(No Model.)

C. A. DEAN & F. H. ROBIE.

MACHINE FOR ORNAMENTING PAPER.

No. 410,155. Patented Sept. 3, 1889.

Fig. 1.

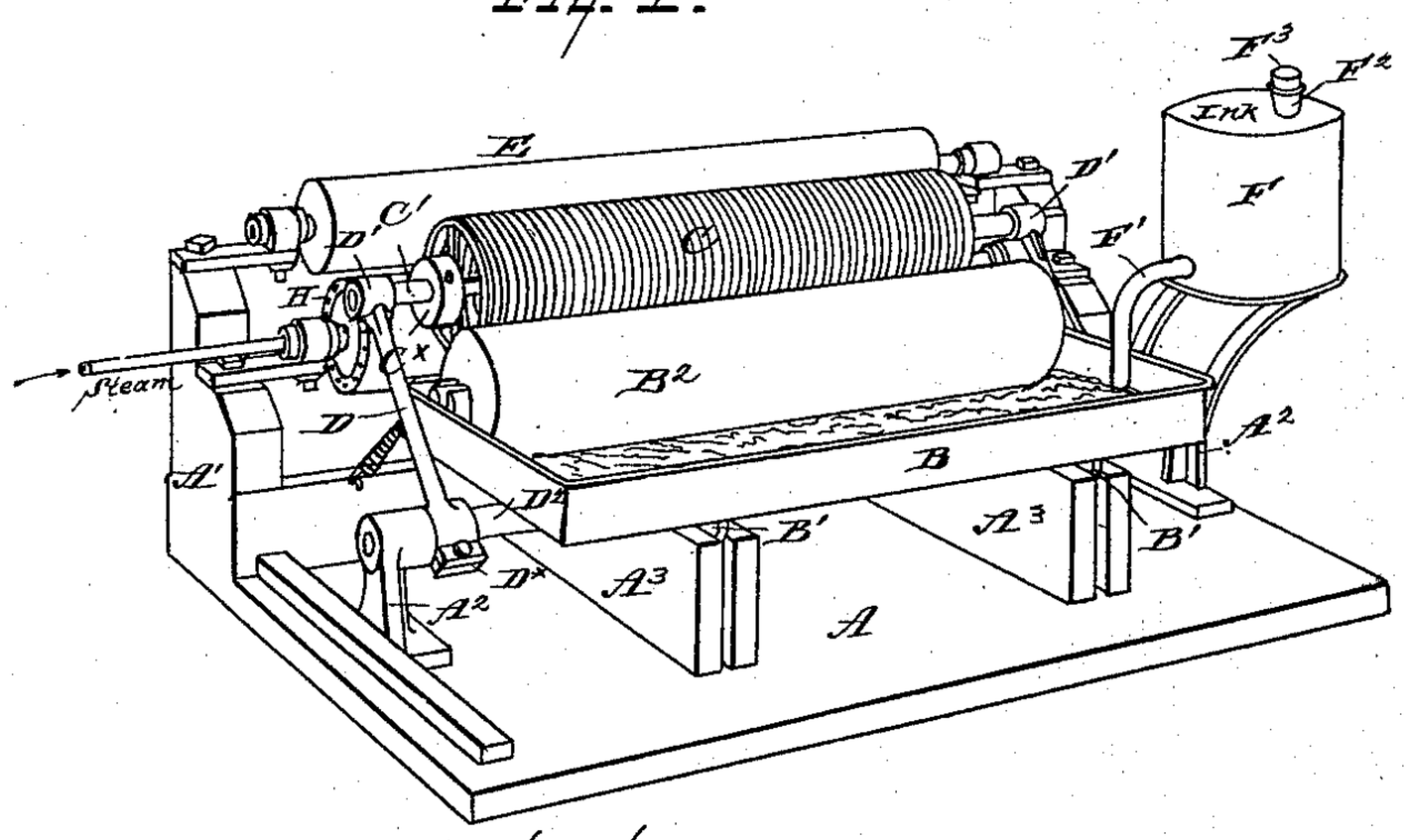


Fig. 3.

