

(No Model.)

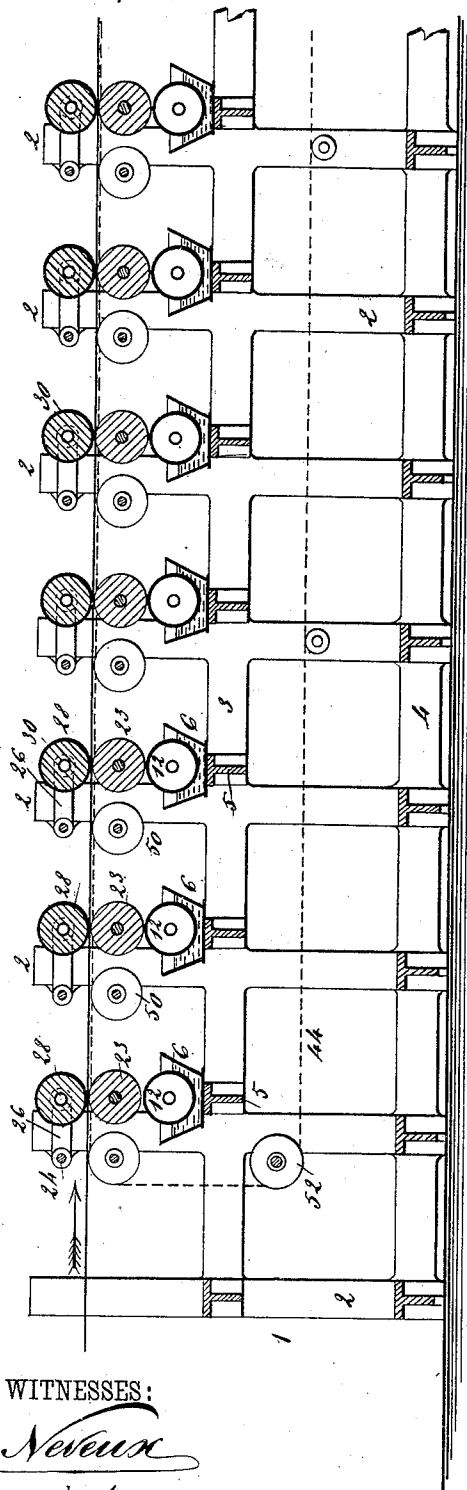
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G. DAVISON, Jr.
MACHINE FOR PRINTING OIL CLOTH, &c.

No. 369,925.

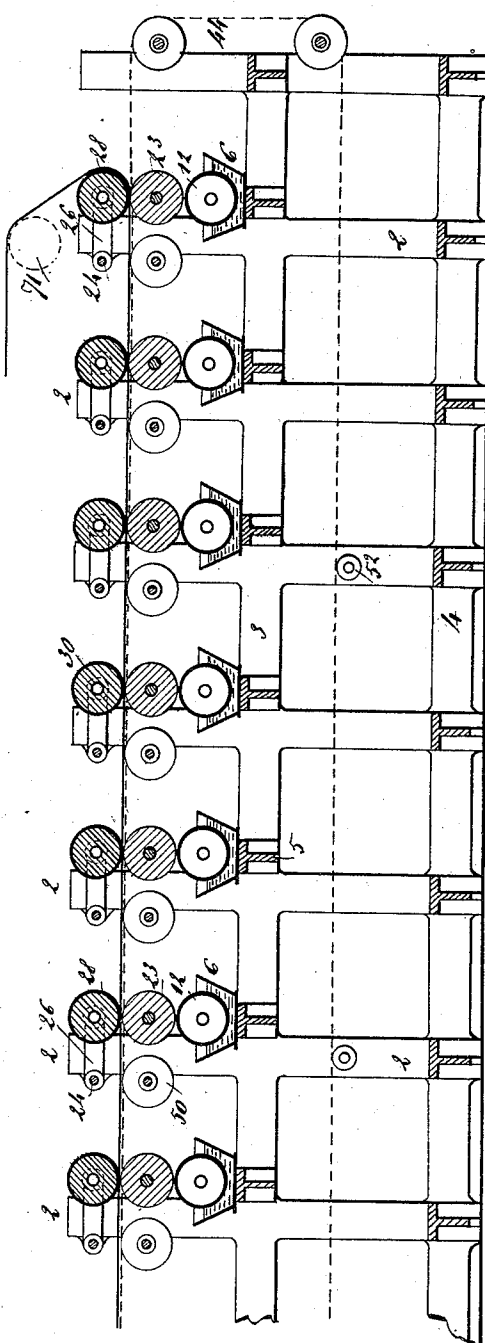
Patented Sept. 13, 1887.

Fig. 1



WITNESSES:

C. Neveu
C. Sedgwick



INVENTOR:

G. Davison Jr.
Munn & Co.

BY

ATTORNEYS.

(No Model.)

