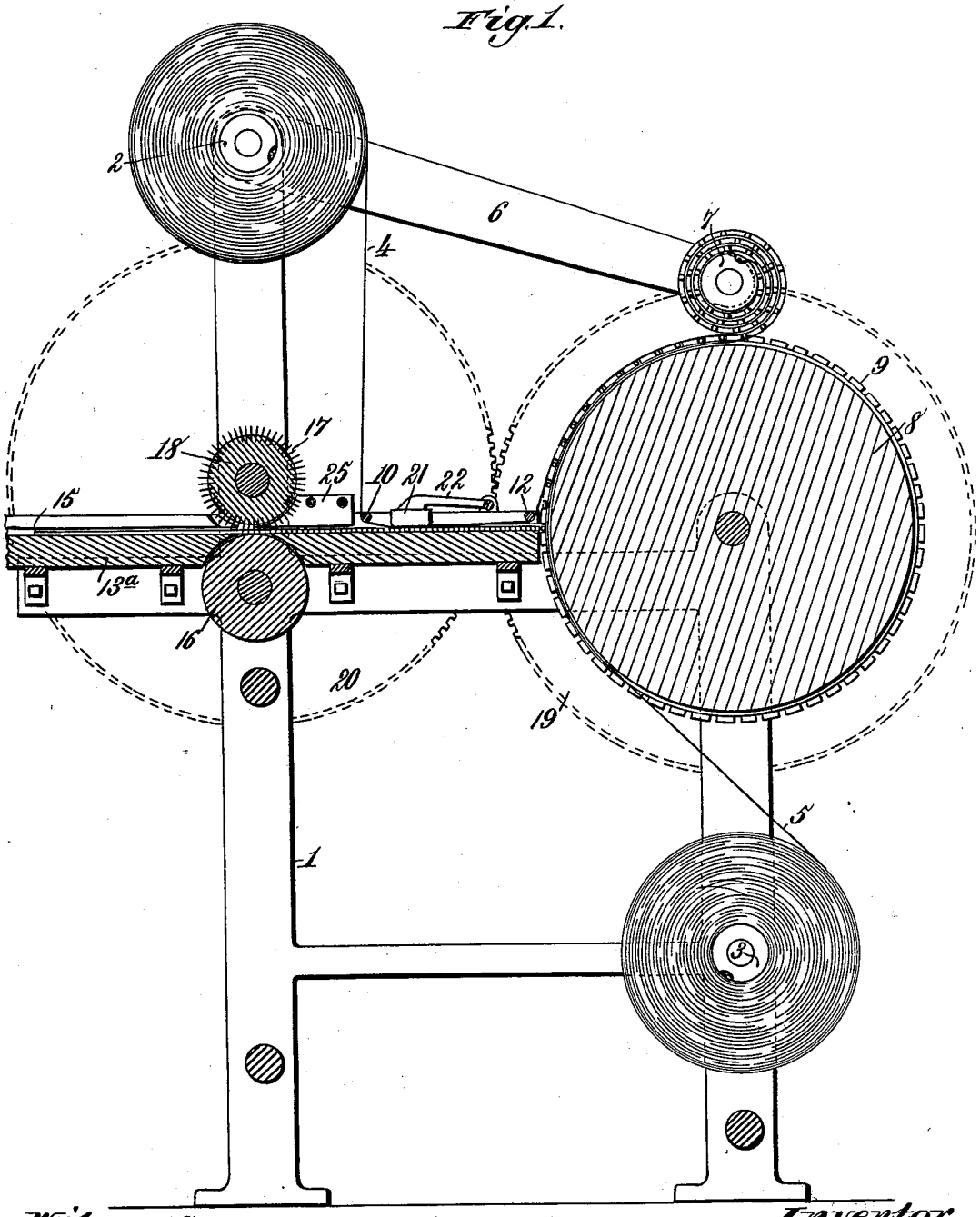
(No Model.) 2 Sheets—Sheet 1.

E. H. EISENHART.

MACHINE FOR CUTTING AND BUNCHING MATCH STICKS.

No. 508,293. Patented Nov. 7, 1893.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

E. H. EISENHART.

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Fig. 2.

