(No Model.)

W. H. R. TOYE.

SIZING OR PAINTING MACHINE.

No. 263,998. Patented Sept. 5, 1882.

Fig. 1.

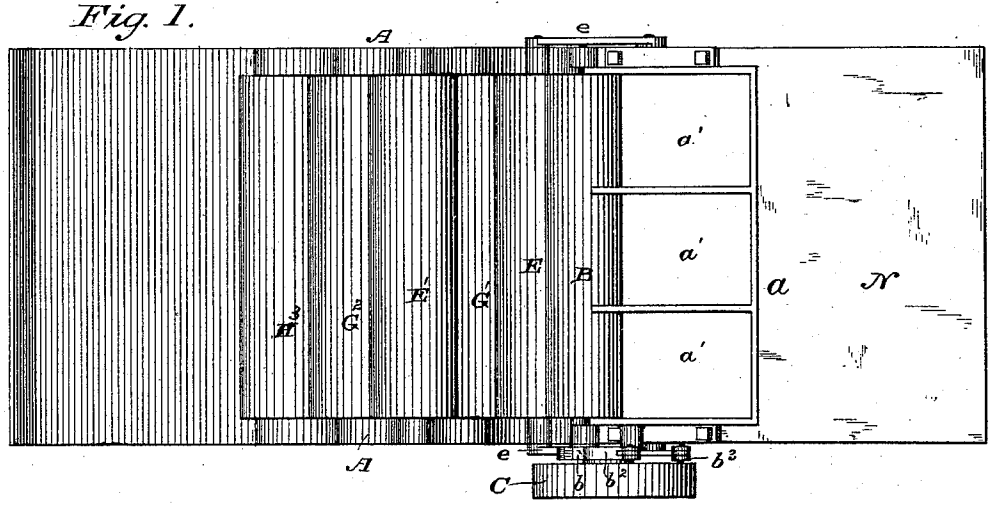


Fig. 2.