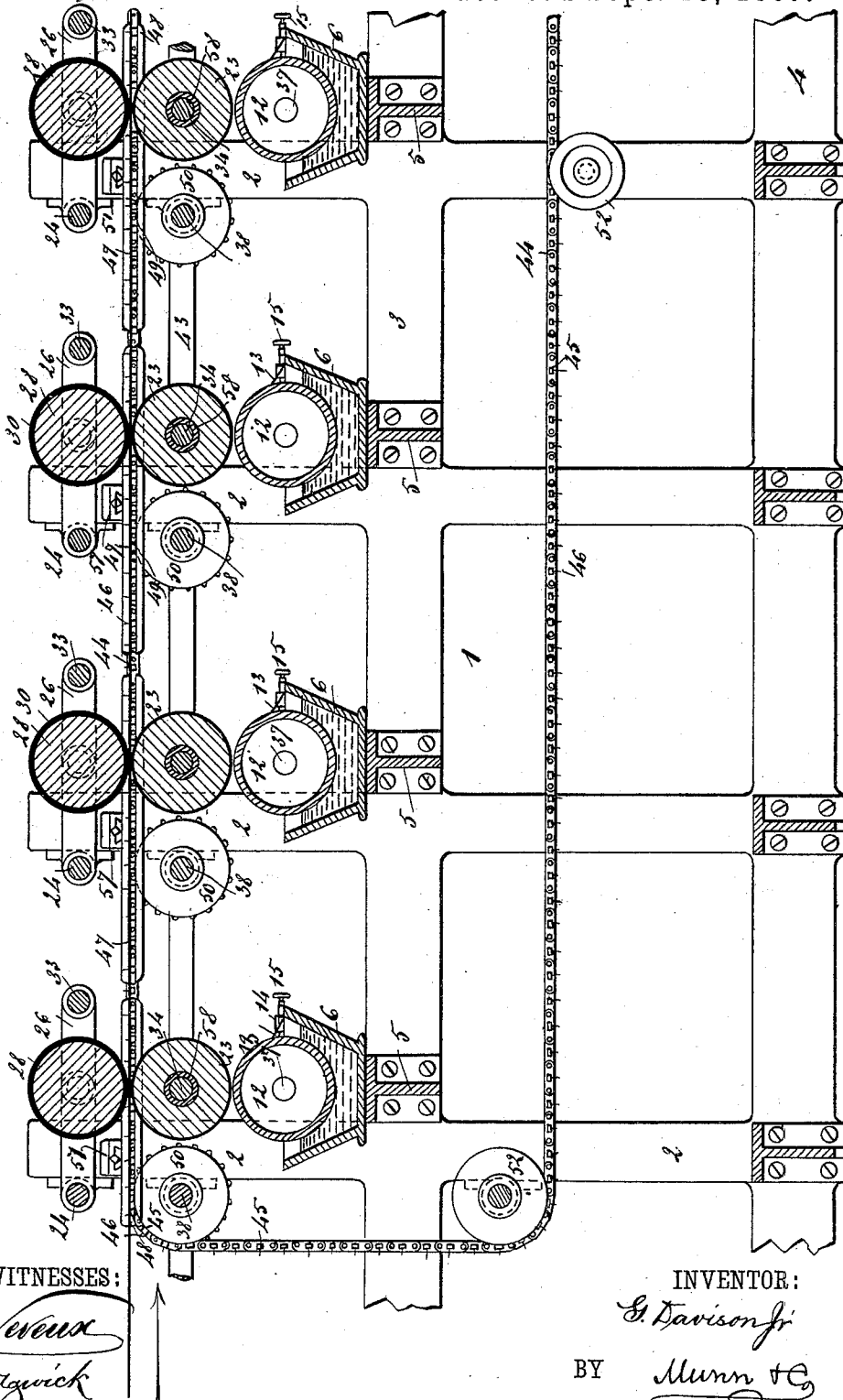
6 Sheets—Sheet 2.

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Fig. 2



WITNESSES:

