

H. SILVER.
MACHINE FOR GRAINING LUMBER.

APPLICATION FILED MAY 13, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

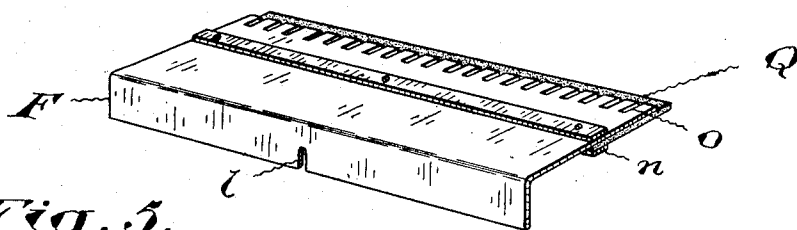
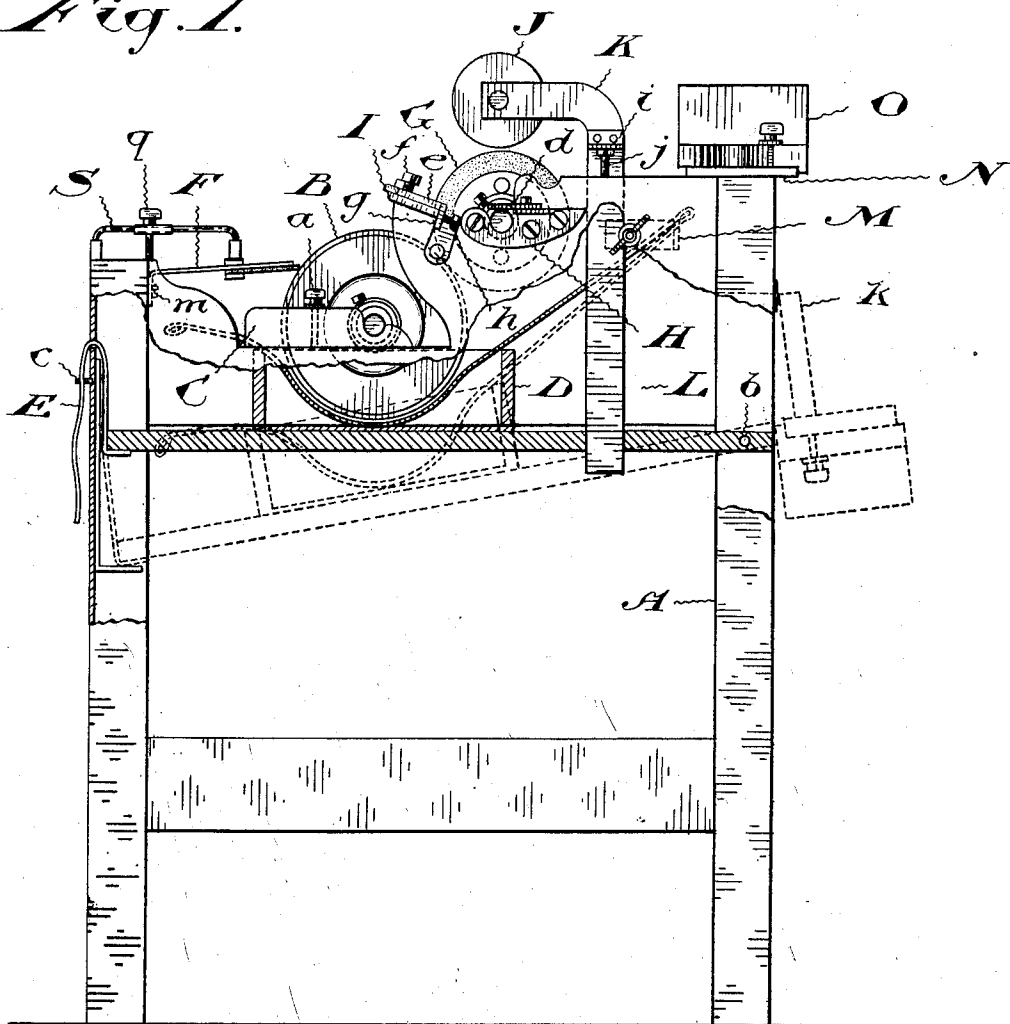


Fig. 5.

