

(No Model.)

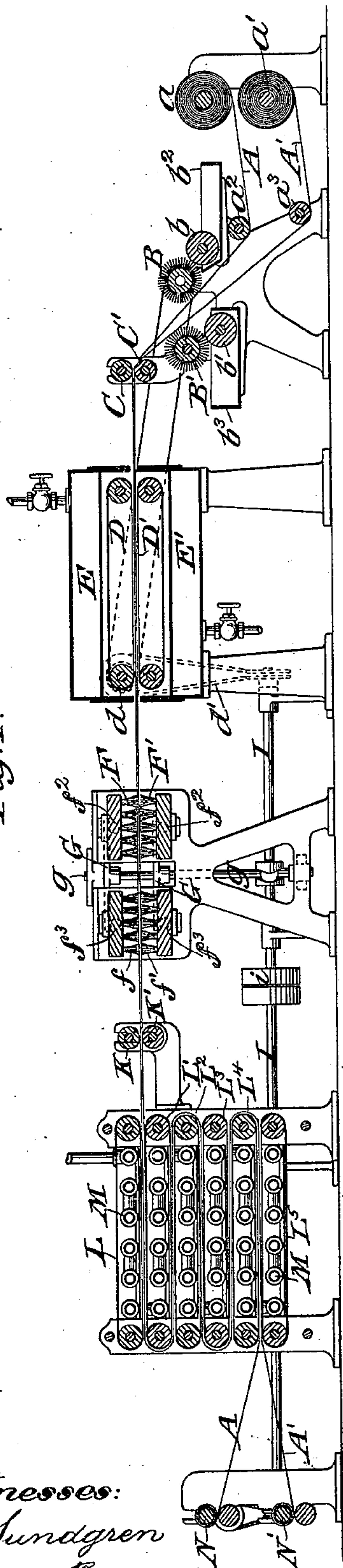
W. SPARKS.

MACHINE FOR COATING OR ENAMELING PAPER.

No. 510,098.

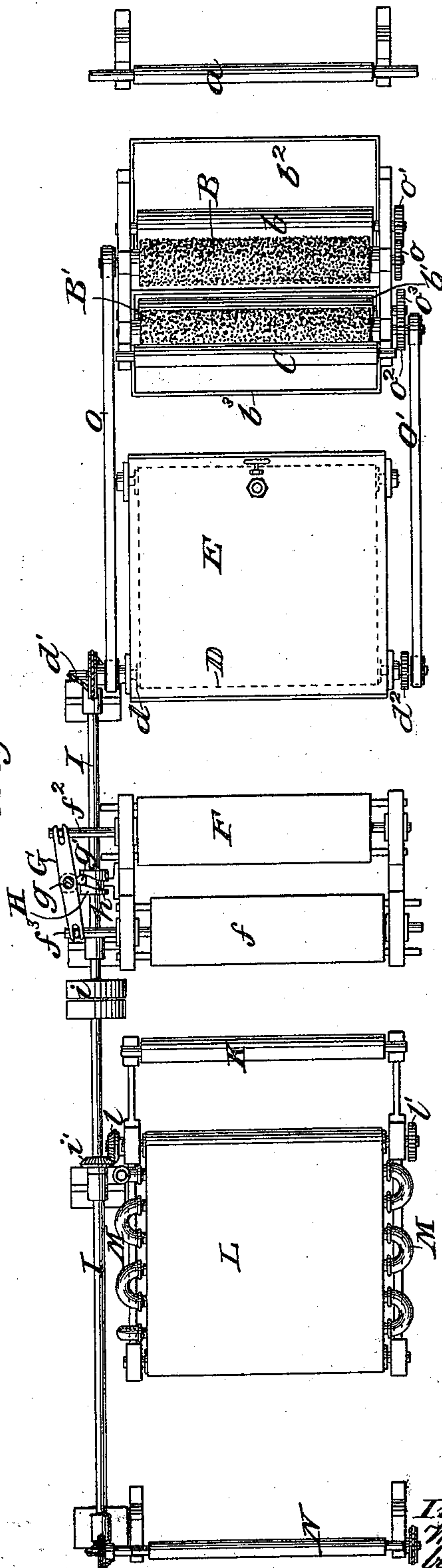
Patented Dec. 5, 1893.

Fig. 1.



Witnesses:
O. Sundgren
George Barry.

Fig. 2.



Inventor:
Walter Sparks
by attorneys
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UNITED STATES PATENT OFFICE.

WALTER SPARKS, OF BROOKLYN, NEW YORK.

MACHINE FOR COATING OR ENAMELING PAPER.

SPECIFICATION forming part of Letters Patent No. 510,098, dated December 5, 1893.

Application filed August 19, 1893. Serial No. 483,549. (No model.)

To all whom it may concern,

Be it known that I, WALTER SPARKS, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machines for Coating or Enameling Paper, of which the following is a specification.

My invention relates to an improvement in machines for coating or enameling paper in which provision is made for simultaneously coating the opposite sides of a single web of paper or for coating one side of each of two simultaneously fed strips of paper.

A practical embodiment of my invention is represented in the accompanying drawings in which—

Figure 1 represents the machine in vertical longitudinal section, and Fig. 2 represents a top plan view of the same.

