

(No Model.)

2 Sheets—Sheet 1.

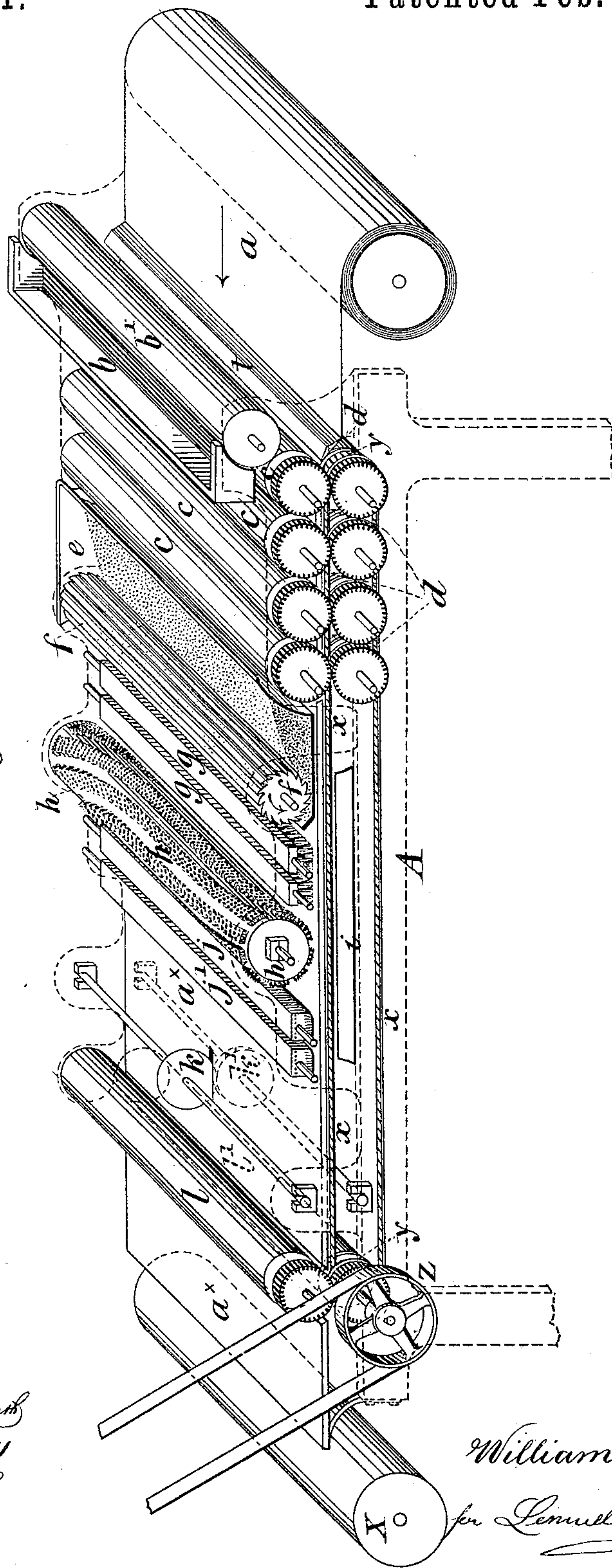
W. MACRONE.

MACHINE FOR VARNISHING OR SIZING AND APPLYING COLORS TO
PAPER, &c.

No. 336,331.

Patented Feb. 16, 1886.

Fig. 1.



Witnesses

Chas. H. Smith
J. Stail

Inventor

William Macrone

per Lemuel W. Perrell

att.

