(No Model.) 2 Sheets—Sheet 1.

H. CUTTING & T. J. DE LANEY.

VARNISHING MACHINE.

No. 249,225. Patented Nov. 8, 1881.

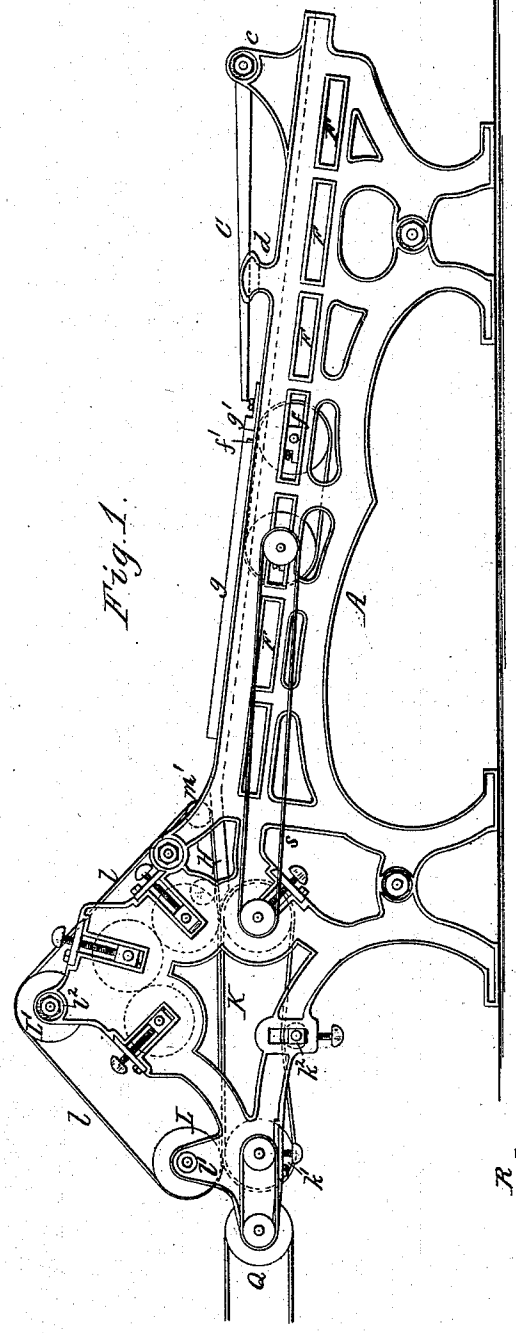


Fig. 1.

