(No Model.)

W. C. FLÖRING & D. EISELE

PAPER HANGING MACHINE.

No. 458,259. Patented Aug. 25, 1891.

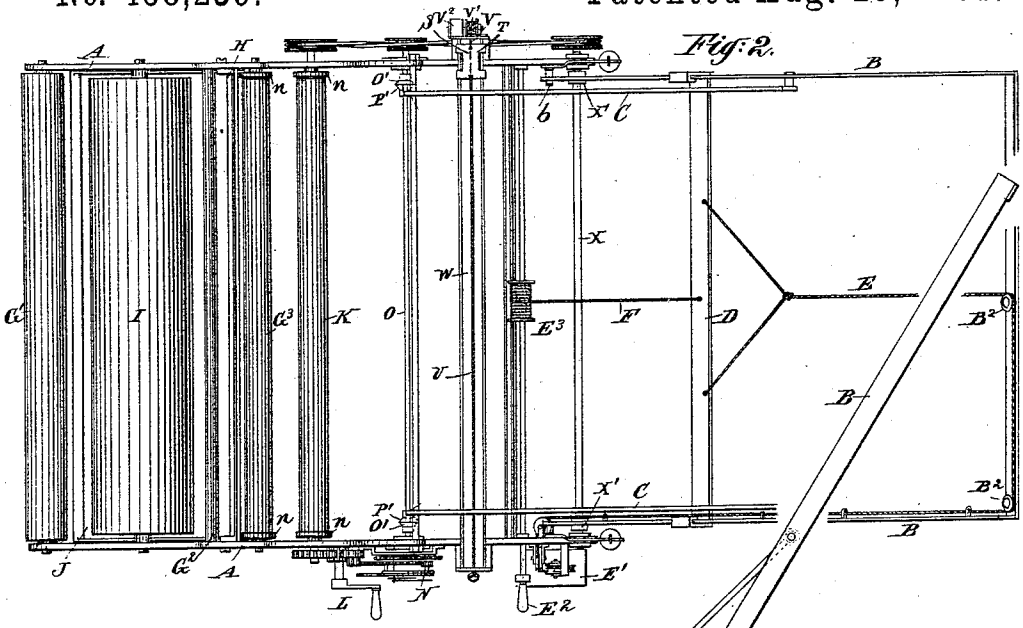


Fig. 2.

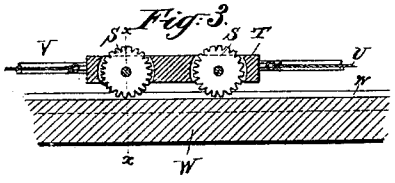


Fig. 3.

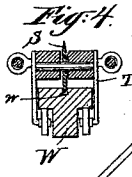


Fig. 4.

