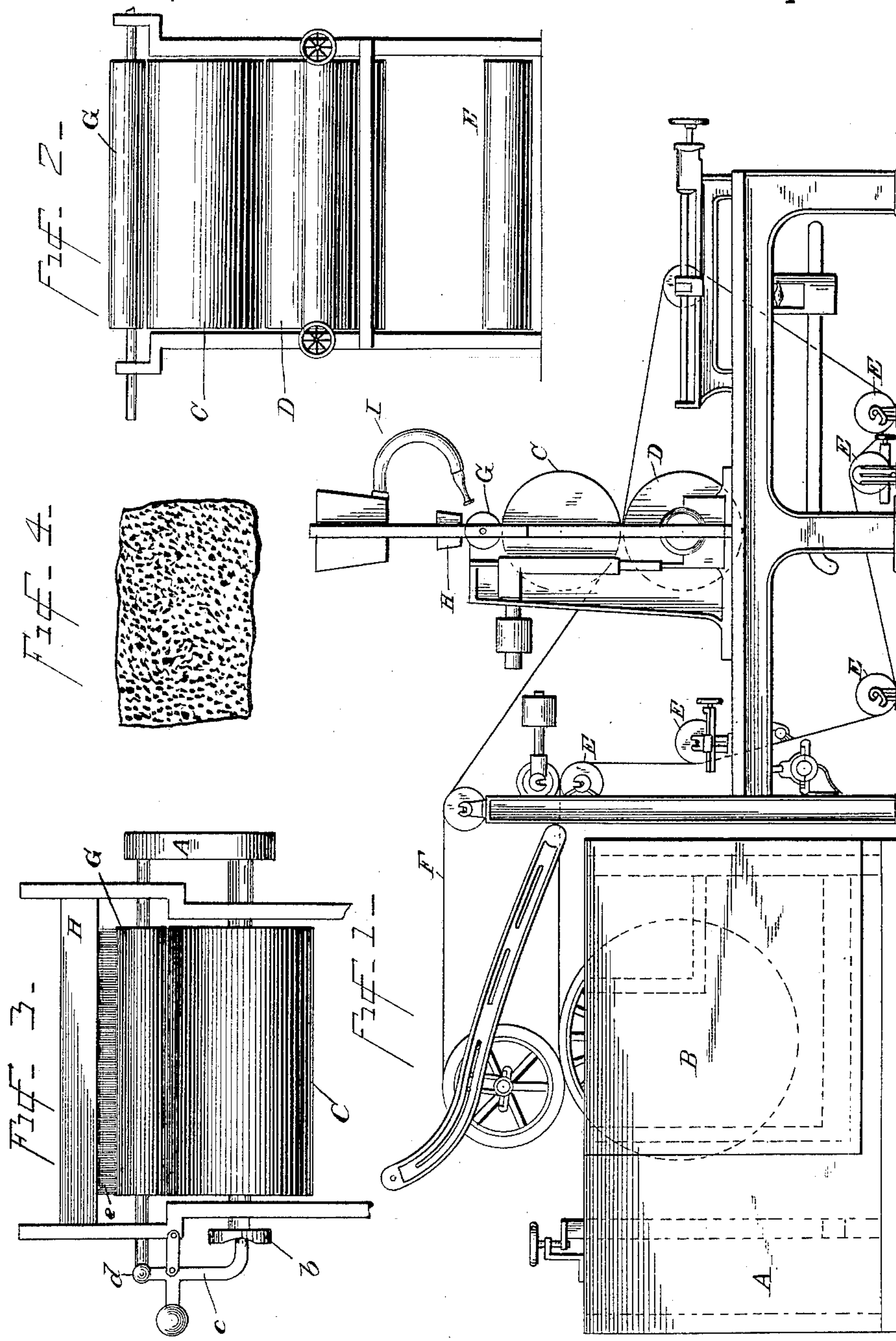


(No Model.)

W. N. CORNELL.
MACHINE FOR MAKING IMITATION BURLS.

No. 435,684.

Patented Sept. 2, 1890.



Witnesses
Morris A. Clark.
Arthur A. Clark.

Inventor
William N. Cornell
By his Attorney
Frank L. Dyer

UNITED STATES PATENT OFFICE.

WILLIAM N. CORNELL, OF BROWNVILLE, NEW YORK.

MACHINE FOR MAKING IMITATION BURLS.

SPECIFICATION forming part of Letters Patent No. 435,684, dated September 2, 1890.

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To all whom it may concern:

Be it known that I, WILLIAM N. CORNELL, a citizen of the United States, residing at Brownville, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Machines for Making Imitation Burls; and I do hereby declare the following to be full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to various new and useful improvements in or additions to the usual varieties of wood-pulp machines by which I am enabled to imitate with precision the various kinds of wood having an irregular grain, such as burls, French walnut, knots, pin and birds-eye maple, &c.

Prior to my invention it has been considered an impossibility to successfully reproduce in wood pulp the irregular or arbitrary grain of the varieties of wood above enumerated; but by means of the improvements hereinafter described and claimed this can be very easily and cheaply accomplished.

The application of my improvements is not restricted to any particular kind or class of wood-pulp machines, but is as suitable with one machine as with another.

The machine I have shown in the drawings is only for illustration, and I therefore do not wish it to be limited to the same.

For a better understanding of my invention attention is invited to the accompanying drawings, wherein similar parts are designated by identical letters of reference, and in which—

Figure 1 is a side elevation of an ordinary style of wood-pulp machines with my improvements attached thereto; Fig. 2, an end elevation of the same; Fig. 3, an enlarged side elevation of the press-roll and "sponge" roll, illustrating one means for reciprocating the latter; and Fig. 4, an enlarged side elevation of a portion of the sponge-roll, showing the approximate character of its surface.