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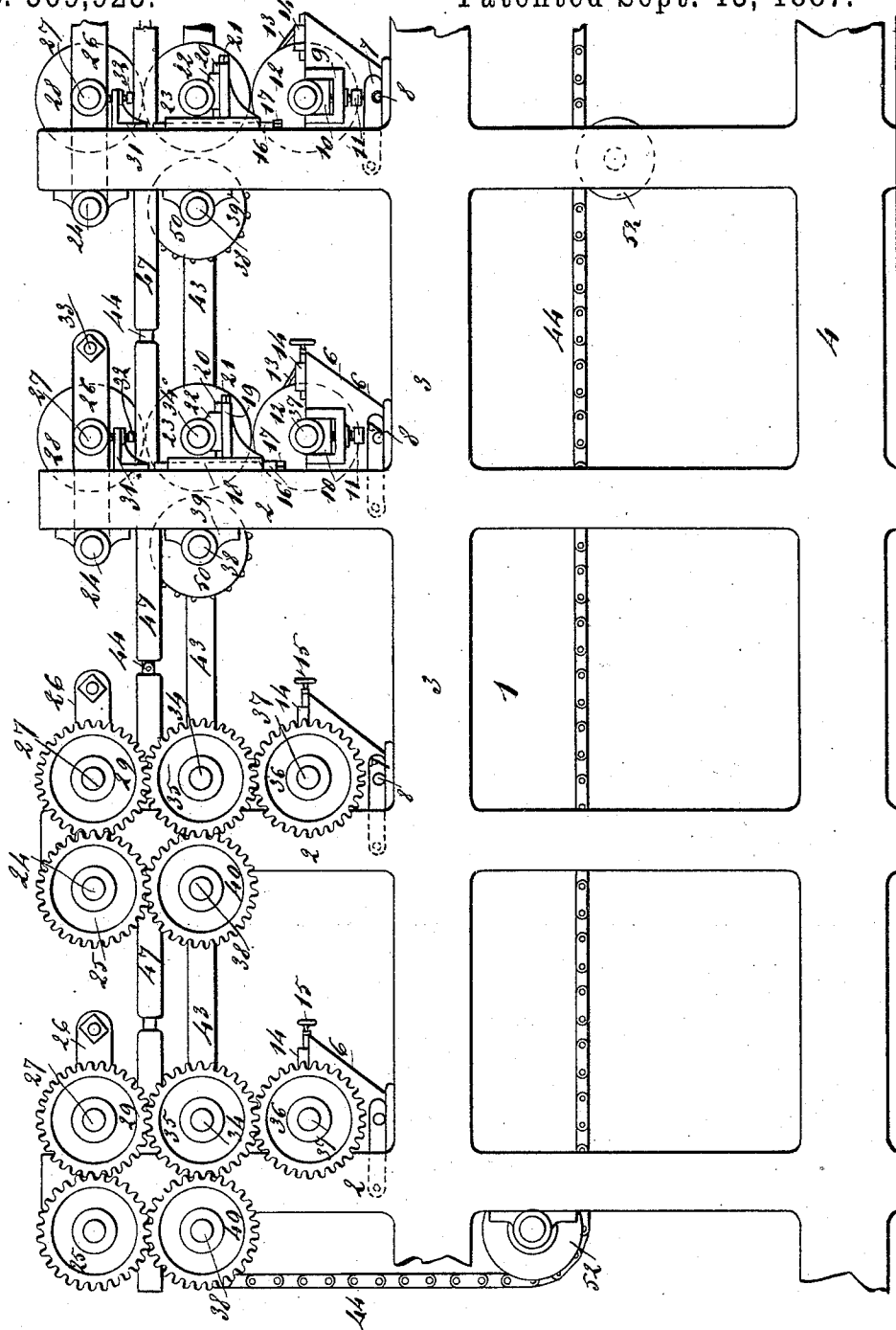
ATTORNEYS.

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Fig. 3



WITNESSES:

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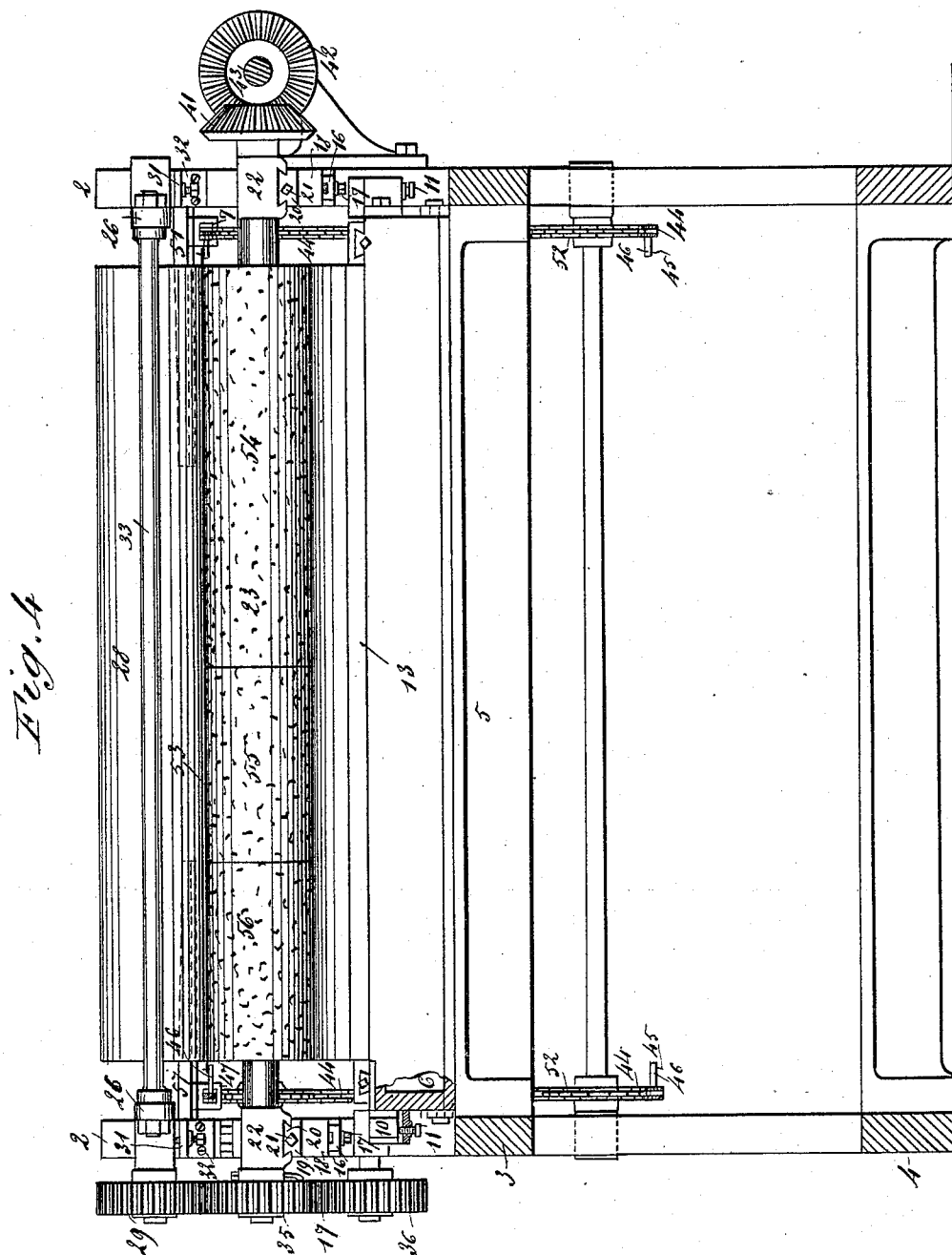
(No Model.)

