F. O. SCOTT.

WATERMARKING DEVICE.

APPLICATION FILED AUG. 17, 1916.

1,225,871.

Patented May 15, 1917.

2 SHEETS—SHEET 1.

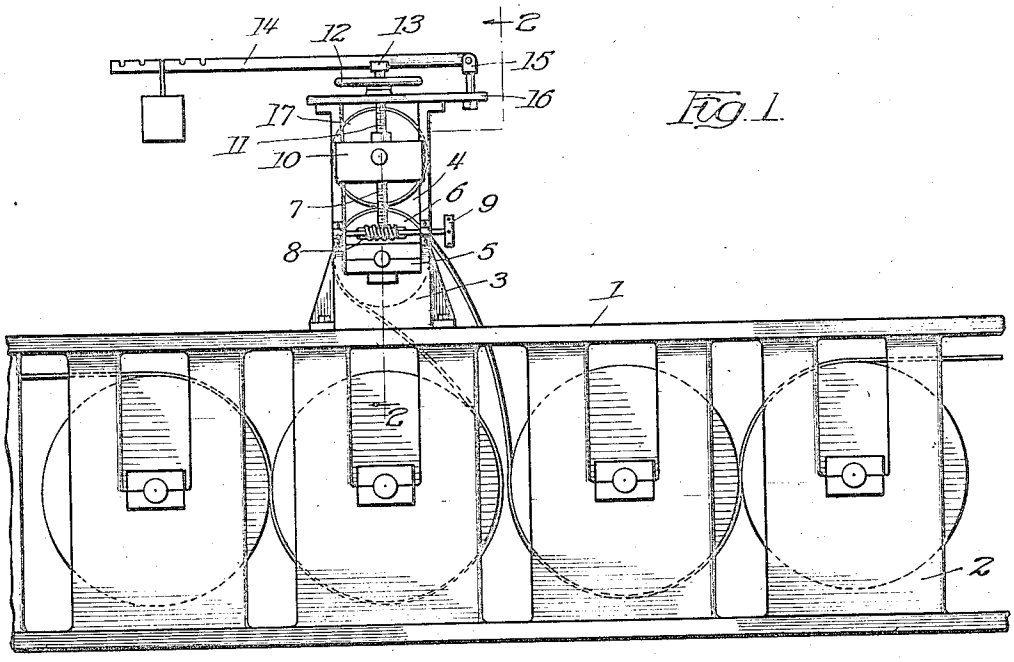
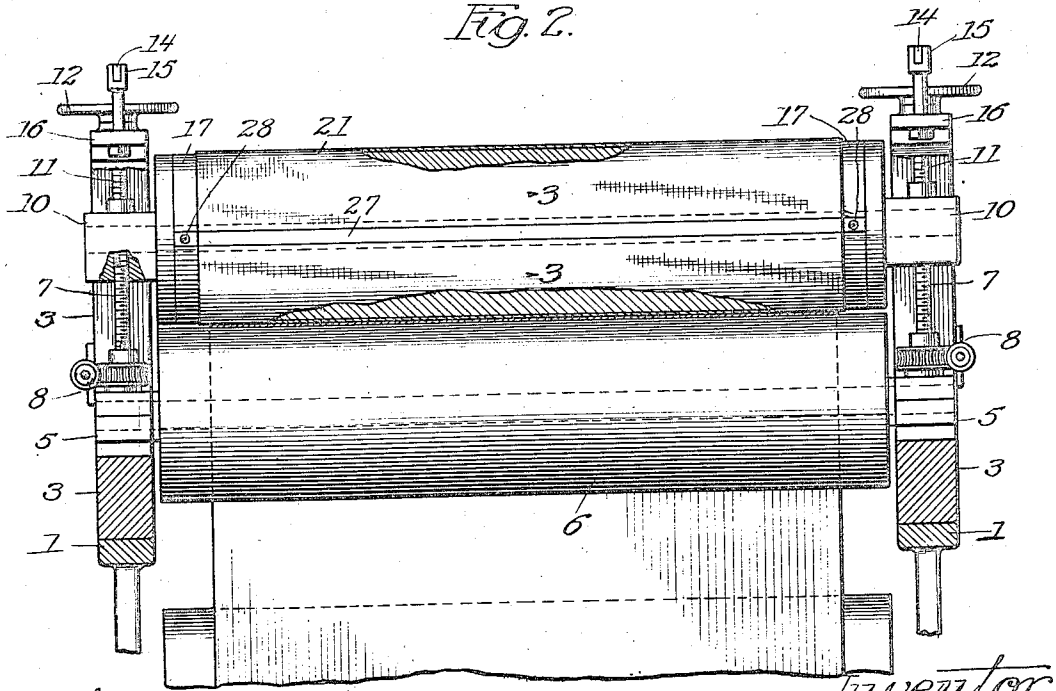


Fig. 1.