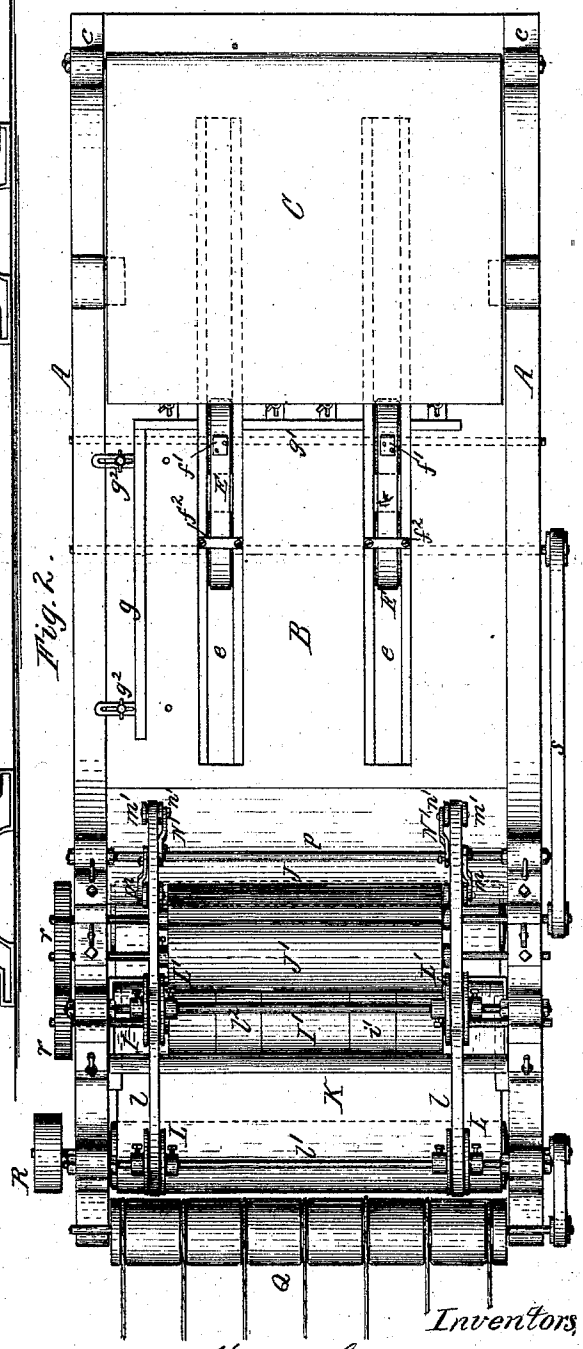


Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

H. CUTTING & T. J. DE LANEY.

VARNISHING MACHINE.

No. 249,225. Patented Nov. 8, 1881.

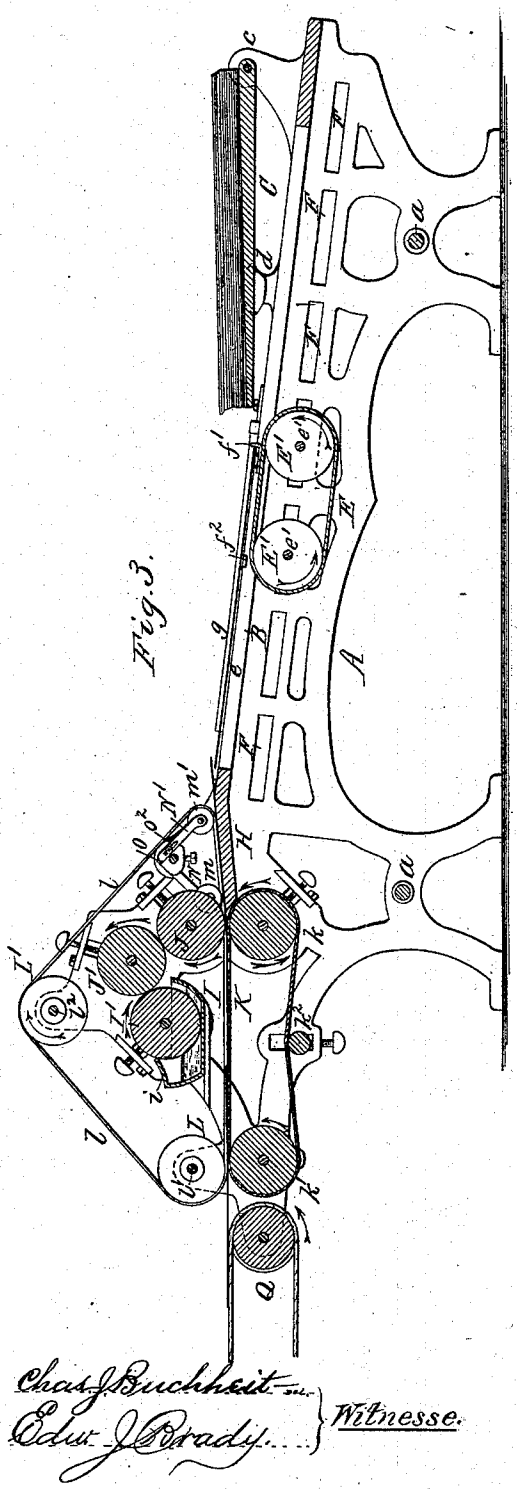


Fig. 3.

