

No. 780,224.

PATENTED JAN. 17, 1905.

W. H. PARKER.
PROCESS OF MAKING MATCHES.

APPLICATION FILED JULY 28, 1904.

2 SHEETS—SHEET 1.

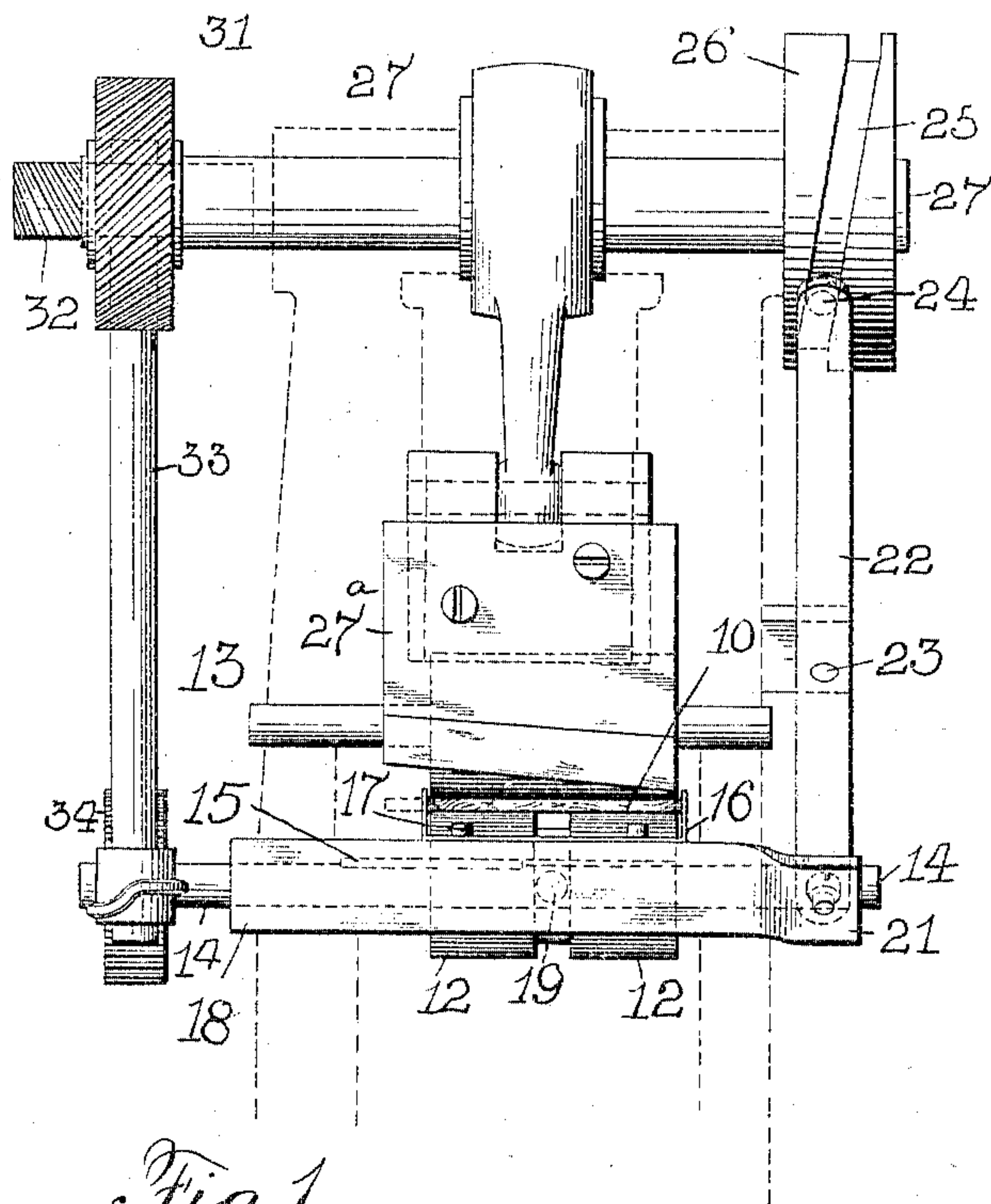


Fig. 1

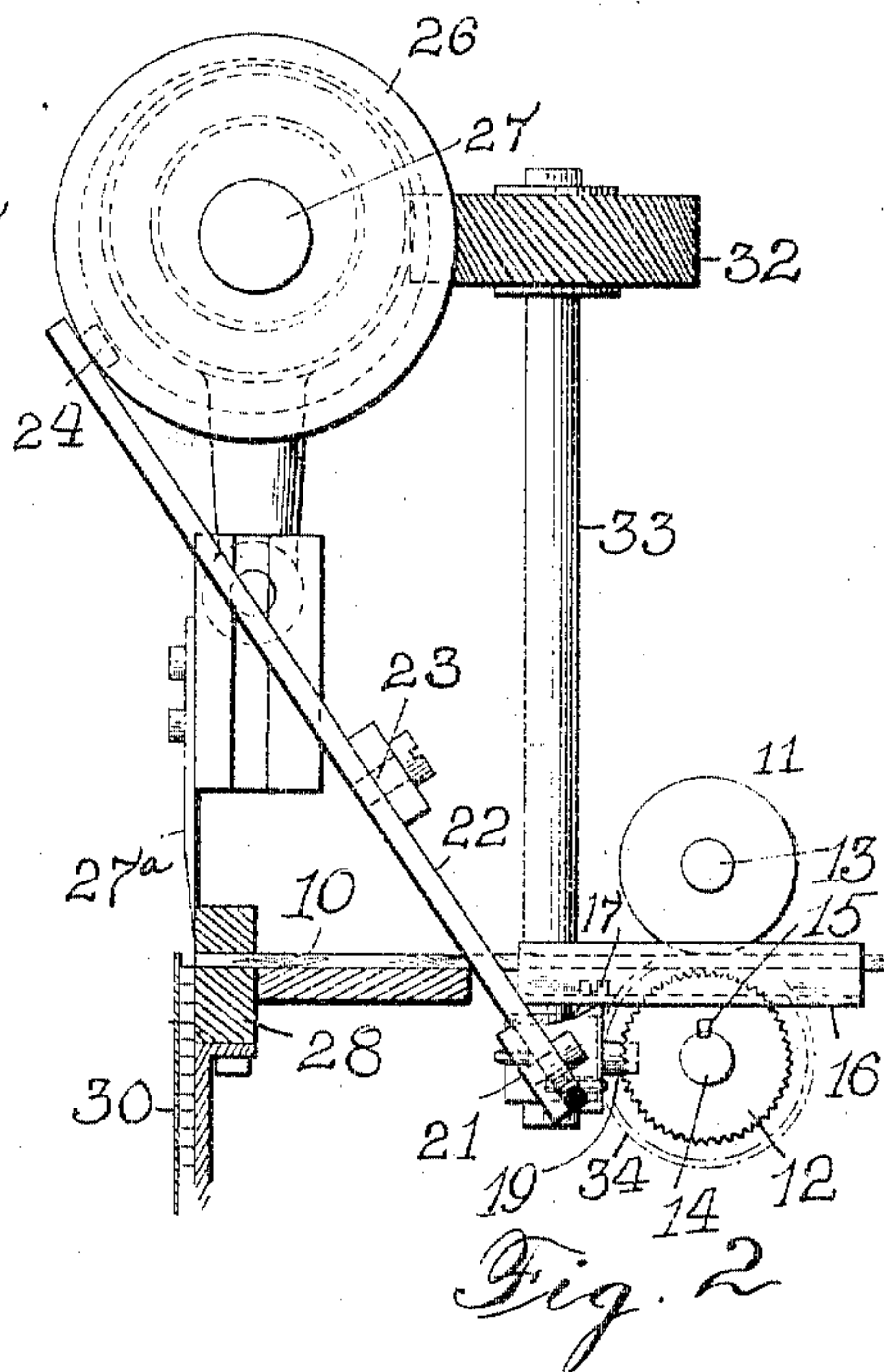


Fig. 2

