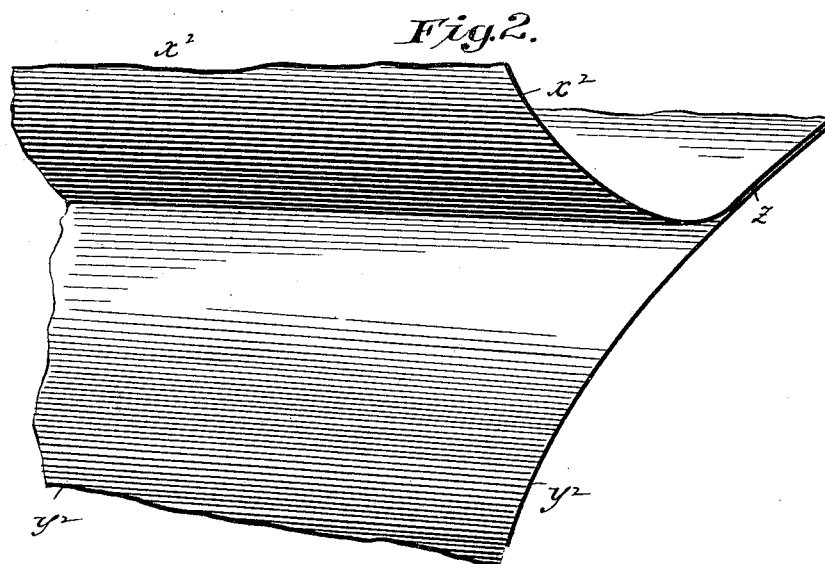
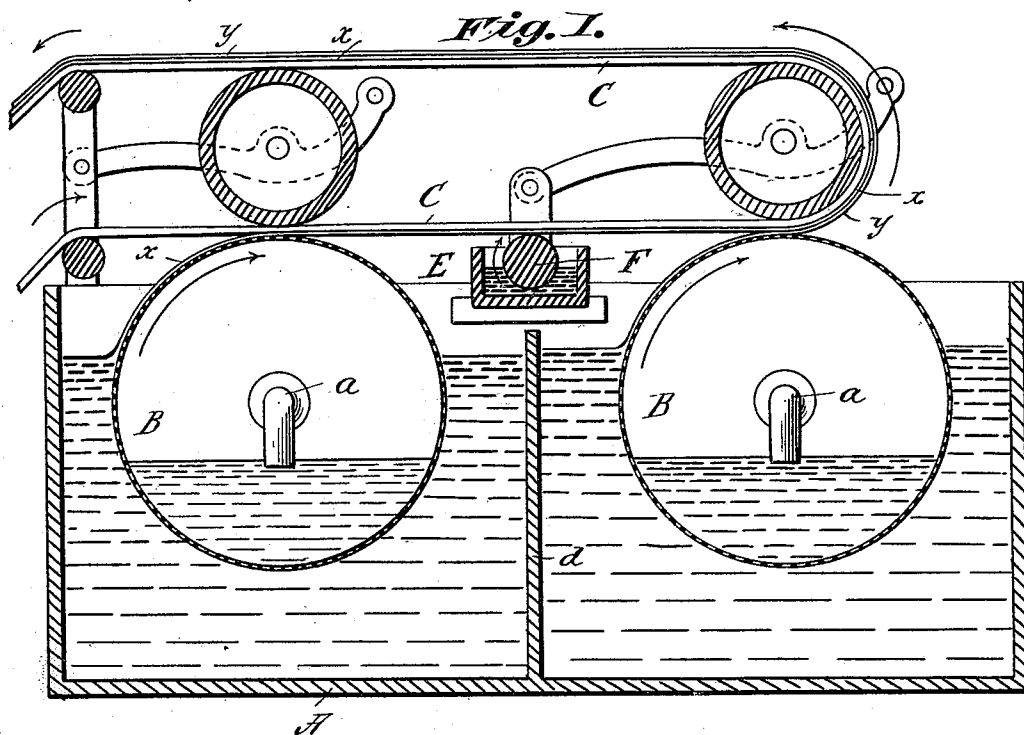


(No Model.)

C. S. BIRD.
METHOD OF AND APPARATUS FOR MAKING SEPARABLE PAPER SHEETS.

No. 514,059.

Patented Feb. 6, 1894.



Witnesses:

J. L. Gaffield
H. I. Clemons

Inventor:

Chas. S. Bird,
per *Chapman & Co. attys.*

UNITED STATES PATENT OFFICE.

CHARLES S. BIRD, OF WALPOLE, MASSACHUSETTS.

METHOD OF AND APPARATUS FOR MAKING SEPARABLE PAPER SHEETS.

SPECIFICATION forming part of Letters Patent No. 514,059, dated February 6, 1894.

Application filed June 16, 1893. Serial No. 477,814. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. BIRD, a citizen of the United States, residing at Walpole, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Methods of and Apparatus for Making Separable Paper Sheets, &c., of which the following is a specification.

This invention relates to improvements in the method of, and means for, the production of sheets of paper comprising separable layers. Such paper is very advantageously employed for the manufacture of the well known "lincresta Walton," or embossed wall covering, the secondary or rear layer serving to reinforce or support and protect the front layer during the process of embossing, and in transportation,—and in fact at all times previous to the application of the material upon the walls, the said secondary layer being readily removable, however, when the material is to be applied.