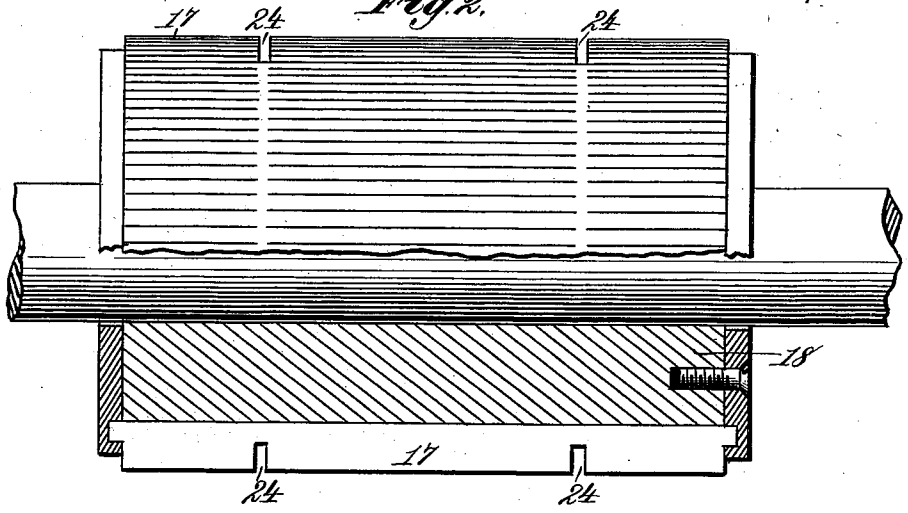


Fig. 3.

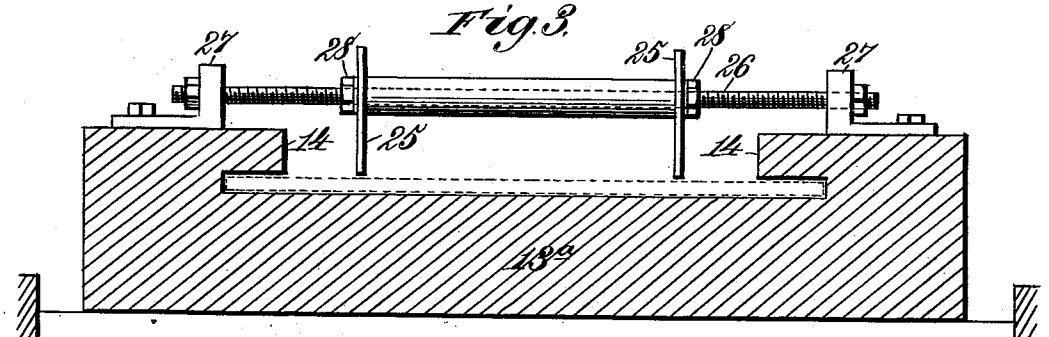


Fig. 4.

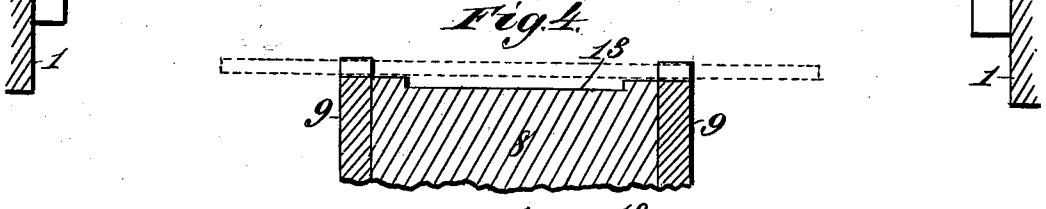
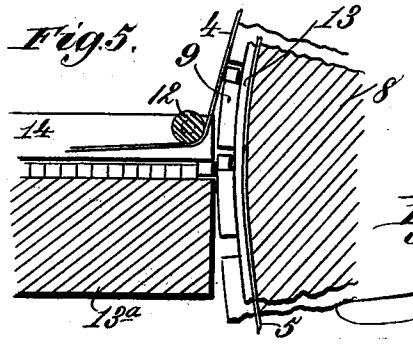


Fig. 5.



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THE NATIONAL LITHOGRAPHING COMPANY,
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UNITED STATES PATENT OFFICE.

EDWARD H. EISENHART, OF NEW YORK, N. Y.

MACHINE FOR CUTTING AND BUNCHING MATCH-STICKS.

SPECIFICATION forming part of Letters Patent No. 508,293, dated November 7, 1893.

Application filed March 15, 1893. Serial No. 466,098. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. EISENHART, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented new and useful Improvements in Machines for Cutting and Bunching Match-Sticks, of which the following is a specification.

