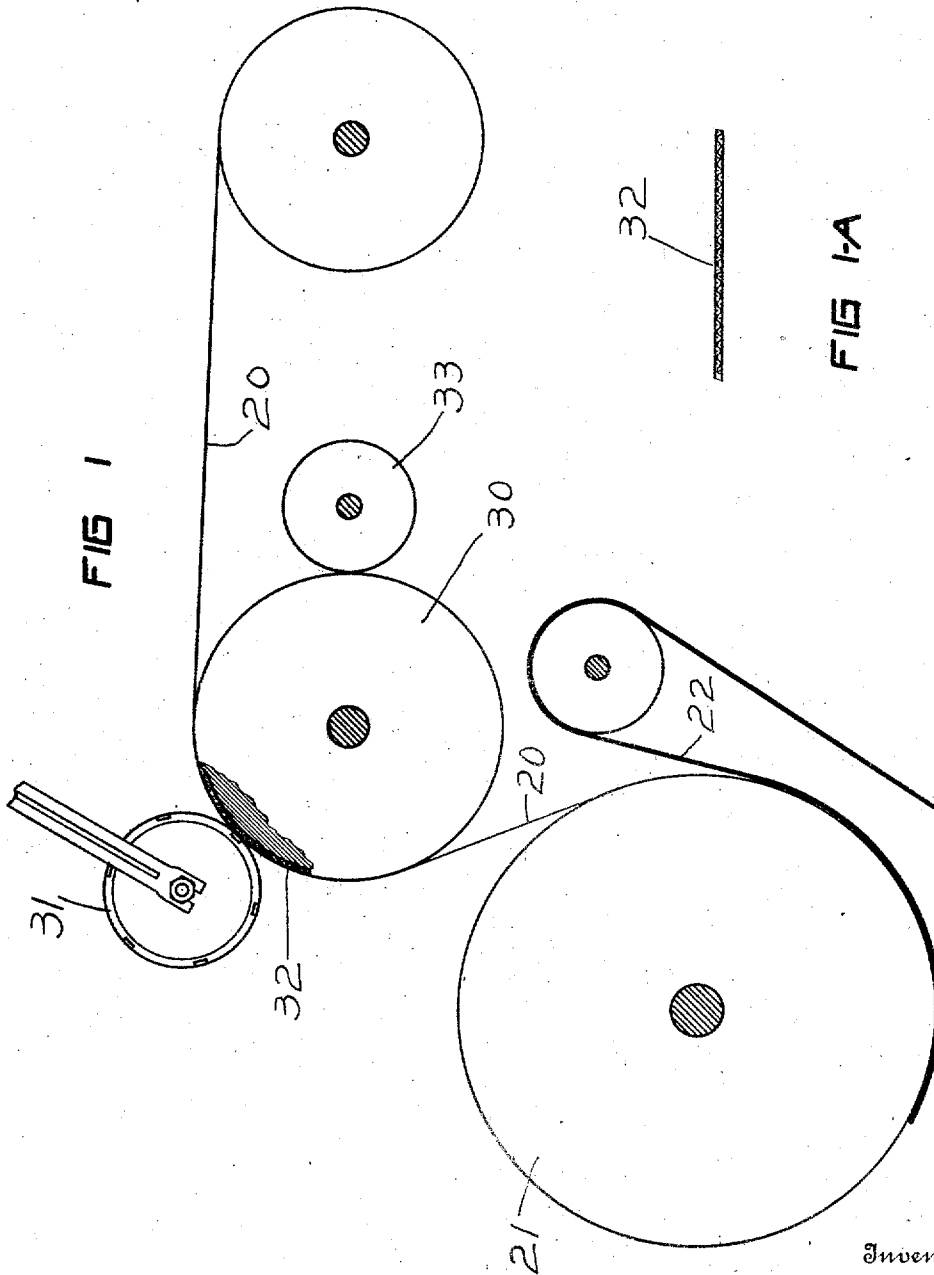


H. M. HOWARD.
WATERMARKING DEVICE.
APPLICATION FILED MAY 31, 1912.

1,045,144.

