J. SPENCER.

2 Sheets—Sheet 1.

Varnishing-Machine.

No. 206,276. Patented July 23, 1878.

Fig. 1.

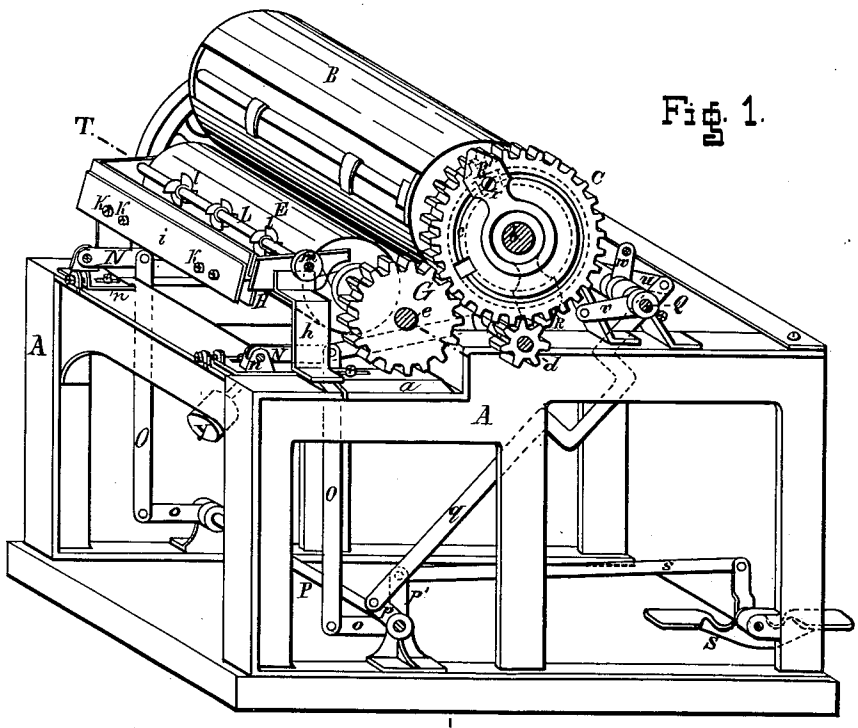
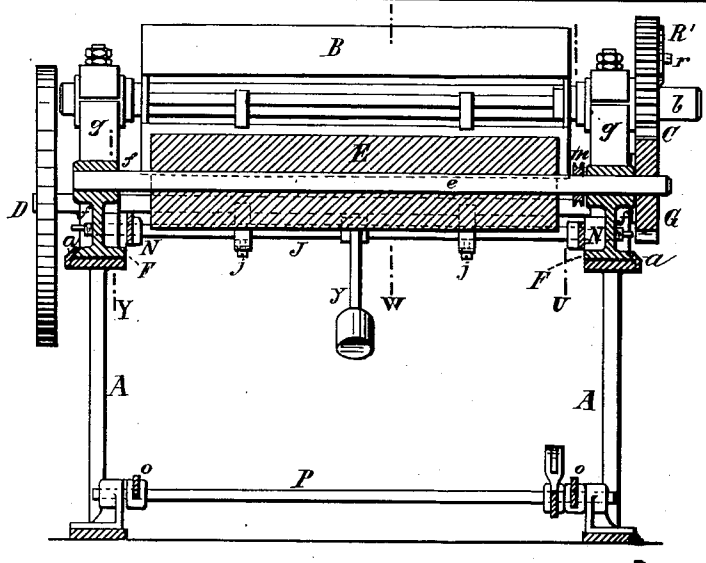


Fig. 2.



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2 Sheets—Sheet 2.

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Varnishing-Machine.

No. 206,276. Patented July 23, 1878.

Fig. 3.

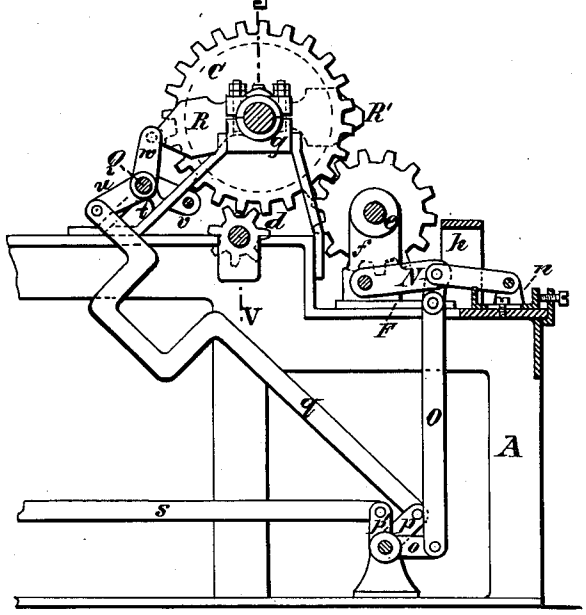


Fig. 4.

