No. 787,794. PATENTED APR. 18, 1905.

S. B. ROY.

CARD GRINDING MACHINE.

APPLICATION FILED OCT. 29, 1904.

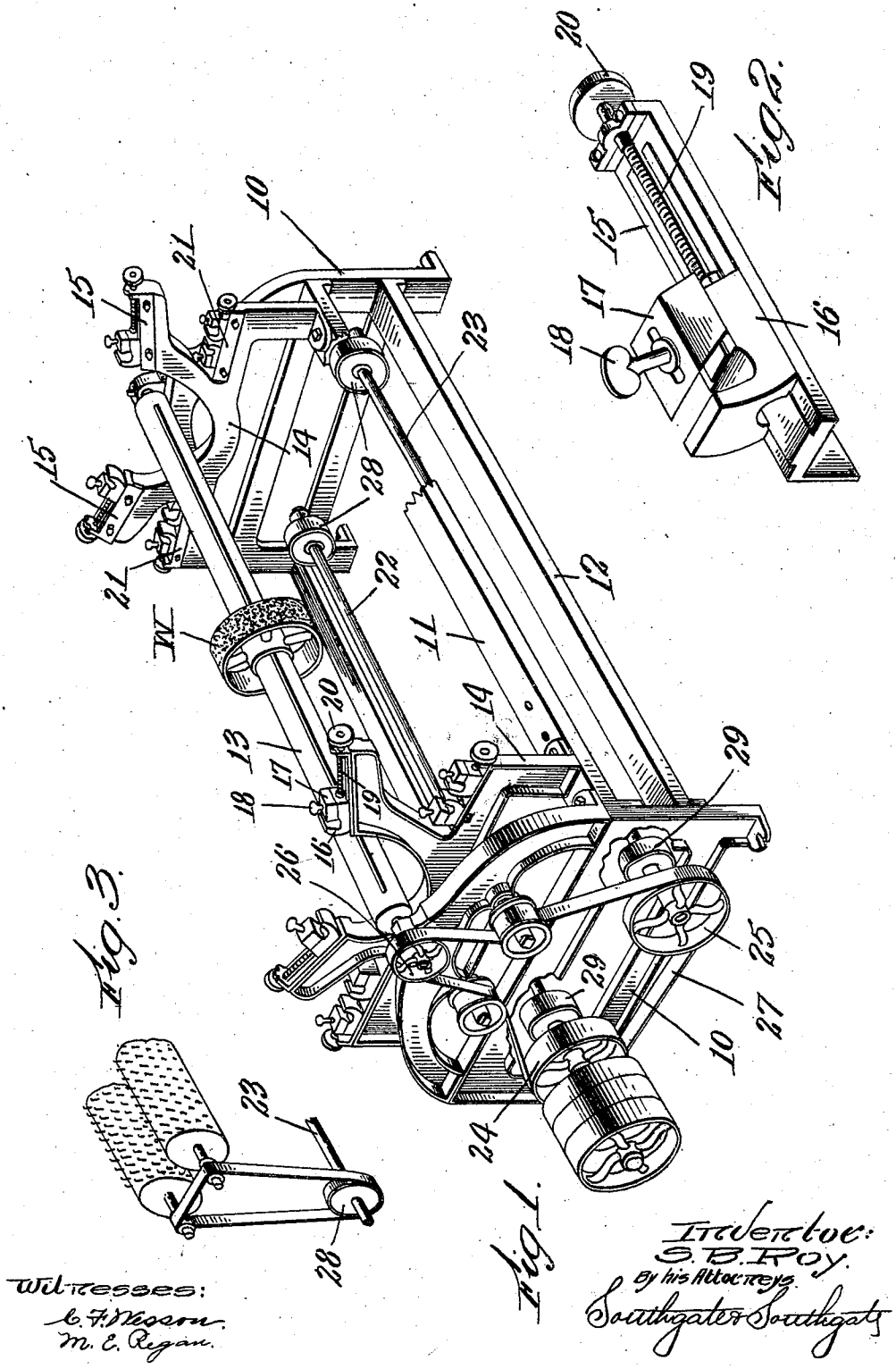

Fig. 1.

