

C. Lang

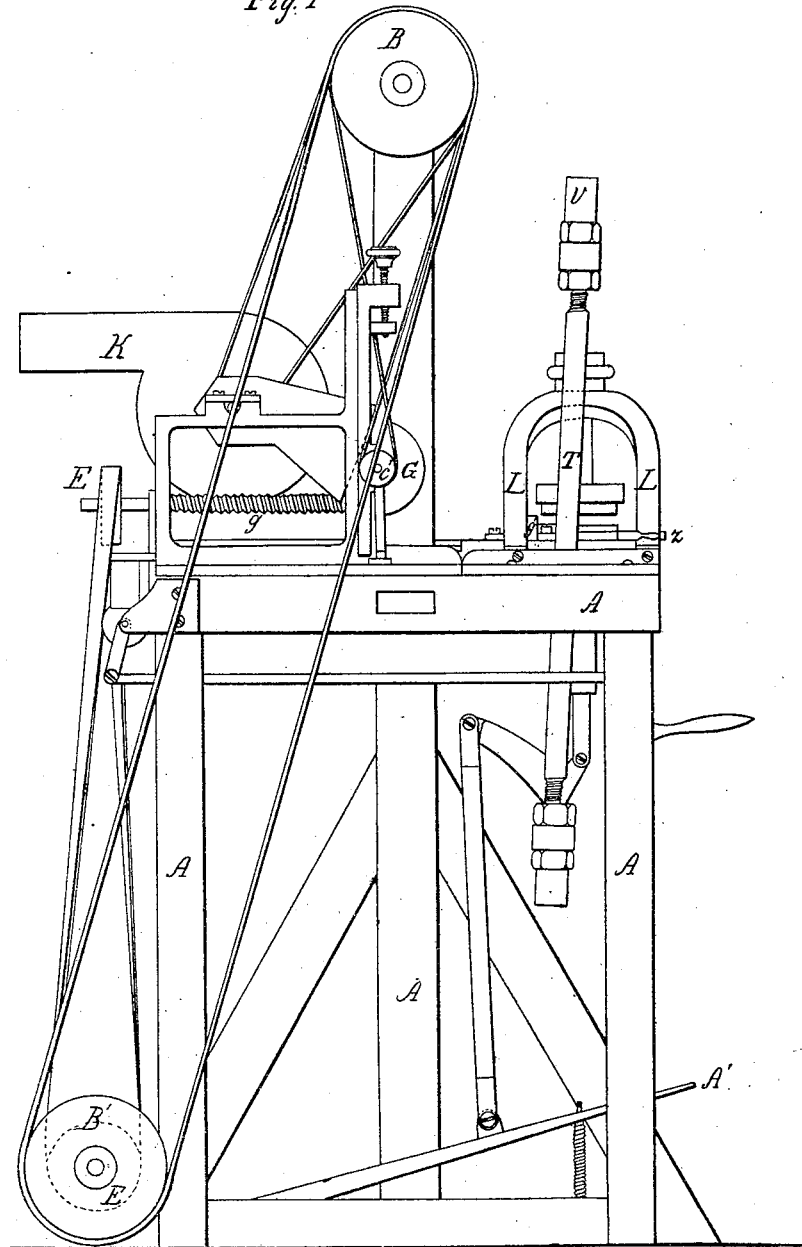
Sheet 1 of 5 Sheets

Machine for Making Lace Paper

No 53991

Patented Apr. 17. 1866

Fig. 1



