S. B. B. NOWLAN.

Machine for Varnishing Cloth.

No. 57,955. Patented Sept. 11, 1866.

Fig. 2.

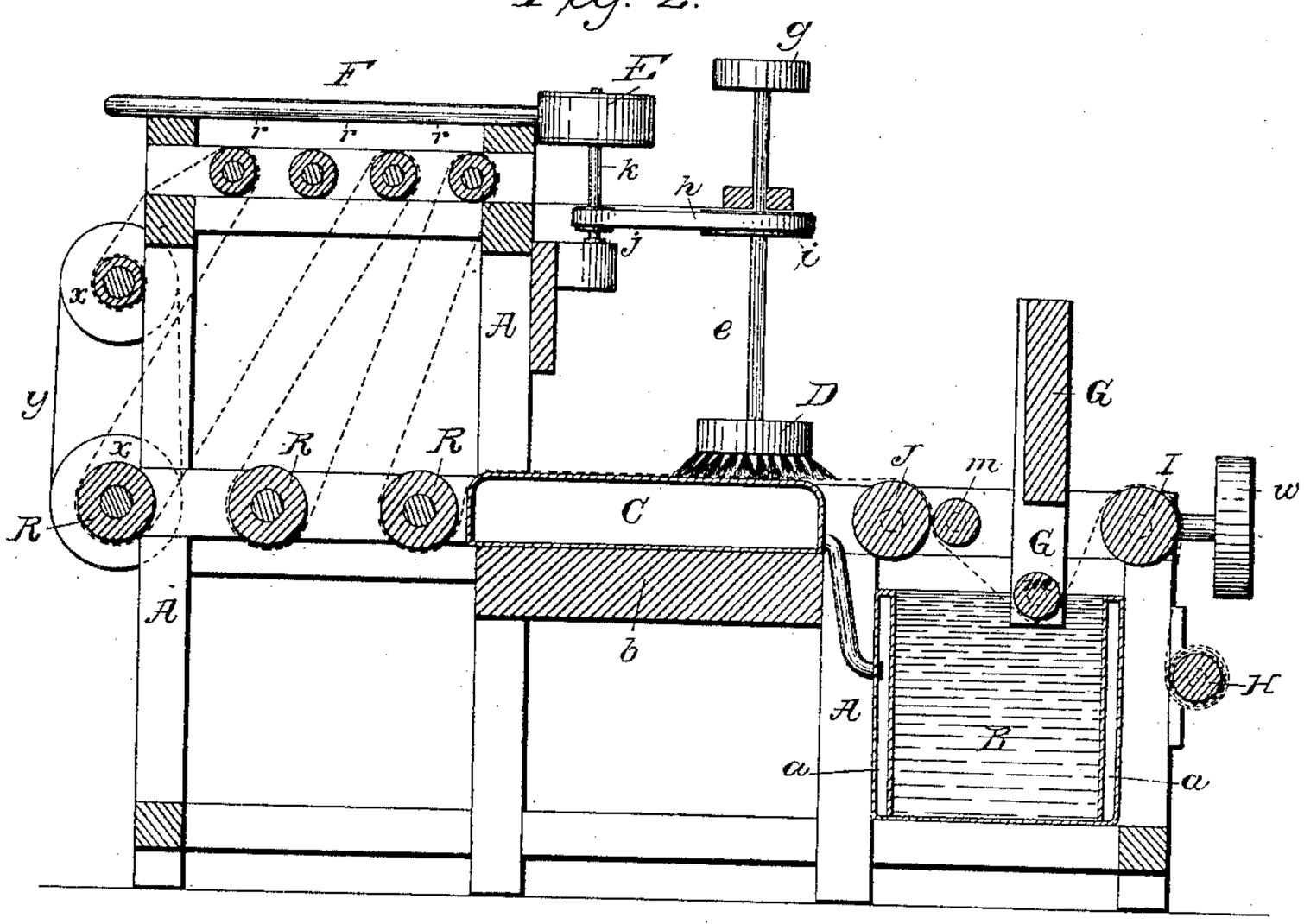
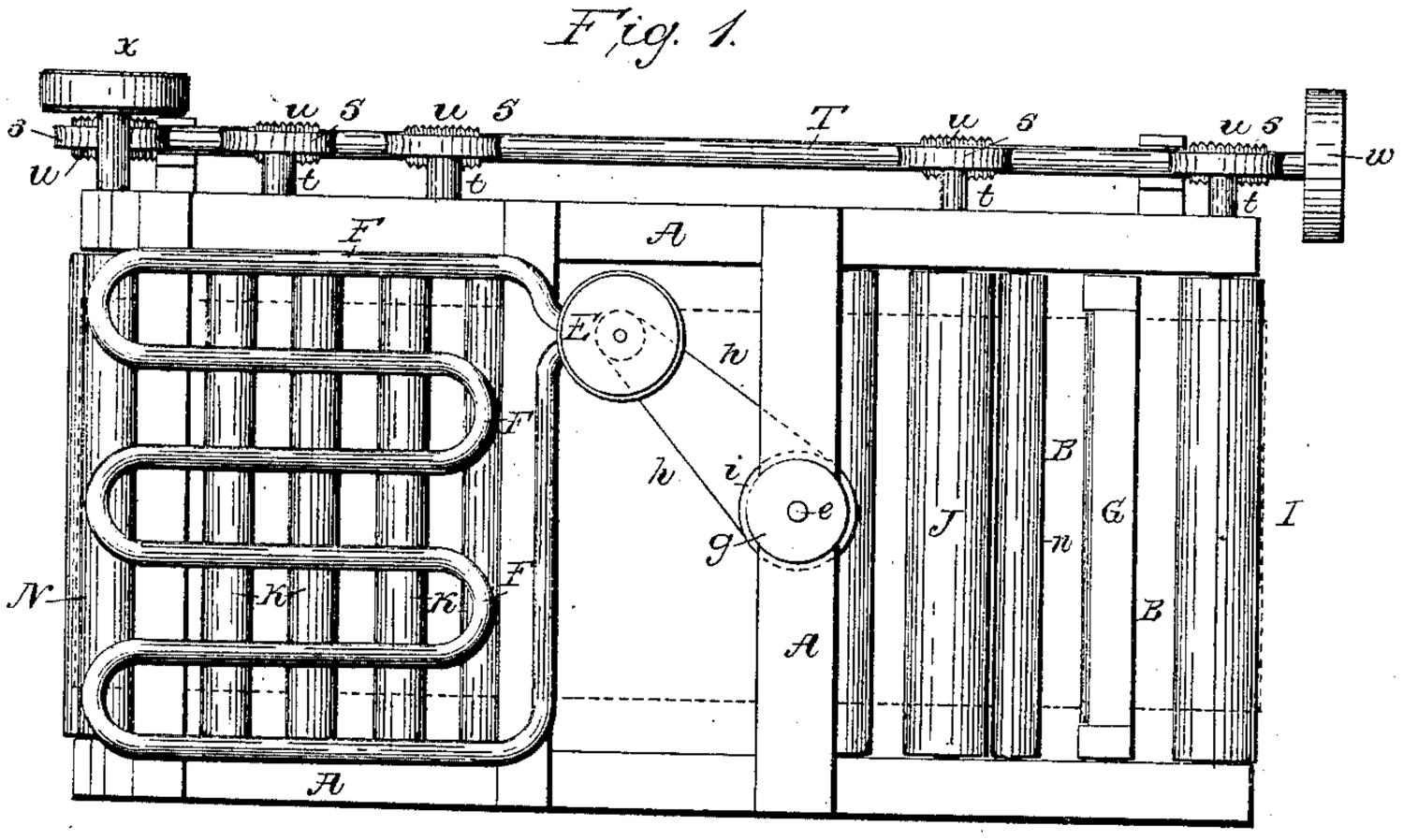