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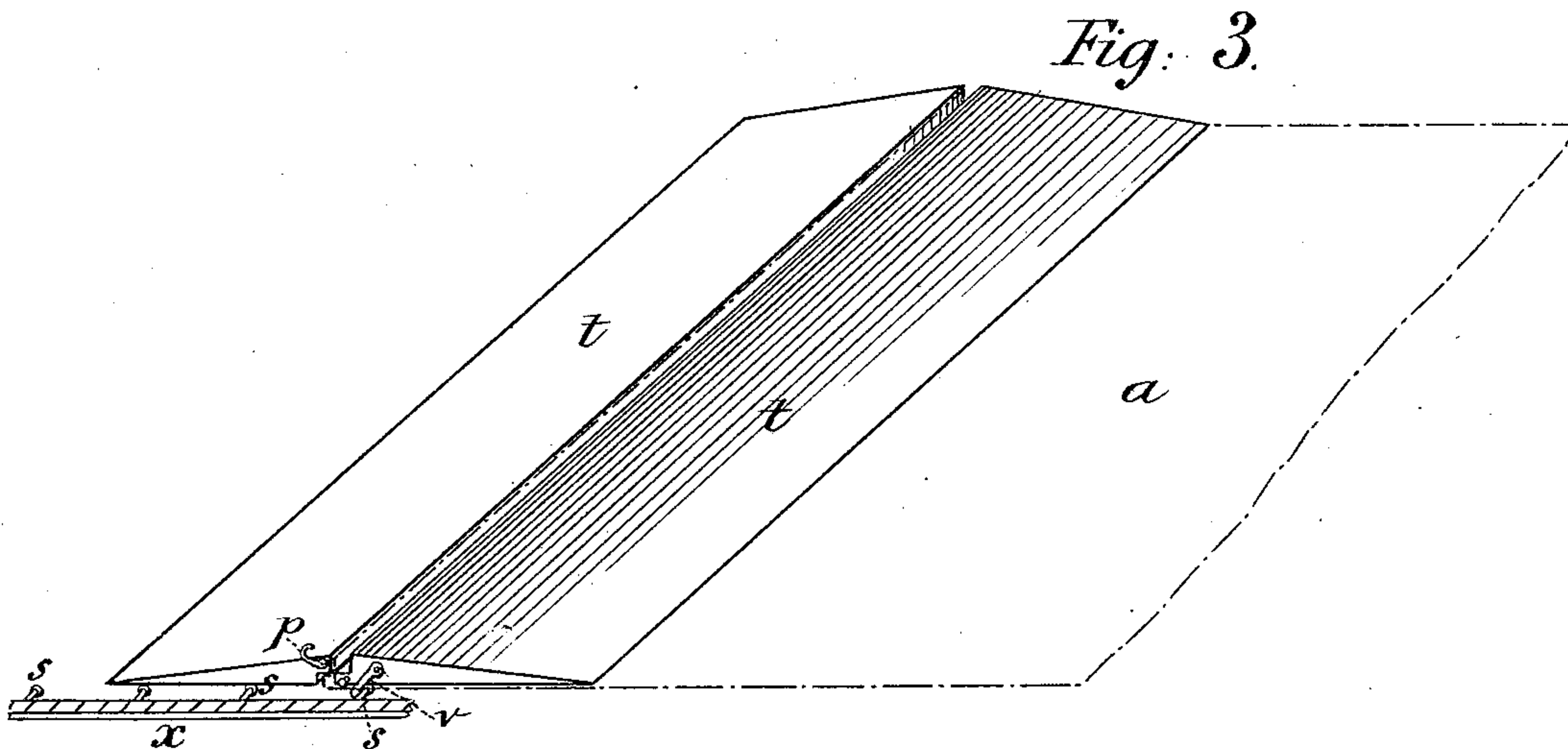
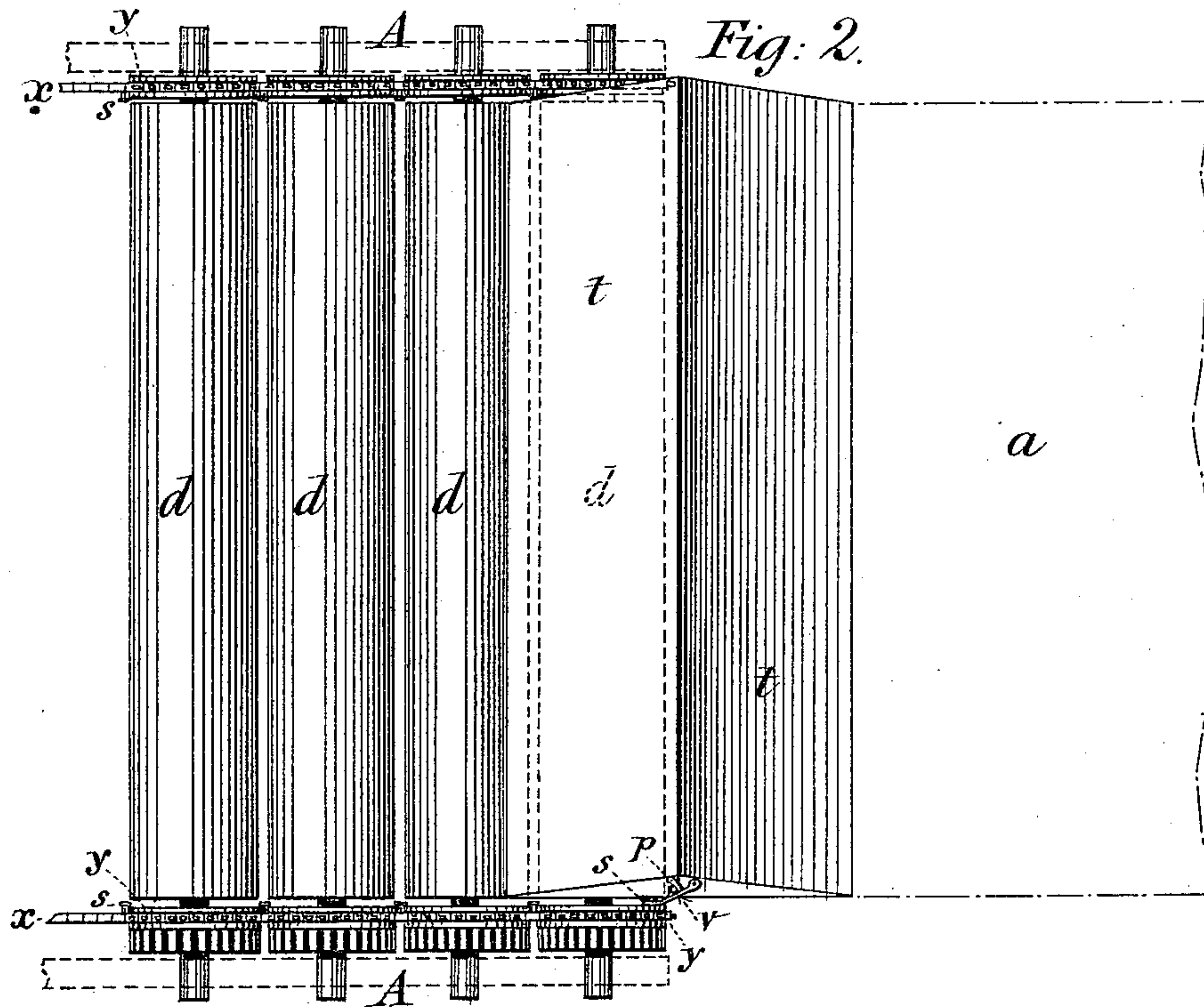
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UNITED STATES PATENT OFFICE.