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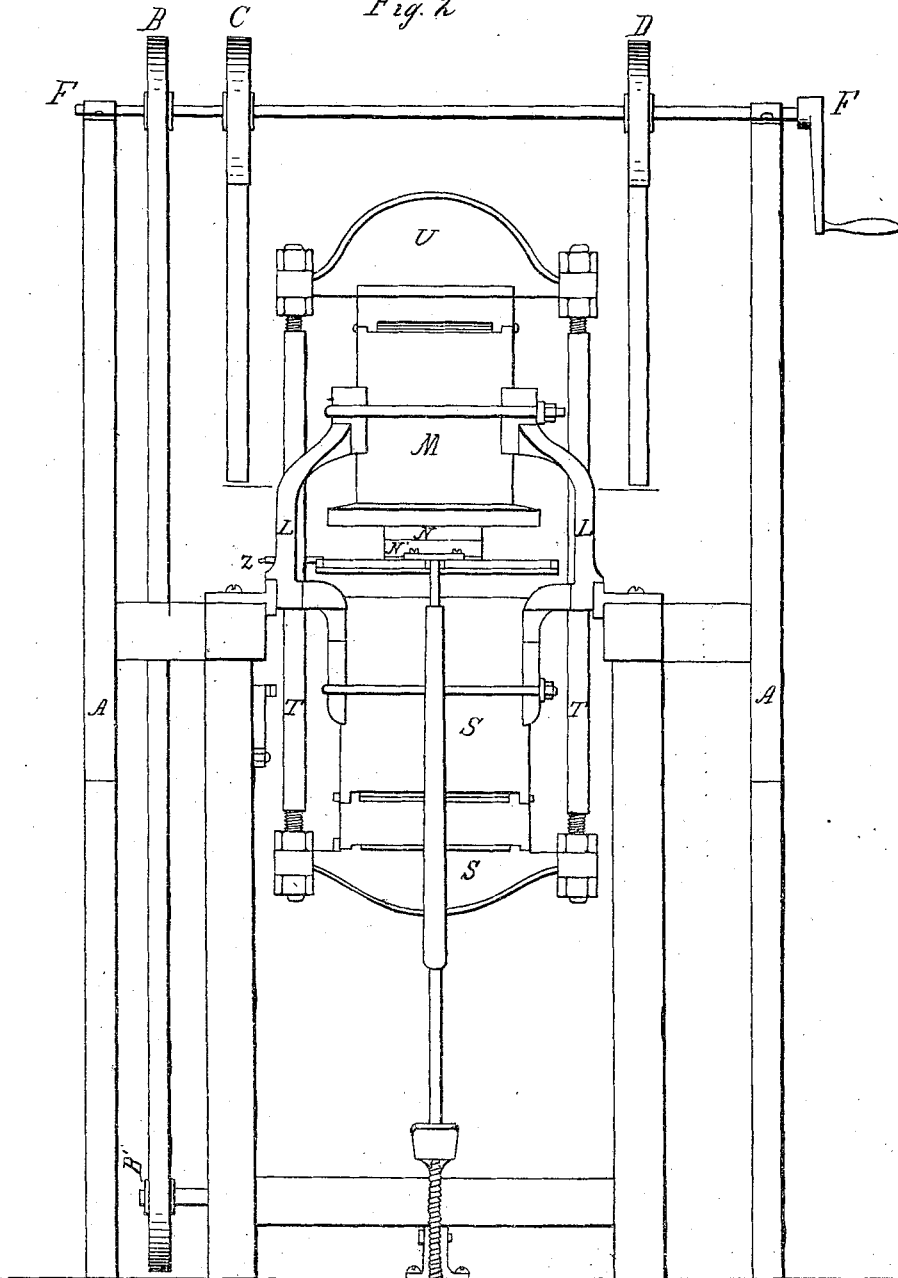
Sheet 2. of 3 Sheets.

Mach^e for Making Lace Paper.

N^o 53991.

Patented Apr. 17. 1866.