Patented Nov. 26, 1912.

3 SHEETS-SHEET 1.



Witnesses
/s/ H. H. Hodgson
W. R. Birney

Howland M. Howard,
By
Kerr, Page, Cooper & Hayward,
Attorneys

Inventor

H. M. HOWARD.
WATERMARKING DEVICE.
APPLICATION FILED MAY 31, 1912.

1,045,144.

Patented Nov. 26, 1912.

3 SHEETS-SHEET 2.

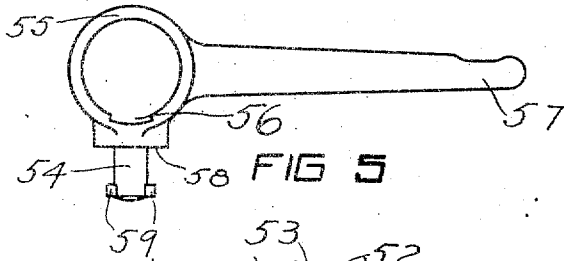


FIG 5

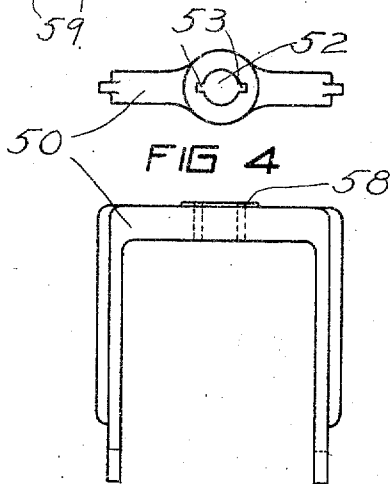


FIG 4



FIG 8



FIG 6



FIG 7

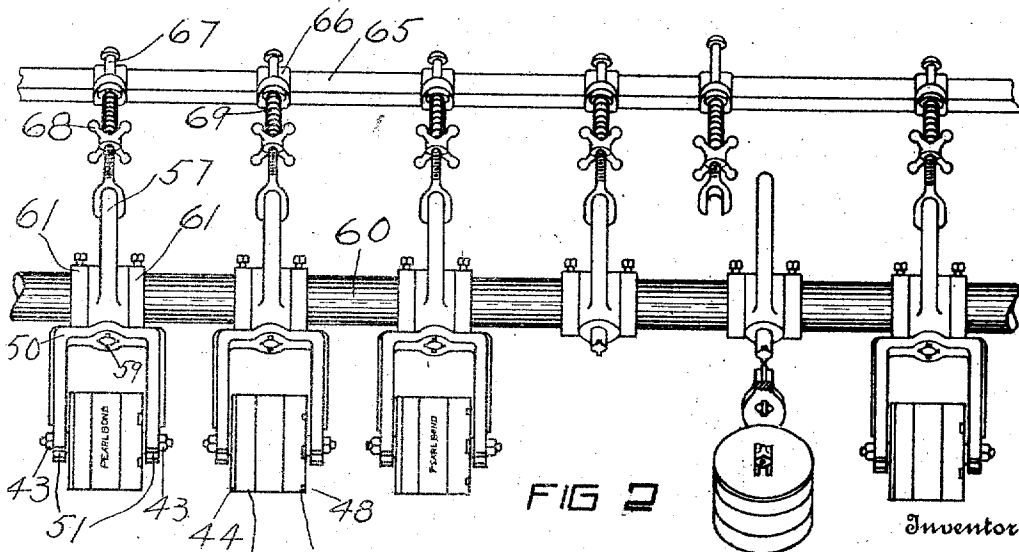


FIG 2

Inventor

Witnesses

H. H. Hodgson
W. R. Birney

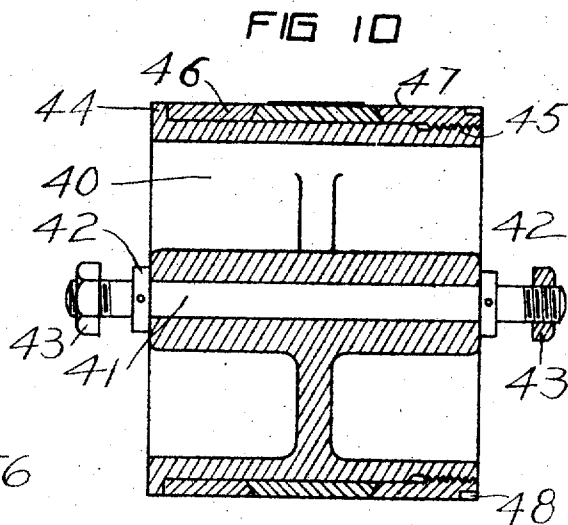
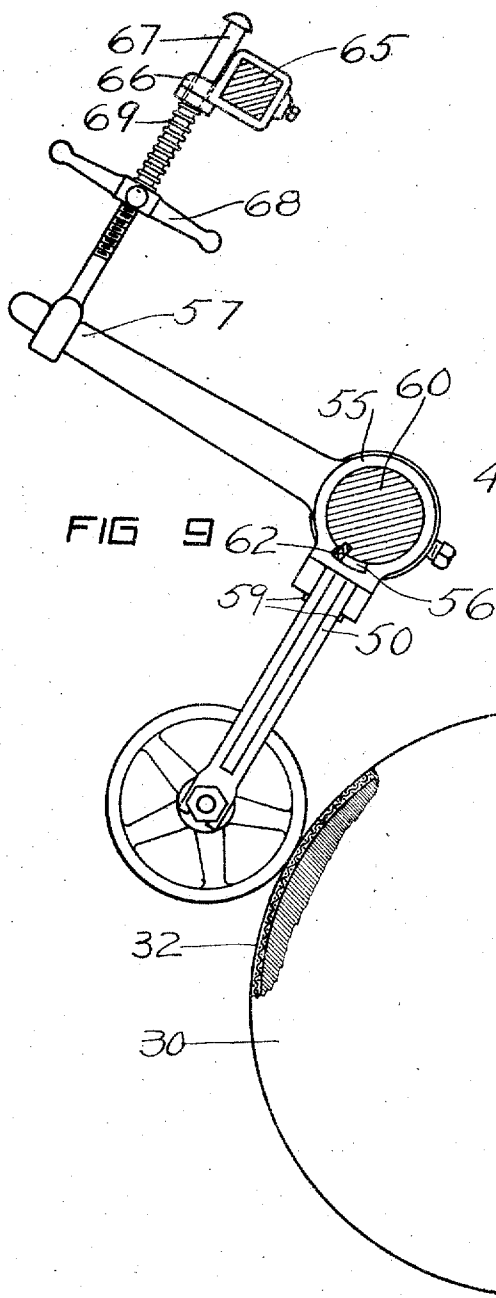
Howard M. Howard,
Kerr, Page, Cooper & Hayward,
Attorneys.

H. M. HOWARD.
WATERMARKING DEVICE.
APPLICATION FILED MAY 31, 1912.

Patented Nov. 26, 1912.

3 SHEETS-SHEET 3.

1,045,144.



Inventor

Witnesses
J. A. J. / J. J. / J. J. / J. J.
W. R. Birney

Howland M. Howard
By
Kerr, Page, Cooper and Hayward,
Attorneys

UNITED STATES PATENT OFFICE.

HOWLAND MAXWELL HOWARD, OF DAYTON, OHIO.

WATERMARKING DEVICE.

1,045,144.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed May 31, 1912. Serial No. 700,865.

To all whom it may concern:

Be it known that I, HOWLAND MAXWELL HOWARD, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Watermarking Devices, of which the following is a full, clear, and exact description.