Fig. 2.



Witnesses:
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2 SHEETS—SHEET 2.

Fig. 3

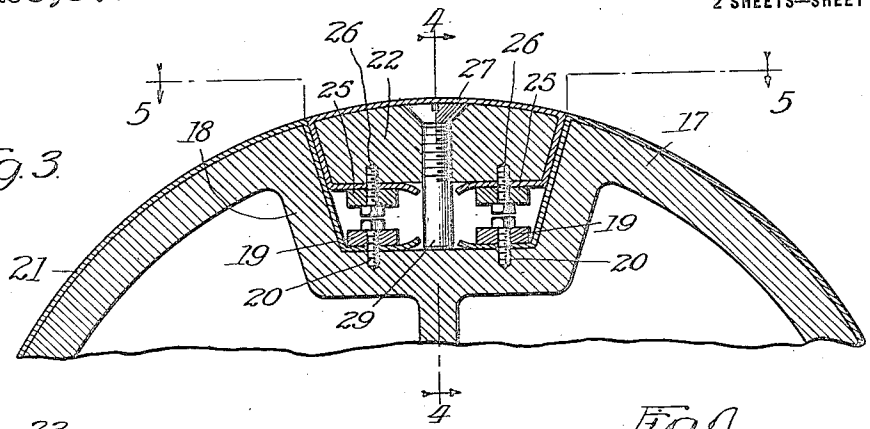


Fig. 4

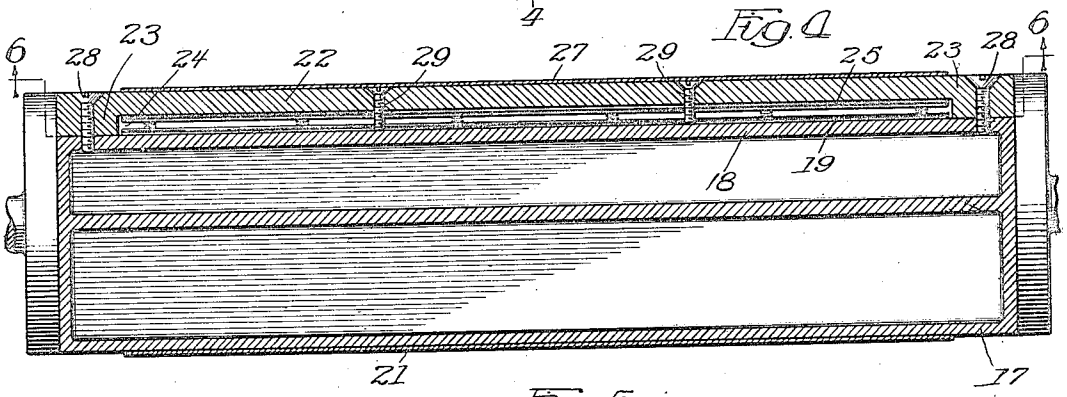


Fig. 5.

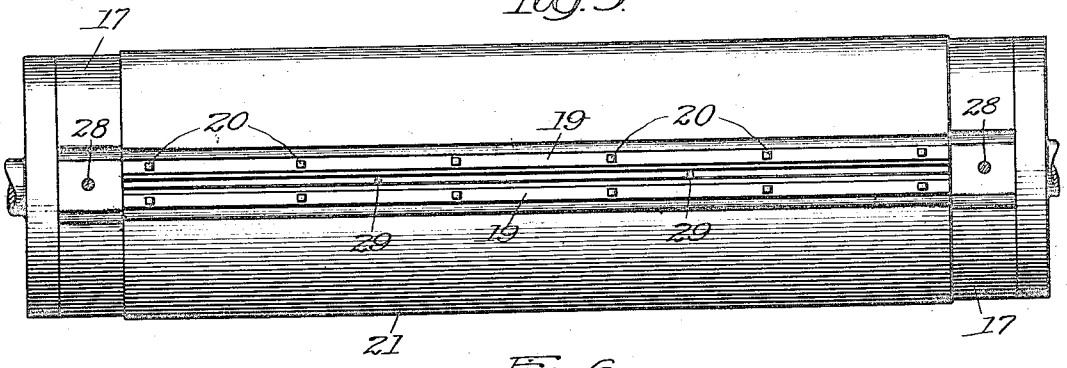
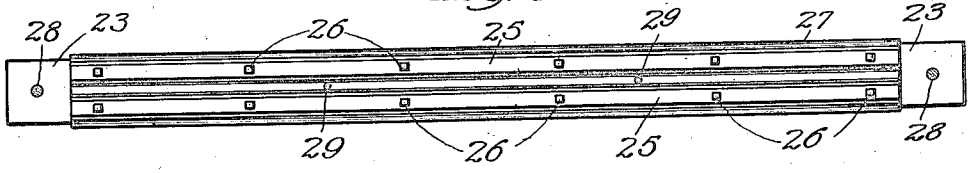