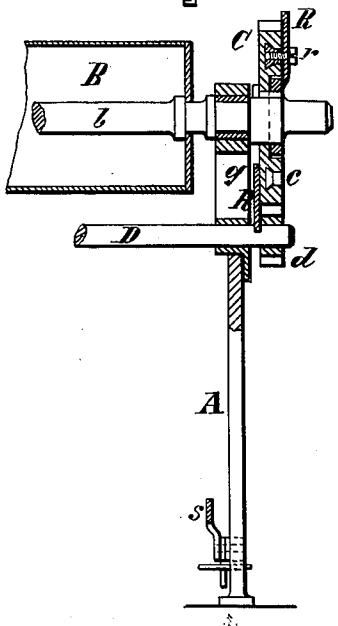


Fig. 5.

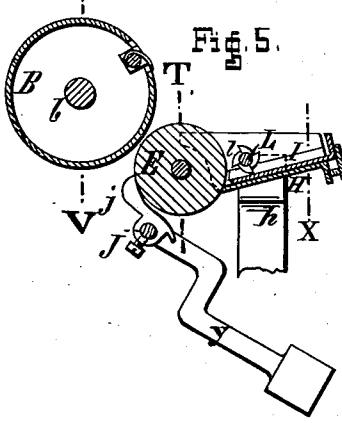


Fig. 6.

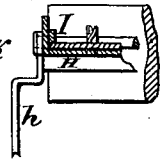


Fig. 7.

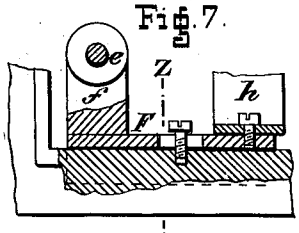
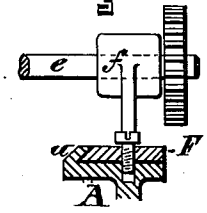


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN SPENCER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN VARNISHING-MACHINES.

Specification forming part of Letters Patent No. **206,276**, dated July 23, 1878; application filed June 6, 1878.

To all whom it may concern:

Be it known that I, JOHN SPENCER, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Varnishing-Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and to the letters of reference marked thereon.

The nature of my invention relates to machines for varnishing maps, charts, labels, or other prints on paper or on other flexible material; and it consists in the general construction and arrangement of the machine, and in certain contrivances by which to make the machine perform its functions more automatically, so as to be better adapted for its work, and to obviate the necessity of changing the blanket for each different size of sheets to be varnished, as hereinafter will be more fully described.

In the drawings, Figure 1 represents an exterior perspective view of the varnishing-machine embodying my improvements. Fig. 2 represents a vertical longitudinal section on line T through the axis of the varnishing-roller. Fig. 3 represents a sectional end elevation of the machine on line U in Fig. 2. Fig. 4 represents a section on line V through one end of the feeding-cylinder and its driving gear-wheels. Fig. 5 represents a transverse vertical section on line W in Fig. 2. Fig. 6 represents a sectional view taken on line X in Fig. 5. Fig. 7 represents a sectional view on line Y in Fig. 2, and Fig. 8 represents a sectional view on line Z in Fig. 7.

A is the frame of the machine, suitably shaped for supporting the several operating parts. B is the feeding-cylinder, secured upon a shaft, *b*, and mounted in crotched pillow-blocks *g* secured upon the frame sides A. This feeding-cylinder is slotted on its face, and is arranged with gripers for automatically seizing and releasing the sheets of paper to be varnished in the usual manner.

Upon one end of the shaft *b* is secured a gear-wheel, C, the teeth of which engage with the teeth of the pinion *d* secured upon the end of a driving-shaft, D, which is mounted in suitable journal-boxes arranged in the top of frame A, and is provided with a fly-wheel and the necessary pulleys for imparting a rotating motion thereto and to the feeding-cylinder.

Upon said frame A, and in the rear of the feeding-cylinder, is to be a table, (not shown in the drawing,) upon which the sheets to be varnished are placed, and whence one by one they are brought in contact with the feeding-cylinder to be taken up by the gripers, and thence, after being coated with varnish, to be conducted to the delivery-board in the rear of the machine by endless cords, which arrangement I have not shown in the drawing, as I do not claim originality in this device; but for a better understanding of the operation of the machine I consider it necessary to make mention thereof.

E is the varnishing-roller, the journals of the shaft *e* of which are mounted in standard-boxes *f*, having base-plates, F, and being placed parallel with each other upon the ends of frame A, to have a longitudinal sliding motion thereon, in which they are steadied by half-V-guides *a*, forming part of the frame A.

Upon the end of this varnishing-roller shaft *e* is secured a gear-wheel, G, the teeth of which engage with the teeth of the gear-wheel C of the feeding-cylinder, so as to receive a rotating motion therefrom in an opposite direction.