10 This invention relates to water-marking devices for paper and has for its object to provide mechanism of such nature that the water-mark may be applied to the paper during its ordinary process of manufacture
15 by a paper machine, and also of such nature that the water-mark design may be made up in any desired form by ordinary electrotype or similar metal type or designed plates. Of course it has been very old in
20 the art to use metal type in connection with water-marking of paper and the use of ordinary electrotype plates bearing the water-mark design has the obvious advantage that such plates are comparatively in-
25 expensive to make and very adaptable for quickly and conveniently changing the water-mark design as well as offering a wide field of variation in the wording or in the pictorial representations that may be
30 desired in the water-marks even to the extent of making use of very fine lines and elaborate designs in the water-mark.

It has been very old in the art of water-marking paper, to have rollers bearing the
35 water-marking design, and pressing them upon the sheet of paper as it passes through the ordinary paper-making machine, so as to impress upon the paper the water-mark design carried by the rollers. It is also
40 very old in the art to locate these water-mark rollers in proximity to the drying cylinders of the machine, while the paper is still in a damp state, either before or after the web of paper has passed over a
45 drying cylinder or cylinders, as may be found to give the best results; and it is also old in the art in such machines as mentioned, to have the paper pass between the water-marking roller and another roller
50 which is covered by preference with paper or other elastic material such as to form a cushion for the web of paper to be pressed

upon by the roller containing the pattern or design.

My invention resides in utilizing a particular kind of material for such cushioning effect as just above referred to, for the purpose of securing more efficient results, and it is also one of the purposes of the invention to provide improved means of
60 mounting the water-marking rollers so that convenient access may be had thereto and so that they may be removed individually without interference one with the other; also to provide novel constructions of the
65 water-marking rollers themselves so as to permit the convenient attachment and detachment of the water-marking type such as may be desired for impressing on the paper or water-marking designs.

70 With this general description of the main objects of the invention, I will now proceed to describe the specific construction which I have adopted, making reference to the drawings accompanying this specification
75 and showing a preferred form of embodiment of my invention.

In said drawings Figure 1 is a diagrammatic view of the paper machine showing the ordinary rollers of any well-known
80 form of press such as the ordinary Fourdrinier paper-making machine, and also showing the location of my water-marking roller. Fig. 1^a is an enlarged detail view of a portion of the fabric which I utilize
85 for covering the roller between which and the water-marking roller, the paper is fed. Fig. 2 is an elevation view of a series of five of the water-marking rollers, one of the same being shown turned preparatory
90 to removal from its holding yoke. Figs. 3 and 4 show one of the yokes for holding the water-marking roller. Fig. 5 represents the rock frame to which the said yoke may be attached, which said rock frame is
95 mounted upon a shaft, as shown in Fig. 2. Figs. 6 and 7 show two views of an electrotype for the water-mark impression. Fig. 8 shows an individual type which may be used in setting up any desired name for
100 water-marking. Fig. 9 shows a detail side elevation partly sectionalized, of the water-marking roll and its connected devices, showing how the parts are mounted. Fig.

10 is a cross-section of the water-marking roll showing the manner of holding the type bars in place by means of overlapping bands.