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G. DAVISON, Jr.
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Patented Sept. 13, 1887.



WITNESSES:

C. Neveu
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INVENTOR:

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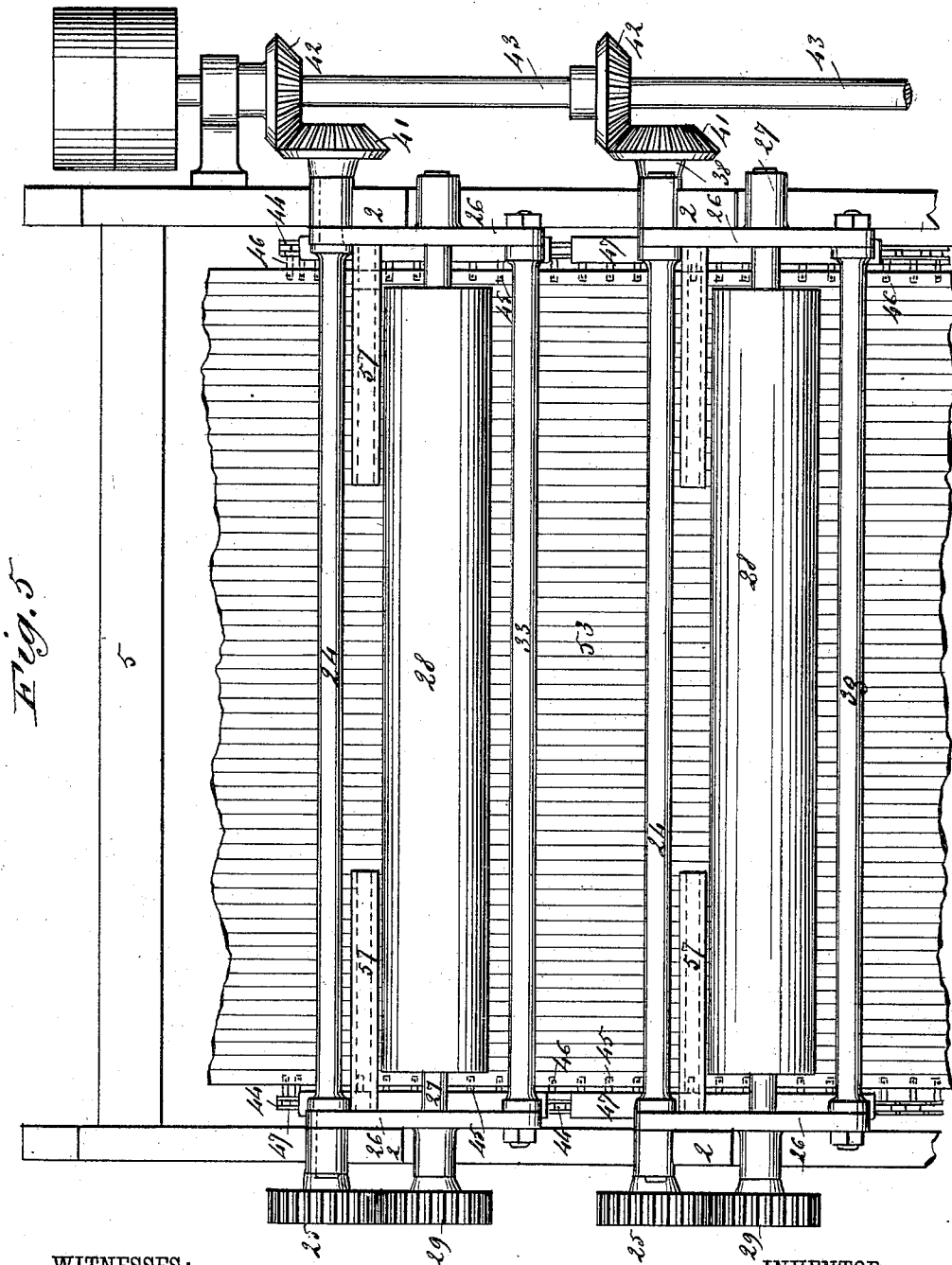
(No Model.)

