No. 756,193. PATENTED MAR. 29, 1904.

J. P. WRIGHT.

MATCH MAKING MACHINE.

APPLICATION FILED FEB. 28, 1899. RENEWED AUG. 13, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

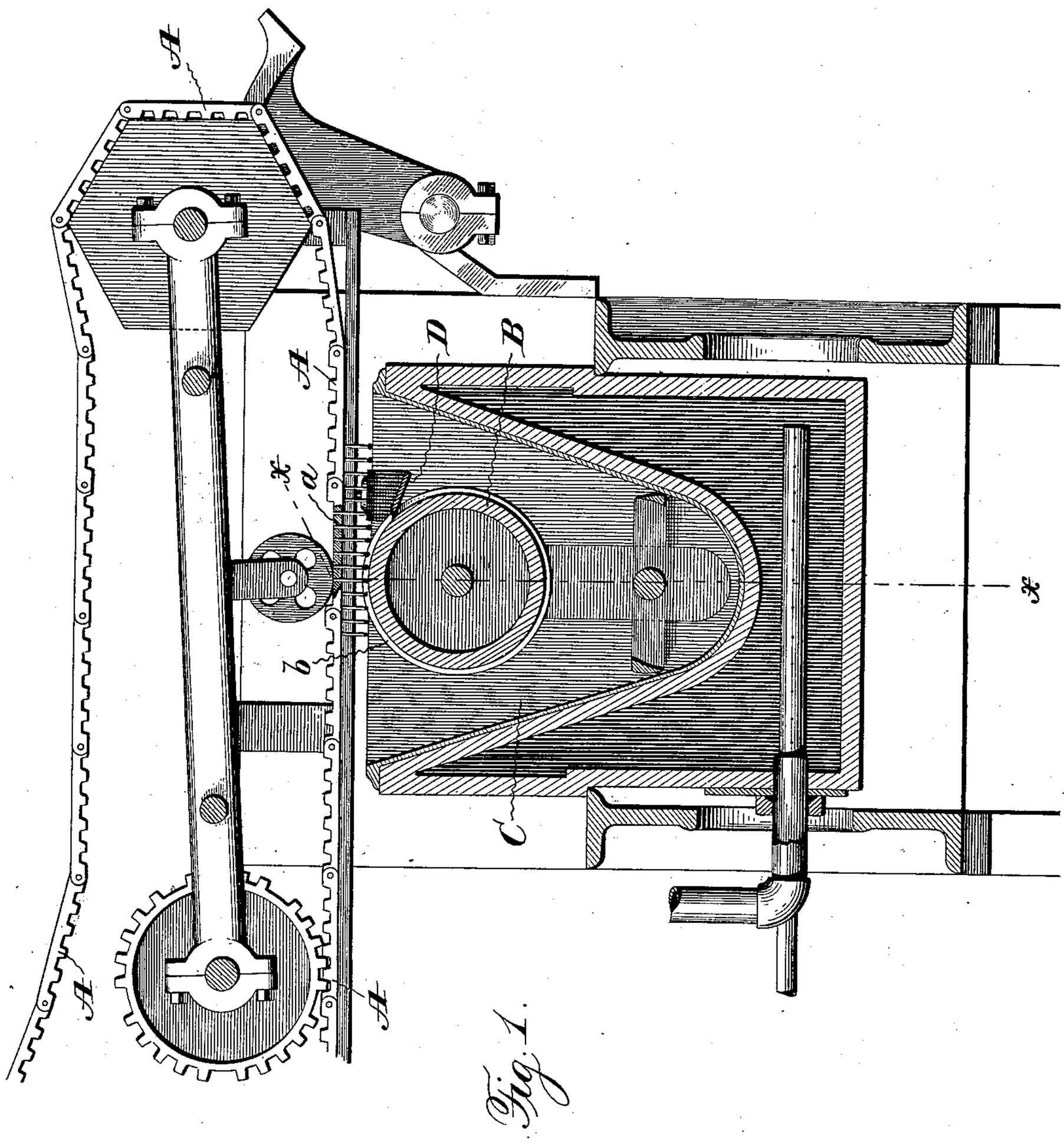

Fig. 1.

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Henry C. Hazard.