Witnesses

R. Jones.
A. M. McRae

Inventor

Hugh Silver.
by Redoutt & Maybee
attys.

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2 SHEETS—SHEET 2.

Fig. 2.

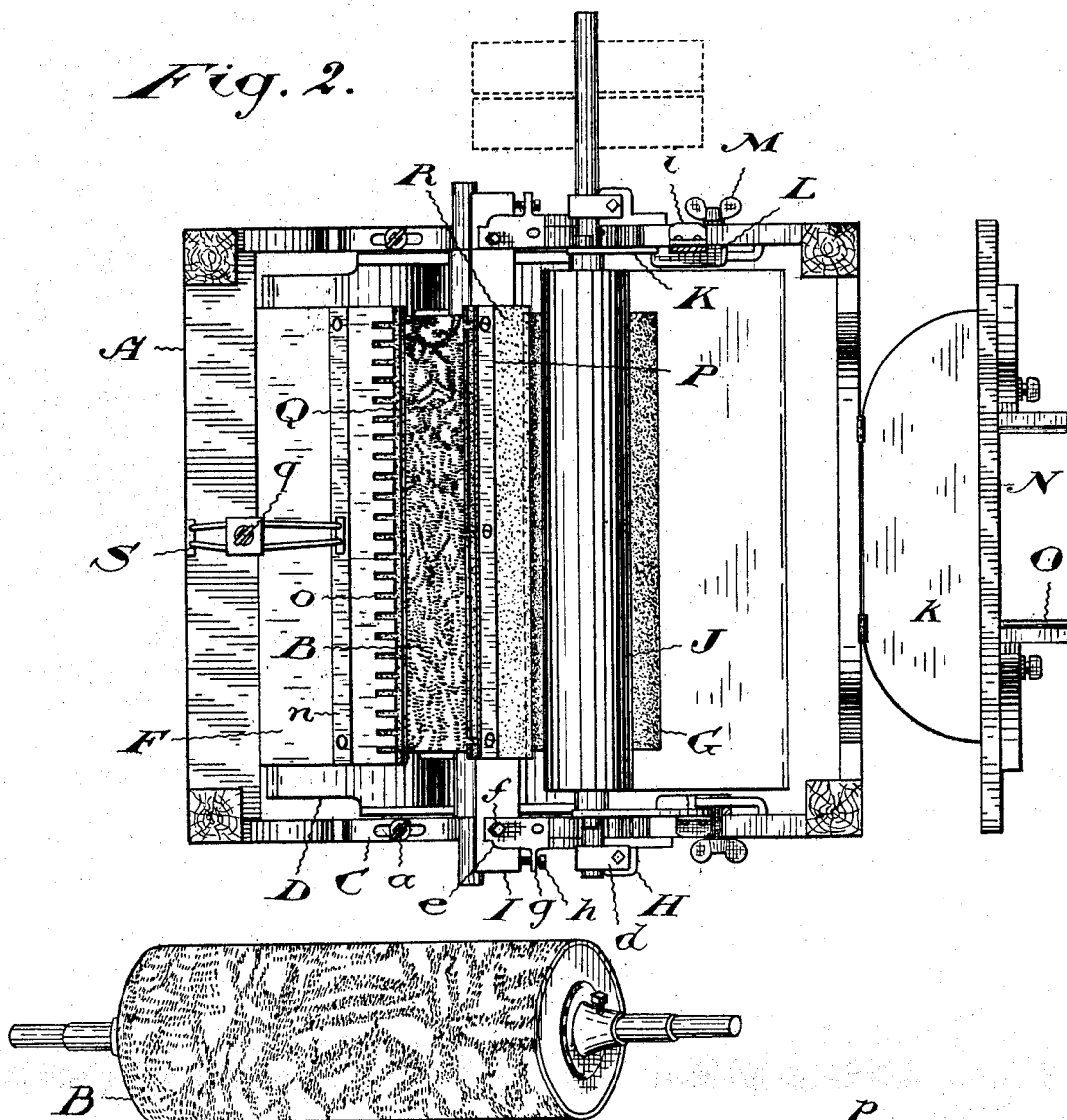


Fig. 3.

