Dec. 20, 1927. 1,653,148

J. G. CALLAN

METHOD OF FORMING AND APPLYING PAPER MARKING PATTERNS TO PATTERN CARRYING MEMBERS

Filed June 5, 1926

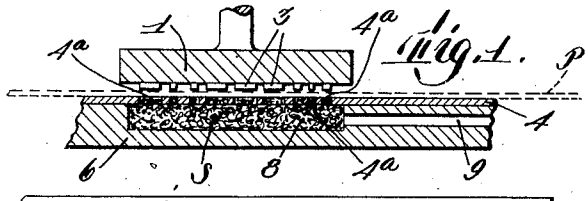


Fig. 1.

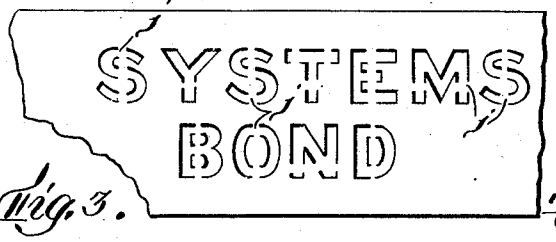


Fig. 3.

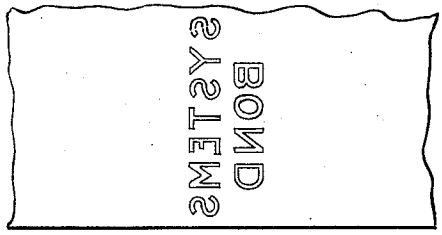


Fig. 4.

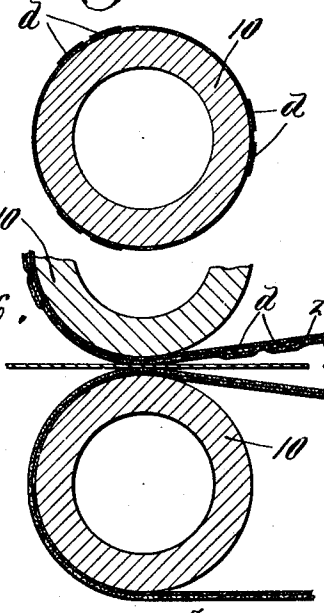


Fig. 5.

Fig. 6.

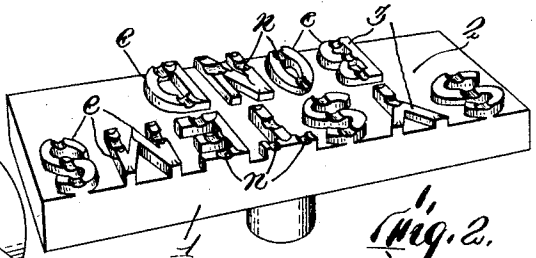


Fig. 2.

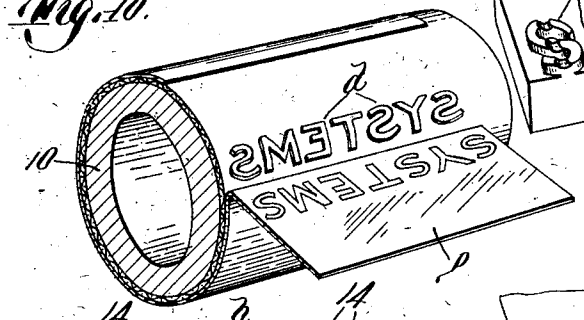


Fig. 10.



Fig. 9.

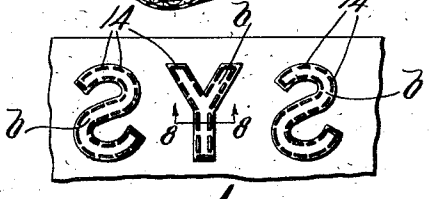


Fig. 7.

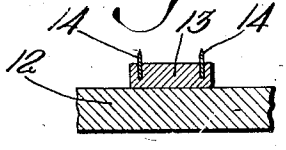


Fig. 8.

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UNITED STATES PATENT OFFICE.

