

E. ANDREWS.
 Coloring and Sizing Leather or Paper Board.
 No. 203,810. Patented May 21, 1878.

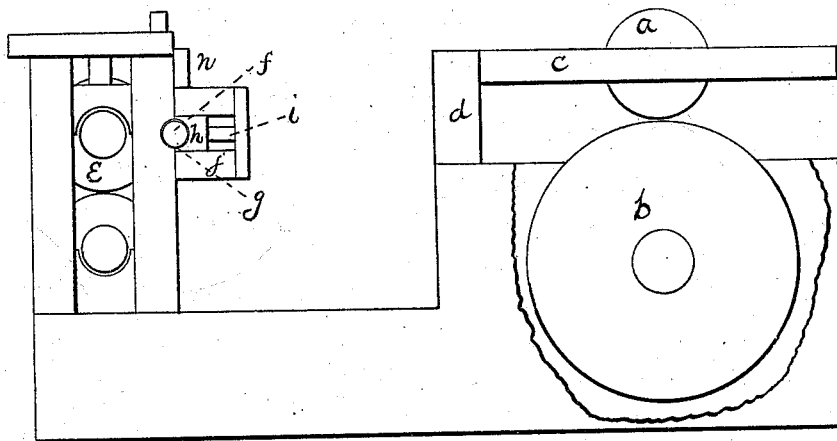


Fig. 1.

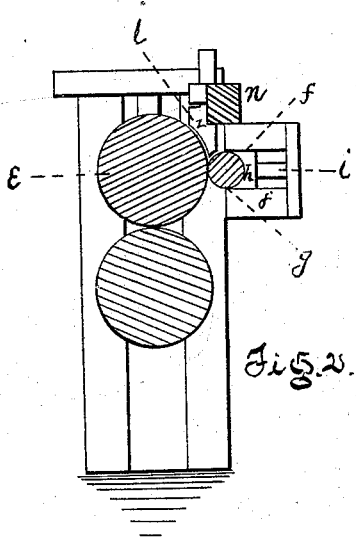


Fig. 2.

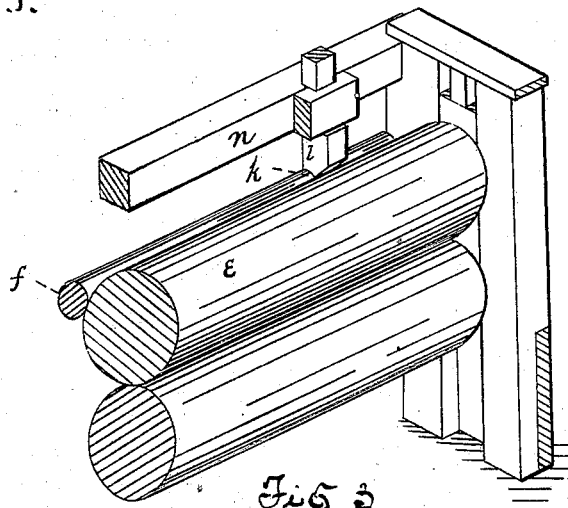


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

EMERY ANDREWS, OF KENNEBUNK, MAINE.

IMPROVEMENT IN COLORING AND SIZING LEATHER OR PAPER BOARD.

Specification forming part of Letters Patent No. **203,810**, dated May 21, 1878; application filed June 16, 1877.

To all whom it may concern:

Be it known that I, EMERY ANDREWS, of Kennebunk, in the county of York and State of Maine, have invented certain new and useful Improvements in Coloring and Sizing or otherwise Treating Leather or Paper Board; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 shows a side view; Fig. 2, sectional view; Fig. 3, perspective, showing position of rolls and gates.

The purpose of this invention is to produce a device for imparting coloring, sizing, &c., to paper board or pulp after it has left the felts, with increased economy and effectiveness.