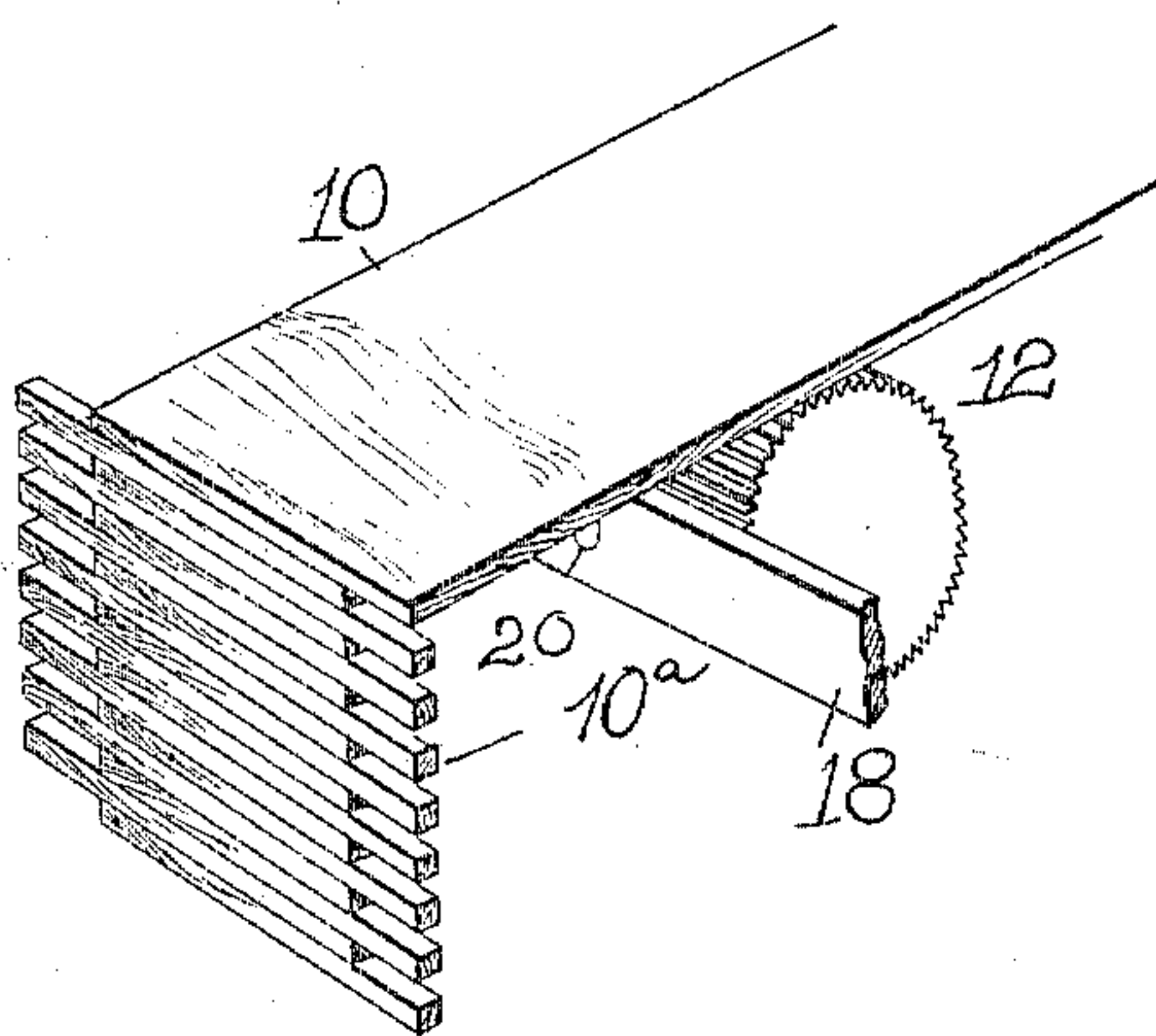


Fig. 3

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2 SHEETS—SHEET 2.