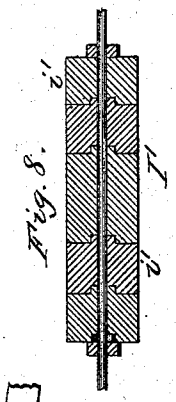


Fig. 8.

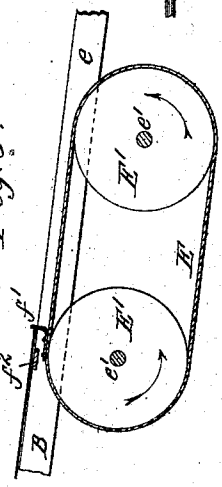


Fig. 6.



Fig. 7.

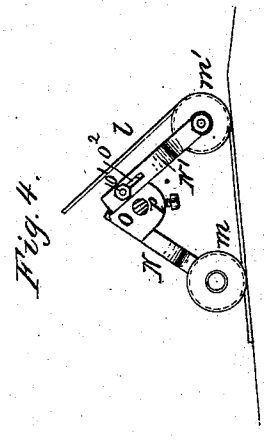


Fig. 4.

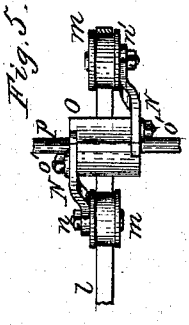


Fig. 5.

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UNITED STATES PATENT OFFICE.

HENRY CUTTING AND THOMAS J. DE LANEY, OF BUFFALO, NEW YORK.

VARNISHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 249,225, dated November 8, 1881.

Application filed November 9, 1880. (No model.)

To all whom it may concern:

Be it known that we, HENRY CUTTING and THOMAS J. DE LANEY, both of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Varnishing-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a machine for applying varnish or size to the surface of labels, show-cards, and other sheets of paper, cardboard, or similar material.

The object of this invention is to construct the machine in such manner that the operation of varnishing or sizing is carried on automatically, expeditiously, and uniformly.

Our invention consists of the peculiar construction, arrangement, and combination of the various parts of which our improved machine is composed, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation, Fig. 2 a top-plan view, and Fig. 3 a longitudinal sectional elevation, of our improved machine. Fig. 4 is a detached side elevation, on an enlarged scale, of the vertically-adjustable tape-rollers. Fig. 5 is a top-plan view of the same. Fig. 6 is a sectional elevation, on an enlarged scale, of the feed-belt. Fig. 7 illustrates the manner in which the sheets are fed to the varnishing mechanism. Fig. 8 is a sectional elevation of the roller by which the varnish is removed from the receptacle.

Like letters of reference refer to like parts in the several figures.

A A represent the side frames of the machine, connected by cross-stays *a*.

B represents the top plate of the feed end of the machine, secured between the side frames, A, and arranged in an inclined position, so as to rise toward the varnishing mechanism.

C represents the feed-table, arranged above the lower portion of the top plate, B, and pivoted at one end between two lugs, *c c*, formed on the side frames, A, and resting near its opposite end upon lugs *d d*, also formed with the side frames.

e represents one or more longitudinal slots formed in the top plate, B, and E represents one or more endless feed-belts, arranged with their upper portions in the slots *e* and passing around the rollers or pulleys E′. The latter are mounted on shafts *e′*, which turn in bearings *f*, arranged adjustably and removably in longitudinal slots F of the side frames. The latter are provided with a number of such slots F, so that the bearings of the roller-shafts can be arranged at various distances apart, thereby permitting the use of feed-belts of various lengths, in accordance with the length of the sheets which it is desired to varnish.