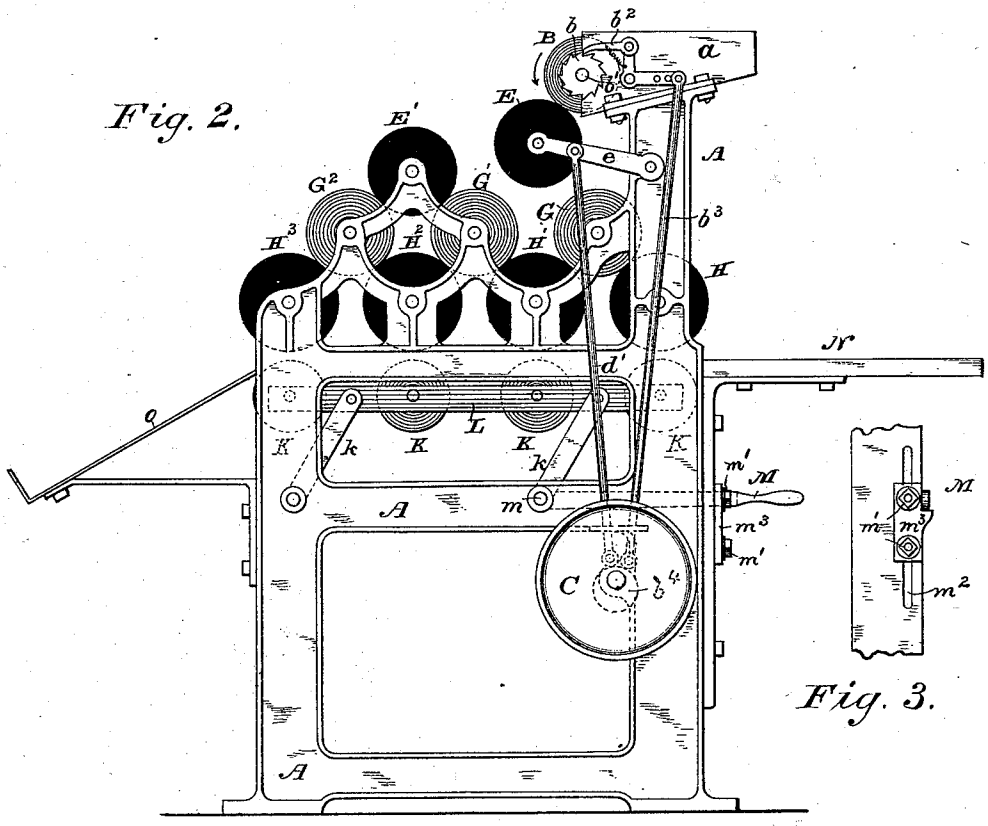


Fig. 3.

WITNESSES

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SIZING OR PAINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,998, dated September 5, 1882.

Application filed April 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. R. TOYE, a citizen of the United States, residing in the city of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Sizing or Painting Machines, of which the following is a specification.

My invention relates to certain improvements in the construction of sizing machinery; and the object of the invention is to provide a machine for applying a uniform and continuous coating of size, varnish, glue, or other such substances to irregular or uneven surfaces of paper, cloth, tin, glass, wood, and other materials.

In the machines heretofore employed in the process of applying size or varnish to the surface of paper and other like fabrics it has been usual to cause the material to pass beneath or between rigid rollers which are sufficiently well adapted to apply the glutinous or viscid substance to uniform plane surfaces. Such machines are not, however, well adapted for applying size or varnish to any other than plane surfaces—such as are offered by flat sheets of cloth or paper—and hence cannot be successfully employed for coating irregular surfaces—such, for example, as are presented by moldings, glass of varying thickness, &c.

My invention consists in employing, in connection with a series of elastic compressible distributing-rollers, a corresponding series of rigid pressure-rollers capable of being adjusted to or from the distributing-rollers with reference to the thickness of the material to be operated upon, and in adapting thereto a fountain or reservoir for containing the size, varnish, or other liquid or viscid substance to be applied to the surfaces to be operated upon, and suitable devices for conveying the same to the distributing-rollers.

The sizing or distributing rollers are preferably made of an elastic compound and yielding material, to the end that they may better adapt themselves to any irregularities in the surface of the material to which the size is to be applied, and two or more distributing-rollers are employed to insure a uniform coating of glutinous substance over the entire surface.

In the accompanying drawings, Figure 1 is a plan view of a sizing-machine embodying my improvements, and Fig. 2 is a side elevation of the same. Fig. 3 is a detached view, showing certain details of construction.

Referring to the figures, A represents the frame-work for supporting the various portions of the machine.

A receptacle or fountain, *a*, for containing the liquid sizing or other like substance to be applied to the surface of the article or material to be operated upon, is supported above a system of rollers for distributing the sizing. The receptacle or fountain *a* may be divided by means of suitable partitions into two or more compartments, *a' a'*, for containing sizes of different colors when required.

B represents a fountain or duct roller placed in close proximity to the discharge-opening of the fountain *a*, which roller is caused to revolve in the direction indicated by the arrow by means of the ratchet-wheel *b*, mounted upon the end of its supporting-shaft *b'*. The wheel *b* is caused to advance step by step by means of a pawl, b^2, operated through the reciprocating pitman b^3, which bears at its lower extremity against a cam, b^4, carried upon the main shaft of the driving-pulley C. The cam b^4 also serves to give a reciprocating motion to a second pitman, *d'*, which is pivoted at its upper extremity to a rocker-arm, *e*, upon which is supported the axis of a vibrating distributing-roller, E, which is thus brought alternately into contact with the duct-roller B and with two other rollers, G and G'.

An idle-roller, E', corresponding to the roller E, is mounted in stationary bearings in the frame A, and constructed to revolve in contact with the roller G' and a third roller of the same series, G^2.