In the form of wood-pulp machines illustrated in the drawings the following elements are represented:

A is the vat, within which the pulp is pumped before being formed into sheets.

B is the making-cylinder rotated by suitable power, and which is partly immersed in the pulp within the vat A.

C and D are the upper and lower press-rolls, respectively, constructed and arranged as heretofore.

E E E E are pulley-rolls rotating in suitable bearing-boxes, and F represents the felt passing over such pulley-rolls and between the two press-rolls.

The parts I have just mentioned are old, and are used with almost every variety of pulp-machines known to the trade.

Mounted above the upper press-roller C in suitable bearings is a smaller roller G, arranged to touch lightly against each layer of pulp as it is being wound on the upper press-roll. This smaller roll G is made of some light elastic material—such as porous rubber or sponge—its periphery being of the appearance illustrated in Fig. 4, and is rotated by suitable power, so as to follow the exact speed of each pulp layer, and thereby prevent any tendency toward buckling. This sponge roll may be rotated by direct means—such as by a belt *a*—from the upper press-roll shaft, or it may be rotated indirectly by the friction of the pulp layers in passing beneath it. The latter arrangement is preferable. In addition to the rotary movement of this "sponge roll," as I will call it, I give said roll an entirely independent reciprocating motion, so that when said roll is revolving it is at the same time moving longitudinally across the peripheral face of the upper roll C. The mechanism for producing this reciprocating motion of the sponge roll is secondary to the essential spirit of my invention, and as this particular movement can be accomplished in a great many ways, such as would be suggested to any ordinary mechanic, I do not wish to be limited to any particular means for doing this.

In Fig. 3 one means is shown for reciprocating the sponge roll. The shaft of the upper press-roll is provided with a crown cam-wheel *b*. Engaging with the periphery of this cam-wheel is a pivoted lever *c*, having a roller at its lower end to prevent friction and wear. The upper end of this lever is provided with a socket *d*, which engages with a ball formed on the end of the shaft for the sponge roll. When the press-roll is rotated, the cam-wheel will be turned with it, which

will cause the lever to be moved back and forth, and in this way imparting the desired reciprocating movement to the sponge roll. Directly above this sponge roll is a long rectangular box or trough H for containing coloring-matter. This coloring-matter is to be fed evenly on the sponge roll G in any convenient manner, so as to keep said roll in a thoroughly saturated condition. The preferable manner of applying this coloring-matter is by means of a brush e, extending down from the interior of the box H, and through which the color will be fed by capillary attraction and gravity. Instead of this rectangular box H an ordinary feed-roller—such as now used in printing-presses—may be substituted. Mounted somewhat above the upper press-roll C, at any convenient point and in any convenient manner, is a spray-nozzle I, connecting with a suitable color-supply box J. This spray-nozzle is so arranged that a fine shower of coloring-matter from the supply-box J can be sprayed on each layer or only the outer layer of pulp as it is being wound on the upper press-roller C. This spray-nozzle is operated by an attendant, and a suitable amount of coloring-matter may be thus sprayed on each or any pulp-layer to suit the taste by simply moving the nozzle more or less rapidly over the desired layer or layers.

By means of the above improvements I have thus generally described, I am enabled to reproduce the imitated burls, &c., very simply, as follows: The pulp is first ground, as formerly, and is colored the exact color of the wood that is to be imitated. The coloring-matter for this purpose can be of any ordinary and convenient variety, either mineral or vegetable. After being thus colored the pulp is pumped into the vat A, from which it is carried by the making-cylinder B in very thin layers to the felt F. By the felt this fine pulp layer is carried to the press-rolls, and it will be wound convolutionally around the upper of said rolls. As each layer passes under the sponge roll G, (which, it will be remembered, is constantly revolving and at the same time moving laterally back and forth,) the rough fiber of said roll will produce an excellent imitation of the irregular grain of burls and similar varieties of wood, owing to the rotary and reciprocating movements of said roll. This irregular grain is much intensified by the coloring-matter fed to said

sponge roll and which should be either of a darker or lighter shade than that of the colored pulp, so that the grain produced by the sponge roll will be very clear and in contrast with the pulp. The excellence of the imitation of the burl, &c., is further improved by the use of the spray-nozzle I, by which a very fine shower of an entirely different color can be thrown on the pulp, so as to cleverly reproduce the pins or eyes seen in woods of that variety.

It will be evident that my improved machine for making burls, knots, French walnut, &c., out of wood pulp is not only valuable from the fact that I am enabled to make a perfect imitation of a very costly wood very cheaply, but by making the irregular grain of the imitated article so that it extends entirely through the same the imitation can be treated like the original by planing or sanding without destroying the grain, which would not be the case if the grain were only on the surface.

In this specification I have described the broad use of either or both a sponge or rubber or soft roller and a spray-nozzle with any form of a paper-machine, and this broad matter is what I wish to secure by Letters Patent in my claims, which are as follows:

1. In a machine for making imitation burls, the combination, with the upper press-roll, of a roll above the same of the character herein specified and adapted to rotate and to move laterally across the periphery of the press-roll, substantially as set forth.

2. In a machine for making imitation burls, the combination of the upper press-roll, a sponge roll above the same having the movements specified, and a color-box above the sponge roll to feed color thereto, substantially as set forth.

3. In a machine for making imitation burls, the combination of the upper press-roll, a sponge roll above the same, a color-box above said sponge roll, and a nozzle I, connected with another color-box, substantially as set forth.

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

WILLIAM N. CORNELL.

Witnesses:

G. M. BOTCHFORD,
GEO. E. LEWIS.