6 Sheets—Sheet 5.

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WITNESSES:

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6 Sheets—Sheet 6.

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Fig. 6

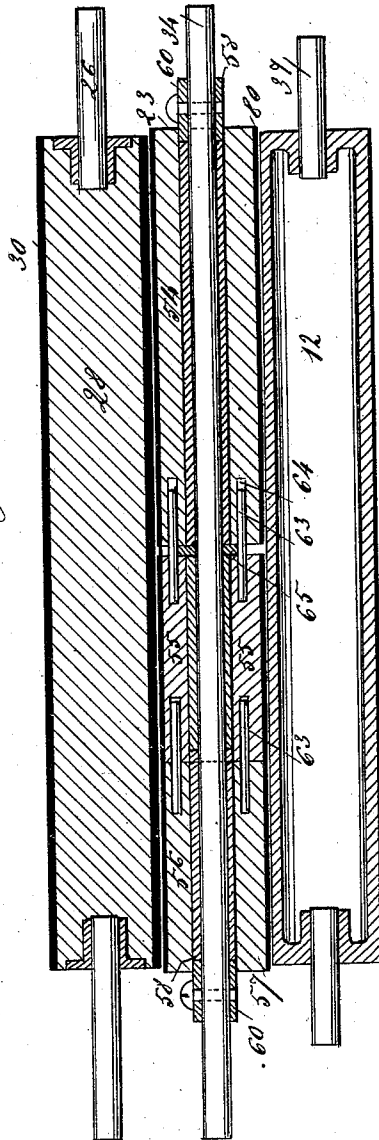


Fig. 7

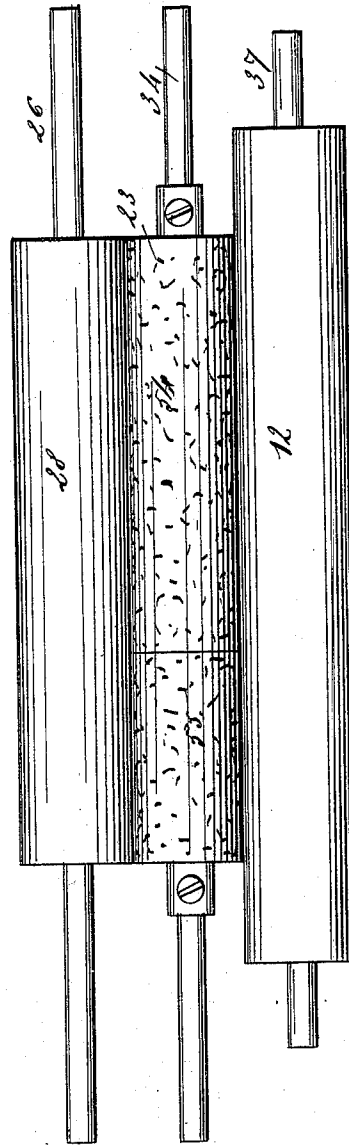


Fig. 11

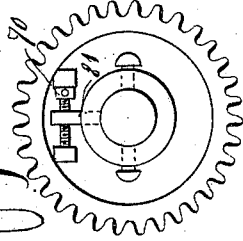


Fig. 8

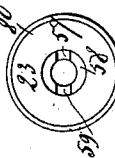
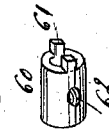


Fig. 10



WITNESSES:

C. Xeroux

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UNITED STATES PATENT OFFICE.

GEORGE DAVISON, JR., OF BROOKLYN, NEW YORK.

MACHINE FOR PRINTING OIL-CLOTH, &c.

SPECIFICATION forming part of Letters Patent No. 369,925, dated September 13, 1887.

Application filed June 4, 1887. Serial No. 240,263. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DAVISON, JR., of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Machine for Printing Oil-Cloth and Similar Material in Color, of which the following is a full, clear, and exact description.

My invention relates to a machine for printing oil-cloth and similar material in color, and has for its object to provide a machine capable of printing any number of colors upon any-width cloth, and in which the print-rollers are made sectional upon a central shaft, whereby they may be adjusted to the ordinary width of oil-cloth or similar material.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the figures.

Figure 1, in two parts, is a central longitudinal section through the complete machine, illustrating its complement of printing-rollers; and Fig. 2 is a central longitudinal section through a portion of the machine, illustrating the operation. Fig. 3 is a side elevation illustrating the gearing and adjustability of the rollers. Fig. 4 is a front elevation of the machine. Fig. 5 is a partial plan view, and Fig. 6 a longitudinal section, through the pressure, print, and ink rollers, illustrating the arrangement of the print-roller when yard-wide cloth is to be printed. Fig. 7 is a front elevation of the one complete set of rollers when cloth a yard and a half wide is to be printed. Fig. 8 is an end view of an inner section of the print-roller, and Fig. 9 an outer end view of an outer section of said roller. Fig. 10 is a perspective view of the coupling employed to attach the print-roller to its shaft; and Fig. 11, an end view of the print-roller gear, illustrating the ordinary form of adjusting the same to register in printing.