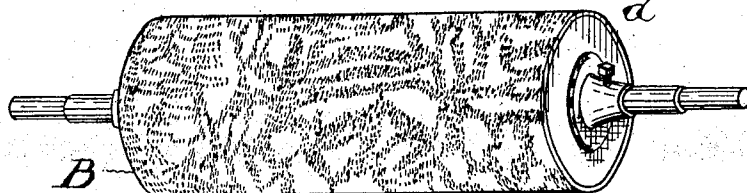
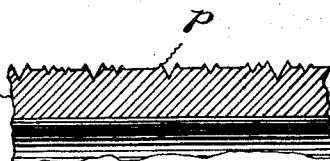


Fig. 4.



Witnesses

P. R. Jones.
A. M. M. R.

Inventor

Hugh Silver
by Robert Maybee
Attys

UNITED STATES PATENT OFFICE.

HUGH SILVER, OF LINDSAY, CANADA.

MACHINE FOR GRAINING LUMBER.

No. 805,100.

Specification of Letters Patent.

Patented Nov. 21, 1905.

Application filed May 13, 1904. Serial No. 207,854.

To all whom it may concern:

Be it known that I, HUGH SILVER, of the town of Lindsay, in the county of Victoria, Province of Ontario, Canada, have invented certain new and useful Improvements in Machines for Graining Lumber, of which the following is a specification.

My invention relates to a machine for graining lumber, described and claimed in my prior United States patent, No. 601,908, April 5, 1898, and has for its object the improvement of the machine in the direction of greater simplicity, greater effectiveness, and in enabling it to produce work more natural in appearance than ever before.

The more important features of my invention are the construction of the design-roller, the construction of the scraper therefor, the construction of the scraper for the printing-roller, the arrangement of the pressure-roller, and the arrangement of the front guide of the machine, all substantially as hereinafter more specifically described and then definitely claimed.

Figure 1 is a side view of my improved machine, partly in section. Fig. 2 is a plan view of the same. Fig. 3 is a perspective view of the design-roller. Fig. 4 is a section of a portion of the surface of the design-roller on an exaggerated scale. Fig. 5 is a perspective view of the scraper for the design-roller.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the frame of the machine, suitably shaped to support the different parts.

B is the design-roller, having its spindle journaled in the blocks C, longitudinally movable on the frame of the machine and provided with thumb-screws *a*, passing through slots in the blocks into the frame of the machine. By this means the design-roller may be adjusted to and from the printing-roller. The construction of this design-roller will be hereinafter more fully described.

D is the paint-tank, the front end of whose bottom is pivoted at *b* on the frame of the machine. The rear end of the bottom is provided with the strap E, which may be caught on a pin *c* to vertically adjust the tank. The tank is shown raised in full lines in Fig. 1 and lowered in dotted lines.

F is the scraper for the design-roller, hereinafter more particularly described.

G is the printing-roller, substantially similar to the composition rollers employed for

distributing ink in the ordinary printing-presses. Its spindle is journaled in notches in the brackets H, bolt or screw held latches *z* being employed to hold the ends of the spindle in the bearings.

I is the scraper for the printing-roller. The ends of this scraper are movable to and from the printing-roller in jaws *e*, formed on the frame of the machine. Set-screws *f* pass through the upper sides of these jaws, and by their means the scraper may be clamped in position. Lugs *g* are also connected with the jaws *e*, and through these jaws are screwed the adjusting-bolts *h*. By means of these the contact of the scraper with the printing-roller can be accurately regulated and the scraper subsequently clamped by means of the nuts *f*.

Above the printing-roller is located the pressure-roller J. This pressure-roller has its spindle journaled in the L-shaped arms K. These arms are vertically movable upon the frame of the machine, being held in position by the grooved battens L. A screw-operated clamp M is provided for each arm, whereby it may be rigidly secured to the frame. Each arm is provided with a lug *i*, resting on a set-screw *j*, screwed into the frame of the machine. By means of these set-screws the height of the pressure-roller above the printing-roller may be accurately adjusted.

