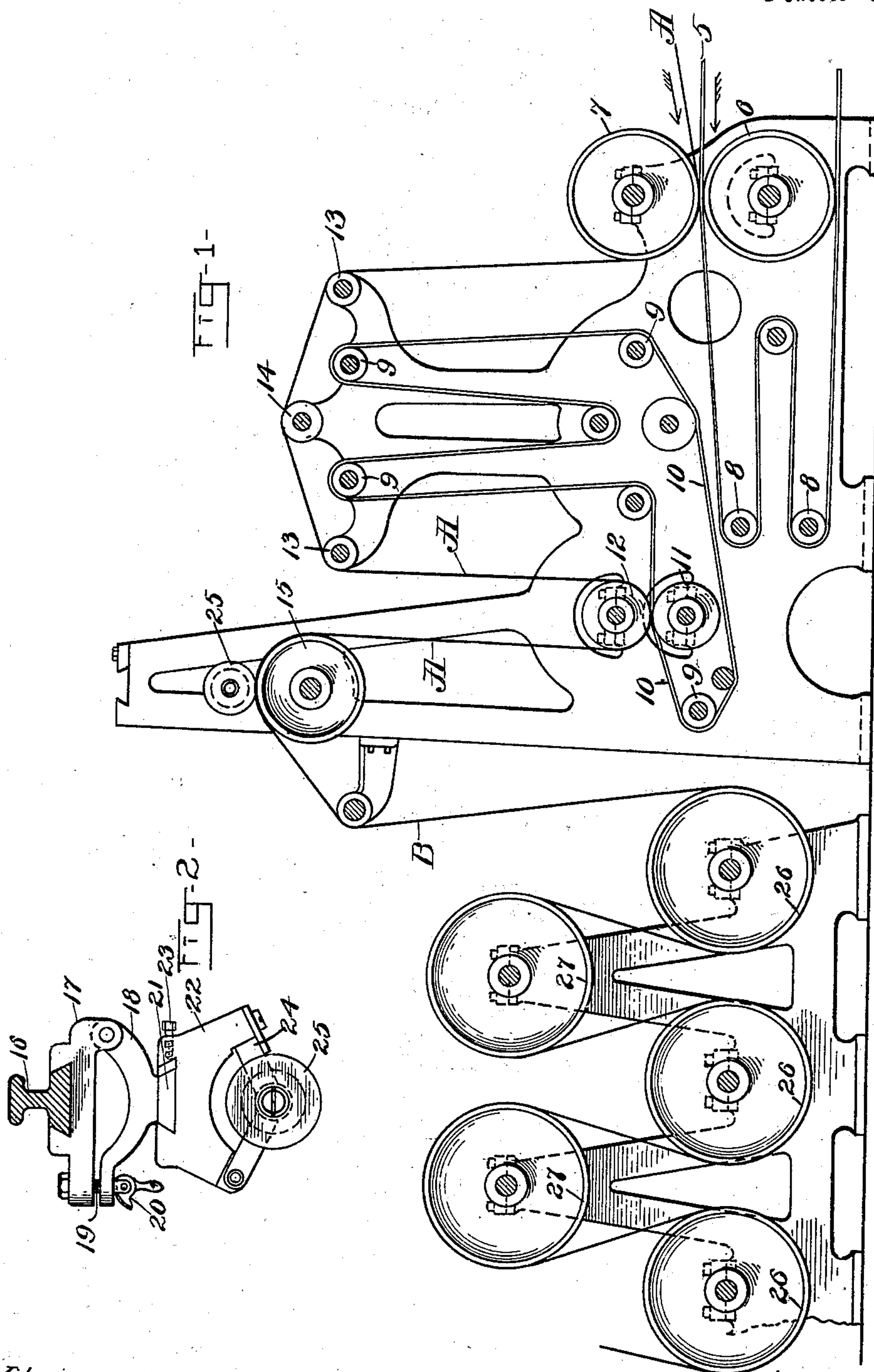


J. B. HANSCOM.
PROCESS OF MAKING PAPER.

(Application filed Sept. 23, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

Harry C. Giffert
C. S. Miller.