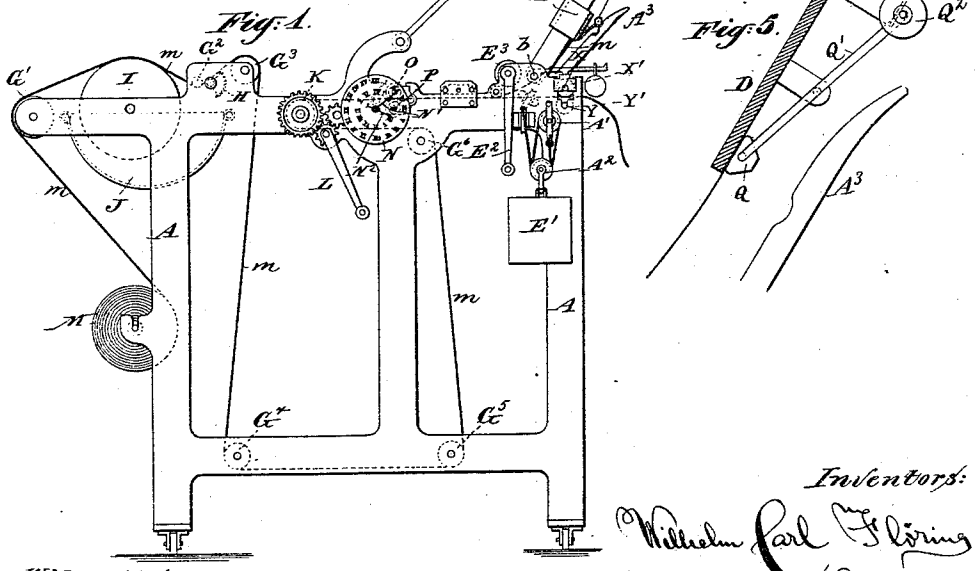


Fig. 1.

Fig. 5.

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UNITED STATES PATENT OFFICE.

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PAPER-HANGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 458,259, dated August 25, 1891.

Application filed May 8, 1891. Serial No. 392,002. (No model.)

To all whom it may concern:

Be it known that we, WILHELM CARL FLÖRING, a subject of the Emperor of Germany, and DAVID EISELE, a citizen of the United States, both residing in the city and county of New York, in the State of New York, have invented a certain new and useful Improvement in Paper-Hanging Machines, of which the following is a specification.

Our machine is operated by the hand of the attendant, applied simultaneously or in succession to two cranks. The paper is supplied in a roll, and the machine draws it off, applies the paste liberally but without excess to the back face, trims the edges, cuts off the proper length, and carries the forward end nearly or quite to the ceiling. The machine requires two attendants, one to apply the paper to the wall, guiding it as the length is successively applied from the top downward, while the other operates the cranks and supplies him with the lengths of paper ready for application.

Custom has established in the paper-hanging trade the practice of manufacturing the paper with an excess of width, which excess is removed immediately before its application to the wall. Better edges are thus secured than would be otherwise obtainable. The edges may be lapped, in which case only one edge requires trimming; but the slight deformity induced by the excess of thickness along the lines of junction is objectionable. It is preferred to abut the edges squarely together, pasting both directly upon the hard finish or otherwise suitably-prepared wall of the apartment. We will describe our machine as arranged for trimming both edges. We draw the paper off from its roll and induce its proper movement through the machine by means of pressure-rollers driven at a uniform speed and engaging with the strip of waste, which is sheared off from each side.

The following is a description of what we consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation of our improved machine. Fig. 2 is a corresponding plan view, and Fig. 3 represents the transverse shearing device and its guiding means on a larger scale. It is a cross-section of a portion. Fig. 4 is a cross-section on the line $x\ x$ in Fig. 3. Fig. 5 is an elevation, partly in vertical section, showing a portion detached.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the fixed frame-work, of cast-iron or other suitable material, supported on casters rigidly set to facilitate lateral movement.

B is a sufficiently stout frame hinged to the frame A at *b*, and held at the proper inclination by a guy C at each side.

D is a cross-head, which takes hold of the sides of the frame B, and is raised and lowered by the aid of a cord or small wire rope E, which runs over pulleys B^2 in the upper edge of the frame B, and is operated by a weight E′ through the aid of pulleys A′ A^2.

When a length of paper has been fully prepared and is ready to be applied to the wall, it is clamped to the cross-head, as hereinafter described, and is drawn upward by a sufficient tension on the cord E, due to the slow descent of the weight E′. After the paper has been detached from the cross-head and during the last part of its being applied upon the wall by one operator, the other attendant pulls the cross-head down again by means of the cord F, which is drawn by turning the windlass E^3 by means of the hand-crank E^2.