Fig. 3.

Fig. 2.

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No. 787,794. Patented April 18, 1905.

UNITED STATES PATENT OFFICE.

SYLVANUS B. ROY, OF WORCESTER, MASSACHUSETTS.

CARD-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 787,794, dated April 18, 1905.

Application filed October 29, 1904. Serial No. 230,491.

To all whom it may concern:

Be it known that I, SYLVANUS B. ROY, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Card-Grinding Machine, of which the following is a specification.

This invention relates to that class of grinding-machines which are employed for sharpening the card-clothing which is wrapped around rolls.

The especial object of this invention is to provide a strong, simple, inexpensive, and efficient grinding-machine which is particularly adapted for grinding the card-clothing of napper-rolls.

To this end this invention consists of the card-grinding machine and of the combinations of parts as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a perspective view, partly broken away, of a card-grinding machine constructed according to this invention. Fig. 2 is an enlarged perspective view of one of the adjustable bearings, and Fig. 3 is a fragmentary perspective view showing the manner in which a pair of rolls are finished by being rotated in contact with each other.

In napping-machines which are employed for surfacing or raising the naps of cloth large numbers of comparatively small rolls are used. These rolls are covered with long-toothed diamond-pointed card-clothing.

In practice it is a matter of difficulty to keep the card-clothing of the napper-rolls sufficiently sharply pointed to produce the best results.

I have found in practice that the long-toothed diamond-pointed card-clothing of napper-rolls can be successfully ground and sharpened by first grinding off to true the points of the teeth, which can best be done by a flat-surface grinding-wheel, and by thereafter sharpening the sides of the teeth by a gang-disk grinding-wheel, which may consist of a number of emery saw-shaped disks clamped together upon a suitable hub. These grinding operations, however, are apt to leave the teeth somewhat rough, and in order to burnish and finish the napper-rolls I have found it desirable to turn a pair of freshly-ground rolls in contact with each other, so that their teeth will intermesh and mutually burnish and finish each other.

The especial object of my present invention is to provide a machine for grinding and finishing napper-rolls in the manner referred to, the machine being preferably designed to simultaneously operate upon a number of such rolls.

In the grinding-machine which I have herein illustrated the machine is intended to operate simultaneously upon six rolls. Two napper-rolls are supported in adjustable bearings, so as to be presented to a traveling grinding-wheel, and two pairs of grinding-rolls are supported and turned in contact with each other to secure the burnishing or finishing operation before described.

Referring to the accompanying drawings for a detail description of this form of machine, the machine-frame comprises the end frames 10, which are connected by top and bottom side rails 11 and 12.

Journaled in the end frames 10 is a grinding-shaft 13, which supports the traveling grinding-wheel W. The grinding-shaft 13 is preferably made hollow in order to contain the traversing connections which travel the grinding-wheel W back and forth.

Adjustably mounted upon the top rails 11 are brackets 14, which can be set to different positions to accommodate different widths of napper-rolls. Each of the brackets 14 is provided with an arc or curved section in order to permit the passage of the grinding-wheel W, it being desirable that the wheel W should run beyond the end of the napper-rolls to insure evenness of grinding, and extending out from the curved part of each of the brackets 14 are the extending arms, which support adjustable bearings for the shafts of the napper-rolls which are being ground.

In many of the napper-rolls which are used in modern napping-machines the shafts are of comparatively small and varying diameters and extend out beyond the body portions of the roll for comparatively short distances.

