

F. P. PRIEM.
MACHINE FOR PRODUCING NARROW PAPER STRIPS.
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1,392,218.

Patented Sept. 27, 1921.

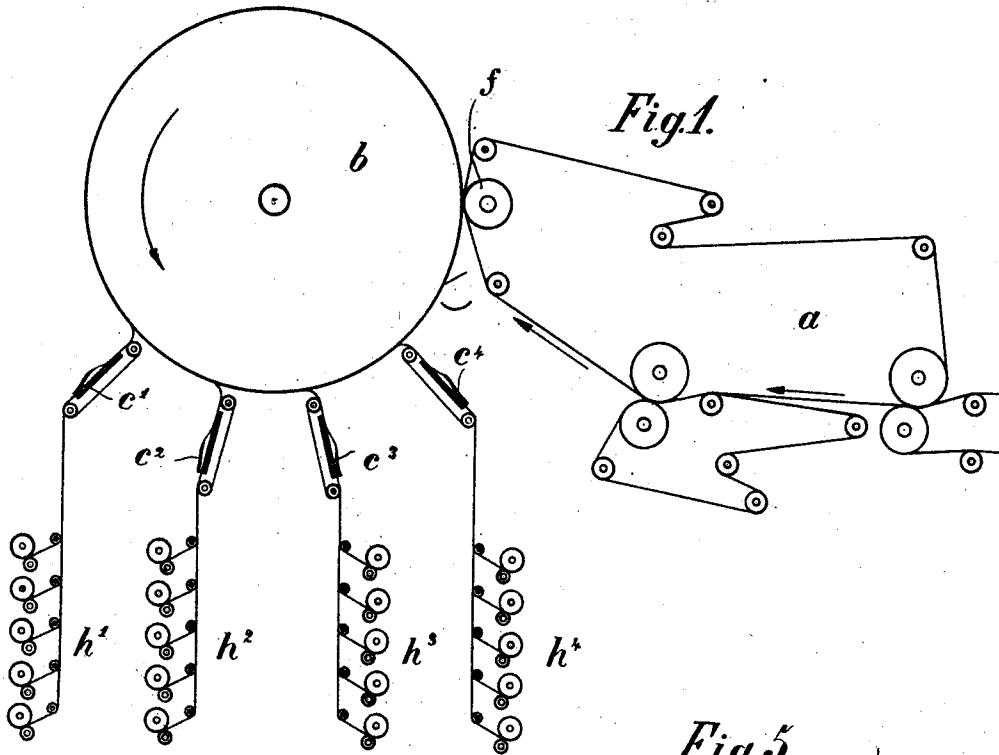


Fig. 1.

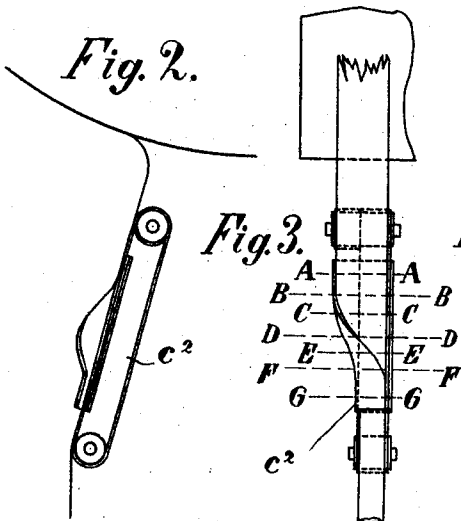


Fig. 2.

Fig. 3.

Fig. 4.

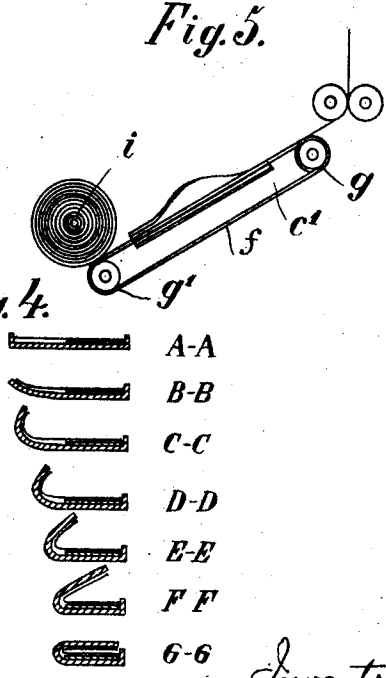


Fig. 5.

Inventor.
Friedrich Paul Priem.
By *[Signature]* atty.

UNITED STATES PATENT OFFICE.

FRIEDRICH PAUL PRIEM, OF HEIDENHEIM, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CHEMICAL FOUNDATION, INC., A CORPORATION OF DELAWARE.

MACHINE FOR PRODUCING NARROW PAPER STRIPS.

1,392,218.

Specification of Letters Patent. Patented Sept. 27, 1921.