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by Pindle and Pindle
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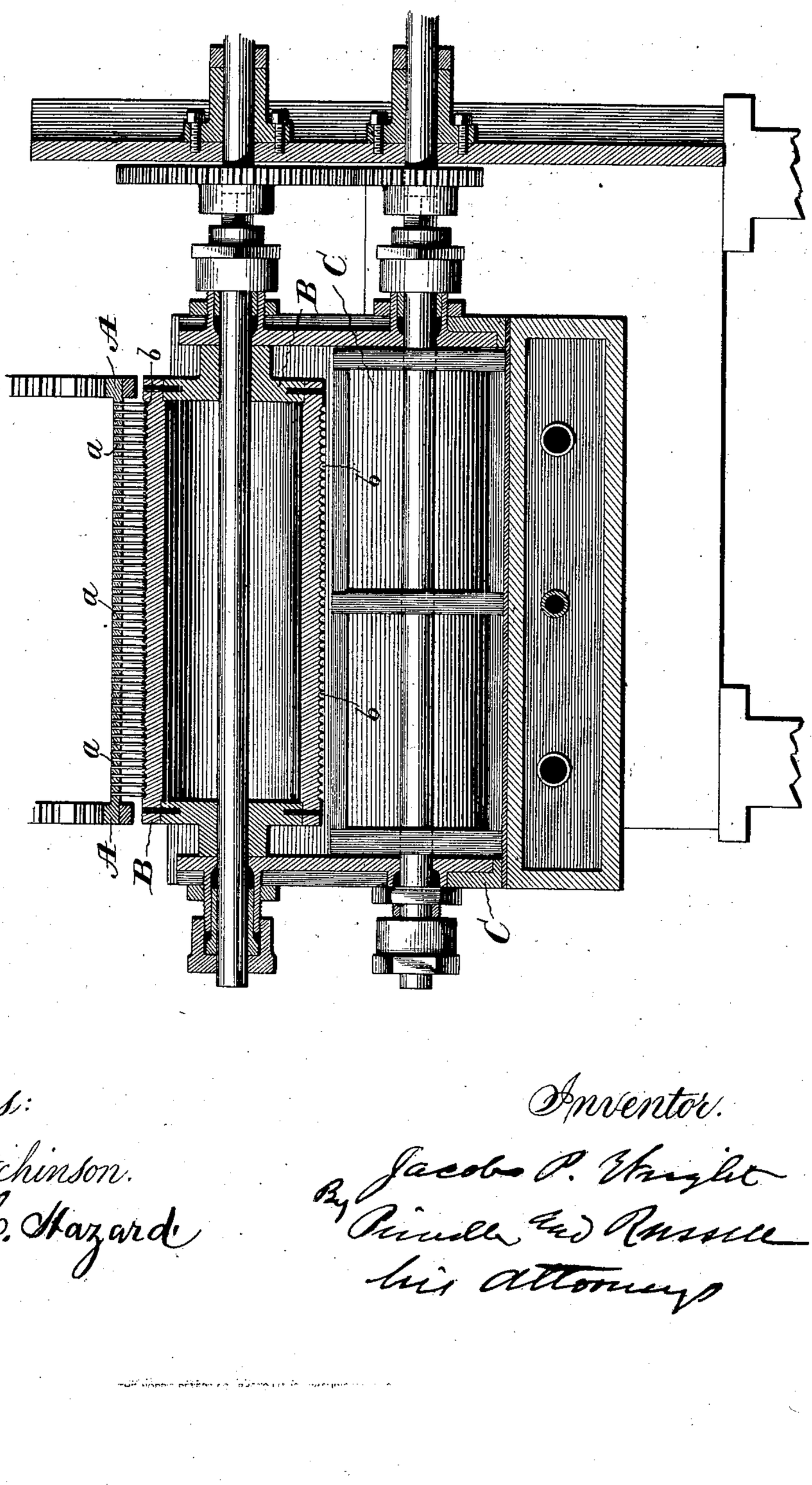
NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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NO MODEL. 3 SHEETS—SHEET 3.