We provide the paper in a roll preferably of greater length than those ordinarily in stock in the paper-hanging business, although such can be used. We prefer that the paper shall be manufactured expressly for the machine in lengths constituting large rolls. M is such a roll supported on an easily-revolving axis, and *m* is a length of paper being drawn off. The paper runs first around an idler-drum G′, and thence over a paste-drum I, the lower portion of which drum is immersed in a vessel J containing paste. There may be a scraper (not shown) arranged to remove some of the surplus paste from this drum as it revolves and before it strikes the paper; but our experiments do not indicate such to be necessary. We apply the paste as liberally as may be, and subsequently remove the surplus. The paper, after running in contact with the paste-drum I and having its under surface liberally pasted, runs under a small

roller G^2, which comes in contact only with its upper and dry side, and thence travels upward obliquely, being still over the paste-tank J. It here passes in sufficiently close contact with an adjustable scraper H, which removes the surplus paste. Thence it passes over a roll G^3, which tends to still further spread the remaining thin layer of paste. The pasted paper may now be led immediately to the shears, and thence up the inclined frame to be put upon the wall. It is important, especially with some kinds of paper, to allow time for the paper to become partially saturated with the paste. This we attain by traversing the paper a considerable circuit within the limited frame. It runs from the roller G^3 at the top of the frame down under two rollers G^4 and G^5, set wide apart in the bottom of the frame, and thence upward over another roller G^6, near the top of the frame. These latter rollers come in contact only with the face, which is the dry side. It next runs to the left and is carried partially around a roller K, to which it presents its pasted face. This roller, becoming thinly but evenly coated with paste, serves to insure an even condition of the pasting, if any differences in the character of the coloring material or other cause have after the lapse of time and the limbering around the several rollers developed inequalities in the thin coating. Now the paper, fully prepared for immediate application to the wall, is traversed horizontally to the right. In this passage it runs between two shafts O and P, on which are small cutting disks or rotary shears O′ P′, one pair on each side, properly arranged to shear the edges of the paper. A strip is thus detached from each side, while the main body of the paper, properly trimmed, moves forward and is engaged with the cross-head D, as before intimated. The forward movement of the paper is induced by the revolutions of a hand-crank L, operated by the attendant, and which through the proper gearing, as represented, turns the wet paste-distributing and paper-impelling roller K and the shafts O P. Short pinching-rollers X′ and Y′, mounted on shafts X and Y, are located near the forward end of the frame A at each edge of the paper. These rollers seize the paper by the edges, which are being cut off to form waste-strips. They pull the paper forward uniformly by the two edges, leaving the middle to move forward undisturbed.

The clamping of the paper to the cross-head D is shown in Fig. 5. A bar Q is fixed at each end to a lever Q′, which turns on a pivot carried on the cross-head D. The opposite end of each lever is subject to the force of a long flat spring R, which exerts a tension sufficient to hold the upper end of the length of paper between the cross-head D and the clamp-bar Q. A roller Q^2 is pivoted on the end of each lever Q′. When the cross-head is pulled down by operating the crank E^2, it brings each roller Q^2 into contact with a properly-arranged stationary curved arm A^3, fixed on the frame A, and opens the clamp. The attendant inserts the upper end of the freshly-pasted paper into the clamp by hand or otherwise. The attendant, by turning the main crank L, feeds the paper forward, and thus carries its front end, which has been squarely cut across by the cross-shearing device, into the open clamp D Q. Now by turning the other crank E^2 the roller Q^2, which has been resting against the stationary arm A^3 and holding the clamp D Q open, is carried out of contact with that arm, the clamp closes upon the paper by the force of the spring R, and the paper may be carried up the frame B as fast as delivered.

The shaft of the crank L carries a gear-wheel which communicates motion to a train of mechanism analogous to clock-work, and having hands or pointer and a dial N properly graduated and numbered, the function of which is to indicate the length in feet and inches of the paper that has passed the line of the transverse cutter. If, for instance, the operator on the top of the ladder wants a piece of dressed paper three feet nine and one-half inches in length, the attendant sets the hands on the dial back to "12" and "16," respectively, and then proceeds to turn the crank and pass the paper through the machine until the hands indicate that three feet and nine and one-half inches have passed. Then he stops turning, and draws the cutter T across the paper, and the desired length will be obtained. We can thus cut any length up to sixteen feet.