The frame 1 of the machine is constructed alike at both sides, with a series of standards, 2, about sixteen in number, at regular intervals apart, the said standards being braced and supported by integral lower and central

rails, 3 and 4, and transversely the said frame, connecting the sides, beams 5 extend. Said beams are arranged at one side of the standards 2, and are bolted to the central longitudinal rails, 3. The said transverse beams are adapted to sustain ink-troughs 6, which troughs are unattached thereto, being held in position by hooks 7, attached to the outer sides of the standards, as shown in Fig. 3, or other equivalent devices engaging a pin or stud, 8, secured at each lower end of the aforesaid troughs. The troughs thus sustained project at least two-thirds of their width to the rear beyond the standards, and are provided at each end with a flanged rectangular central recess, 9, in which a box, 10, is made to slide, adjustable vertically by a set-screw, 11, passing through the lower flange of the recess 9 and engaging the under side of said box. Within the adjustable boxes 10 the shaft 37 of an ink-roller, 12, is journaled, said roller being constructed of any material usually employed for the purpose. Upon the outer top end edges of the ink-trough 6 the ends of a scraper or doctor, 13, are made to slide horizontally in ways 14, attached to said trough, which doctor, extending longitudinally the trough parallel with the ink-roller 12 at an incline from the side of said trough upward to said roller, is held in adjustable contact therewith by a screw, 15.

Integral with each side of the standards 2, at the rear edges thereof, above the ink-roller 12, a vertical V-shaped guide-bar, 16, is cast, having a longitudinal slot in its face and a screw, 17, entered from the lower end to travel in said slot. A vertical bar, 18, having a V-shaped slot in its under face and a nut held centrally in said slot, is entered over the V-guide 16, the nut in the sliding bar 18 entering the slot in the said V-shaped guide 16, through which nut the set-screw 17 passes. Thus the vertical bar 18 is adjustable vertically upon the standards through the action of the screw 17. A bracket, 19, is cast integral with the sliding bar 18, extending outward at right angles thereto, which bracket 19 has cast longitudinally and centrally upon its upper face a V-shaped offset, 20, similar to the V-shaped guide-bar 16 upon the standard, and provided also with a similar longitudinal slot and a screw, 21, adapted to enter said slot

from the outer end. The combined sliding rod 18 and bracket 19 constitute an adjustable support for the journal-boxes 22 of the print-rollers 23. The journal-box 22 is slotted upon its under side to engage and slide upon the V-shaped offset 20 of the bracket 19, and is provided in said slot with a nut through which the screw 21, passing through the offset 20, is made to enter. It will be observed that by this arrangement the print-roller 23, journaled in the boxes 22, may be adjusted vertically through the sliding bar 18 and its operating-screw 17, and horizontally by reason of the movement longitudinally the machine of the said boxes 22 upon the bracket 19, the said movement being controlled by the set-screw 21.

To the forward edge of the opposite standards 2, near the top, a transverse shaft, 24, is journaled, upon one end of which shaft, outside the standard, a gear, 25, is keyed. Within the standards 2 horizontal arms 26 are pivoted upon the transverse shaft 24, adapted to extend toward the rear about half the distance between the said standards, centrally within which pivoted arms 26 the shaft 27 of a pressure-roller, 28, is journaled, the said shaft being provided with a gear, 29, at one end outside the standards, adapted to mesh with gear 25 of the transverse shaft 24. The pressure-roller, which is covered with soft material, 30—such as felt, rubber, or their equivalents—is so positioned as to bear firmly and evenly upon the print-roller 23, and the axes of the three rollers—namely, the ink-roller 12, the print-roller 23, and the pressure-roller 28—are in precisely the same vertical plane as illustrated in Figs. 3 and 4. To the outer edge of the standard 2, above the guide-bar 16 cast thereon, a bracket, 31, is secured, provided with a set-screw, 32, which engages the horizontal arm 26, whereby the bearing of the pressure-roller upon the surface of the print-roller may be regulated at pleasure. In order to stiffen the horizontal arms 26, so that when the pressure-roller is carried toward the front of the machine the said arms will sustain the tension uniformly, a bar, 33, is made to connect the rear extremities of the same, as illustrated in Fig. 5. To one end of the print-roller shaft 34 a gear, 35, is keyed outside the standards 2, adapted to mesh with gear 29 of the pressure-roller when said roller is in its normal position, and a similar gear, 36, is keyed to the end of the ink-roller shaft 37, purposed to mesh and revolve with the aforesaid gear 35 of the print-roller 23.