5 Referring to Fig. 1 the web of paper 20 is shown passing on to the first drier 21. The usual felt band 22 is provided, between which and the drier 21 the paper web passes. In proximity to this drier 21, is an impression roller, or what I may term a fabric roller, over which the paper web passes just before it reaches the first drier and against which presses the water-marking roller 31 carrying the water-marking design as hereinafter explained. This impression roller 30 is covered with a particular kind of fabric wherein resides one part of my present invention. The underlying part of the roller 30 may be of any substance such as wood or metal as found desirable, but the roller is coated or incased by a fabric 32 which forms a cushion for the web of paper to be pressed upon by the water-marking roller 31 carrying the water-mark design. And I have discovered in a fabric of this sort there are particular advantages resulting from having the outer surface of the fabric (over which the paper runs) of a smooth and glossy nature. This glossy fabric surface I have found gives very good results in various ways as to speed of operation and fineness of design and as a preferred form of the fabric referred to I have adopted a material having a glossy surface finish similar to what is well known as "patent leather." But the particular material which I have found best suited for my purposes is a japanned drill or duck material having a glazed smooth surface, of the sort well known on the market as manufactured by the Standard Oil Cloth Company of New York city under the trade name of "Meritas." Of course other fabrics having such glazed smooth surface might well be available for the purposes mentioned but I refer to this particular kind of fabric as a preferred form and one instance of a material which I have found gives very satisfactory results. Of course the impression roller 30 might be entirely composed of such fabric as referred to with the outer surface thereof having the glazed smooth finish as explained. I desire also to point out that in the particular arrangement which I have adopted, this fabric 32 has both surfaces of this same glazed smooth finish, so that when the fabric incases the impression roller 30, the inner smooth surface of this fabric comes in contact with the surface of the underlying roller.

33 is an auxiliary roller which bears against the impression roller 30 so as to assist in keeping the fabric properly rolled out in shape, and to assist in removing any pos-

sible wrinkles just before the fabric passes 65 under the paper.

Having thus described the general nature of the fabric roller, I will now proceed to describe the water-marking roller and the means of mounting the same in proximity 70 to the fabric roller.

40 indicates a wheel or roller, which is mounted to rotate upon a shaft 41. Collars 42 pinned to the shaft at each end of the hub limit the end play of the roller. The 75 ends of the shaft 41 are threaded to receive nuts 43. At one end the roller is provided with a shoulder 44 and at the other end a screw thread 45. A band or sleeve 46 is made to slip on the roller and about the 80 shoulder 44. The inner end of the sleeve 46 is provided with an overhanging bevel. A sleeve 47 threaded to screw on to the thread 45 has a similar overhanging shoulder; it also has a recess 48 to receive a Spanner 85 wrench, with which to screw up the sleeve.

Figs. 6 and 7 are views of a sector, having raised letters representing a design which is to appear upon the paper. Two of these sectors, which have beveled edges complementary to the overhanging bevels on the sleeves 46 and 47, may be laid around the roller and clamped in place by screwing the sleeve 47 against them. For certain purposes it may be desirable to set up the desired word or words with separate type, in which case individual type such as is shown in Fig. 8, also having bevel edges complementary to the bevels of the sleeves 46 and 47, may be used instead of the segments. 100 When the roller has been equipped with the printing device, it is mounted in a yoke 50, the shaft 41 lying in open slots 51 formed in the extremities of the yoke, the nuts 43 holding the shaft in place. The base of the yoke 105 has an aperture 52 at each side of which are key-ways 53. The aperture is adapted to admit a stud 54, which is secured to and forms part of the rock frame 55. A stationary shaft 60 is placed in suitable proximity to the impression roll and upon this shaft a succession of rock frames 55 are placed. The longitudinal position of each frame is adjustable and when adjusted, maintained by collars 61, which are held in place by set screws. A spline 62 is secured in one side of the shaft, which permits a limited rotary movement of the rock frame; the key-way 56, which is formed in the rock frame, being somewhat broader than 120 the spline. A stationary bar 65 has a number of guides 66, longitudinally movable on the bar and held in place by set screws. Each guide has an aperture through which a rod 67 passes freely, the rod having a fork 125 at its lower end which embraces the arm 57, extending laterally from the rock frame 55. The rod has a screw thread and a turn

buckle 68 with which the tension of a compression spring 69, confined between the guide and the turn buckle, may be adjusted.

In Fig. 2, four rollers mounted in yokes are shown in position for use. A fifth yoke is shown detached from but in position ready to be placed upon the stud 54. It will be observed that the yoke is turned one-fourth of the way around in attaching or detaching from the stud, and by the time the yoke has been pushed against the shoulder 58 the splines 59, carried by the stud 54 will have emerged from the aperture 52, permitting the yoke to be rotated; obviously, the splines prevent the yoke slipping off of the stud.