Fig. 1.



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL B. B. NOWLAN, OF NEW YORK, N. Y.

IMPROVED MACHINE FOR VARNISHING CLOTH.

Specification forming part of Letters Patent No. **57,955**, dated September 11, 1866.

To all whom it may concern:

Be it known that I, SAMUEL B. B. NOWLAN, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Varnishing Cloth; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan or top view. Fig. 2 is a central vertical longitudinal section.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in a novel construction of a machine for coating fabrics with varnish, as required in the manufacture of oil or water-proof cloths, whereby the several operations of saturating the cloth with varnish, of removing the surplus varnish from the said cloth and evenly spreading the residue upon its surface, and of thoroughly drying the varnish in and upon the fibers thereof are simultaneously performed upon the different portions of the cloth as it passes through the machine, thus greatly reducing the expenditure of time and labor required in the manufacture of such water-proof fabrics as heretofore conducted.

To enable others to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

A is a strong frame-work, which supports the other portions of the apparatus, and in the front or forward end of which is situated a vat or reservoir, B, which holds the varnish with which it is designed to coat or saturate the cloth. The sides of this vat are made double, with a steam-space, *a*, between them, the steam in the said space *a* keeping the vat warm, and consequently keeping the varnish in a liquid condition during the operation of the machine.

b is a horizontal cross-piece fixed in the frame-work A, and supporting a horizontal steam-table, C, the upper side of which is made of sheet metal or other good conductor of heat, this steam-table C being connected by a pipe, *c*, with the steam-space *a* of the vat B.

e is a vertical shaft, which is suspended and works in a suitable bearing or journal-box fixed in a transverse bar, *f*, and which has a driving-pulley, *g*, attached to its upper end, while upon its lower end is secured a circular or other properly-shaped brush, D, the length or diameter of which should be about equal to the width of the cloth to be varnished. Instead of a single brush, two or more may be employed, of any desired size, and rotated by separate shafts.