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK O. SCOTT, OF MITTINEAGUE, MASSACHUSETTS, ASSIGNOR TO SOUTHWORTH COMPANY, OF MITTINEAGUE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WATERMARKING DEVICE.

1,225,871. Specification of Letters Patent. Patented May 15, 1917.

Application filed August 17, 1916. Serial No. 115,354.

To all whom it may concern:

Be it known that I, FRANK O. SCOTT, a citizen of the United States, residing at Mittineague, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Watermarking Devices, of which the following is a specification.

This invention relates to an apparatus for marking paper, and particularly to a method and apparatus whereby the entire surface of the paper may be treated so as to give any desired finish or texture thereto.

It is well known that writing and other fancy papers may be often rendered much more attractive by the impression thereupon of a particular kind of surface or of a pattern which may cover the entire surface of the paper, giving it a particular desired appearance.

In so far as I am aware, it has not been possible, except in a very limited range of decorative effects, to treat the entire surface of paper for the reason that when the marking is done with the dandy roll, (which has been the only hitherto successful method), the impression put in the paper by the marking device becomes blotched and blurred in the subsequent operations of the paper making machine and does not show up in the finished paper a clear mark.

It has been proposed heretofore to put small marks upon paper by special design plates and such practices have been effected. My invention contemplates not merely the impressing of a certain definite particular mark upon the paper by a special design plate but the treatment of the entire surface of the paper in a fashion such as to impress any pattern whatever desired upon the paper in a clear-cut, sharp, attractive fashion.

Another object of my invention is to employ fabrics either of wire or cloth having the surfaces desired to be imparted to the paper directly in the marking mechanism so that by simply covering a roll with such a fabric the pattern of the fabric may be impressed upon the paper in a clear-cut, sharp and distinct fashion.

In the drawings:—

Figure 1 is an elevation of the drying section of the paper making machine, driers being shown more or less diagrammatically.

Fig. 2 is a cross sectional end elevation of the paper making machine, showing my device applied thereto.

Fig. 3 is an enlarged detailed fragmentary sectional view of the special roll forming part of my invention.

Fig. 4 is an enlarged cross sectional view of the roll.

Fig. 5 is a top plan view of the marking roll, with a portion removed therefrom.

Fig. 6 is a top plan view of the removed portion.

1 represents the frame work of the paper making machine in which are drier drums 2 of customary form, about which the paper passes after it leaves the press rolls. Somewhere intermediate of the driers as shown, I mount a pair of standards 3, having cut away portions 4 therein. At the bottom of the cut away portions 4, rest the journal boxes 5 of the lower rolls 6. Abutting in a socket in the journal boxes 5 is a threaded rod 7, operable by a worm 8, controlled by the capstan 9, the top of the rod 7 being threaded into the bottom of the journal boxes 10 for the upper rolls. A shaft 11 is situated in sockets in the top of the journal boxes 10 and are threaded adjacent their upper ends, upon which the hand wheels 12 are mounted. Upon forks 13 at the top of shafts 11 rest the weighted arms 14 journaled in the brackets 15, mounted upon the cover plate 16, which covers over the cut away parts the portions of the standards 3, and through which the shafts 11 pass. By this means the upper rolls 17 may be brought to bear with any desired pressure against the lower rolls 6, the threaded shaft 7 and its worm control forming a very delicately adjustable stop or abutment to take the weight of the upper roll and that of the weighed lever construction shown so that by careful adjustment of the threaded shaft 7, just as much as desired of the weight of the weighted lever construction will be thrown upon the pressure roll, while at the same time this pressure roll will be prevented from being depressed, particularly more than a definite distance, by the posi-

tive stop effected by the third shaft 7. By this means the pressure roll 17 may be caused to float under accurately determinable and regulated pressure and to bear with resilient or heavy force against the backing roll 6, the degree of pressure being absolutely controllable, so that it may be changed for different thicknesses and different kinds of paper.