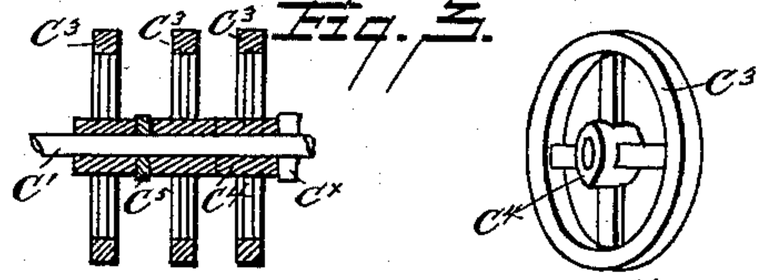
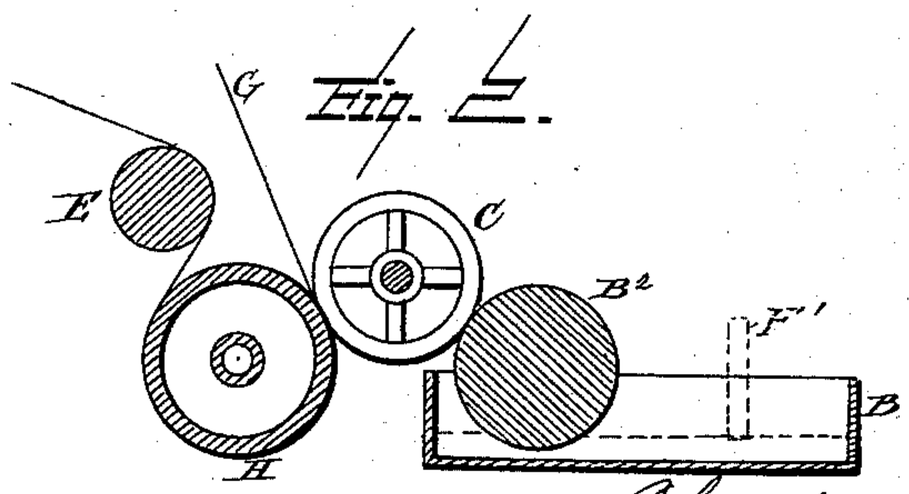


Fig. 2.



Witnesses:
L. C. Hills.
W. S. Duvall

Inventors:
Charles A. Dean and
Frederic H. Robie.
E. B. Stocking Attorney.

UNITED STATES PATENT OFFICE.

CHARLES A. DEAN AND FREDERIC H. ROBIE, OF BOSTON, MASSACHUSETTS.

MACHINE FOR ORNAMENTING PAPER.

SPECIFICATION forming part of Letters Patent No. 410,155, dated September 3, 1889.

Application filed July 21, 1888. Serial No. 280,678. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. DEAN and FREDERIC H. ROBIE, citizens of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Machines for Ornamenting Paper, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to mechanism for ornamenting paper, either in plain or ornamented straight, zigzag, or curved and parallel stripes.

Among the objects of the invention are to provide a printing-roll which can be adapted for printing webs of paper of varying widths.

Other objects and advantages of the invention will hereinafter appear, and the novel features of the same will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective of a machine embodying our invention. Fig. 2 is a diagram in side elevation, partly in section; and Fig. 3, a detail in cross-section of a portion of the printing-roll.

Like letters of reference indicate like parts in all the figures.

A represents a base or foundation, from which risers A′ A^2 A^3 project to support the operative parts of the machine. The risers A^3 are preferably grooved upon their upper edges for the reception of ribs B′ of the ink-well B, in order that said well may be moved upon the risers toward and away from the printing-roll of the machine.

Within the well B there is mounted for rotation an inking-roll B^2, which is preferably made of rubber, felt, or other elastic yielding and ink taking or absorbing material.