H is the varnish-trough, consisting of a plate placed on an incline toward the varnishing-roller E, having vertical ends, which partly embrace the ends of said varnishing-roller, and being stiffened by a pendent flange to its front edge. This trough is secured upon the base-plates F by angular brackets *h*, and has fitted between its end plates, so as to rest upon its inclined bottom, a plate, I, Fig. 5, having flanges *i* upon its front edge rectangular therewith, while its rear edge is placed parallel and in close proximity with the face of the varnishing-roller, so as to leave a narrow opening between, by which the thickness of the varnish-coating adhering to the roller may be regulated, and which can be adjusted as desired by means of set-screws K, tapped through the front pendent flanges of the trough.

L is a small shaft placed parallel with and close to the varnishing-roller in the bottom of the varnish-trough, and pivoted into the ends of the same. A pulley, *m*, is mounted upon its end, and is driven by a belt from a pulley,

M, on the varnishing-roller shaft *e*. This shaft L carries a series of mixing-wheels, *l*, which are shaped like propeller-screws, and will agitate the varnish in said trough so that it will be supplied to the roller in a uniform condition.

An intermittent reciprocating motion is imparted to the varnishing-roller and trough by means of two toggle-joints, N N, one at each side of the machine. These toggle-joints are pivoted at one end to the internal faces of the standard-boxes *f*, and their opposite extreme ends are pivoted to plates *n*, which are adjustably secured upon the top of the front frame ends, while their central joints are each connected by a bar, O, with cranks *o* of shaft P, mounted in suitable boxes in the base of the frame A, and having, also, cranks *p* and *p'*, the former of which, by a bar, *q*, connects with the rear arm *u* of a three-armed tumbler-shaft, Q, pivoted in a journal-box, *t*, Fig. 3, behind the gear-wheel C.

The forward arms *v w* of this tumbler-shaft Q are at right angles with each other, and are placed far enough apart for the rim of said gear-wheel C to pass between, each having a side stud or pin, which may carry a small roller to engage with the cam-plates R and R'.

The cam-plate R is secured rigidly and permanently against the inner face of the wheel C, while the cam-plate R' is adjustably held against the exterior face of said wheel by a bolt, *r*, the head or nut of which is inserted in an annular T-shaped or dovetail groove, *c*, formed in the body of said wheel C.

While said wheel C is rotating the cam-plates R and R' will alternately move the arms *v* and *w* in opposite directions, thereby imparting a rocking motion to the shaft Q, which motion in transmitted to the shaft P, and thence to the toggle-joints N, which, by their motion, will reciprocate the varnishing-roller so as to be in close proximity with the feed-roller during a limited portion of a revolution of the same only, which portion is to be in accordance with the sizes of the sheets or the surface to be coated with varnish, and which can be regulated by adjusting the cam-plate R' to the requisite point of movement at which the varnishing-roller is to be retracted.

The crank *p'*, by means of a rod, *s*, is connected with the vertical arm of a horizontal lever, S, pivoted at its center against one side of the frame A, and having pedals formed to its ends, by which the varnishing-roller E can be reciprocated by the operator's foot independently of the cam-plates R and R'.

J is a shaft pivoted between the plates F, underneath the varnishing-roller E, and having scrapers *j* adjustably secured thereto by set-screws, which scrapers are pressed against the face of the varnishing-roller by a weighted arm, Y, secured upon the central part of said shaft J, so as to remove the varnish adhering to the face of said roller wherever desirable, and preventing its coating with varnish beyond the limit to which said scrapers are adjusted. The varnish thus scraped off may be collected in a vessel suspended below each scraper, into which it will drip as it flows down over the scraper.

Heretofore such machines required a cushion to be stretched over the periphery of the feeding-cylinder equal in size to the size of sheet to be varnished, so as to cover the said cushion entirely, and to prevent the varnishing-roller from coming in contact therewith, or with the feeding-cylinder, in order to prevent the back of the sheet being varnished from adhering thereto, while by the herein-described device of imparting automatically an intermittent reciprocating movement to the varnishing-roller, so as to bring and hold the same up to the feeding-cylinder only while the sheet to be varnished is interposed between said feeding-cylinder and the varnishing-roller, and by the attachment of the scrapers *j* for removing the varnish from the roller where a coating with such is not desirable, a cushioning-blanket large enough for the largest sheet which can be varnished in this machine may be stretched permanently over the periphery of the feeding-cylinder, which will answer for all sizes of prints to be varnished, thus saving the expense of a great variety of cushions and the time for exchanging such cushions with every variation of the work to be performed.

What I claim as my invention is—

1. The combination, with the feeding-cylinder, of the varnishing-roller, varnish-trough, the sliding frame, the toggle-joints N, rock-shafts P Q, connecting-rods O *q*, arms *v w*, and cams R R, substantially as described and shown.

2. The combination, with the feeding-cylinder, of the varnishing-roller, varnish-trough, the sliding frame, the toggle-joints N, rock-shaft P, connecting-rod O, bar *s*, and pedal S, substantially as described and shown.

3. The combination, with the varnishing-roller E, of the shaft J, having weighted lever Y, and the scrapers *j*, adjustable upon such shaft, substantially as described and shown.

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