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A. H. SHERWOOD.

PRINTING OR GRAINING MACHINE.

APPLICATION FILED SEPT. 19, 1902.

NO MODEL.

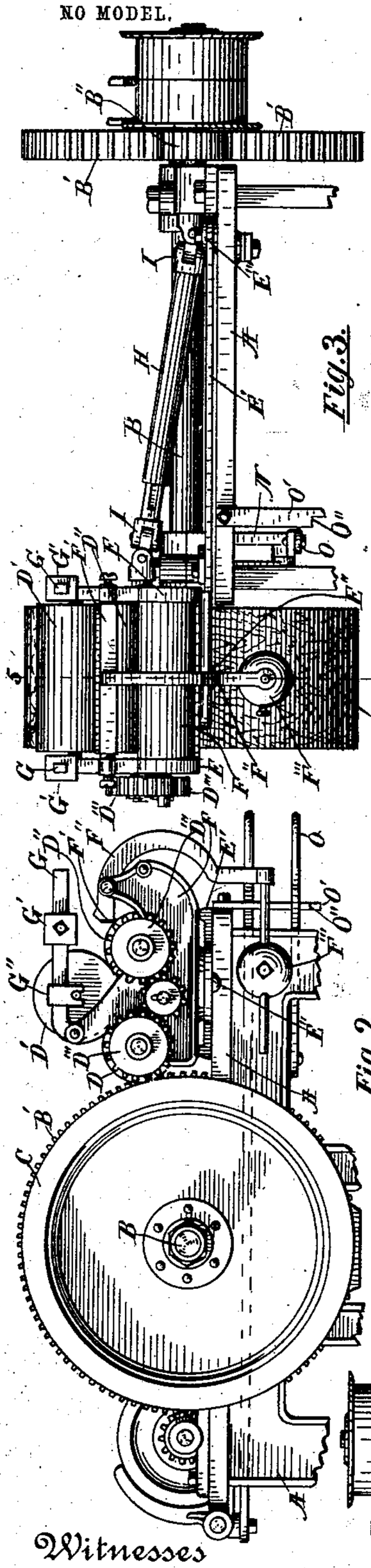

Fig. 3.

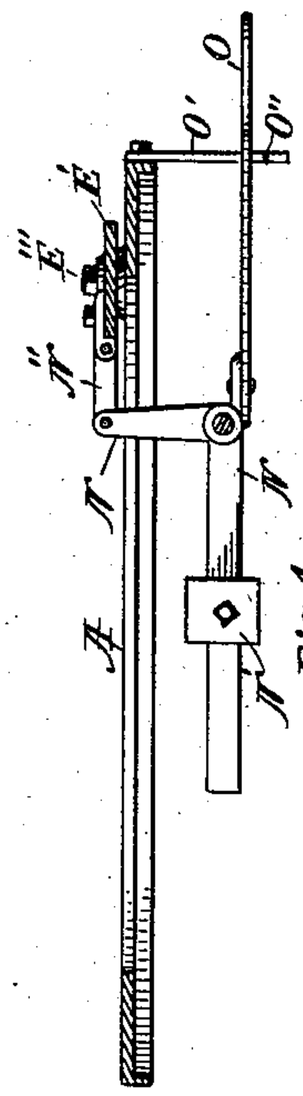

Fig. 4.