I will now describe the pressure roll 17, which permits the entire effective surface of this roll to be covered with the fabric, the impression of which it is desired to make upon the paper. The roll 17 comprises a metallic shell, having a depressed section 18 therein extending almost the entire length of the roll. In the bottom of the depressed section 18 are a pair of clamping strips 19, which may be fastened by bolts 20 screwed into the bottom of the depressed portion. By means of this clamping strip, the fabric 21 may be wrapped almost the entire distance around the roll and clamped firmly at both its ends so as to be tightly stretched about and cover all of the roll except that represented by the depressed or cut away portion. I provide a sector 22, having portions 23 at its ends large enough to entirely fill up the depression 18 but cut under intermediate its ends as indicated at 24. This is to accommodate the clamping strips 19 and similarly situated clamping strips 25 on the end surface of the sector 22 and screwed thereto by bolts 26. A strip of fabric 27 is tightly stretched about the sector 22 and clamped by means of the clamps 26. Thus, when the sector 22 is put in place, the entire surface of the roll will be covered by a fabric. The sector 22 is secured in position by screws 28 passing through its full end portions, and the pressure intermediate the ends of the sector 28 is taken up by abutting screws 29 which bear against the bottom of the depressed portion 18 and prevent the sector from sagging at its middle.

In operation, any desired fabric is put upon the upper or pressure roll in the manner just explained so as to entirely cover the same. To obtain the clearest and best results, a wire fabric is employed, and the use of such a fabric for the purpose and in the manner herein disclosed is new and an important part of the invention. Where large runs of the same pattern are to be made, the wire fabric may be specially made therefor and will last indefinitely. In the operation of the paper making machine, a paper which has been partially but not completely dried is passed between the two rolls so as to be subjected to the heavy but controllable and resilient pressure of the rolls while it is in a condition in which the body of the paper is soft and damp but a thin tough skin has been made upon its surface by the action of one or more of the drier drums. By this means, the paper will be impressed by the fabric on the pressure roll and the entire surface of the paper covered with the desired pattern, which is immediately baked in and rendered permanent by the remainder of the drier drums.

Having now described my invention, I claim:—

1. In a paper making machine, a plurality of drier drums, a hard backing roll located intermediate the drier drums, a pressure roll adapted to bear with a heavy pressure against said backing roll, a fabric covering over the pressure roll, said covering comprising two independent pieces of fabric, each covering a portion of the roll.

2. In a paper making machine, a plurality of drier drums, a hard backing roll located intermediate the drier drums, a pressure roll adapted to bear against the backing roll, said pressure roll comprising an incomplete roll and a section adapted to complete the same, each covered with an impression producing fabric.

3. In a paper making machine, a plurality of drier drums, a pressure roll comprising a roll having a depressed portion longitudinally thereof, cleats at the base of said depressed portion to engage and clamp fabric, a sector for filling said depressed portion, means to cover the outer side of said sector with fabric, substantially as described.

4. In apparatus of the class described, a pressure roll having a depressed portion longitudinally arranged therein and a sector for filling said depressed portion, the underside of said sector being cut away along a portion of its length, securing devices passing through the uncut away portion of the sector into the roll to secure the sector thereto.

5. In apparatus of the class described, a pressure roll having a depressed portion longitudinally arranged therein and a sector for filling said depressed portion, the underside of said sector being cut away along a portion of its length, securing devices passing through the uncut away portion of the sector into the roll to secure the sector thereto, and abutting devices extending into the space between the cut away portion of the sector and the roll to take the pressure of the roll.

6. In apparatus of the class described, a pressure roll having a depressed roller portion therein, a filler for said depressed portion, fabric securing devices on said roll and said filler, all so constructed and arranged that the entire periphery of the roll may be covered with fabric when the filler and roll are assembled, in combination with said fabric.

7. In apparatus of the class described, a

pressure roll having a depressed portion, a filler for said depressed portion, means to secure the filler in position and other means to convey the pressure upon the filler to the pressure roll, a fabric impression device completely covering the periphery of said roll and adapted to indent paper in the course of its manufacture.

In witness whereof, I hereunto subscribe my name to this specification in the presence of two witnesses.

FRANK O. SCOTT.

Witnesses:
MELVIN D. SOUTHWORTH,
EDWARD SOUTHWORTH.