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To all whom it may concern:

Be it known that I, FRIEDRICH PAUL PRIEM, subject of Germany, residing at Heidenheim a. d. Brenz, Germany, have invented a certain new and useful Machine for Producing Narrow Paper Strips, for which I have filed applications in Germany, Mar. 14, 1918; Austria, Nov. 2, 1918; Finland, May 29, 1918; Denmark, Nov. 5, 1918; Holland, Nov. 9, 1918; Hungary, Nov. 5, 1918; Sweden, Oct. 28, 1918; Norway, Nov. 16, 1918; Switzerland, Oct. 26, 1918; Belgium, Dec. 2, 1918, and of which the following is a specification.

Paper strips produced on paper machines were usually narrowed by rounding or crowding them laterally, before being coiled up on spools, rolls or the like, by the aid of special devices, in which the strips pass between two moving surfaces, which besides having a forward motion have a lateral to and fro movement against one another. Such a device is described in the United States Patent 826859, where these surfaces are cylindrical and are formed by rubber mantels surrounding rotating rollers. Similar apparatus is known, in which the working surfaces are flat and are formed by endless belts of rubber.

Rubber is a comparatively expensive material and not any proper substitute which would satisfactorily answer the desired purpose can be found. On the other hand it is necessary that the paper strips be prepared by rounding or narrowing before entering the operations for the production of yarn, twine, cord or the like.

According to the present invention the previous devices for narrowing the fiber strips are replaced by a folding apparatus through which the strips produced in the machine are passed and in which they are folded longitudinally. Such folding means may be so constructed that the strips are folded flat once, or twice, or in tubular form.

In the accompanying drawings there is shown, diagrammatically, an illustrative and preferred embodiment of a machine in accordance with my invention and by means of which the process thereof may be carried out, and therein—

Figure 1 shows, diagrammatically, a portion of a web paper machine in combination with a plurality of folding appliances;

Fig. 2 shows a folding device in longitudinal section for folding strips once in longitudinal direction; and Fig. 3 shows the folding device in transverse section;

Fig. 4 illustrates sections of the folding device; and

Fig. 5 is a longitudinal view of a modification.

The machine *a* is provided with a delivery cylinder *b* for distributing the strips *b*¹, and in connection with the cylinder there are a number of folding devices *c*¹, *c*², *c*³, *c*⁴, which fold the strips *b*¹ delivered by the cylinder *b*. These folding devices consist of a plate *d* having upturned edges *e* for guiding the strips *b*¹. On one side of the plate *d* the edge *e*¹ is gradually bent upward and turned over so that this device finally forms a doubled up guide, distinctly shown in the cross section G—G, Fig. 4. The cross sections A—A, B—B, C—C, D—D, E—E, F—F and G—G illustrate the manner in which the plate *d* is bent to give the folder a form, similar to a flattened hopper. Through this hopper the strips are guided by means of an endless belt *f*, running over the rollers *g*, *g*¹. Preferably the roller *g* has double the width of the roller *g*¹. The endless belt *f* has about the width of the strips *b*¹, and covers only one half of the roller *g*. The other half of the roller *g* is covered by the mantel *g*², which has the same thickness as the endless belt *f* and is made of the same material, which may be felt, leather, cloth, rubber or the like. If desired, however, the mantel *g*² may be omitted. By rotating the rollers *g* or *g*¹ the strips *b*¹ will be advanced by means of the belt *f*, to the hopper *e* and thereby folded lengthwise. The strips *b*¹ thus doubled up by the folding devices *c*¹, *c*², *c*³, *c*⁴ are collected or coiled up by the coiling devices *h*¹, *h*², *h*³, *h*⁴ in any known manner.

If desired the coiling devices may be constructed to form an integral part of the folding apparatus. By way of example such a combination is shown in Fig. 5, in which a coiling or spooling roll *i* rests on the lower roller *g*¹ carrying the endless belt *f*, this roller together with the roll *i* comprise the coiling device.

I claim:

1. Machine for producing narrow paper strips comprising the combination of strip

producing means and folding means for longitudinally folding the strips produced by the first named means.

2. Machine for producing narrow paper strips comprising the combination of strip producing means and collecting means, and folding means for longitudinally folding the strips, said folding means being placed intermediate of the strip producing means and the collecting means.

3. A machine for producing narrow paper strips which comprises a combination of strip producing means, strip distributing means, folded-strip collecting means, and folding means for folding the strips longitudinally, said folding means being positioned intermediate of the strip producing means and the folded-strip collecting means.

4. A machine for producing narrow paper strips which comprises a combination of strip producing means, a cylindrical strip distributor, folding means for longitudinally folding the strips, and folded-strip collecting means.

5. A machine for producing narrow paper strips which comprises a combination of

strip producing means, a cylindrical strip distributor, a folder for longitudinally folding the strips consisting of an endless belt above which is positioned a former consisting of a metallic plate which is gradually upset and folded over proceeding from the receiving end toward the discharging end of said former, and folded-strip collecting means.

6. A machine for producing narrow paper strips which comprises a combination of strip producing means, a cylindrical strip distributor, a folder for longitudinally folding the strips consisting of an endless belt above which is positioned a former consisting of a metallic plate which is gradually upset and folded over proceeding from the receiving end toward the discharging end of said former, folded-strip collecting means, and coiling devices for collecting the folded strips.

FRIEDRICH PAUL PRIEM.

Witnesses:

ROSWORD MAIER,
PAUL REICH.