Fig. 2



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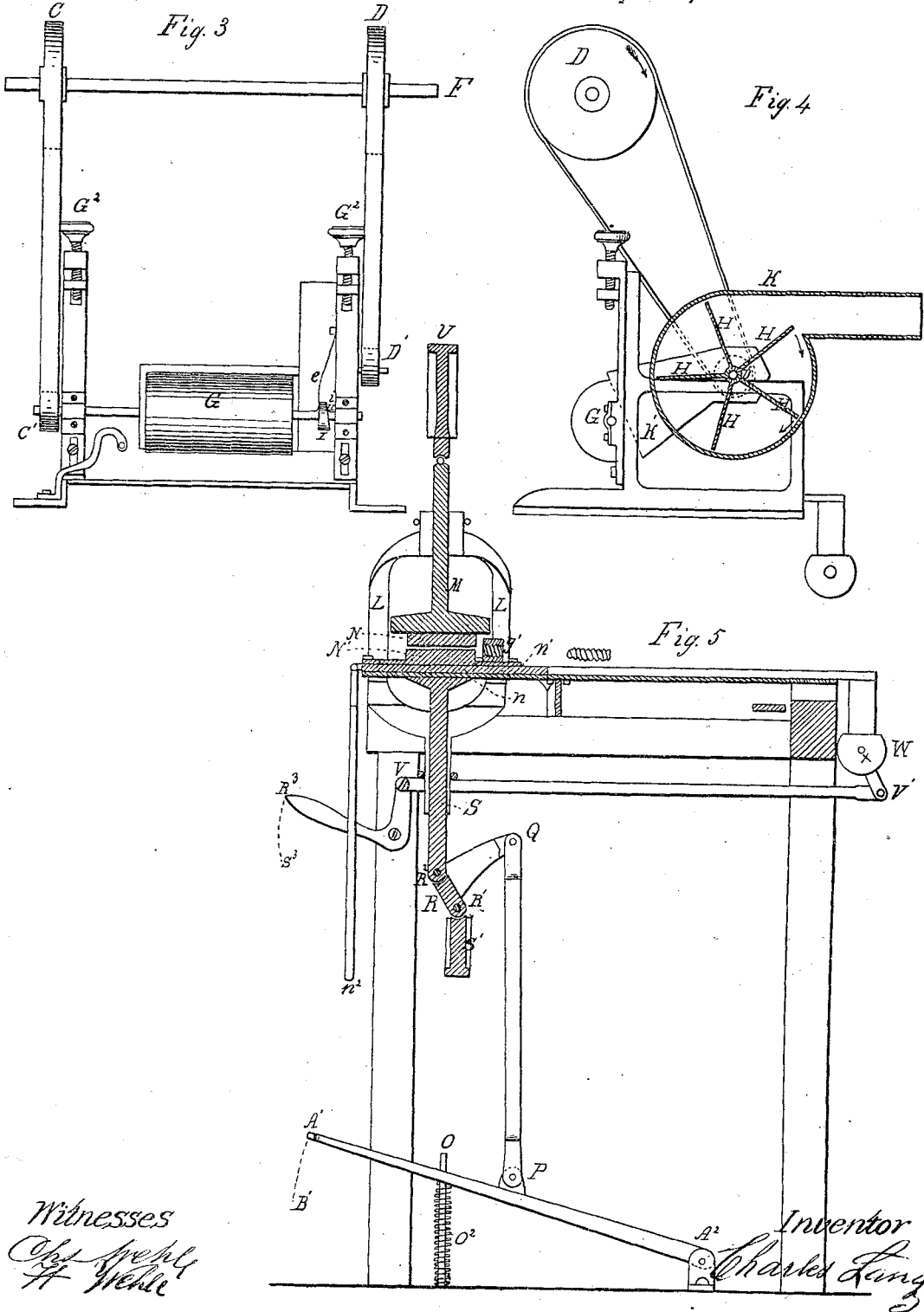
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Sheet 3.3 Sheets.

Machine for Making Lace Paper.

No 53991.

Patented Apr. 17, 1866



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UNITED STATES PATENT OFFICE.

CHARLES LANG, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF LACE-PAPER.

Specification forming part of Letters Patent No. 53,991, dated April 17, 1866.

To all whom it may concern:

Be it known that I, CHARLES LANG, of the city, county, and State of New York, have invented a new and Improved Machine for the Manufacture of Lace-Paper; and I do hereby declare the following to be a full and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a side view of my improved machine with the front frame removed. Fig. 2 represents a front view of my said machine; Fig. 3, a front view of the rotating and vibrating roller G and its connections; Fig. 4, a cross section of the sucking-blower and its connections; Fig. 5, a cross section of the press and its connections.

The same letters mark the same parts in all these figures.

The nature of my invention consists in constructing a machine capable of performing all the operations required for transforming usual paper into lace-paper.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I deem it proper to state that by Letters Patent of the United States granted to me on the 31st day of January, 1865, and bearing No. 46,115, I have described a method for grinding off or removing the elevated parts of embossed paper, and that the principle of that operation is the same as the principle of that part of my new machine performing the same operation, although the device is here somewhat different, and that I therefore refer to the description and drawings, forming a part of said patent No. 46,115, for the better understanding of that part of my present machine which relates to the same operation.

In the annexed drawings, A A A represent the wooden frame of the machine. B and B' are a set of fixed pulleys, around which an endless belt, B B', passes direct. C and C' are another set of pulleys, around which an endless belt, C C', passes crossed. D and D' represent a third set of pulleys, around which an endless band, D D', passes direct, and E and E' represent another set of pulleys, around which an endless belt passes half twisted.

The pulleys B, C, and D are fixed on one axle, F F, which is the principal axle of the

machine. The pulleys B' and E' are fixed on one axle on the lower part of the machine.

The pulley C' is on the same axle on which the drum G is fixed, and also the cam I, as is shown in Fig. 3 of drawings. The pulley D' is on the same axle on which the fans H H H H H of the blower K are fixed.

In Fig. 5 the press is represented in such a manner as to show the fixed and permanent parts thereof with black colors and its movable parts in red colors.

L L represents the frame of the press, which is permanently fixed to the frame of the machine. M represents the center piece of said frame, to the lower part of which the die N is fixed, which contains the design which is to be produced on the lace-paper in relief. N' represents the plate or die containing the same design depressed or sunk.

A' A² represents the foot-lever or foot-presser of the press. It is movable on a pivot, A².