Fig. 4

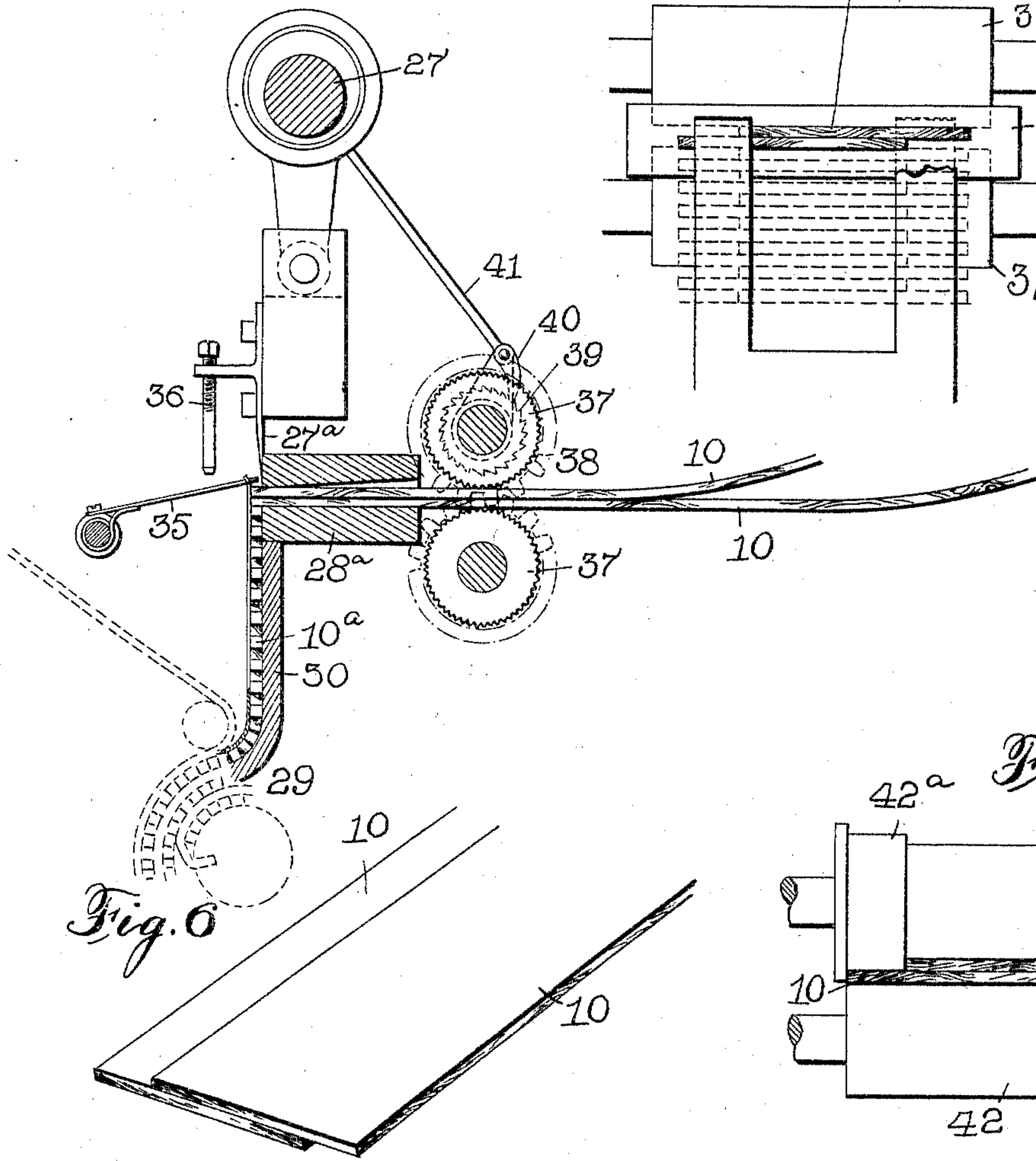


Fig. 5

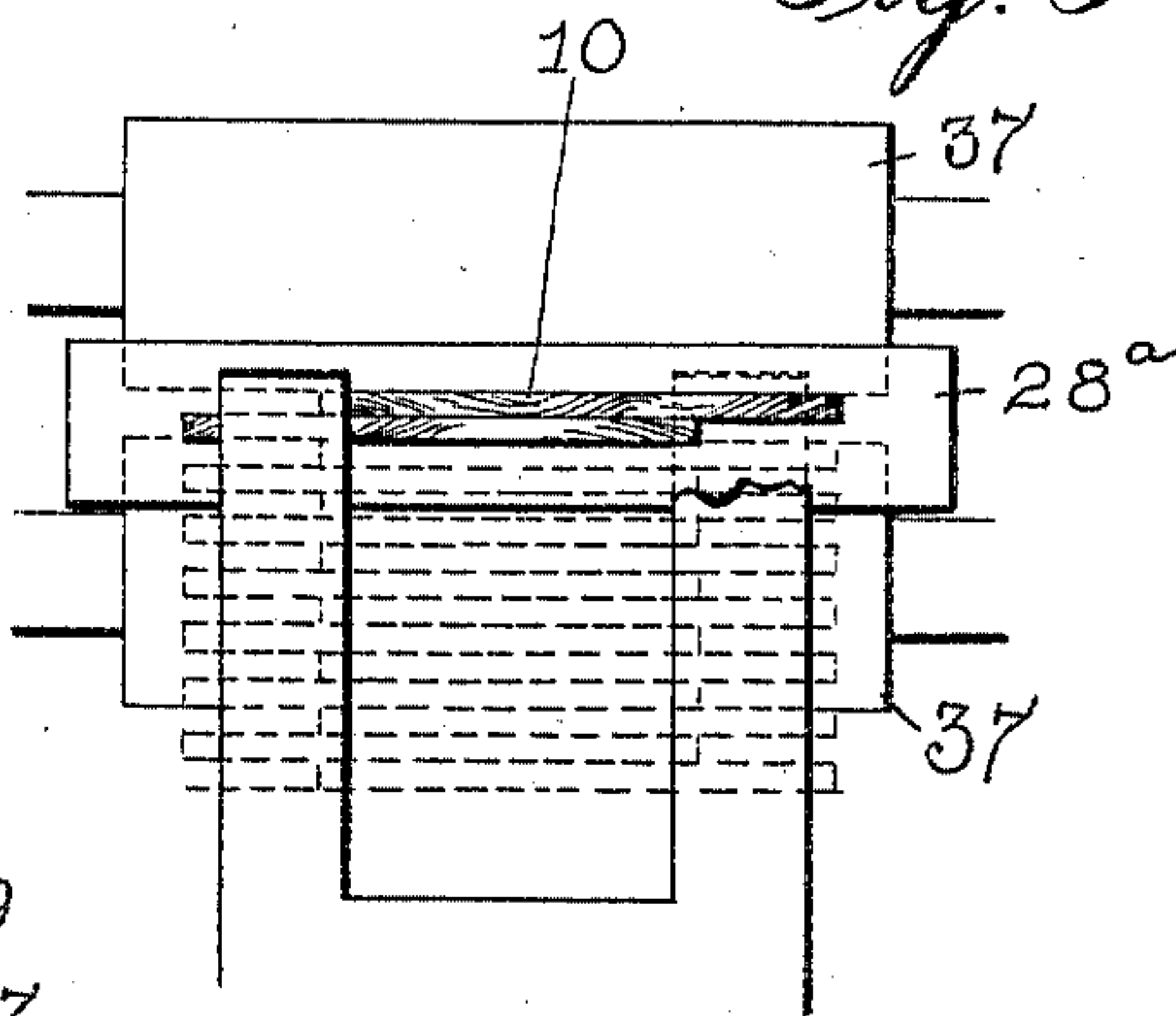


Fig. 6