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METHOD OF FORMING AND APPLYING PAPER-MARKING PATTERNS TO PATTERN-CARRYING MEMBERS.

Application filed June 5, 1926. Serial No. 113,876.

In application, Serial No. 96,507, filed March 22, 1926, by Stuart W. Webb and Albert Allen, there is described a method of forming a mark on paper closely simulating a watermark, while the paper is undergoing a surface finish such as the well-known linen finish. According to the method therein described, the marking is effected by a pattern made of thin material such as paper, cut to the form of the desired mark and fixed in a position to permit its impression on the paper.

In carrying out a linen finishing method, such, for example as described in Patent No. 1,277,714, dated September 3, 1918, the paper is passed between a pair of fabric belts and while interposed therebetween is passed through the nip of heavy pressure rolls, one of which is softer than the other, this operation producing the desired finish of the paper. The paper pattern for marking the paper simultaneously with its finishing, and cut to the form of the desired mark, may be fixed to the surface of one of the rolls, to the surface of the belt, or between the plies of a multi-ply belt, so that upon passage of the paper through the nip of the pressure rolls the mark of the pattern is also impressed therein. Where the marking pattern is in direct contact with the paper, the marked portion, of course, does not acquire a fabric finish.

The object of the present invention is to provide a method of forming and applying a marking pattern of the desired configuration to a pattern-carrying member, such as a belt or roll. In accordance with the method of the present invention, a pattern of the desired configuration is almost wholly cut or severed from a sheet of paper, the pattern remaining joined to the main body of the paper by small joints which may be easily ruptured or torn from the main body. A face of the pattern is coated with an adhesive, preferably during the severing operation, so that it may be applied immediately in marking position to a pattern-carrying member on its coated side, whereupon the adhesive is allowed to dry or set, thus causing a fixture of the pattern. The body of the paper may then be pulled away from the fixed pattern to effect a rupture of the joints and the complete severance of the pattern. Thus, only the pattern remains fixed in marking position and where formed of spaced elements, as letters, they are fixed in the desired spaced relation.

For a more complete understanding of the present invention, together with further objects and advantages, reference may be had to the accompanying drawings, to be considered in conjunction with the following description.

On the accompanying drawings,

Figure 1 represents a section through a pattern die for effecting partial severance of a pattern and a coating of a face thereof.

Figure 2 shows in perspective the upper half of the die.

Figure 3 is a plan view showing the partially severed pattern.

Figure 4 illustrates a plan view of a belt to which the pattern has been applied.

Figure 5 is a section through one of the pressure rolls, showing the marking pattern fixed thereto.

Figure 6 is a cross-section through the lower portion of the hard, and through the soft, roll of a fabric-finishing machine of the type hereinbefore referred to, showing multi-ply fabric belts with the pattern fixed between the plies, and paper interposed between the belts passing through the nip of the rolls.

Figure 7 represents a plan view of modified means for severing a pattern.

Figure 8 is a section on the line 8—8 of Figure 7.

Figure 9 shows in perspective the partially severed pattern produced therewith.

Figure 10 illustrates the manner in which a pattern is applied to a carrying member.

Referring first to Figure 1 of the drawings, 1 represents the upper or punch member of a die for effecting a partial severance of a pattern from the paper. As shown best in Figure 2, this punch member comprises a base plate 2, from which project a series of pattern-cutting elements 3, herein shown as being letters and forming the words Systems bond, arranged parallel to each other. The letters may be fixed to the base 2 as by welding, and are regularly spaced from one another. The edges *e* of the upper surface

of each letter are well defined and constitute cutting or punching edges. Each letter is slightly notched out at the desired surface portions *n* thereof, so that the edges *e* are discontinuous. When the upper member 1 is forced down against paper *p* placed over a corresponding female die member 4 arranged in cooperative relation thereunder, the cutting elements 3 punch the paper into the corresponding recesses 4^a of the female die, except at the portions 2. Thus, the individual letters of the pattern are almost completely severed, small joints *j* joining the letters to the main body of the paper where the notched-out portions *n* did not exert a punching or cutting action. Preferably the support 6, to which the female die is fixed, is hollowed out under the recesses 4^a in the form of a chamber 8, filled with an absorbent material, e. g., a sponge *s*, filled with glue or other adhesive. Thus, in punching or cutting the pattern, the cut portions are forced into the recesses 4^a of the female member 4, and the under surfaces of these portions contact with the adhesive-filled absorbent material, and acquire a coating of adhesive. Preferably, the base is provided with a channel 9, through which adhesive may be introduced into the chamber 8.