Power is transmitted to the aforesaid rollers through the medium of a transverse shaft, 38, journaled in brackets 39, secured to the inner edge of each standard 2, said shaft being in horizontal alignment with the print-roller shaft 34. Upon one end, outside of the standards, a gear, 40, is keyed upon the transverse drive-shaft 38, adapted to mesh and transmit motion to the gear 35 of the print-roller, and likewise the gear 25 of the upper transverse

shaft, 24, upon which the arms 26, carrying the pressure-roller, is pivoted. Upon the other end of the transverse drive-shaft 38, and also outside the standards 2, a bevel-gear, 41, is keyed, which bevel-gear is adapted to mesh with a similar bevel-gear, 42, keyed upon the main drive-shaft 43. The said main shaft is journaled in brackets secured to the outer face of the standards 2, and is made to extend longitudinally from end to end of the machine, a bevel-gear, 42, being keyed thereon, as aforesaid, at regular intervals to communicate power to the transverse drive-shafts 38.

An endless sprocket-chain, 44, is made to pass longitudinally each side of the machine outside of the rollers and in horizontal alignment with the approximate intersecting pressure and print rollers, the said chain, each link of which is provided centrally upon its inner side with horizontal arms 45, carrying upwardly-extending pins 46, being supported near the top of the machine by a series of guide-plates, 47, made more or less rectangular in form and provided with a central longitudinal slot, 48, in the inner side, through which the pin-carrying arms 45 project, and a similar slot, 49, in the bottom thereof, through which a sprocket-wheel, 50, enters, adjustably secured upon the transverse drive-shaft 38 inside the standards 2, which wheel 50, engaging the chain 44, imparts motion to the same. The guide-plates 47 extend at intervals longitudinally the machine, and are supported by and made to slide upon transverse plates 57 by a V-shaped offset in the former entering a similarly-shaped slot in the latter, as shown in Fig. 2. These plates 57 are permanently fastened to the inner faces of the standards 2, and are made to extend inward toward the center, for a purpose hereinafter stated. The pins 46, carried by the chain 44, are adapted to engage the edges of the cloth 53 to be printed and carry the same forward, the motion of the cloth equaling the motion of the roller, as will be seen from the uniformity of the gearing. As a support for the chain when passing below the rollers, grooved pulleys 52 or sprocket-wheels are journaled at intervals to the standards 2 below the central beam, 3, as shown in Fig. 2.

In arrangement of the print-rollers upon their bearings the distance from the center of one print-roller to the center of the opposite roller is exactly equal to the circumference of the said rollers, so that all the rolls will register accurately and produce an accurate design. In constructing my machine as illustrated in Fig. 1, I employ fourteen sets of rolls in construction and operation alike, so that I am enabled to print in fourteen different colors. Any pair of the said rolls may be used independently of the others, or more may be added if found necessary.

The print-roller 23, I make in three sections, 54, 55, and 56, as shown in Fig. 6, although more sections may be employed if found de-

sirable, and cause each section to be detachable from the shaft 34. The roller 23, which may have its body 57 of wood or other like material with a metallic facing, 80, having the design produced thereon, is provided with a central metallic tube, 58, extending from end to end of each section thereof, which tubing is adapted to pass over the shaft 34. At each outer end of the said tubing 58 slots 59 are cut, as illustrated in Fig. 9, the attachment being made to the shaft by means of a collar, 60, having lugs 61 at one end and a transverse aperture, 62, as shown in Fig. 10, which collar is slid over the end of the shaft, the lugs 61 being made to engage and enter the slots 59 in the tubing. A screw is then passed through the transverse aperture 62 in the collar, and also through a corresponding aperture in the shaft, whereupon the print-roller is rigidly secured. In constructing the print-roller I make the same two yards long, that being about the greatest width of cloth printed, dividing the same into three sections, as above stated, the one section 54 measuring one yard in length and the sections 55 and 56 each eighteen inches, and connect the inner ends of each section by means of dowelpins 63, attached to one section, as shown in Fig. 8, entering apertures 64 in the opposite section, as illustrated in Fig. 6. When cloth is to be printed two yards wide, I use a roller of that width. If yard-wide cloth is to be printed, however, I employ two duplicate sections, each one yard long, place them upon the same shaft, securing their ends, as aforesaid, and enter between their abutting ends a washer, 65, as shown in Fig. 6, whereby I am enabled to print two designs one yard wide upon one stretch of cloth, leaving a blank space between.

In the event cloth is to be printed one and one-half yard wide I remove the long pressure-roller and insert a roller of that width, and in building the print-roller I employ two sections, one, 54, a yard wide and the other, 55, eighteen inches wide, which together represent a yard and a half, securing their abutting edges in manner aforesaid, and when the joined sections have been placed centrally the shaft their outer ends are secured thereto by the collar 60, as above described. The ink-roller is not changed. The rollers now appear as represented in Fig. 7. The guides 47, carrying the endless chain 44, are now slid inward upon their grooved supporting-plates 51 at each side until the pins 46, carried by said chain, are positioned to engage the outer edges of the cloth, 53, upon which the design is to be printed. Likewise the sprocket-wheels 50 are slid inward upon the transverse driving-shaft 38 and keyed in position to engage the under side of the chain. It is obvious that in making the change but little time or trouble is involved, as the spaces between the standards afford ample room to easily and expeditiously make the transfer.