O represents a fixed pin, on which a spiral spring, O², is wound. The pin passes through a hole in the lever, and after the lever A' A² is pressed down, as indicated by A' B', and the pressure is released, the said lever will resume its original position by the pressure of the spring O² upward.

On the upper part of the presser-foot A' A² there is a pivot, P, on which a vertical link, P Q, hinges. At Q there is another pivot for a lever in an oblique direction, Q R, which lever is pivoted below at R' and above at R², both pivots being connected with the movable frame of the press S and S', and with the two rods T and T', which serve to complete the connection between the lower part of the press S and its upper part, U, which upper part admits but of a slight motion by the working of the system of levers and rods above mentioned.

The plate n, to which the die N' is fastened, slides horizontally on a bed-plate, n', and may be pulled out entirely by the movable handle n².

R³ represents an angular lever attached to the frame of the machine, which angular lever, by means of the pivot V and lever V V', with another pivot at V', is connected with another lever and cam, W, by means of which a plate, in continuation of the bed-plate n', may be somewhat raised or lowered. It will be lowered and in its normal position when the angular handle R³ is in the position represented by Fig. 5,

and raised when the said handle is moved downward, which movement is indicated in said figure by the line R³ S³. The said cam W is fixed to an axle, X, which extends through the width of the machine, and contains on the opposite side thereof another cam of the same form and shape, so that the said plate, in continuation of *n'*, is lifted uniformly, and the said cams are so constructed as to admit no higher elevation of the plate than to the level of the lower surface of plate *n*. On the left side of plate *n*, in Fig. 2, there is a small spring-catch and spring, Z, which serves to keep the plate *n* in the position which is shown in Fig. 5—that is, during the pressing of the paper—and when it is desired to shove the said plate to the rear of the machine under the drum G, Fig. 4, the said spring-catch Z is pressed, when the said motion may be accomplished.

G represents an adjustable vibrating and rotating roller or drum, the rotation of which is accomplished by the rotation of its axis, and its vibration by means of the small cam I, being pushed on one side by a fixed small pin, *i*, and on the other by the spring *e*.

Connected with the rotating and vibrating roller G is the sucking-blower K, of the usual construction, with fans H, H, H, H, and H. The said rotating and vibrating drum is covered on its surface with a layer of ground glass, emery, or similar substance, or the drum may be formed of said substances.

On the axle of the pulley E is a screw, *g*, which is turned by the said pulley, and forms a sliding feed for the plate *n*, when shoved to the said screw, the said plate being provided with a hollow screw, *g'*, which fits exactly to the screw *g*, and which hollow screw, when once in contact with the other screw, *g*, will be slid with its plate *n*.

It is not necessary that the drum G should form a full cylinder, but it may be part of a cylinder, as represented by B on the drawing forming part of the schedule of my former patent, herein referred to.

It will be observed that the whole machine, except the press and parts immediately connected therewith, is put in motion by the rotation of the axis F F. In the drawings it is represented that this axle should be moved by hand, but it is clear that the same motion may be accomplished more regularly by steam or other mechanical power.

This machine is used in the following manner: The paper which I wish to convert from plain paper into lace-paper is pressed between the upper die and the lower die by pressing down the foot-presser A' A², when the paper will have received the imprint of the design on the dies, and will be what is termed "embossed paper." The catch Z is then detached, the lever R³ S³ is lowered, whereby the drop-plate is raised, and then the plate containing the die is moved to the feed-screw, then the axle F F is brought in rotation, when the plate will be fed under the drum G until the die has passed the said drum. During this passage the said drum will grind off or remove the elevated parts of the embossed paper, after which the drop-plate is lowered by means of the handle R', the die with the plate is pulled forward by means of the movable rod *n*², and the paper will be taken out as finished laced paper.

The operation of the sucking-blower K is as follows: By the rotation of the principal axis F F the pulleys D and D' are turned in the direction indicated by the arrows in Fig. 4, whereby the wings H, inside of the blower K, will be turned in the same direction, thereby a draft of air will be produced in the blower-frame K, inclosing part of the drum G, which will be sufficient to carry off and remove all dust and waste paper which is rubbed off by the drum G.

The screws G² and G³ serve to adjust the drum G so as to put it higher up or lower down, as may be required.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The paper-lacing machine, substantially as herein described, consisting of a press, an adjustable vibrating and rotating drum or its equivalent, and a sucking-blower, for the purpose set forth.

2. The dropping-plate under the drum or roller G, substantially as described.

3. The sliding feed *g*, in combination with the sliding plate *n*, substantially as described.

CHARLES LANG.

Witnesses:

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HENRY WEHL.