The feed belt or belts E are arranged between the feed-table C and the varnishing mechanism; and if the length of the feed-belt should be so great that it would extend under the feed-table the latter can be swung outward on its pivots so as to project from the lower end of the machine, in which position the outer end of the feed-table is supported in any suitable and convenient manner. For small sheets a single feed-belt arranged in the center of the machine is sufficient; but when the width of the sheets is considerable two or more feed-belts may be used, and in the latter case the belts are preferably replaced by endless chains running over chain-pulleys, in order to insure the uniform movement of all the chains.

f′ represents a flexible shoulder or projection secured to each feed-belt E, for the purpose of engaging against the rear edge of each sheet and moving the same toward the varnishing mechanism.

f^2 is a stop or bridge secured in the slot F, above the upper pulley of the feed-belt, in such manner that the flexible shoulder *f′* comes in contact with the stop f^2 when the shoulder is about to move downward over the face of the upper pulley, whereby the shoulder *f′* is retarded or turned back and prevented from carrying the rear end of the sheet of paper down with it.

g is a longitudinal guide-strip, and *g′* represents a number of transversely-arranged guide-strips, the latter being arranged in line, and all being secured to the upper side of the top plate, B, to form a guide for properly placing the sheets upon the plate B. The strips *g* and *g′* are adjustably secured to the plate B by set-screws passing through slotted ears g^2, in order to permit the adjustment of the strips in accordance with the size of the sheets operated upon.

H represents that portion of the top plate

of the machine which leads to the varnishing mechanism. This portion of the top plate is inclined downwardly, so as to form an obtuse angle with the upwardly-inclined main portion B of the top plate. By this means the direction of the sheets in passing over the top plate of the machine is changed from an upward to a downward direction shortly before they reach the varnishing mechanism, thereby raising the rear end of the sheet which has been sized by the varnishing mechanism, and permitting the forward end of the next following sheet to enter below the rear end of the first-mentioned sheet, as clearly represented in Figs. 3 and 7. In this manner the sheets are made to present an unbroken surface to the varnishing-roller, and the latter is prevented from applying varnish to the parts whereby the sheets are supported.

I represents the varnish-receptacle, and I′ a roller arranged with its lower surface within the same to remove the varnish therefrom in a film of greater or less thickness.

i represents the cover of the receptacle I, constructed to come in contact with the ascending side of the roller I′, and operating as a scraper to remove the excess of varnish adhering thereto.

J is the roller which applies the varnish to the upper side of the sheets, and J′ is a roller interposed between the rollers I′ and J, for conveying the varnish from the roller I′ to the roller J. The roller I′ is composed of a series of similar sections slipped loosely on the shaft of the roller and secured thereon between two adjustable collars, *i′*, so that the length of the roller can be increased or reduced, in accordance with the width of the sheet operated upon, by adding or removing one or more sections, whereby the coat of varnish transmitted from the roller I′ to the rollers J J′ and the sheet operated upon is correspondingly increased or decreased in width.

K represents an endless apron arranged below the varnishing mechanism and running over rollers *k k′*. The roller *k* is arranged directly below the varnishing-roller J, so as to support the sheets while the varnish is applied to their upper surface.

k^2 is a tightener, whereby the tension of the apron K is regulated.

The rollers I′, J, J′, and *k* are mounted on shafts which turn in adjustable boxes in the side frames, A, so that the rollers can be adjusted with reference to the thickness of the film of varnish which it is desired to apply to the sheet operated upon, and with reference to the thickness of the sheets to which the varnish is to be applied.

l l are endless tapes running over pulleys L L′ *m m′*, and arranged to bear against and hold down the side edges of the sheets acted upon by the varnishing mechanism. The pulleys L are arranged above and in contact with the roller *k′* of the apron K, and the pulleys L′ are arranged at a short distance above the varnishing mechanism, so as to carry the tapes *l* clear of the same. The pulleys L and L′ are mounted on shafts l' l^2, so as to be laterally adjustable thereon. The pulleys *m m′* turn on arbors *n n′*, which are secured respectively to bars or arms N N′. The latter are secured to a head, O, on opposite sides thereof, by screws *o′*, passing through slotted holes o^2 in the bars, so that the latter and the pulleys attached thereto can be raised or lowered at desire. The head O is secured by a set-screw to a transversely-arranged shaft or rod, *p*, so as to be laterally adjustable on the same. The rollers *m m′* are arranged on the downwardly-inclined portion H of the top plate, and the three rollers L *m m′* carry the lower portions of the tapes *l* in contact with the portion H of the top plate and the endless apron K. The two endless tapes are arranged at such a distance from each other that they bear upon the side edges of the sheets only.