From the foregoing description it is evident that the lateral position of the rollers may be adjusted to suit any ordinary requirement, that if fewer rollers are required at any given time than there are rock frames on the shaft, such rock frames as are required may be employed and the remaining ones left untenanted. Those which are untenanted will be prevented by the spline 62 from dropping down upon the impression roller or in any other manner interfering with the operation of the machine or the other rollers.

I am aware that minor changes may be made in the construction or arrangement of the parts of my invention while remaining within the scope of the claims.

What is claimed is as follows:

1. In a water-marking device for paper-making machines, the combination with a water-marking roller, of an impression roller against which said water-marking roller presses and over which the paper passes, said impression roller having its outer surface provided with a glazed smooth finish with fabric immediately underlying said surface.

2. In a water-marking device for paper-making machines, the combination with a water-marking roller, of an impression roller against which said water-marking roller presses and over which the paper passes, said impression roller having its surface covered with a fabric possessing a glazed smooth surface.

3. In a water-marking device for paper-making machines, the combination with a water-marking roller, of an impression roller, against which said water-marking roller presses with the paper in between, said impression roller having its surface covered with a fabric of elastic texture and having a glazed smooth surface.

4. In a water-marking device for paper-making machines, the combination with a water-marking roller, of an impression roller against which said water-marking roller presses and over which the paper passes, said impression roller having its sur-

face covered with fabric, and an auxiliary roller which bears against the impression roller, whereby any wrinkles in the fabric are removed just before the fabric passes under the paper.

5. In a water-marking device for paper-making machines, the combination with a water-marking roller of a rock frame mounted upon a stationary shaft, a detachable yoke, in which the roller is rotatably mounted, secured to the rock frame, and an adjustable tensioning mechanism tending to rock the frame in one direction, whereby to press the roller against the paper.

6. In a water-marking device for paper-making machines, the combination with one or more water-marking rollers, each mounted to rotate in a yoke, of a stationary shaft carrying a plurality of rock frames, said frames being longitudinally adjustable on the shaft, means for attaching a yoke to each rock frame, and an independent adjustable tensioning mechanism for and tending to rock each frame in one direction, whereby the roller carried thereby is pressed against the paper.

7. In a water-marking device for paper-making machines, the combination with one or more water-marking rollers, each mounted to rotate in a yoke, of a stationary shaft carrying a plurality of rock frames, each frame being longitudinally adjustable on the shaft, means for limiting the rotary motion of the rock frames on the shaft, means for attaching a yoke to each rock frame, and an independent adjustable tensioning mechanism for and tending to rock each frame in one direction, whereby the roller carried thereby is pressed against the paper; the yoke attaching means being so constructed that a yoke may be attached or detached, without disturbing the others or interrupting the operation of the machine, the limiting means being so constructed that one or more of the rock frames may remain untenanted without their interfering with the operation of the machine.

8. In a water-marking device for paper-making machines, a roller having at one end a shoulder with an overhanging bevel, and at the other end a screw thread; a threaded sleeve adapted to screw on the threaded end, having at its inner end an overhanging bevel, and one or more segments having type on their outer faces, said segments having a curvature corresponding to that of the roller and having beveled edges complementary to the bevels of the shoulder and sleeve.

9. In a water-marking device for paper-making machines, the combination with a water-marking roller, of an impression roller against which said water-marking roller presses and over which the paper

passes, said impression roller having its surface covered with a fabric possessing a glazed smooth surface on its under side in contact with the surface of the impression roller.

5
10
10 In a water-marking device for paper-making machines, the combination with a water-marking roller, of an impression roller against which said water-marking roller presses and over which the paper

passes, said impression roller having its surface covered with a fabric possessing a glazed smooth surface on both its outer and under sides.

In testimony whereof I affix my signature 15
in the presence of two subscribing witnesses.

HOWLAND MAXWELL HOWARD.

Witnesses:

J. B. HAYWARD,

CHAS. D. BRONSON.