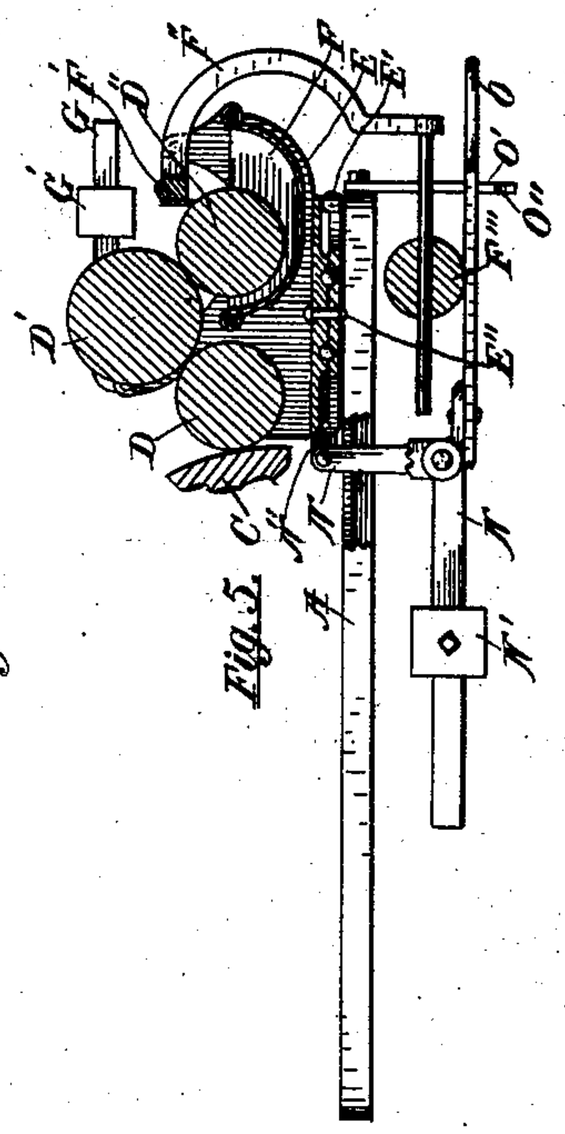

Fig. 5.

Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

ALFRED HARRY SHERWOOD, OF GRAND RAPIDS, MICHIGAN.

PRINTING OR GRAINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,244, dated February 24, 1903.

Application filed September 19, 1902. Serial No. 124,019. (No model.)

To all whom it may concern:

Be it known that I, ALFRED HARRY SHERWOOD, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Printing or Graining Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in printing or graining machines, and more particularly to machines for printing or graining the surfaces of moldings, strips of lumber, the sides of packing-boxes, and other like articles; and its object is to provide the same with improved means for applying color to the printing-cylinder, improved means for operating the same, and to provide the device with certain new and useful features hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a device embodying my invention; Fig. 2, an end elevation of the same; Fig. 3, a side elevation of the same; Fig. 4, a detail of the means for engaging and disengaging the color-distributer with the printing-roll; and Fig. 5, a detail of the color-distributing means and adjacent parts, shown in vertical section on the line 5 5 of Fig. 3.

Like letters refer to like parts in all of the figures.

A represents any suitable frame to support the various working parts of the machine; B, a shaft extending across the top of the frame and provided with suitable journal-bearings; B′, a driving-gear on this shaft engaged by any suitable driving means to operate the machine; and C, the printing-cylinder, preferably having a suitable elastic printing-surface. The pitch diameter of this gear is the same as the diameter of the cylinder C.

The means for applying the color, ink, or paint to the printing-cylinder consists of a train of distributing-rolls D, D′, and D″. The rolls D and D″ are journaled in a suitable frame E, and the roll D′ is journaled in bearings G″, adjustably mounted on levers G, and said levers are provided with adjustable weights G′ and pivoted to the frame E at one end. This roll is preferably provided with an elastic surface. Beneath the roll D″ and partially inclosing the same is a reservoir F to contain the color. A scraper F′ engages the roll D″. This scraper is pivoted to the frame E and provided with a lever F″, extending outward and forward beneath the roll D″ and provided with an adjustable weight F‴. The roll D″ is made of some hard material, preferably iron or steel, and the scraper F′ is made of some softer material, preferably type or Babbitt metal, so that the wear will all fall on the scraper, which is easily replaced, and whereby the scraper will wear to fit closely to the roll without wearing the roll out of shape. The weight F‴ will rise and fall to accommodate any variation in the surface of the roll and at the same time maintain uniform contact of the scraper therewith.

The described color-distributing means is mounted on one end of a horizontal arm E′ and is pivoted thereto to turn freely on a vertical axis E″ and in proper position to engage the roll D with the surface of the printing-cylinder C. The other end of the arm E′ is pivoted to the frame at E‴ and is moved toward the printing-cylinder C by means of a bell-crank lever N, attached to the arm E′ by a rod N″ and provided with an adjustable weight N′.

To operate the distributing-rolls, the rolls D and D″ are connected by a train of gears D‴ and the roll D is driven by a pinion B″, engaging the gear B′ and having a pitch diameter the same as the diameter of the roll D and mounted on a shaft connected to the roll D by means of a telescopic shaft H, connected at its respective ends by universal-joint couplings I to the pinion-shaft and the roll D.

To hold the roll D out of contact with the cylinder C, a lever O is pivotally attached to the lever N to swing laterally and engage a stop O′, provided with a shoulder O″ to engage the lever O and hold the same in a de-

pressed position, whereby the arm E′ is moved away from the cylinder C and held out of contact with the same.