For the purpose of adjusting the varnishing apparatus for sheets of greater or less width, the rollers I′, J, and J′ may be removed and replaced by rollers corresponding in length with the width of the sheets, and the rollers over which the tapes *l* run are adjusted on their shafts so that the tapes bear upon the side edges of the sheets.

Q represents a carrier, composed of endless cords running over rollers, or constructed in any other suitable manner, and arranged so as to receive the varnished sheets from the machine and convey the same to a drying apparatus.

R represents the driving-pulley, mounted on the shaft of the roller *k′*; and *r* represents gear-wheels mounted, respectively, on the shafts of the roller *k*, J, J′, and I′, so that the motion imparted to the roller *k′* by the belt running over the pulley R is transmitted by the endless apron K to the roller *k*, and thence by the gear-wheels *r* to the varnishing-rollers. The feed belt or belts E are driven by an endless belt, *s*, from the roller *k*. The different parts of the machine may, however, be driven in any other suitable and convenient manner.

The sheets to be varnished or sized are taken from the feed-table and placed successively, with their face side uppermost, upon the plate B, against the guide-strips *g g′*. The feed-belt moves the sheets successively forward to the varnishing mechanism, and in passing between the rollers *k* and J the varnish is applied to the upper side of the sheet. The sheets, in passing from between the rollers *k* and J, are supported by the endless apron K, upon which they are held against accidental displacement by the tapes *l*, and are finally delivered upon the carrier Q, which conveys the sheets to a drying mechanism, or from which the sheets are taken by attendants and placed upon a drying apparatus.

We claim as our invention—

1. In a varnishing-machine, the combination, with the varnish-receptacle I and varnishing-rollers I′ J J′, of one or more endless feed-belts, whereby the sheets are successively pre-

sented to the varnishing-rollers, substantially as set forth.

2. In a varnishing-machine, the combination, with the main frame, the varnishing mechanism, and one or more endless feed-belts, of a pivoted feed-table, C, and supports *d*, substantially as set forth.

3. The combination, with the varnishing mechanism, of the main frame having a top plate, B, provided with one or more longitudinal slots, *e*, and one or more endless feed-belts arranged with their upper portions in the slots *e*, substantially as set forth.

4. The combination, with the varnish-receptacle I and rollers I′ J J′, of the endless apron K, and endless tapes *l*, substantially as set forth.

5. The combination, with the varnishing-receptacle I, of the endless apron K and endless tapes *l*, and one or more endless feed-belts provided with projections *f*′, substantially as set forth.

6. The combination, with the varnishing mechanism, of a sheet-supporting plate composed of an upwardly-inclined portion, B, and a downwardly-inclined portion, H, substantially as and for the purpose set forth.

7. The combination, with the varnishing mechanism, of a sheet-supporting plate composed of an upwardly-inclined portion, B, and a downwardly-inclined portion, H, and one or more endless feed-belts arranged in the portion B of the sheet-supporting plate, substantially as set forth.

8. In a varnishing-machine, the combination, with the side frames, A, provided with a series of slots, F, of one or more endless feed-belts, E, pulleys E′, mounted on shafts *e*′, and bearings *f*, arranged removably in the slots F, substantially as set forth.

9. In a varnishing-machine, the combination, with an endless feed-belt, E, provided with a flexible shoulder, *f*′, of the stop f^2, adapted to arrest the movement of the shoulder *f*′, substantially as set forth.

10. The combination, with the varnishing mechanism, of the endless tapes *l*, pulleys L L′, and the pulleys *m m*′, attached to bars N N′, which are adjustably secured to a head, O, substantially as set forth.

11. The combination, with the varnishing mechanism, of a main frame provided with a top plate, B, having one or more longitudinal slots, *e*, one or more endless feed-belts, E, and guide-strips *g g*′, secured adjustably to the plate B, substantially as set forth.

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