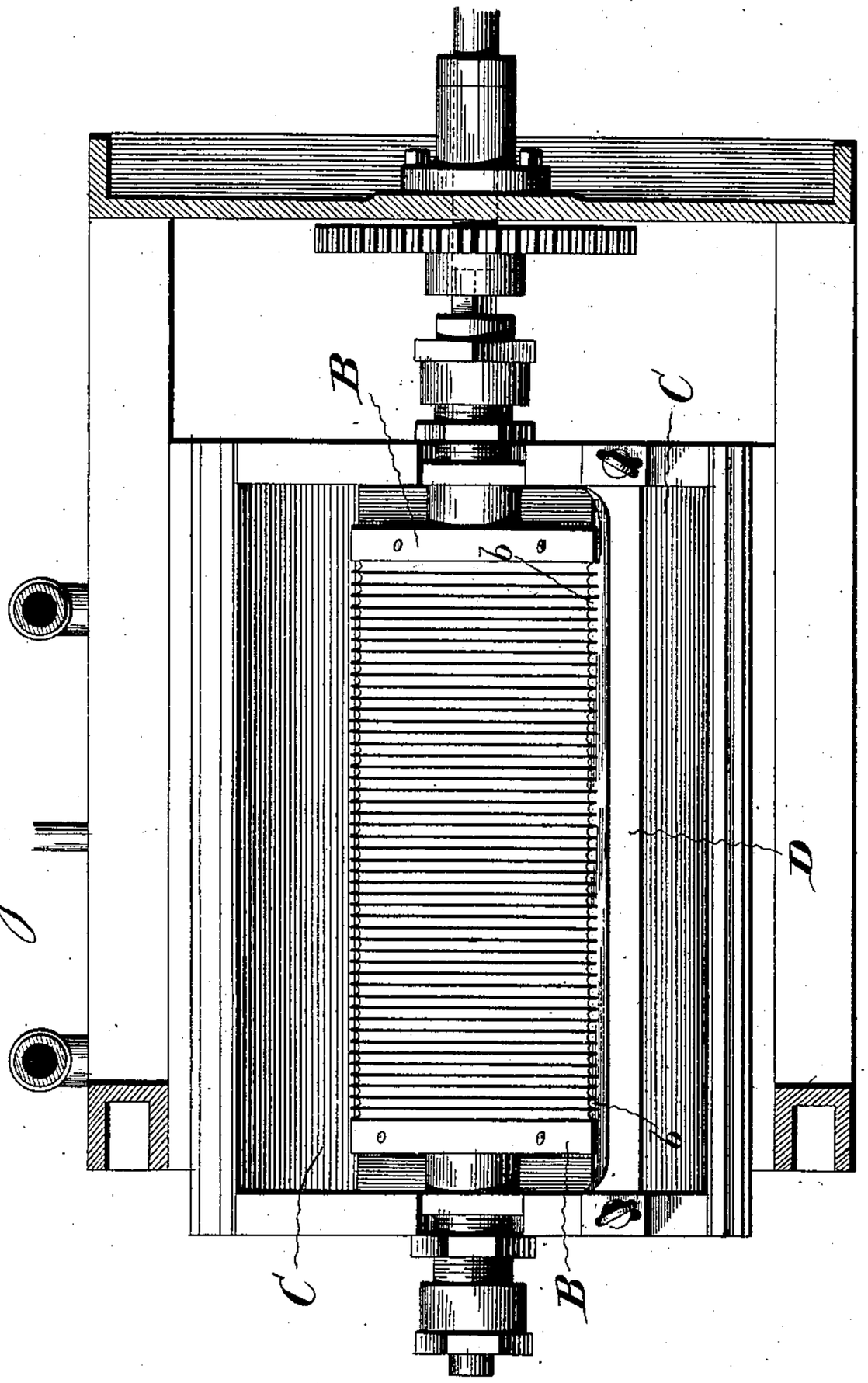

Fig. 3.

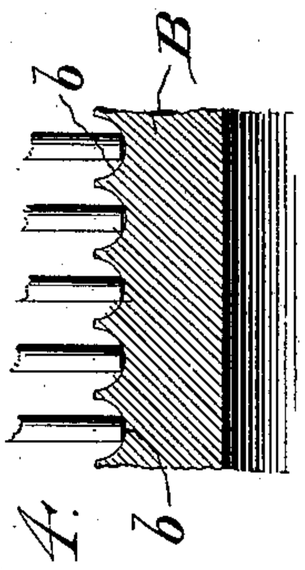

Fig. 4.