Inventor:

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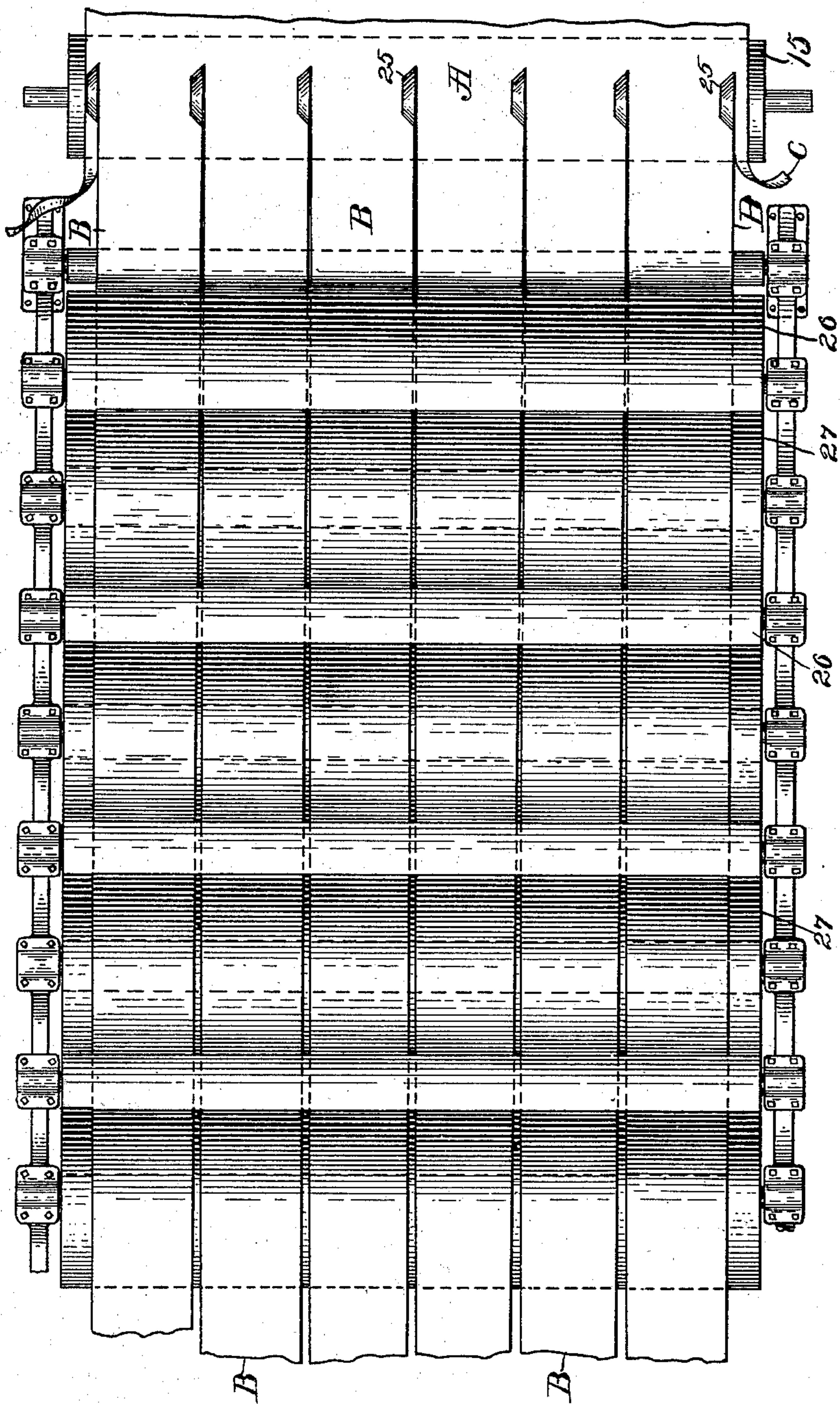


FIG-3-

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UNITED STATES PATENT OFFICE.