In general operation, if the entire fourteen

colors enter in the design, thus bringing into play all the rollers, the cloth is entered in direction of the arrow in Fig. 1, face downward. Each print-roller is adjusted by means of the ordinary adjusting device, 81, (represented in Fig. 11,) consisting of the T-screw 70, bearing against the gear 35 of the said rollers, the adjustment being effected as heretofore, bringing each print-roller in proper position to register with the color printed by its preceding roller. The pressure-roller is then adjusted by the set-screw 32 and the cloth allowed to pass between the pressure-rollers and the print-rollers until the last roll is reached. The cloth is now carried over a roll, 71, above the machine and bent back overhead to dry, in any approved manner.

When but seven or eight colors are to be used, the first seven or eight rolls are employed, the cloth being carried from the last roll up overhead for drying. The remaining rolls may be entirely removed if found desirable.

The extra gear 25 upon the upper transverse shaft, 24, by meshing in the drive shaft gear 40 and the pressure-roller gear 29, tends to keep the said pressure-roller down to its work, and when said pressure-roller is thrown back for any cause its gear meshing with the gear upon the said upper transverse shaft keeps the roller revolving.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A machine for printing oil-cloth or similar material, provided with a print-roller, a hinged and adjustable pressure-roller held above said print-roller, and an ink-roller adjustably held in a detachable trough below the same, substantially as herein shown and described.

2. A machine for printing oil-cloth or similar material, provided with an adjustable sectional print-roller, a hinged and adjustable pressure-roller held above said print-roller, and an ink-roller adjustably held in a trough below the same, substantially as herein shown and described.

3. In a machine for printing oil-cloth or similar material, the combination, with a printing-roller, and a hinged and adjustable pressure-roller held above said print-roller, of an endless chain having projecting pin-carrying arms, adjustable longitudinal guides for said chain, and means for rotating said chain, substantially as shown, and whereby the cloth is carried between the pressure and print rollers, as set forth.

4. In a machine for printing oil-cloth or similar material, the combination, with a series of regular-interval adjustable pressure-rollers held above adjustable sectional print-rollers, and ink-rollers below the same, adjustably held in troughs, of an endless chain having projecting pin-carrying arms, adjustable longitudinal guides for said chain, and means

for rotating the chain, substantially as herein shown and described.

5. In a machine for printing oil-cloth or similar material, the combination, with an adjustable sectional print-roller, a hinged and adjustable pressure-roller held above said print-roller, and an ink-roller adjustably held in a trough below the same, of an endless pin-carrying chain, slotted longitudinal guide for said chain, and transverse guides, substantially as shown and described, whereby the said chain is adjustable to any width of cloth or length of roller, as set forth.

6. In a machine for printing oil-cloth or similar material, the combination, with a sectional print-roller detachably held to its shaft and adjustable thereon, a hinged and adjustable pressure-roller held above said print-roller, and an ink-roller adjustably held below the same, of an endless pin-carrying chain, slotted longitudinal guides for said chain, transverse guides adapted to carry said longitudinal guides, and sprocket-wheels adapted to engage said chain and adjustable therewith, substantially as shown and described.

7. In a machine for printing oil-cloth or similar material, the combination, with the vertical standard thereof, having a vertical bar integral with its edge and a bracket vertically-adjustable upon said bar, and a journal-box horizontally adjustable upon said bracket, of a sectional print-roller journaled in said box, a hinged pressure-roller above said print-roller, and an inking-roller below the same, together with an adjustable endless pin-carrying chain adapted to carry the cloth between the pressure and print rollers, substantially as herein shown and described.

8. In a machine for printing oil-cloth and similar material, the combination, with a print-roller detachably attached to the shaft, adjustable thereon, and divided into three or more

sections united by dowels in one section entering apertures in opposite section, of a pressure-roller held adjustably above the print-roller, an inking-roller beneath the print-roller, and an endless adjustable pin-carrying belt adapted to feed the cloth between the pressure and print rollers, substantially as herein shown and described.

9. In a machine for printing oil-cloth and similar material, the combination, with a print-roller divided into two or more sections united by pins, a metallic tube extending centrally through each section, having recessed ends, and a collar having lugs adapted to engage said recesses, uniting the roller to the shaft, of an adjustable pressure-roller above said print-roller, an inking-roller below the same, and an endless pin-carrying chain adapted to feed the cloth between the pressure and print rollers, as set forth.

10. In a machine for printing oil-cloth and similar material, a print-roller divided into two or more sections and means for uniting the same, each section provided with a central metallic tube having recessed ends, in combination with a collar having lugs adapted to engage said end recesses and detachably secure said roller to a shaft, substantially as herein set forth.

11. The combination, with a shaft having apertures therein, of a sectional printing-roller provided with a central metallic tube having recessed ends adapted to slide over said shaft, metallic collars having lugs at one end adapted to engage the end recesses of the roller, and bolts adapted to pass through said collars and shaft, substantially as herein shown and described.

GEORGE DAVISON, JR.

Witnesses:

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SAML. H. POST.