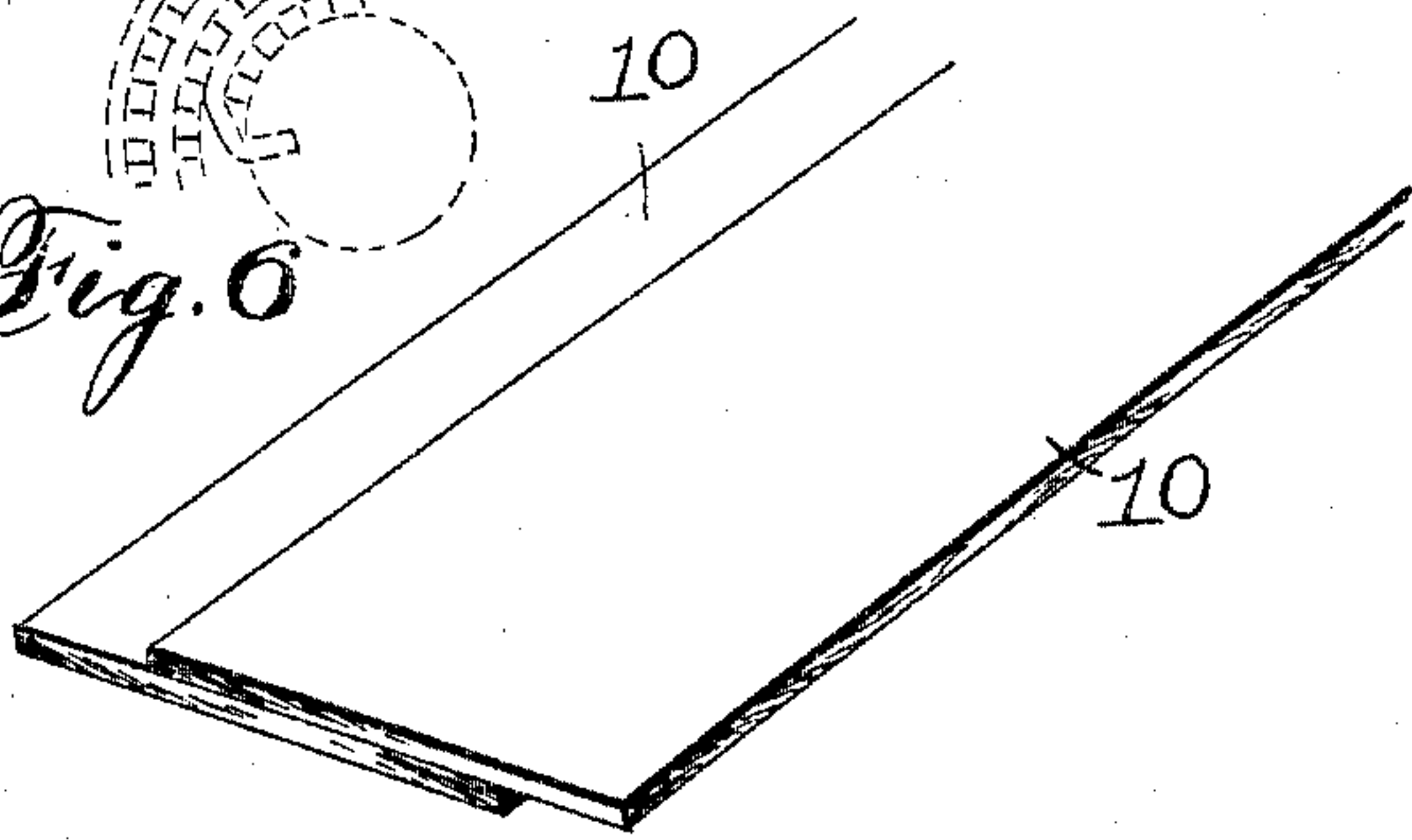
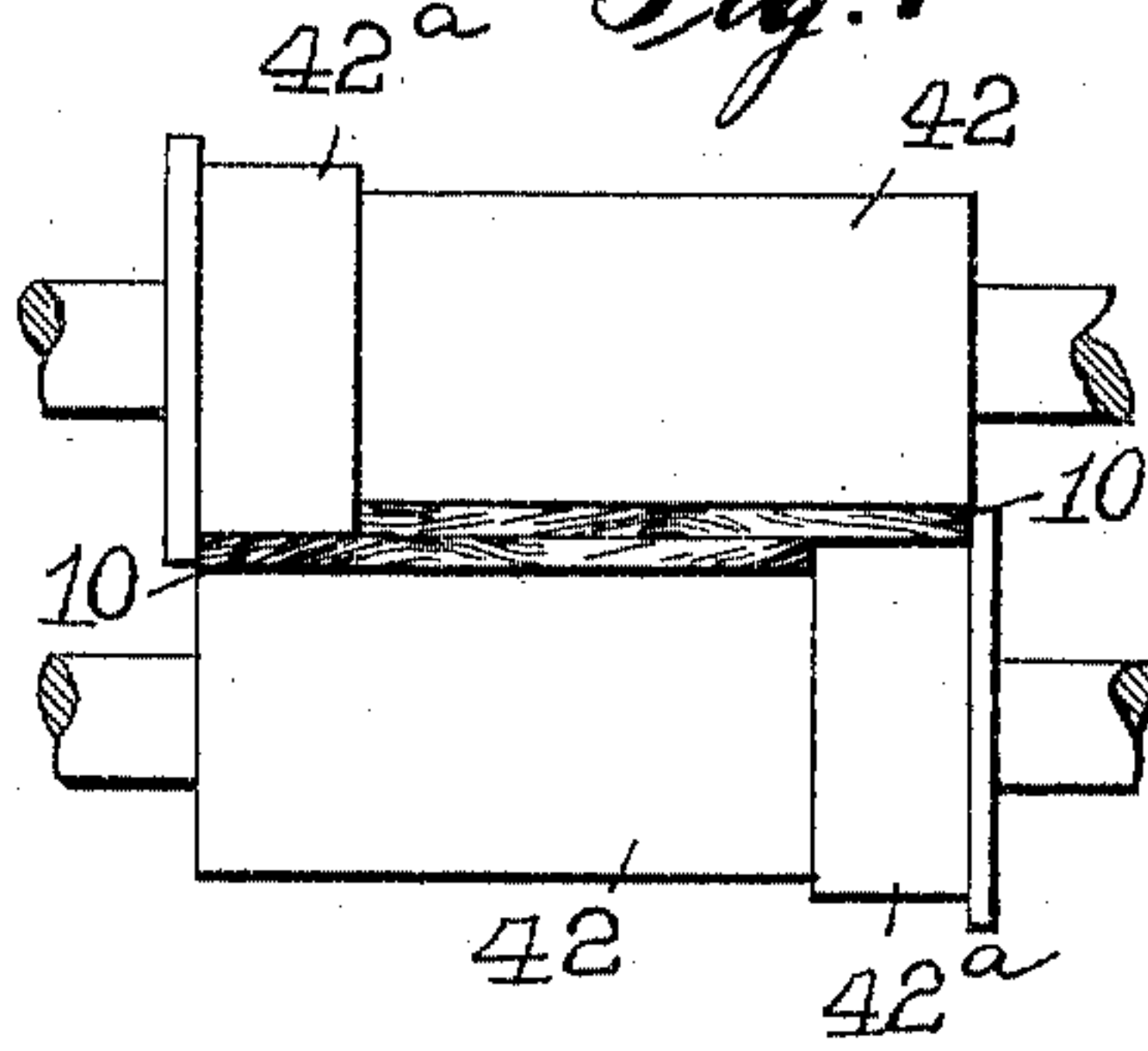


Fig. 7



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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING MATCHES.