JOHN B. HANSCOM, OF EAST WALPOLE, MASSACHUSETTS, ASSIGNOR TO
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PROCESS OF MAKING PAPER.

SPECIFICATION forming part of Letters Patent No. 702,205, dated June 10, 1902.

Application filed September 23, 1901. Serial No. 76,157. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN B. HANSCOM, a citizen of the United States, residing at East Walpole, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Processes of Making Paper, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has reference to improvements in the process of making paper.

The invention has particular reference to improvements in that class of paper ordinarily manufactured as a web and subdivided
15 into strips or sheets.

One object of the invention is to so improve the process of paper-making that the density and expansibility of the strips or sheets of paper cut from the web shall be
20 equal.

Another object of the invention is to equalize the shrinkage of all parts of the paper.

Another object of the invention is to so subdivide the paper web at a particular period in the process of manufacture that this
25 equalization of shrinkage is effected in the original machine.

The invention consists in the process of paper manufacture which consists in preparing a web of paper, subdividing such web into
30 strips, and drying the strips.

The invention also consists in subdividing a web of paper into strips prior to their subsection to the drying and shrinking action of
35 the drying-cylinders.

The invention also consists in such other improvements in the process or mechanism as shall hereinafter be more fully described, and pointed out in the claims.

40 Figure 1 represents a side elevation of portions of the well-known paper-making machinery, illustrating the new process and indicating the course of the paper as it passes in the form of a web from the wet apron to
45 the dry apron through the last squeeze-rolls to the cutter and thence as strips between the drying-cylinders. Fig. 2 represents an elevation of a cutter adapted for use in carrying out this process. Fig. 3 represents a
50 plan of portions of the machine, showing the paper passing therethrough and illustrating

the improved process of manufacture and the independent shrinkage of the strips.

Similar characters of reference designate corresponding parts throughout. 55

In the drawings, 5 indicates the wet apron of any well-known paper-making machine adapted to receive the web of paper in its preliminary stages of manufacture and convey such web through any suitable compressing or consolidating devices, such as the rolls 6 and 7, this blanket 5 being usually in the form of an endless belt mounted on guide-rolls, as 8 8, journaled in bearings provided in the machine, the rolls 6 and 7 being also
60 rotatably mounted and being furnished with driving means of well-known character. Also journaled in bearings provided in the machine is a series of guide-rolls, as 9 9, on which the dry blanket 10 is mounted, this
65 blanket 10 being driven by contact with the rolls 11 and 12, mounted and driven in the usual manner, while above the rolls 9 9 are the guide-rolls 13 13 and 14 for guiding the web of paper above this portion of the blanket. 75

At the upper part of the machine is journaled the roll 15, which is or may be furnished with driving means, and above this roll 15 is mounted the bar 16, on the lower flange of which is adjustable a series of plates 17, Fig. 80
2, to one end of each of which is pivoted a yoke, as 18, the other end of each of said plates 17 being furnished with the pendent bolt 19, working through a perforation in the free end of the yoke 18 and being furnished with a pivoted lifting-cam 20, working
85 against such free end of the yoke 18 to lift the same when desired. On the flange 21 of the yoke 18 is clamped the plate 22 by means of the bolt 23, and from the lower ends of this
90 plate 22 extend the arms of the angle-frame 24, in which is rotatably mounted a cutter-disk, as 25.