In order to support the napper-rolls while they are being ground, I have found it desirable to provide a special form of adjustable bearing. This construction is most clearly illustrated in Fig. 2. As shown in this figure, 15 designates a supporting-plate, and dovetailed onto the plate 15 is a bearing-block 16, which is grooved near its end and provided with an upwardly-extending finger or lip. Dovetailed onto the block 16 is a retaining-piece 17, which is slotted longitudinally and is clamped in place by a tap-bolt 18. The retaining-piece 17 is provided at its forward edge with an inclined overhanging surface which coöperates with the groove and upwardly-extending finger of the block 16 to hold one end of a roll-shaft in place while the roll is being ground. Threaded into the block 16 is an adjusting-screw 19, having an adjusting-handle 20 at its end.

By means of the four adjustable bearings shown two napper-rolls may be supported in position to be presented to and operated upon by the grinding-wheel W.

To provide for finishing and burnishing one or more pairs of previously-ground napper-rolls, I provide the plates 21, and adjustably mounted upon the plates 21 are two pairs of napper-rolls. These adjustable bearings may be of the same construction as illustrated in Fig. 2, except that the inner one of each pair of bearings on a plate 21 is preferably stationary.

Any desired driving connections may be employed for operating the grinding-machine.

In the construction illustrated I have provided two bottom shafts 22 and 23. The rear bottom shaft 22 is provided at one end with tight and loose pulleys for an ordinary driving-belt. Secured upon the shaft 22 is a pulley 24, and in line with the pulley 24 is a pulley 25 upon the bottom shaft 23. Passing around the pulleys 24 and 25 and around a pulley 26 upon the grinding-shaft 13 is a connecting-belt 27, which may be tightened by means of idler-pulleys, as shown. Secured near the other ends of the bottom shafts 22 and 23 are the pulleys 28. Each of the pulleys 28 may be belted to drive a pair of napper-rolls during their burnishing or finishing operation, as shown in Fig. 3. Near the driven ends the bottom shafts 22 and 23 are provided with pulleys 29, which may be belted to turn the napper-rolls which are presented in position to be operated upon by the grinding-wheel. By means of this construction it will be seen that I have provided a grinding-machine adapted for simultaneous operation upon six napper-rolls, which machine is adapted to successively perform the functions of truing up, repointing, and then burnishing the teeth of card-clothing of the diamond-pointed type which is used upon napper-rolls.

I am aware that a grinding-machine constructed according to this invention may be employed for grinding and finishing different kinds of products and that the details of construction may be considerably varied by skilled mechanics. I do not wish, therefore, to be limited to the particular machine which I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a grinding-machine, the combination of a grinding-wheel, means for presenting a roll to the grinding-wheel, and means for simultaneously finishing a pair of rolls by rotating them in contact with each other.

2. In a grinding-machine, the combination of a grinding-wheel, adjustable bearings and driving connections for presenting two rolls to the grinding-wheel, and two sets of adjustable bearings and driving connections for simultaneously finishing the two pairs of rolls by rotating them in contact with each other.

3. In a grinding-machine, the combination of the frame, two bottom shafts, a central grinding-shaft, a belt connecting said shafts, adjustable bearings for presenting two rolls to the grinding-wheel, two sets of adjustable bearings for simultaneously holding two pairs of rolls in position to burnish or finish each other, two pulleys for turning the rolls while being ground, and two pulleys for turning the two sets of rolls which are being simultaneously finished.

4. In a grinding-machine, the combination of a framework, comprising end frames, side rails connecting the end frames, brackets adjustably fastened on the side rails, each bracket having a pair of extending arms, adjustable bearings mounted on the extending arms for presenting rolls to the grinding-wheel, each of said bearings comprising a block with an upwardly-extending finger, and a retaining-piece clamped on the block and having an inclined end coöperating with the finger, and each of said brackets having two sets of bearings for supporting two sets of rolls to be rotated in engagement with each other, and driving connections comprising two bottom shafts, a belt connecting the two bottom shafts and grinding-shaft, and pulleys on the bottom shafts for turning the rolls which are being ground and the rolls which are being burnished respectively.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SYLVANUS B. ROY.

Witnesses:
PHILIP W. SOUTHGATE,
J. ELMER HALL.