A fan-blower, E, is situated at the top or upper part of the frame-work A, and is operated by a belt, *h*, which extends from a pulley, *i*, on the shaft *e* to another pulley, *j*, on the shaft *k* of the fan of the said blower.

F is a serpentine pipe, which is placed upon the upper side of the rearmost portion of the frame-work A, and has its two open ends in communication with the fan-blower E. Formed longitudinally in the under side of this serpentine pipe F is a row of small holes or perforations, (indicated at *v* in Fig. 1,) so that when air is forced into the said pipe by the fan-blower E it will be forced out downward through the aforesaid holes or perforations in the under side of the aforesaid pipe.

Situated in the forward part of the frame-work A is a vertical transverse sliding frame, G, which works in suitable guides formed in the aforesaid frame-work, so that the frame G may be moved up or down when desired to increase or diminish the tension of the cloth during the varnishing operation, and also to enable the cloth to be varnished with equal facility at whatever height the varnish may be in the vat, as will be hereinafter fully explained. The lower end of this frame G projects downward into the vat B, and carries a roller, *m*, at its lower side, the said roller *m* extending from one end of the frame to the other.

Working in suitable bearings secured upon the extreme front end of the frame-work A is a horizontal transverse roller, H, and at the upper front corner of the said frame-work is another transverse roller, I. A similar roller, J, is situated in front of the steam-table C and over the rearmost side of the vat B. *n* is a smaller roller, which is placed in front of the roller J, parallel with and nearly in contact with the same.

R represents three transverse horizontal rollers, which may be placed on a level with each other, and which are situated in rear of the

steam-table C. These rollers R, together with the rollers I and J, are all of the same size; and fixed upon one end of the shaft *t* of each one is a worm-wheel, *s*, which meshes into a screw, *u*, formed upon a longitudinal shaft, T, which is situated at one side of the frame-work A, and is rotated by a belt upon the pulley *w*, attached to one end of the said shaft T.

K are transverse rollers corresponding in number with the rollers R, and placedi n the upper part of the frame A, over the said rollers R and underneath the serpentine pipe F.

N is another transverse roller, which is situated at the rearmost end of the frame-work A, and which has a pulley, *x*, fixed upon one of its ends. A similar pulley, *z*, is fixed upon the corresponding end of the rearmost roller R, and the two pulleys are connected by a belt, *y*, so that the rotation of the roller R communicates a corresponding rotary movemnnt to the roller N.

The vat B being filled with varnish, steam of any desired temperature is let into the steam-space *a* of the vat B, and consequently into the steam-table C, and a rotary motion is communicated to the brush D by a belt acting on the pulley *g*, the belt *h* at the same time operating the fan-blower E.

The cloth to be varnished is represented in red lines in the drawings, and, previous to being varnished, is wound or rolled upon the roller H. The outer end of the cloth is then drawn or extended back, first over the roller I, then underneath the roller *m* of the slide G, then upward between the roller J and the scraper *n*, and then back over the flat horizontal surface of the steam-table C, and then underneath the foremost roller R, whence it is carried alternately over the rollers K and under the rollers R, and is finally secured to the roller N. The several rollers being rotated by the means hereinbefore fully set forth, and in such direction as to unwind the cloth from the roller H and wind it upon the roller N, the cloth is drawn back through the varnish in the vat B, (its tension being regulated by the pressure of the roller *m*,) the varnish adhering to and saturating the same, thence between the rollers J and *n*, which squeeze or express the surplus varnish therefrom, and thence over the warm upper surface of the steam-table C and underneath the brush D, the warmth of the steam-table keeping the varnish in a fluid condition, while the brush D spreads it evenly over the surface of the cloth. The cloth then passing over the rollers R and K, as hereinbefore explained, the varnish is dried by the air forced downward upon the cloth through the holes *r* in the under side of the serpentine pipe F by means of the fan-blower E, the tension of the cloth while thus passing through the machine being determined by the pressure upon it of the roller *m* of the frame G, and the said frame being pushed downward as the quantity of varnish in the vat B is reduced in order to insure the proper passage of the cloth through the said varnish. The varnish being thus dried, the cloth is wound upon the roller N. When the entire piece of cloth is thus wound upon the roller N, the said roller is removed and replaced by another, the roller H being also replaced by one upon which is wound the succeeding piece of cloth, upon which the same operation is performed.

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

1. The steam-table C, arranged underneath the cloth and in relation with the brush D, substantially as herein set forth, for the purpose specified.

2. The adjustable sliding frame G, applied in combination with the vat B, substantially as herein set forth, for the purpose specified.

3. The vat B, pressure-rollers J *n*, and frame G, arranged in relation with each other, and with the steam-table C and brush D, substantially as herein set forth.

4. The arrangement of the blower E and perforated serpentine pipe F with reference to the cloth as it passes from the coating or saturating devices, substantially as herein set forth, for the purpose specified.

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Witnesses:

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