SPECIFICATION forming part of Letters Patent No. 780,224, dated January 17, 1905.

Application filed July 28, 1904. Serial No. 218,478.

To all whom it may concern:

Be it known that I, WILLIAM H. PARKER, of Passaic, in the county of Passaic and State of New Jersey, have invented a new and Improved Process of Making Matches, of which the following is a full, clear, and exact description.

My invention relates to improvements in the art of making matches, and especially to the art as shown in my application for Letters Patent of the United States, Serial No. 188,025, filed January 7, 1904, in which the match-splints are staggered so that the alternate splints are displaced lengthwise and the whole are arranged in web form in a belt ready for dipping.

In my previous application referred to I have shown means for cutting the splints so that they lie in contact side by side in a temporary holder, means for displacing the alternate splints lengthwise, so that each splint will protrude from the body or mass of splints in order that the splints may be properly dipped, and means for winding the splints when thus displaced into a coil to the end that they may be spaced row-wise and may be held for dipping. My present improvement is based on the same principles, but is designed to do away with mechanism for displacing the splints longitudinally after they are cut and to provide means for arranging the stock prior to and at the time of cutting, so that when the splints are cut off they shall be delivered without other mechanism ready for the coil. It will be readily seen that this simplifies the process to a great extent.

With these ends in view my invention consists of a process of making matches which will be hereinafter clearly described and the novel features claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is an outline elevation of the essential parts of the machine embodying my invention. Fig. 2 is a cross-section of the same. Fig. 3 is a detail perspective diagram,

showing the manner in which the splints are delivered as they are cut. Fig. 4 is a sectional elevation of a modification of my invention in which plural strips of the stock are piled in a particular manner preparatory to cutting. Fig. 5 is a perspective sectional front elevation of a part of the structure shown in Fig. 4 and illustrating particularly the form of the guide or feed trough. Fig. 6 is a detail perspective view showing the arrangement of the stock-strips preparatory to cutting, and Fig. 7 is a broken detail showing a slightly-modified construction of the feed-rolls to feed the stock.

In Figs. 1 to 3 I show means for moving the stock laterally as it is cut, so that a splint shall be cut off from a single strip of stock when it is moved to one side of a central position, the next strip cut when the stock is moved to the opposite side, and so on, and in this way the splints are delivered, as shown in Fig. 3, in the desired position with relation to each other with the bodies in contact and with the ends protruding. In Figs. 4 to 7 I show another means of accomplishing the same result; but in this case two strips of the stock are arranged one on the other, so as to overlap, as in Fig. 6, and thus two matches are cut at a stroke, and the splints are in a desired relation to each other without using any mechanism to place the splints.

Referring particularly to Figs. 1 and 3, I have shown only sufficient mechanism to bring out the fact that the stock is moved laterally prior to cutting, as all the other details are not novel. The stock 10 is a strip of veneer cut as usual, the strip being of the thickness of a match-splint and having its width the length of a match-splint. This strip is fed to the knife by the rollers 11 and 12, which are arranged as usual except for their longitudinal movement, and the rollers are carried by shafts 13 and 14, the lower roller having a feather connection with the shaft, as shown at 15, so that the roller may slide longitudinally on the shaft, but will turn also with the shaft. Except for this sliding movement I claim no novelty for the feed-rollers.

A feed spout or trough 16 is arranged in connection with the rollers, so as to guide the stock through them, and this feed-trough is of the right width to receive the match-stock, and its upturned edges come opposite the ends of the upper roller 11, so that when the trough is moved laterally the roller 11 will slide with it; but any suitable means can be used for sliding the upper or both rollers. In the drawings I have shown the lower roller as roughened on the surface; but this is not really necessary. The feed-trough is connected, as shown at 17, to a slide-bar 18, which moves back and forth across the machine and which can be held in any convenient way. This slide-bar is perforated, as shown at 20, (see Fig. 3,) to receive a pin 19, (see Fig. 1,) which enters a reduced part of the lower roller 12, and thus the slide-bar and roller move in unison. The slide-bar 18 has one end bent, as shown at 21, and pivotally connected with the lower end of the cam-lever 22, which is fulcrumed, as shown at 23, on a suitable support and has its upper end connected, as shown at 24, with the cam-groove 25 of the cam-wheel 26, which is secured to the shaft 27, and so when the shaft is rotated the lever 22 is oscillated, and the slide-bar 18, feed-roller 12, feed-trough 16, and feed-roller 11 are all reciprocated, thus reciprocating the stock 10, as already described.