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No. 756,193. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

JACOB PULVER WRIGHT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MATCH-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 756,193, dated March 29, 1904.

Application filed February 28, 1899. Renewed August 13, 1903. Serial No. 169,535. (No model.)

To all whom it may concern:

Be it known that I, JACOB PULVER WRIGHT, of New Haven, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Match-Making Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a view showing in vertical section a portion of a match-machine embodying my invention, such portion including a section of the splint carrier or chain and the composition-applying mechanism; Fig. 2, a vertical section on line *x x* of Fig. 1; Fig. 3, a top plan view of the composition-applying mechanism with portions above the splint evening and applying roll removed; and Fig. 4 is a detail view, on a larger scale, of a portion of said roll.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to improve the construction of match-making machines so as to insure the separation and even spacing of the splints held in the carrier in order that the formation of "double" heads or the connection of the ends of adjacent splints by a mass of composition can be prevented and also that there shall be the uniform application of composition to the splints and the proper quantity on each; and to these ends said invention consists in the mechanism having the features of construction substantially as hereinafter specified.

My invention is applicable to any type of match-machine in which the splints are placed for dipping in a carrier having any construction by which the splints are carried projecting in parallel rows, and while I shall show it as arranged for use with the familiar type of machine in which such carrier consists of an endless chain formed of perforated plates hinged together it is to be understood that I do not restrict the invention to use with such a carrier.

The splint-carrier that I show is similar to the one shown in United States Patent No. 528,457, issued October 30, 1894, and consists of plates A and A, adjoining ones of which are hinged together at their edges and each plate being provided with parallel transverse rows of holes or perforations *a* and *a*, each of which is adapted to receive one end of a splint thrust into it, and thus hold the splint so that it may be carried to the various treating devices by which the match is made. It is desired that the splints shall stand or project from the carrier-plates at a right angle, so that the splints will be perfectly parallel with each other, with their free ends spaced uniform distances apart, so that when the composition is applied to said ends adjacent splint ends will not be near enough for a mass or quantity of composition to bridge or reach across between and unite them. It sometimes happens, however, that the splints when thrust in the holes are not left at right angles to the plate, but stand away, with the result that the free ends of adjoining splints of the same row are too close together. To remedy such a condition as this I employ a roll B, which is preferably the composition-applying roll, mounted with its axis crosswise of the carrier and having a series of annular or circumferential ridges or ribs *b* and *b*. Preferably said ridges or ribs are formed by annular or circumferential grooves or channels in the periphery of the roll, the adjacent grooves being placed with their sides close together, but not quite touching, so that the apex of the ridge formed by the two grooves is not sharp, but blunt. The grooves are so situated relative to the holes or perforations in the carrier-plate that parallel planes extending longitudinally of the plate, passing through the centers of the holes of a transverse row, pass each through the center of the bottom of one of the grooves. Preferably each groove is semicircular in cross-section, so that the opposite sides of each rib or ridge, though slightly concave, slope or incline toward the bottoms of the grooves at the respective sides of the ridge or rib, each side of the rib thus having such formation that it will engage the end of a crooked or displaced splint and easily

and gently press it laterally to the desired position. The bottom of the groove being a round full concave surface, there is no danger of the end of the splint being jammed or pinched between two ridges or ribs.

The use of the composition-roll to separate and even the splints is desirable, because one roll is thus made to perform two functions, and it is made certain that at the time the composition is applied the splints are in precisely the right position to receive the composition. Moreover, it is an advantage to have the composition-applying roll provided with the circumferential grooves, for as each groove is filled with composition it is made certain that there shall be an ample quantity for the ends of the splints. These grooves are especially desirable in machines in which the composition-roll is revolved slowly, for with a slowly-revolving roll having a smooth or even periphery it is difficult to insure the carrying up to the splints of enough composition.

The roll B is shown as mounted in a vat C of the same construction as that shown in the hereinbefore-referred-to Patent No. 528,457, and the mechanism for revolving said roll and that for supporting and guiding the carrier over the roll are the same as the like mechanisms in said patent, and therefore need not be described herein.

For preventing the clogging or filling of the grooves in the roll by hardened composition a scraper D is employed, that is supported in a position parallel with the roll and has an edge shaped to correspond with and fit the surface formation of the roll. Said scraper as the roll revolves will clear out of the grooves the composition contained therein, so that after passing the scraper the grooves can fill with a fresh supply from the vat.