I have chosen to illustrate my invention the arrangement of parts suitable for simultaneously coating one side of each of two strips of paper, viz., the upper side of one strip and the under side of an adjacent strip, the non-coated sides of the two strips being adjacent to each other as they are fed through the machine. It does not, however, require any reorganization of the parts of the machine to adapt it to coating both sides of a single strip of material other than to simply adjust the brushes which apply the coating nearer together than they are shown in the present drawings.

The two strips of material are denoted by A and A'. They are fed from suitable supply rolls a, a' and pass thence under suitable guide rollers a^2, a^3 upwardly into contact with the coating or enamel applying brushes B, B', the former located in position to engage the upper side of the strip A and the latter in position to engage the under side of the strip A'. The applying brushes B, B' receive their supply of the liquid coating or enamel from distributing rollers b and b' , the former being partially immersed in a supply of the liquid in the receptacle b^2 and the latter partially immersed in a supply of the liquid in the receptacle b^3 . From their engagement with the brushes B, B', the two strips are led between a pair of guide rollers C, C' which bring their adjacent non-coated faces together and the two strips pass thence between a pair of end-

less aprons D, D' which serve to evenly distribute the coating over the faces of the strips and also to partially dry it before it shall have been exposed to dust or contact with any injurious foreign substances. The endless aprons D are composed of some suitable, tenacious, pervious, soft material—such for example as felt—and are located within hot boxes E, E' with a circulation of air admitted more or less freely through the openings in the ends of the boxes or between the boxes through which the strips of material are passed between the aprons. The boxes may be heated by means of a supply of steam kept circulating through them and I provide them with suitable inlet and outlet pipes for such purpose. The material of which the aprons are composed is of such a nature that it will tend to absorb and retain heat so as to effect a partial drying of the coating which has been placed upon the strips. The aprons D and D' are positively driven and serve to feed the strips of paper forward in a manner which will hereinafter be more particularly referred to. From between the aprons D, D' the strips are led between two sets of upper and lower polishing brushes which are made to reciprocate back and forth across the upper and lower faces of the strips as they are fed along between them. The upper and lower brushes of one set are denoted by F, F' and the upper and lower brushes of a second set are denoted by f, f' . The brushes are mounted in suitable bearings by means of stems projecting from their opposite ends, the stems f^2 and f^3 projecting from the corresponding ends of the two pairs being extended beyond the bearings and yoked together by a vibrating yoke G, fixed to an upright rock shaft or spindle g . The shaft g is provided with a projection g' thereon adapted to engage a groove h in the face of a rotary cam H fixed on a drive shaft I. As the shaft I rotates, the shaft g will be rocked, thereby vibrating the yoke G and by the connection of the latter with the supporting stems f^2 and f^3 of the pairs of brushes, the latter will be reciprocated back and forth across the opposite faces of the strip. From the polishing brushes the strips are led between a pair of guide rollers K and K' to a stack of endless aprons, represented by L, L', L², L³, L⁴ and L⁵. The num-

ber of such aprons composing the stack may be three or more. In the present instance I have shown six. These aprons L, L', &c., like the aprons D and D', are formed of some suitable soft, tenacious, pervious material and are kept heated to the desired degree by means of steam coils M, interposed between the opposite parts of each of the several aprons. The strips are fed back and forth between the stack of aprons L, L', &c., until their coated or enameled surface has become completely dried and smooth. The strips may then be separated and led away to their receiving or take-up rolls N, N', which latter may be of ordinary form used commonly in connection with cloth weaving. It is intended that the strips of material shall be engaged by the faces of the aprons L, L' in such a manner as to afford a grip upon them to feed them smoothly along.

The several parts of the machine are actuated as follows: Motion is communicated from a suitable source, not shown, to the drive pulley *i* on the drive shaft I. Bevel gear *i'* on the shaft I engages a bevel gear *l* on one of the drums which carry one of the stacks of endless aprons L, L', in the present instance the lower one, and motion is communicated from this to the other drums by means of intermeshing gear wheels *l'* on the opposite ends of the drums. The means of communicating motion from the shaft I to the vibrating brushes have already been explained. Motion is imparted from the shaft I to one of the drums *d*, carrying one of the endless aprons

D, D', by means of a band *d'* and motion is communicated from the drum *d* to its companion drum by means of gear *d²* upon the opposite end of the drum *d*. Motion is communicated from the drum *d* to one of the brushes B by means of a belt O and from the opposite end of said companion drum to the brush B' by means of a belt O'. The brush B is geared with the roller *b* by suitable intermeshing gear *o, o'* and from the brush B' to the roller *b'* by suitable intermeshing gear *o², o³*.

It is to be understood that the movements of the several parts are so timed that the strips will be fed by the aprons L, L', &c., at the same speed that they are fed by the aprons D, D', the several aprons taking an extended and gentle grip upon the strips, so that even where they are easily torn, there will be no danger of their becoming overstrained by the action of the feed.

What I claim is—

The coating or enameling machine, comprising the coating applying brushes between which the strip or strips of material pass, the combined feeding and drying endless aprons for receiving the strip or strips from the coating brushes, the vibrating polishing brushes adapted to engage the opposite faces of the strip or strips and the stack of drying and feeding aprons for completing the coating, substantially as set forth.

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Witnesses:

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