Beneath the intermediate rollers, G, G', and G^2, is arranged a series of distributing-rollers, H, H', H^2, and H^3, upon which the sizing material is evenly distributed from the respective rollers G, G', and G^2, which may be caused to revolve by friction therewith or by any suitable mechanical device of well-known character.

The vibrating roller E, the idle-roller E', and the distributing-rollers H H' H^2 H^3 are preferably constructed of a compound of glue, molasses, and glycerine, such as is commonly em-

ployed in the so-called "composition rollers" employed in printing-presses, which forms a compressible and elastic compound. The rollers G, G′, and G² are preferably constructed of wood.

Beneath the series of distributing-rollers H are placed four corresponding pressure-rollers, K K K K, revolving in suitable bearings upon two horizontal bars, one of which is shown at L. Each of these bars is supported upon two parallel upright links, *k k*. The parallel links *k* are pivoted to the bar and to the frame-work A in the manner of an ordinary parallel ruler.

A hand-lever, M, is attached to the shaft *m*, to which the upright arm *k* and the corresponding arm at the opposite end of the roller K are rigidly attached. By means of this lever the supporting-bars L may be raised or lowered accordingly as the parallel upright arms *k* are caused to assume a more or less vertical position. The lever M projects beyond the frame A at the front of the machine, and is provided with an adjustable supporting-stop, *m*³, for securing the lever in its proper position, as best seen in Fig. 3. The stop is held in its required position by means of bolts *m*′, extending through a slot, *m*², in the frame-work A, and the lever M has a sufficient lateral flexibility to permit its being sprung out beyond the catch *m* when it is desired to raise or lower the rollers.

Suitable tables and receiving-shelves, N and O, are provided for holding the articles or fabrics to which the sizing is to be applied.

The operation of the machine is as follows: The material to be sized is placed upon the table N, and is thence moved forward continuously between the series of compressible rollers H H′ H² H³ and pressure-rollers K K K K, the position of the latter having previously been adjusted with reference to the thickness of the material to be sized. If that material presents an irregular or uneven surface—such, for example, as is frequently the case with moldings or of glassware—the composition rollers H will, under the pressure of the rigid rollers K, yield to the irregularities of the material and adapt themselves to the recesses, thus causing the size to be evenly applied to the entire surface.

By employing two or more compressible rollers, a more even distribution of the sizing material is secured, and glutinous substances—such as varnish or paint—may be applied in such a manner as not to run or flow into any cavities or hollows before "setting" or becoming dry.

The materials and proportions of materials employed for the compressible rollers may be varied as found desirable, and in cases where the size or other substance is to be applied to uniform plane surfaces rigid unyielding rollers may be substituted.

I do not desire to confine myself to the particular method which I have herein described of adjusting the vertical position of the rollers K, as it is evident that various equivalent mechanical devices may be employed in lieu thereof; nor is it necessary that the particular arrangement of intermediate and distributing rollers be conformed to in all cases, as any arrangement whereby the size may be evenly distributed over all the rollers and any arrangement allowing of a variable but regulated pressure being applied to the sizing-rollers may be substituted therefor without departing from the principle of my invention.

I claim as my invention—

1. In a sizing or painting machine, the combination, substantially as hereinbefore set forth, of a series of distributing-rollers, a series of pressure-rollers, and means for adjusting the distance between the two series of rollers.

2. In a sizing or painting machine, the combination, substantially as hereinbefore set forth, of the compressible distributing-rollers, the rigid pressure-rollers, the parallel movable links for supporting said impression-rollers, and the movable lever for adjusting the vertical position of the pressure-rollers.

3. In a sizing or painting machine, the combination, substantially as hereinbefore set forth, of two or more compressible distributing-rollers, two or more rigid pressure-rollers movable toward or from said composition rollers, a fountain or reservoir having two or more separate compartments, and a series of interior rollers.

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