An important end attained in consequence of the exercise of this invention consists in the certainty of the separation of the rear from the front layer when the one is purposely stripped or peeled from the other, without any liability of the one layer carrying with it portions of the fiber belonging to the other.

The improvement in the method consists in forming a web from pulp, applying a non-adhesive material upon the surface of said web, and then applying another web of pulp upon the so-surfaced first web, and suitably finishing the whole in sheet form by pressure and drying; and the apparatus for carrying out the invention consists in the combination with a vat for containing the pulp or "stuff," of two wire cloth cylinders rotating in the vat, the apron running in proximity to the cylinders, and appliances arranged between the cylinders for the deposition of a quantity of non-adhesive material upon the web or layer of pulp which is received onto the apron from the first of said cylinders before the second web is laid thereonto from the second cylinder, and all substantially as will hereinafter fully appear and be set forth in the claims.

In the accompanying drawings the apparatus is illustrated, Figure 1 being a vertical sectional view thereof. Fig. 2 is a perspective

view of the sheet having the separable layers, they being shown partially separated.

In the drawings, A represents the vat or tank for containing the pulp or "stuff," and B B are rotary cylinders, the peripheral surfaces of which are usually and preferably formed by wire cloth. One end of each of these cylinders is absolutely closed while the other end has the opening through, or about, its journal shaft, *a*, which constitutes an egress passage for the water drained by a sufficiently strong suction established through the hollow journal shaft.

C represents the apron which may be of felt and which has a course or portion thereof running in proximity to the upper surfaces of the cylinders, these parts, mentioned, being constructed and arranged as common in the well known cylinder paper machine. The pressure of the pulp within the vat forces the pulp against the wire cloth sides of the first cylinder and the layer thereof, or web, is carried by the cylinder as insured by the suction therewithin to the apron, and is carried thereby along over the next wire cloth cylinder which in the same manner brings another web or pulp layer onto the first; and in the drawings, *x* and *y*, represent the two layers of pulp running along as carried by the said apron.

Between the two cylinders, B B, and in proximity to the lower course of the apron is a tank, E, which contains a non-adhesive material in solution, the solution which I have employed with practical and satisfactory results being clay water.

Rotating partially submerged within the clay water in the tank, E, is a roller, F, a peripheral portion of which has a slight pressure bearing against the first web, *x*, given by the first cylinder, onto the apron; and, in its rotation, as insured by such pressure bearing by reason of the travel of the apron, a layer of the clay water is deposited upon the first web to be then overlaid by the second web brought thereupon by the second cylinder, B. The roll, F, is peripherally covered with fine wire cloth which experience thus far has indicated most satisfactory in effect. The double layers, or webs, of the paper pulp with the intervening solution of clay are thence by the apron carried to press rolls and to the driers,

beyond, in the manner usual, in paper making, the finished product being apparently a sheet of paper which is homogeneous throughout its entire thickness but which in reality
 5 has two separable layers,—the layers clinging the one to the other with no liability to separation until it is desired to separate them, when, by spreading them at the edge of the sheet the parts may be peeled, the one from
 10 the other, without the least liability of the one layer “skinning off,” or carrying with it, portions of the thickness of the other layer, and in Fig. 2 the sheet of paper so formed is shown, the heavy lines, x^2 and y^2 , indicating
 15 the layers while the white line, seen at z , indicates, in an exaggerated manner, the interposed clay or other non-adhesive material. In the finished product the layer of clay is imperceptible.

20 In carrying out the invention one of the layers may be much thicker than the other by simply partitioning the vat, as seen at d , having the pulps in the different compartments of varying consistency; and the layers may
 25 be made to split easily or hard, according to the specific gravity of the clay water.

Of course the machine may be readily extended in an obvious manner for the addition of one or more of the wire cloth cylinders, B,
 30 and the clay-water vats and rollers, for the production of a sheet having more than two separable layers.

Having thus described my invention, what I claim, and desire to secure by Letters Patent,
 35 ent, is—

1. The method herein described of manufacturing sheets of paper, comprising separable webs or layers, which consists in forming webs or layers of pulp, applying a solution of non-adhesive material between said webs or
 40 layers, then superimposing the webs or layers and pressing and finishing the same, substantially as set forth.

2. In a machine for making paper, substantially as described, the combination with a
 45 vat for containing the pulp or “stuff,” of two cylinders rotating in the vat, the apron running in proximity to the cylinders and adapted to receive successively, webs or layers of the pulp, thereupon from said cylinders, and appliances arranged between the cylinders for
 50 the deposition of a quantity of non-adhesive material upon the web or layer of pulp which is received onto the apron from the first cylinder before the second web is laid thereonto
 55 from the second cylinder.

3. In a machine for making paper, substantially as set forth, the combination with a vat for containing the pulp, of the wire cloth cylinders rotating in the vat, the apron running
 60 in contact with the rollers and a receptacle for the non-adhesive material, between the cylinders, with the roller, therein, which has its surface running adjacent the apron, substantially as described.

CHARLES S. BIRD.

Witnesses:

GEORGE M. GRAVES,
 FREEMAN S. EVANS.