The length of paper is cut squarely across by cutters carried in a traveling carriage T, which is moved one way across the machine by the tension of a cord U, pulled by the attendant, and is moved back by a cord V, running around a spool V′, and turned by a spring inclosed in the drum V^2. The carriage T carries two toothed cutter-wheels S S, which, as the carriage runs across, traverse in a groove *w* in a stationary block W below. The teeth in these cutters puncture the paper, leaving a portion of the paper intact between the cutters. This construction compels the cutters to turn as they are traversed across, and the teeth being sharpened, each partially and smoothly cuts its portion of the width of the paper. The two cutter-wheels will usually cut through the paper at different points in the same line and effect a complete division.

N is a dial having two sets of figures, the outermost running from 1 to 16 and the innermost from 1 to 12.

N′ and N^2 are hands mounted in a manner analogous to clock-hands, but, unlike a clock, the shorter one revolving more rapidly. The hand N^2 travels around its series of figures with each foot of paper which is delivered. The long hand N′ traverses only from one figure to another with such motion of the paper. It follows that the dial and the hands running thereon indicate exactly how much paper is delivered.

Modifications may be made by any good mechanic without departing from the principle or sacrificing the advantages of the invention. We can vary the inclination of the frame B, and can vary the means of supporting it. We make this part easily removable to facilitate transportation of the machine from one building to another. We can adapt it for higher or lower rooms by adding or removing sections.

We propose in some cases to modify the machine by providing feeding-rollers which will take hold of the body of the paper and pull it forward, either in place of or additional to the rollers X′ X^2, which act upon the edges after they have been separated from the main body. We can use collars *n* on the ends of some or all of the rollers to work against the edges of the paper to aid in keeping it in place. (See Fig. 2.) We can use gears on the shafts of the cutting-disks O′ and P′ to insure their proper motion.

The gearing operated by the crank L may be arranged to allow the crank to turn right-handed instead of, as shown, turning left-handed.

All the rollers may sit in slots in the frame, allowing them to be easily lifted out to facilitate cleaning and repairs.

Parts of the invention may be used without the whole.

We claim as our invention—

1. In a machine for paper-hanging, the two cranks L and E^2, with their respective trains of mechanism, adapted to be independently operated at will, the crank L and its train for moving forward the paper, and the other E^2 for operating the clamp D Q, combined as herein specified.

2. In a machine for paper-hanging, the inclined frame B and cross-head or traveler D, with mechanism for moving the latter in opposite directions up and down the said frame, in combination therewith and with the foundation-frame A and mechanism, substantially as shown, for coating the paper with paste, all substantially as herein specified.

3. In a machine for paper-hanging, the paste-tank J and paste-roller I, with mechanism for feeding the paper over the latter, in combination with each other and with the cutting-disks O′ P′ and rollers X′ Y′, adapted to trim the edges of the paper and induce the required forward movement thereof, all substantially as herein specified.

4. In a machine for paper-hanging, the portable frame A, mounted on carrying-wheels, the inclined frame B, and traversing clamp D Q for carrying up the front end of the length of paper, in combination with each other and with the paste-tank J, partially-immersed roller I, scraper H, and rollers G^3 G^4 G^5 G^6, around which the paper is extended, all arranged for joint operation substantially as herein specified.

5. In a machine for paper-hanging, the transversely-moving carriage T, with cutting-wheels S, having toothed edges, lower stationary block W, and provisions for pasting, carrying forward, and trimming the edges of the paper and for carrying up the front end of each length of paper, all combined and arranged for joint operation substantially as herein specified.

6. In a machine for paper-hanging, the paste-tank J and paste-roller I, in combination with each other and with the cross-head D and provisions for traversing it up and down on the inclined way B, the bar Q, lever Q′, spring R, roller Q^2, and arms A^3, adapted to automatically open and close the clamps as they are brought down into and raised up out of their lowest positions, as herein specified.

In testimony that we claim the invention above set forth we affix our signatures in presence of two witnesses.

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DAVID EISELE.

Witnesses:
RAE HARRISON,
M. F. BOYLE.