Toward the finishing end of the machine and also suitably mounted and driven is a series of drying-cylinders 26 26 and 27 27, the usual provision being made for supplying these cylinders with heat by the admission of steam therein or otherwise. 95

It has heretofore been customary to carry the web of paper supplied to the apron 5
100 through the pressure-rolls 6 and 7 and then

lead the same over the guide-rolls 13 13 and 14 to contact with the blanket 10 as it passed between the rolls 11 and 12. Thence the web was directed over the guide-rolls to the cylinders 26 and 27, which, acting on both sides of the paper, served to dry and to an extent finish the same. After passing over the cylinders the web in its dried state was subdivided into strips convenient for use and wound into rolls. As in passing over the cylinders the moisture is evaporated from the web, the material shrinks and contracts in width. The edge portions being more free for movement than the central portion are drawn toward the center, while the central portion, drawing equally from both edges, becomes more dense and compact than the edge portions, and it has been found that when this thus shrunk web was cut into strips those strips from the central portions were far less expansible than the strips cut from the edges of the web and that while more dense in structure they possessed less tensile strength to withstand suddenly-exerted pressure, this being particularly noticeable when the paper was used in the construction of articles of a tubular form which were designed to be subjected to pressure of various kinds, the articles made from the material of the edge portions of the web yielding under the expansive pressure and contracting when the pressure was reduced, while the articles made from the material of the central portion of web would burst under the sudden pressure.

In carrying this invention into practice it is my object to so equalize the shrinkage of all portions of the web that the density and expansibility of the strips cut therefrom shall be similar, and to attain this object I introduce into the machine a cutter mechanism located at a position intermediate the point where the least pressure is exerted on the web and the first of the drying-cylinders, as 26. This cutter mechanism may be of any well-known construction designed to cut the web into strips and preferably works in relation to a roll, as 15, or other suitable guide, over which the web is led from the last squeeze-rolls, as 11 and 12. The web A, passing as heretofore with the blanket 5 between the rolls 5 and 6, is then directed over guides, as the rolls 13 13 and 14, to contact with the dry blanket 10 between the rolls 11 and 12 and over the roll or guide 15, where it is cut into strips B B by the cutter 25, and the rough edge C is cut away. After the web A has thus been divided into strips B B by the cutters these strips pass under and over the respective cylinders 26 and 27 and are subjected to the drying action thereof to evaporate the last moisture and to be in a degree finished as to surface. In this subjection to the drying action of the cylinders shrinkage of the strips B B

is caused; but this shrinkage is equalized by the independence of the strips, whereby the edges of each strip are drawn or contracted toward the center of the strip, as shown in Fig. 3 of the drawings, so that the density and expansibility of the strips are equal when they finally pass from the cylinders to be packed in rolls or otherwise for future use. When the web is formed with alternating thin and thicker portions across the same and is designed to be divided along the thinner portions, this improvement is particularly noticeable, for whereas by the ordinary method in drying the web as a whole and subsequently cutting the strips therefrom it has been found that the thin edges of the strips assumed a crinkled or slightly-ruffled appearance, detrimental to subsequent mechanical working, by this improved process the thin edges of the strips are free to accommodate themselves to the longitudinal shrinkage of the thicker portions and shrink in a proportionate degree without distortion.

In Fig. 1 I have shown the web A as separated from the blanket 5 to indicate a portion thereof beyond the rolls 6 and 7 and to distinguish the same from the blanket; but it is to be understood that this portion of the web rests against the blanket in actual practice.

I do not restrict myself to the exact construction of the cutter herein shown nor to its exact location, the true intent of the invention being to cut the unfinished web into strips prior to subjection of the material to shrinkage.

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

1. In the process of paper-making, dividing a web of unfinished paper into longitudinal strips prior to drying the same.

2. In the process of paper-making taking a web of paper from the last squeeze-rolls, dividing such web into longitudinal strips and subjecting such strips to the action of heated surfaces or cylinders.

3. In the process of paper-making that intermediate step in a continuous process which consists in cutting an unfinished web into strips and subjecting said strips simultaneously to a drying medium.

4. In the process of paper-making dividing a web of paper containing moisture into a series of longitudinal strips and subsequently expelling the moisture from the strips simultaneously.

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

JOHN B. HANSCOM.

Witnesses:

HENRI E. DAVENPORT,
FRANK W. FILLMORE.