At the front of the machine is the guide N. The upper part of this guide is provided with ordinary adjustable gages O. The lower part K of the guide fills a gap in the end of the frame of the machine and is hinged, as shown, at the lower side of the gap.

When the guide is in its normal position, as shown in full lines in Fig. 1, its upper surface is substantially on a level with the upper or operating surface of the printing-roller. When the guide is swung outwardly, as indicated in dotted lines in Fig. 1 and in full lines in Fig. 2, a gap is left in the end of the frame extending down considerably below the operative surface of the printing-roller. This is a great advantage, for while the guide is needed substantially on a level with the printed surface of the roller when running straight lumber through it, yet the end of the frame must of necessity be open if it be desired to pass curved or bent materials through the apparatus, particularly when the concave side of the lumber is to be treated.

The removability of the pressure-roller is an important feature, as when it is removed

I am enabled to treat finished articles, such as the fronts of drawers and the like, by merely passing them by hand over the rotating printing-roller.

5 The printing-roller may be rotated by hand or power. In Fig. 2 I have shown in dotted lines fast and loose pulleys for the belt-drive.

In my prior patent the design-cylinder was formed of basswood. I found this lacking in durability and not well adapted for the finer grades of work. I now form my design-rollers of seamless drawn-brass tubing, which possesses much greater durability and has a finely-finished highly-polished surface. I find in such tubing, however, one defect—that is, that though supposed to be true, yet there exist certain undulations in the surface, which make it difficult to properly scrape the surplus paint from its surface, for though the high parts are scraped perfectly clean the lower parts will retain a shade of color, which makes the work turned out uneven in its appearance. I find the ordinary stiff-back rubber-edged scrapers insufficient to cope with this difficulty. I have therefore devised the scraper F. (Shown more particularly in Fig. 5.) This is composed of a sheet of thin flexible metal L-shaped, as shown, its vertical part having a notch or slot *l* formed therein, through which passes a set-screw *m*, by means of which it may be adjustably clamped to the frame of the machine. (See Fig. 1.) The front edge of the horizontal part of the scraper has a piece of rubber *Q* clamped beneath it by means of two pieces of wood *n*, suitably riveted together. These pieces of wood serve also as a longitudinal stiffener for the main body of the scraper, while they do not interfere at all with its flexibility in the other direction. Toward the front edge of the scraper its longitudinal flexibility is not impaired. I prefer, however, to increase its power of conforming itself to the irregularities of the surface of the roller by forming the notches or cuts *o* in its front edge. These permit the scraper to accommodate itself more readily to short or abrupt irregularities in the roller-surface.

I find that a scraper constructed as I have described conforms perfectly to the surface of the roller no matter how irregular the latter may be and that the surface is wiped clean with the exception of the parts wherein the color is intended to lie, as hereinafter described.

As it is sometimes desirable to apply pressure to the scraper, I provide the spring-bar *S*, adapted to engage both the frame of the machine and the scraper. It is held in position by a clamping-screw *q*, on which it freely turns, so that it may be swung out of the way when desired. By tightening up the clamping-screw any desired tension may be given to the scraper.

65 With the roller described in my prior pat-

ent the marks of the graining were sharp and distinct. On certain classes of work, in order to imitate the natural wood, particularly if the latter be filled, it is necessary that the finer shade-marks at least should merge into the background, much as if they were vignetted. To produce this result, I indent the grain-marks on the roller with a chisel, which leaves the edges of the indentations surrounded by a bur *p*, extending above the surface of the roller. The shallower shade-marks are produced in the same way and possess the same bur. In some cases before the shallower shade-marks are produced I file down the burs around the edges of the indentations representing the grain; but for many purposes both series of indentations may have the bur left raised, as shown in Fig. 4. The result of this method of forming the indentations is that after the indentations have passed under the scraper *F* color is left not only in the indentations, but a certain amount just outside them, as, though the rubber edge of the scraper and its general flexibility permits of the scraper conforming to any gradual irregularities of the surface, it will not scrape clean the flanks of the burs at the sides of the indentations, and a certain amount of color is left on each side and is picked off by the printing-roller and transferred to the lumber brought in contact with the latter. The result of this is that the grain-marks and shade-marks, or both, can be given the haziness of outline which much enhances the effect in certain classes of work.