The operation of my device is as follows: When the lever O is released from the stop O′, the weight N′ will press the roll D in contact with the cylinder C with more or less force, according to the adjustment of said weight on the bell-crank N. The frame supporting the roll D will turn on the axis E″ and adapt the position of the roll to any irregularity of the surface of the printing-cylinder C and the weight will yieldingly maintain contact between the rolls, and thus apply the color to the cylinder evenly throughout. The roll D″ will take up the color from the reservoir F and the scraper F′ will remove the color from the roll more or less completely, according to the adjustment of the weight F‴ on the lever F″, and thus determine the amount applied to the printing-cylinder. The roll D′ will automatically adjust its bearings G″ on the levers G to equalize the contact of said roll with the rolls D and D″, and its pressure upon said rolls can be determined by adjusting the weights G′ on the levers G. The device is thus readily and automatically adjusted to work properly. It is also instantly thrown out of action and restored to action again by operation of the lever O. The telescopic and universal-joint coupling connections provided by the shafts H and joints I permit of the foregoing movements and adjustments without interfering with the proper transmission of motion to the roll D, and the train of gears connecting the rolls D and D″ insure proper relative rotation.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a printing-cylinder, a color-distributing roll engaging the cylinder and journaled in a frame pivoted on an axis at right angles to the axis of the cylinder, and mounted on a support adjustable toward and from the cylinder, means for moving and adjusting the support, and means for supplying color to the roll.

2. The combination of a printing-cylinder mounted on a horizontal shaft, a distributing-roll journaled in a frame pivotally mounted on a support movable toward and from the cylinder, a bell-crank lever connected to the support, an adjustable weight on the lever, and a lever and stop to move and hold said support away from the cylinder.

3. The combination of a printing-cylinder mounted on a horizontal shaft, a horizontally-movable and pivoted arm having its movable end opposite the cylinder, a lever connected to the arm, an adjustable weight on the lever, a lever and stop to move and hold the arm away from the cylinder, and color-distributing means pivotally mounted on the movable end of the arm and having a roll adapted to engage the printing-cylinder.

4. The combination of a horizontal shaft, a printing-cylinder and a gear mounted on the shaft, a horizontally-movable arm opposite the cylinder, a frame, a distributing-roll mounted in the frame and adapted to engage the cylinder, said frame mounted on the arm and pivoted to turn on a vertical axis, a pinion engaging the gear, and a telescopic shaft and two universal-joint couplings to connect the gear and the distributing-roll.

5. The combination of a printing-cylinder and a gear mounted on a horizontal shaft, a horizontally-movable and pivoted arm opposite the cylinder, a frame mounted on the arm and rotative on a vertical axis, a reservoir and train of distributing-rolls supported by the frame, a bell-crank lever connected to the arm, an adjustable weight on the lever, a lever and stop to move and hold the arm away from the cylinder, a pinion engaging the gear, a telescopic shaft and two universal-joint couplings connecting the pinion and one of the distributing-rolls.

6. In a printing or graining machine, the combination of a reservoir to contain the color material, a roll of hard metal rotative in said reservoir, a soft-metal scraper engaging the roll, a pivoted lever supporting the scraper, and a weight on the lever to maintain constant pressure of the scraper against the roll, as the former is worn away.

7. The combination of a printing-cylinder, a color-reservoir, a roll partially within the reservoir, a roll outside the reservoir and engaging the printing-cylinder, an intermediate roll engaging the said rolls, pivoted levers, journal-bearings for the intermediate roll mounted on the levers, and adjustable weights on said levers.

8. The combination of a printing-cylinder, a color-reservoir, a roll partially within the reservoir, a scraper engaging the roll, an adjustable weight attached to the scraper, a roll outside the reservoir and engaging the printing-cylinder, an intermediate roll engaging said rolls, pivoted levers, adjustable bearings on the levers for the intermediate roll, and adjustable weights on the levers.

9. The combination of a printing-cylinder, a color-reservoir, a roll rotative in the reservoir, a pivoted scraper engaging the roll, a lever connected to the scraper and engaging the roll, a lever connected to the scraper, an adjustable weight on the lever, a roll adapted to engage the printing-cylinder, an intermediate roll engaging both of said rolls, pivoted levers, and bearings for the intermediate roll adjustable on the levers.

10. In combination with a printing-roll, the following means for applying color to the same, a train of three rolls mounted in a frame, said frame pivoted on an axis movable toward and from the cylinder, means

for yieldingly moving the rolls toward the cylinder, means for moving and holding the rolls away from the cylinder, a color-reservoir partly inclosing the first roll of the train, a pivoted scraper engaging said roll, a lever and adjustable weight to partially remove the color from the roll, a train of gears to connect the first and last roll, and means for yieldingly engaging the intermediate roll with the other rolls.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED HARRY SHERWOOD.

Witnesses:

LUTHER V. MOULTON,

GEORGIANA CHACE.