C represents the printing-roll of the machine, and its shaft C′ is mounted in bearings D′, formed in the ends of rock-arms D, clamped to a rock-shaft D^2, mounted in the risers A^2, the object of thus mounting the roll C being to permit of its being lifted upward and freed from the impression-roll of the machine and over in rear of the ink-well, in order that the length of the printing-roll may be varied in a manner hereinafter described, and for other purposes. The printing-roll is made up of a series of printing-wheels C^2, preferably of metal which will not corrode, although any desired material may be used in their construction. Each of the wheels consists of a rim C^3, the face or periphery of which serves as a printing-surface, and as each wheel of the series is substantially an exact duplicate of the others the general outline of the rim may be varied laterally to produce impressions other than straight parallel stripes. So, also, may the surface or periphery of the wheels be adapted to print ornamental designs. Each of the wheels is provided with a hub C^4 of such dimensions that when several wheels are placed upon the shaft C′ they will be properly spaced so as to print stripes at a uniform and desired distance from each other. Washers C^5 may be interposed between the wheels to widen the spaces between the stripes which they shall print.

As thus far described, it is apparent that in order to adapt the printing-roll C for the ornamentation of webs of varying widths the number of wheels may be increased or decreased as circumstances may require.

The impression-roll H is hollow and adapted to be supplied with steam in order to quickly dry the ink upon the paper.

E represents a guide-roll.

Supported in any suitable manner, either as shown on the well B or upon the base A, or otherwise, is a pneumatic ink-fountain F, having a discharge-pipe F′, which is projected into the well to a point such a distance from the bottom thereof as will maintain a desired supply of ink therein.

F^2 represents the supply-port of the fountain, and is adapted to be closed by a plug F^3, in order to render the fountain air-tight, so that the ink will flow from the fountain to the well only when the supply in the well is reduced so that the upper surface of the ink therein is below the lower end of the pipe F′. In this manner a uniform quantity of ink is maintained in the well, and therefore a uniform quantity is taken up by the roll B^2 and conducted to the printing-roll.

Certain features of construction are herein shown and described but not claimed, as they form the subject-matter of an independent application, Serial No. 280,676, filed herewith.

Having described the construction, the op-

eration has therefore been made apparent, it being substantially as follows: A web G of paper is passed, it may be as shown or in any other desired manner, between the printing and impression rolls, and the guide-roll E is arranged so as to hold the web in contact with the combined drying and impression roll for a greater or less distance, in order that the ink may be dried as soon as or immediately after it is applied to the web. From the guide-roll the web is conducted to any suitable mechanism for rewinding the same, or to any suitable machine for manipulating the paper for any desired purpose.

To remove either the rolls C bodily, or any of the wheels C^2 from the shaft C', a collar $C^\times$ on the shaft is first loosened, and then the clamp-coupling $D^\times$ of the arm D is loosened, so that said arm may be moved toward the end of the shaft D^2, thus removing the shaft C' from the coupling D'. Now, by removing the collar, wheels C^2 may be removed or replaced upon the shaft C'.

Having described our invention and its operation, what we claim is—

1. The combination, with the printing-roll consisting of a shaft and a series of removable wheels and means for holding said wheels to their shaft, of rock-arms carrying bearings for said shaft, substantially as and for the purpose specified.

2. The combination, with the impression-roll and the printing-roll consisting of a shaft and a series of removable wheels on said shaft, of the shaft D^2, parallel with the shaft of the printing-roll, the rock-arms detachably clamped to said shaft D^2, and provided at their ends with bearings in which the shaft of the printing-roll is journaled, and the collar $C^\times$ on the shaft of the printing-roll, substantially as and for the purpose specified.

3. In a machine of the class described, the combination of a flexible elastic ink-supplying roll, a printing-roll having its printing-surface variable as to length, and a steam-heated drying and impression roll, said printing-roll revolving in contact with both said ink-supplying and impression rolls, substantially as described.

4. In a machine of the class described, a flexible elastic ink-supplying roll, a steam-heated drying and impression roll, and a rigid printing-roller pivotally mounted between said rolls and in contact with both of them, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

CHAS. A. DEAN.
FREDERIC H. ROBIE.

Witnesses:
W. B. FRENCH,
ARTHUR P. FRENCH.