WILLIAM MACRONE, OF GLASGOW, SCOTLAND.

MACHINE FOR VARNISHING OR SIZING AND APPLYING COLORS TO PAPER, &c.

SPECIFICATION forming part of Letters Patent No. 336,331, dated February 16, 1886.

Application filed November 2, 1885. Serial No. 181,600. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MACRONE, a subject of the Queen of Great Britain and Ireland, residing at Glasgow, in the county of Lanark, Scotland, letter-press printer, have invented new and useful Machinery for Varnishing or Sizing and Applying Colors to Paper and other Fabrics, of which the following is a specification.

My invention relates to machinery for varnishing or sizing paper and other fabrics preparatory to decorating the same, and for depositing and fixing dry colors thereon, either singly or in combination, or on fabrics having a pattern or design, the said machinery consisting of suitable elements or devices arranged to operate substantially in manner as hereinafter described, whereby I am enabled to effect in the same machine the successive operations above set forth.

In the accompanying drawings, Figure 1 represents in perspective view a machine constructed according to my invention. Fig. 2 shows in plan a portion of the machine, in which the upper rollers are removed in order that the means employed for actuating the gripper which draws the fabric from one end of the machine to the other may be clearly seen, the said gripper being shown on an enlarged scale; and Fig. 3 is a perspective and enlarged view of the gripper detached from the machine, showing the same open and the fabric inserted.

A is the frame supporting the various parts constitutive of the machine, and *b* is a ductor of ordinary construction, adapted for receiving the varnish or size to be applied to the fabric to be treated, and which fabric is at the commencement of the operation conducted or guided through the machine by the gripper *t*, hereinafter fully described. From this ductor *b* a continuous supply of size or varnish is communicated by means of the ductor-roller *b'* to a series of flexible distributing-rollers, *c c c c*. These rollers *c c c c* are employed to spread the size or varnish evenly over the surface of the fabric *a*, which is caused to pass beneath them (in the direction of the arrow) and over a corresponding number of clean iron or brass rollers, *d d d d*, (clearly seen in Fig. 2,) traveling at a like speed, whose function is to im-

part pressure to the fabric. This arrangement secures a perfectly uniform deposit of the size or varnish over the whole upper surface of the fabric, and prevents sliding or skidding of the flexible distributing-rollers while working, which otherwise would result if the material being operated upon were dragged through between the rollers and an inert table. The under rollers, *d d*, are each geared independently, and communicate their speed to the upper rollers, *c c*, so that both sets of rollers act as mutual impellers of the fabric. The upper or flexible distributing-rollers are made to lift clear of the lower rollers by well-known mechanism attached to printing and lithographing machines, in order to allow the gripper to pass, and are dropped into gear successively as the end of the gripper passes from under each roller.