It is to be understood that though I prefer the ridged or ribbed splint-evening roll placed in the composition-vat and serving also as the composition-applying roll it may be located elsewhere, and I also wish it to be understood that though the roll shown has circumferential or annular ribs or ridges to separate and straighten splints of the transverse rows it will be within the scope of my invention to use ribs or ridges to separate and straighten the splints in rows longitudinal of the carrier, the ribs or ridges in this case being placed not circumferentially, but longitudinally, of the roll.

The roll is given such a position relative to the carrier where the latter passes above it that the bottoms of the grooves between the ribs *b* and *b* at the top of the roll are a distance from the bottom of the carrier the same as the distance it is desired that the lower ends of the splints shall be from the carrier-bottom, and hence if any splints project too far beneath the carrier the roll will engage and lift them until they are in the desired position and all splints as they pass over the roll and receive the composition therefrom project an even and uniform distance from the carrier. Thus the roll not only separates and straightens the splints by moving them laterally or sidewise, but evens them by moving any longitudinally that project too far from the carrier.

Having thus described my invention, what I claim is—

1. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a roll to adjust the splints in the carrier having a series of circumferential ribs with inclined, splint-end-engaging sides projecting into the spaces between the rows of splints, so as to move over into line with the respective rows any splint ends which may be out of line with such rows, substantially as and for the purpose described.

2. In combination with a movable splint-carrier, adapted to receive and hold splints in a series of rows, a roll having a series of splint-end-engaging circumferential ribs or ridges with inclined sides projecting into the spaces between the rows of splints, and means for rotating the roll, substantially as and for the purpose described.

3. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, splint-evening means comprising for each row oppositely-inclined, inwardly-converging surfaces adapted and situated to engage misplaced splints of the row, substantially as and for the purpose described.

4. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a splint-evener having a plurality of sets of oppositely-inclined inwardly-converging surfaces, each set being adapted and situated to engage misplaced splints of a row, substantially as and for the purpose described.

5. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a splint-evener comprising a roll having oppositely-inclined surfaces adapted and situated to engage misplaced splints of a row, substantially as and for the purpose described.

6. In combination with a splint-carrier, adapted to receive and hold splints in a series of rows, a splint-evener comprising a roll having a series of ribs with inclined sides, the ribs being situated so as to enter the spaces between the ends of splints of adjacent rows, substantially as and for the purpose described.

7. In combination with a splint-carrier, adapted to engage limited portions of splints, a splint-evening device having a series of ribs or ridges, each having oppositely-inclined, inwardly-diverging surfaces adapted and situated to engage the ends of misplaced splints, substantially as and for the purpose described.

8. In combination with a splint-carrier adapted to receive and hold splints in rows, a

splint-evener having for each row, inwardly-converging surfaces inclined toward opposite sides of the path of travel of the splints of a row, substantially as and for the purpose described.

9. In combination with a movable splint-carrier, adapted to receive and hold the splints in a series of rows, a splint-evener consisting of a rotating roll having grooves with inclined sides into which the splints on the carrier project, such grooves being so situated, with reference to the carrier, that their inclined sides will engage and straighten any misplaced splints having their ends standing to one side or the other of the lines of their respective rows, and, as the splints pass over the roll, the lower portions of the grooves will engage and push up into place any splints whose lower ends are standing below the level of such lower portions of the grooves before the movement of the carrier brings the splints to the roll, substantially as and for the purpose described.

10. In combination with a movable splint-carrier, adapted to receive and hold the splints in a series of rows, a composition-vat containing composition to be applied to the ends of the splints as the carrier moves along, a roll rotating in the vat and adapted to take composition therefrom and apply it to the splint ends, having a series of grooves, one for each row of splints, with oppositely-inclined sides, so situated, that the ends of the splints carried by the carrier to and past the roll, will project down into the grooves thereof and be in contact with the lower portions of the grooves, as the splints are brought over the axis of the roll, and any splints extending with their ends below a certain level, before they reach the roll, will be engaged and pushed up by the roll as the carrier brings them to and over the latter, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of February, A. D. 1899.

JACOB PULVER WRIGHT.

Witnesses:
TOM A. PALMER,
B. C. ROSS.