This invention has for its objects to materially simplify and render economical in construction the apparatus or machinery employed in the manufacture of matches, and to provide new and improved means for operating on suitable veneering of the desired dimensions to sub-divide it into match sticks or splints and wind or roll them into a bunch for the dipping operation by which the usual match heads are supplied.

To accomplish these objects my invention consists in the features of construction and the combination or arrangement of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1, is a vertical central sectional view of a match cutting and bunching machine constructed in accordance with my invention. Fig. 2 is a sectional side elevation of the cutter-carrying-roller. Fig. 3 is a detail transverse sectional view showing the guideway for the veneering and the strippers or clearers for the cutter-carrying-roller. Fig. 4, is a detail sectional view showing a portion of the toothed cylinder, and Fig. 5, is a detail sectional view showing portions of the toothed cylinder, the guideway, and the tapes.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings wherein—

The numeral 1 indicates a framework of any suitable construction, having bearings for the roller shafts 2 and 3 that carry the tapes or bands 4 and 5. The upper end portion of the framework also supports a swinging frame 6 in the outer end of which is mounted a take-up roller 7, for winding the tapes or bands to roll or bunch the match sticks as will hereinafter appear.

The take-up roller 7 is located above a cylinder 8, having longitudinal grooves in its periphery to form a series of teeth 9, which may be of any form or shape suitable for the conditions required to pick-up or take the match sticks and deliver them between the tapes or bands.

The roller which carries the tape or band 5 is located below the axis of the toothed cylinder 8 and the tape or band 5 passes partially round the latter and is connected with the take-up roller 7. The tape or band 4 passes round a guide-roller 10 and thence extends approximately in a horizontal plane to and round a guide 12, from which point it extends partially round the toothed cylinder and is connected with the take-up roller 7. The toothed cylinder is provided with a central circumferential groove 13, for the reception of the tape 5, in such manner that match sticks or splints passing into engagement with the teeth of the cylinder 8 will be carried upward and deposited between the two tapes or bands, and since the latter are wound or convoluted through the medium of the take-up roller 7, the match sticks or splints will be rolled or wound into a bunch whereby they can be dipped into a composition for supplying the usual match heads.

The framework 1 supports a horizontal table or platform 13^a, having an overhanging portion 14 at each side to form a guideway for the passage of a sheet 15 of veneer, the longitudinal edges of which extend under the overhanging portions 14 and are thus held down flat while the sheet travels in a horizontal plane. The table or platform is cut away intermediate its inner and outer end portions for the reception of a cutting bed which is composed as here shown, of a revolving wooden, or other roller 16, suitable for the conditions required to support the veneering while the cutters or knives 17, on a rotary cutter roller 18 operate to incise the veneer at regular intervals to sub-divide it into match sticks or splints. The revolving cutting bed or roller is located below the sheet 15 of veneer, while the cutter-carrying roller 18 is located above the sheet of veneer. The cutters 17 extend longitudinally along the periphery of the roller 18 and are separated by spaces co-ordinate with the thickness of the desired sticks or splints. The thickness and width of the sheet of veneer are such that when it is subdivided by the cutters the match sticks or

splints will possess the desired dimensions as regards length and thickness. The sheet of veneer is fed to the cutting roller 18 and cutting bed 16 which parts co-operate to incise the veneer at regular intervals and thus subdivide it into match sticks or splints which follow along the horizontal guideway to the delivery end thereof, at which point they are taken or picked up, one at a time, by the teeth 9 of the cylinder 8 and are carried upward and deposited between the tapes or bands 4 and 5, which latter are wound or convoluted by the take-up roller 7 to roll the match sticks or splints into a bunch. The roll being formed on the take-up roller 7, rests upon the circumference of the toothed cylinder 8, which latter thereby operates to rotate the take-up roller by the frictional contact of the roll being formed with the circumference of the toothed cylinder, and as the roll increases in diameter, the frame 6 automatically rises. The periphery of the cutter roller 18 is designed to revolve at a much greater speed than the periphery of the cylinder 8 and this may be accomplished by any suitable driving mechanism, but as here shown the shaft of the toothed cylinder 8 is geared by the gear wheel 19 with a gear wheel 20 on the shaft of the cutter roller 18. The shaft of the toothed cylinder 8 may be driven by any suitable motor. Inasmuch as the take-up roller 7 is rotated through the medium of the toothed cylinder 8, the tapes or bands are caused to travel and the approximately horizontal portion of the tape or band 4, at a point between the guide rollers 10 and 12, operates against the upper surfaces of the sticks or splints to feed them toward the toothed cylinder. The feeding effect of the tape or band 4 can be increased, if desired, through the medium of a presser 21, mounted on a frame 22, which is pivotally supported at one end as at 23.