The shaft 27 can be rotated in any convenient way, and it carries the vertically-reciprocating knife 27^a, which moves across the stock-guide 28 and cuts off the stock 10 into splints. I do not describe the knife mechanism in detail, as any suitable cutting-off knife can be used, and likewise I have only shown a skeleton driving mechanism, as this obviously can be of any usual type. As shown, the reciprocating knife 27^a slices off the splints, which are collected in a coil 29, as shown in my previous application above referred to, and the splints pass in contact side by side down through a chute 30 to the coil. Referring to the driving mechanism, it will be seen that the shaft 27 has a gear-wheel 21 meshing with a gear 32 on the vertical shaft 33, and the latter connects by a suitable gear 34 with the lower feed-roller 12, so as to give to the latter a step-by-step movement and advance the stock the width of the splint at every stroke of the knife. There is no novelty about this arrangement, and so it is not described in detail. It will be seen that when the mechanism is operated the knife 27^a will shear off the splints one by one, and it will also be noted that at every upstroke of the knife the cam-lever 22 will actuate the feed mechanism laterally, so as to shift the stock 10. Consequently when the knife comes down first it will cut off a splint when the stock is at one side of the machine and on the next stroke it will cut off a splint when the stock is at the opposite side of the ma-

chine, and thus the splints are staggered, as shown clearly in Fig. 3, their bodies are left in contact, and no displacing mechanism is necessary. In other words, the stock is guided so that the complete splints will be delivered to the coiling mechanism in proper position. Another means of doing this is shown in Figs. 4 to 7. In this case the stock 10 is arranged so that one strip of stock shall lie upon the other, but overlapping it laterally. It is possible that this arrangement might be carried out to a further extent by piling numerous strips one on the other in relation shown in Fig. 6; but only two strips can be used to the best advantage, because it is difficult to feed more and the cutting is not so smooth where a greater number of strips are used. These strips are fed forward through the guide 28^a, which, as will be seen by elevation in Fig. 5, is of the right shape to hold the stock 10 in its overlapped position. The two strips are then sheared off by the knife 27^a, and to assist in forcing them nicely into the chute 30 the spring 35 and abutment 36 are used, the spring being made to overlap the protruding end of the stock and the abutment 36 being made to descend with the knife 27^a, so as to force the spring 35 downward upon the stock as it is cut.

The rollers 37 are used to force the stock forward, and in this case no provision is made for moving the rollers endwise, as it is not necessary. The rollers can be roughened, as in Fig. 4, or plain, as in Fig. 5. To impart a step-by-step movement to the feed mechanism, any suitable ratchet device can be employed, and in Fig. 4 I have shown a ratchet-wheel 39, moved by a pawl 40, which is actuated by a connecting-rod 41, running up to a suitable eccentric on the shaft 27; but this is not shown or described in great detail, as there is no novelty about the mechanism. It will be seen from the description and drawings that the details of the mechanism do not enter particularly into this invention and that the whole invention lies in the scheme for arranging the stock in such a way that the splints when cut will assume the position which they are to have as they enter the carrier or coil, and, as I have clearly shown, this can be done by shifting a single strip of stock from side to side or by arranging overlapping strips of the stock, as shown. It is obvious that many devices can be employed for effecting the result; but I claim to be the first to either shift or arrange match-stock so that when cut off the matches will assume the position clearly shown and described.

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

1. The herein-described improvement in the art of making matches which consists in cutting off successive splints from the match-stock and arranging the stock so that when

cut off the splints are delivered directly into a receiver with their bodies in contact and with the ends of the alternate splints projecting laterally from the contacting portions of the splints.

5 2. The herein-described improvement in the art of making matches which consists in arranging match-stock so that the splints can be cut successively from the ends of the stock and delivered without other adjusting mechanism into a receiver with their bodies in contact side by side and with the ends of the alternate splints projecting laterally and oppositely from the contact parts of the splints and
15 cutting off the stock when thus arranged.

3. The herein-described improvement in the art of making matches which consists in piling one on the other strips of match-stock, the width of which corresponds to the length of the match, in such a way that the strips shall overlap, then feeding the strips forward in the position stated, cutting off successive splints from the stock and delivering the cut-off splints into a receiver in their overlapped position and with their bodies side by side.

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Witnesses:

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