The partially-severed pattern may be applied on its coated side immediately after punching, to a pattern-carrying member. As shown in Figure 5, the pattern may be applied to one of the rolls 10 of the fabric-finishing machine. After application, allowing complete setting or drying of the adhesive to take place, the body of the paper is grasped and pulled away from the fixed pattern, this action rupturing the paper at the joints and completing the severance of the pattern from the body of the paper. Thus, only the pattern remains fixed to the roll, the individual letters of the pattern being accurately alined and regularly spaced to correspond with the letters 3 of the die. This method of application obviates cutting of individual letters, and their individual alinement and spacing on a carrying member.

If desired, the pattern may be fixed to the inner face of a fabric-finishing belt, as shown in Figure 4, or where multi-ply belts are employed, the pattern *d* may be interposed between the plies *z* thereof, as shown in Figure 6. The paper to be finished, interposed between the fabric belts, in passing between the nip of the hard and soft rolls 10 of the finishing machine not only acquires a fabric finish, but also the mark impressed thereon by the pattern, the mark closely simulating a watermark.

In Figure 7 is shown a modified means for effecting partial severance of a marking pattern from paper. As shown, to a base 12 are fixed blocks 13, in which are fixed spaced spurs or prongs 14, projecting upwardly therefrom and arranged to perforate or score paper to the configuration of the desired pattern, which, as shown, consists of letters. When a sheet of paper to be cut is forced down over the prongs 13, the paper is scored or perforated to the configuration of the desired pattern. Preferably the surfaces *b* of the blocks 13 between the prongs are coated with adhesive prior to the scoring of the paper. In scoring the paper, the under surface of the scored portions thus becomes coated with adhesive.

The paper is scored to the configuration of the desired pattern, as shown in Figure 9, and may be applied to a pattern-carrying member, for example, one of the rolls 10 of the linen-finishing machine and the pattern fixed thereto, and after drying completely severed from the body of the paper.

Having thus described certain embodiments of this invention, it is obvious that various changes or modifications might be made therein without departing from its spirit or scope as defined by the appended claims.

What I claim is:

1. A method of forming and applying a paper-marking pattern to a pattern-carrying member, which comprises partially severing the pattern from a sheet, coating one face of the pattern with an adhesive, applying the pattern to the pattern-carrying member, allowing the adhesive to set, thereby fixing the pattern to the member, and then pulling the body of the paper away from the member to effect a complete severance of the pattern which alone remains on the pattern-carrying member.

2. A method of forming and applying a paper-marking pattern to a pattern-carrying member, which comprises partially severing a pattern from a sheet and simultaneously coating a face of the pattern with an adhesive, applying the pattern to the pattern-carrying member, allowing the adhesive to set, thereby fixing the pattern to the member, and then pulling the body of the paper away from the member to effect a complete severance of the pattern which alone remains on the pattern-carrying member.

3. A method of forming and applying a pattern comprising letters, to a pattern-carrying member, which comprises partially severing the letters from a sheet of paper in spaced and alined relation, coating a face of the letters with an adhesive, applying the pattern to a pattern-carrying member, allowing the adhesive to set, thereby fixing the pattern to the member, and then pulling the body of the paper away from the member to effect a complete severance of the pattern which alone remains on the pattern-carrying member.

4. A method of forming and applying a paper-marking pattern to a pattern-carry-

ing member, which comprises partially punching the pattern from a sheet through a die on to an adhesive, thereby coating one face of the partially punched pattern with an adhesive, applying the pattern to the pattern-carrying member, allowing the adhesive to set, thereby fixing the pattern to the member, and then pulling the body of the paper away from the member to effect a complete severance of the pattern which alone remains on the pattern-carrying member.

In testimony whereof I have affixed my signature.

JOHN G. CALLAN.