In cutting veneer through the medium of a revolving roller having longitudinal knives or cutters on its periphery, the match sticks or splints would likely adhere between the knives or cutters unless some special provision is made to strip or clear the sticks or splints from the cutter roller after the knives or cutters have operated on the veneer. To accomplish this I provide the cutter roller near each end with an annular recess or slot 24, Fig. 2, which slot is formed by providing each knife or cutter with a recess. A stripper or clearer 25 is arranged to project at one end portion into each annular grooved portion 24, in such manner that the point of the stripper or clearer will lie beneath the sticks or splints and consequently as the cutter roller revolves the sticks or splints are forced radially from the spaces between the knives or cutters. By this means the sticks or splints are held down in the horizontal guideway and are forced to travel in a horizontal plane to the toothed cylinder 8.

The strippers or clearers 25 are preferably supported by a transverse shaft 26, having its ends arranged in brackets 27, mounted on the table or platform 13^a. The clearers or strippers may be adjusted relatively to each other to register them with the annularly grooved portions 24 of the cutter roller, by providing the shaft 26 with a screw thread and engaging nuts 28 therewith, as in Fig. 3.

By providing the cutter roller with the annularly grooved portions 24, narrow connecting webs are left between the match sticks or splints, but the action of the knives or cutters on the veneer is such that ordinarily these narrow connecting webs will be broken. If, however, the webs are not broken by the cutting portion they will be broken by the action of the toothed cylinder in picking or taking up the sticks or splints, one at a time, from the horizontal guideway, as will be understood by reference to Fig. 5.

A machine constructed in accordance with my invention is simple, economical, and efficient in operation and is susceptible of not only cutting the veneer into match sticks, but also assembling these match sticks or splints into a bunch for the dipping operation.

Having thus described my invention, what I claim is—

1. The combination with a traveling cutting bed, a rotary cutter roller having longitudinal knives or cutters for subdividing a sheet of veneer into match sticks or splints, and stripping devices for removing the sticks from between the knives or cutters, of a table or platform extending in opposite directions from the cutter roller and having a longitudinal guide-way along each side for engaging and holding down the veneer before and after it is operated on by the cutter roller, a cylinder arranged in juxtaposition to the inner end of the table or platform and having its periphery provided with teeth which successively take the match sticks from the said inner end of the table, a lower tape passing partially around the toothed cylinder and an upper tape extending parallel with a part of the table between the cutter roller and the toothed cylinder, and passing partially around the toothed roller, and a winding roller on which said tapes are wound by direct contact with the circumference of the toothed roller for bunching the sticks, substantially as described.

2. The combination with a traveling cutting bed, a rotary cutter roller having longitudinal knives or cutters for subdividing a sheet of veneer into match sticks, and stripping devices for removing the sticks from between the knives or cutters, of a table or platform extending in opposite directions from the cutter roller, a toothed, tape-supporting cylinder, stick-bunching tapes passing partially around the toothed cylinder and one of which extends over the table or platform parallel therewith at a point between the cutter roller and the toothed cylinder, and a presser acting to press said tape upon the subdivided

veneer between the cutter roller and the toothed cylinder, substantially as described.

3. The combination of a traveling cutting bed, a rotary cutter roller having longitudinal knives or cutters for subdividing a sheet of veneer into match sticks, stripping devices for removing the sticks from between the knives or cutters, a table or platform extending in opposite directions from the cutter roller and having a longitudinal guide-way along each side for engaging and holding down the veneer before and after it is operated on by the cutter roller, a toothed cylinder arranged in juxtaposition to the inner end of the table and having its periphery provided with teeth which successively take the match sticks from the inner end of the table, a lower tape passing partially around the toothed cylinder, an upper tape extending parallel with a part of the table between the cutter roller and the toothed cylinder and passing partially around the latter, a presser acting to press the upper tape upon the subdivided veneer between the cutter roller and the toothed cylinder, and a winding roller on which the tapes are wound by direct contact with the circumference of the toothed roller, substantially as described.

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

EDWARD H. EISENHART.

Witnesses:
ALBERT H. NORRIS,
JNO. B. HOPPER.