Immediately on leaving the rollers the fabric passes under a suitably-g geared fluted roller, *f*, revolving in a pan or receptacle, *e*, which contains dry color or colors reduced to an impalpable powder. This pan is open in front, and is provided with a lip, *e'*, which incloses about one-third of the fluted roller on the delivery side. In the revolution of this roller the flutings catch up the color or colors and throw it or them from the slightly overhanging portion of the roller. This color falls clear of the lip of the pan in a thin continuous stream upon the varnished or sized surface of the fabric. The flutings on the roller being on the principle of an inclined plane, the color falls out of each fluting before it reaches the center of the diameter of the roller. From this fluted roller the fabric then passes over a table, *a'*, and under two or more brushes, *g g*, these latter having a swift to and-fro motion across the machine imparted to them through suitable gearing, so that the whole of the varnished or sized surface becomes fully charged with the dry color or colors, which, with that object in view, is supplied by the fluted roller slightly in excess of what the varnish or size can take up. On leaving these elements the fabric passes under a revolving spiral brush, *h*, (or brushes,) provided with a cover, (not shown in the drawings,) and which brush sweeps the excess color into a receptacle, *i*, to one side of the machine. Thence the fabric

passes under pads $j j'$, covered with plush, having a swift to-and-fro motion imparted to them by suitable means. These pads assist the setting or hardening of the combined varnish and color or colors and produce a permanent gloss upon the now finished manufactured article. The fabric thus treated is quite dry enough to be handled and rolled up. A cutter, k , working through a slot in the table upon a roller, k' , mounted beneath the table, may be employed to cut the fabric into convenient widths before it passes finally from the machine to the receiving-roll, upon which it is wound. Any number of sets of cutters and rollers may, however, be employed, according to the widths of fabric required to be cut.

$l l'$ are tension-rollers for drawing the fabric through the machine after it has been decorated.

The gripper t , before referred to, and shown in detail in Fig. 3, is for the purpose of drawing the fabric, after it has been placed therein by hand, between the rollers c and d , and through the machine, until it reaches the end of the table a^x , where it is then cut off by the attendant and removed until again required. The end of the fabric is then conducted by the attendant to the winding-up roller X. This gripper t consists of two portions, forming inclined planes, so constructed as to form jaws, and close upon each other in order to grip the fabric between the same. The portions are connected together by hooks p , or by springs or other suitable means. At the sides of these inclined portions are fixed catches or claws v , which take over or onto studs or buttons s , fixed on the pitch chains x . These pitch-chains travel over pitch-wheels y , mounted on the axis of the under rollers, d , and are actuated by the pulley Z, which is mounted on the axis of the lower tension-roller, l' . These pitch-chains and their wheels may thus be used to drive the entire series of rollers, together with the fluted roller and the revolving brush, and by suitable cam or other attachments on these chains lateral motion may be imparted to the brushes $g g$ and pads $j j'$. I do not, however, restrict myself to this means of driving the machine, as any other suitable means may be employed for the purpose.

Having now described my invention, I declare that I claim—

1. In machinery for varnishing or sizing fabrics and for applying dry colors thereto, the combination of a fluted revolving roller and a color-holding receptacle, as and for the purpose described.

2. In machinery for varnishing or sizing fabrics and for applying dry colors thereto, the special arrangement and combination of the series of flexible distributing-rollers and the pressure-rollers, for the purpose of securing uniform deposit of the size or varnish on the fabric, and for preventing sliding or skidding of the flexible rollers, as described and shown.

3. The gripper consisting of two portions forming jaws between which the fabric is held, and means for connecting the jaws in their closed position, as described and shown, and for the purposes set forth.

4. The improved machinery for effecting successively the combined operations of varnishing or sizing paper and other fabrics and applying dry colors thereto, as set forth, consisting of a series of rigid pressure-rollers and a series of flexible distributing-rollers operating relatively to each other, a ductor for holding the varnish or size, and a roller for distributing the varnish or size to the flexible rollers, a color-holding receptacle provided with a lip, and a fluted roller revolving in said receptacle, brushes for charging the sized surface of the fabric with the color, a revolving spiral brush for sweeping away excess color from the fabric, pads for setting and hardening the combined varnish and color and imparting gloss, tension-rollers for drawing the decorated fabric through the machine, and mechanism for operating the said devices, substantially as herein described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM MACRONE.

Witnesses:

JOHN MUIR,

JAMES MACRAE,

Both of 176 West George Street, Glasgow, Solicitors.