I have already referred to the method of holding and adjusting the scraper *I*. I will now describe its construction.

On reference particularly to Fig. 2 it will be seen that a rubber strip *R* is secured to the surface of the metal scraper by means of a slat *P*, held in position by screws or bolts. By removing the screws or bolts the rubber strip may be removed. If the rubber strip be removed and the metal brought in contact with the printing-roller, the latter will be scraped perfectly clean before receiving a fresh impress from the design-roller. The grain-pattern will then be printed on the wood with a clear background.

For some purposes it is desirable that the background possess a slight tint. In such cases I put the rubber in position as shown in Fig. 2. The soft rubber fails to scrape the printing-roller perfectly clean and a certain amount of color remains, which is imparted to the lumber, together with the grain-pattern picked up from the design-roller.

By thus constructing my design-roller, the scraper for the design-roller, and the scraper for the printing-roller I have adapted my machine to do a finer class of work than before, making the grained goods turned out by the machine scarcely distinguishable from natural-grained lumber.

What I claim as my invention is--

1. In a graining-machine a design-roller formed of metal and having a grain-pattern indented therein, each indentation having a bur at its edges raised above the surface of the roller, substantially as described.

2. In a graining-machine a design-roller formed of metal and having a grain-pattern indented therein, each indentation having a bur at its edges raised above the surface of the roller, some of the indentations being shallow and others relatively deep, substantially as described.

3. In a graining-machine a design-roller having indentations formed therein with burs at their edges raised above the surface of the roller, substantially as described.

4. In a graining-machine a design-roller in combination with a scraper longitudinally flexible and provided with a continuous soft edge extending from end to end, substantially as described.

5. In a graining-machine a design-roller in combination with a longitudinally-flexible continuous metal scraper provided with a continuous flexible-rubber edge extending from end to end of the roller, substantially as described.

6. In a graining-machine a design-roller in combination with a thin continuous metal scraper provided with a continuous flexible-rubber edge extending from end to end of the roller, the metal having a series of cuts or notches at its front edge, substantially as described.

7. In a graining-machine a design-roller in combination with a thin metal continuous scraper; a longitudinal stiffening back from the front edge; and a continuous soft contact-piece carried by the scraper and adapted to engage the roller, substantially as described.

8. In a graining-machine a design-roller in combination with a continuous flexible scraper having a series of transverse cuts in

its front edge; a longitudinal stiffening back from the front edge; and a continuous soft contact-piece carried by the scraper and adapted to engage the roller, substantially as described.

9. In a graining-machine a frame; a printing-roller journaled on the frame and having its upper edge extending above the frame, in combination with two L-shaped arms, guides on the frame in which the arms are vertically movable, and a pressure-roller journaled on the arms above the printing-roller, substantially as described.

10. In a graining-machine a frame; a printing-roller journaled on the frame and having its upper edge extending above the frame, in combination with two L-shaped arms, guides on the frame in which the arms are vertically movable, vertically-adjustable stops determining the position of the L-shaped arms in the guides, and a pressure-roller journaled on the arms above the printing-roller, substantially as described.

11. In a graining-machine provided with a printing-roller the combination of a front guide normally substantially on a level with the operative side of the printing-roller, and hinged to the frame of the machine below the level of the operative side of the printing-roller; and means for removably holding the guide in its normal position, substantially as described.

12. In a graining-machine provided with a printing-roller and having a gap at its front end extending below the level of the printing-surface of the roller, a removable guide which when in position has its guiding-surface substantially on a level with the printing-surface of the roller, substantially as described.

May 9, 1904.

HUGH SILVER.

In presence of—

JAMES A. PEEL,
MABEL HENDERSON.