It also consists in an improved process of accomplishing this result.

a, *b*, *c*, and *d* show the ordinary arrangements for screening the pulp and placing it upon the felts preparatory to winding the same off on the roll *e*. The devices *a*, *b*, *c*, and *d*, I of course do not claim.

Heretofore, as is well known, when coloring matter has been applied to the pulp, it has been done in the beating-engine. In this method about fifty per cent of the coloring matter is wasted and destroyed. My device and process are intended to effect a saving of the chemicals for the purposes specified.

With this view, I place the small supplemental roll *f* immediately in contact with the winding-roll *e*. This roll *f* has bearings at *g*, and is kept pressed up with proper force against the roll *e* by the boxes *h*, operated by the springs *i*. These boxes have projections which fit into grooves in the horizontal parts *j*, and are thus kept in place. The springs *i* allow the supplemental roll to recede slightly as the pulp or board is wound around the winding-roll *e*. The roll *f* has the shoulders *k*. Against these shoulders, and into the space formed between the peripheries of the winding-roll *e* and supplemental roll *f*, where said peripheries do not touch, and on the upper sides of said rolls, are fitted the stops or gates *l*. These are supported by working through

holes in the bar *n*, and are capable of an upward and downward movement, as the relative positions of the winding-roll and supplemental roll may require. These two rolls, together with the stops or gates, when the pulp or board is on the winding-roll *e*, are intended to form a water-tight trough or receptacle. Into this trough or receptacle the coloring or sizing matter is poured, and it is then worked or rolled into the pulp or board by the revolution of the winding-roll *e* and the supplemental roll *f*. These two rolls are kept in revolution by contact and friction, *e* by contact with the felt-roll beneath it, and *f* by its contact with *e*. Thus all of the chemicals prepared for the purposes specified are used, and none are wasted.

The roll *e* and the roll beneath it, as well as the parts *a*, *b*, *c*, and *d*, being common to paper-making machines, need not be specifically described.

The process of imparting coloring herein referred to consists in working, rolling, or forcing the same into the pulp or board by pressure and after the pulp has been couched.

I consider the devices above described best adapted to accomplish the desired result; but modifications of them may be used to impart the chemicals to the sheet after it has been couched and before it reaches the winding-roll.

The advantages of this invention may be further described as follows: It is well-known to manufacturers that pulp free from coloring matter or chemicals will felt better than pulp first treated in the engines or stuff-chest with the chemicals. This invention secures this advantage.

The invention has special reference to the manufacture of leather-board, though it may be used to advantage on other kinds of paper or paper-board.

By mixing cementive material with the color and size, board of superior strength and firmness can be obtained.

By a variation of the chemicals special grades of board may be made with greater exactness, economy, and certainty than when the pulp is treated in the engines in the well-known way with the same chemicals. Thus a grade of board may be made with special reference to its pliability, another grade with reference to its firmness and hardness, another with the

property of resisting water or dampness, and all with the certainty that whatever chemicals are used will be put into the board, instead of largely wasted, as in the old method.

I do not claim sizing and treating paper as described in the Patent No. 495, December 1, 1837, whereby the same is sized after completed and dried. My invention is for coloring and sizing the paper while in a pulpy or semi-pulpy state and moist. My process relates to treating the paper after it has been couched and before it has passed the first press-roll.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The process of utilizing all the chemicals employed in coloring and sizing pulp, facilitating the felting, improving the strength, and regulating the quality of the same, which con-

sists in coloring, sizing, or otherwise chemically treating or stuffing leather or paper board after the sheet has been formed and before it has been removed from the winding or press rolls, as herein described.

2. In combination with the winding-roll *e*, the supplemental roll *f*, for the purposes herein described.

3. The combination of the winding-roll *e*, the supplemental roll *f*, and the stops or gates *l*, as herein described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EMERY ANDREWS.

Witnesses:

C. W. GOODNOW,
HERBERT S. BRIGHAM.