

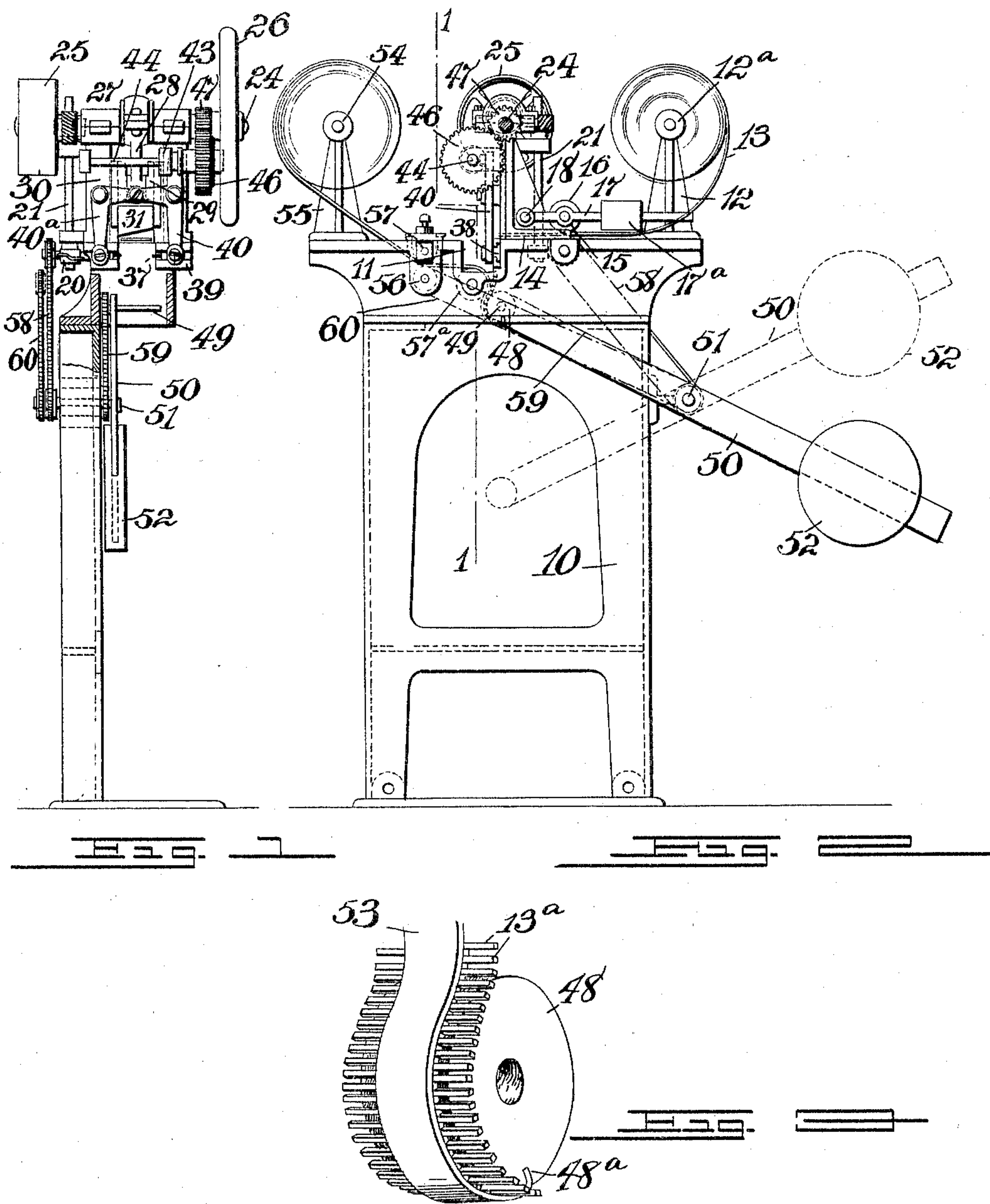
No. 780,223.

PATENTED JAN. 17, 1905.

W. H. PARKER.
MATCH MACHINE.

APPLICATION FILED APR. 14, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

Wm. H. Campfield
John T. Carolan.

INVENTOR.

William H. Parker,
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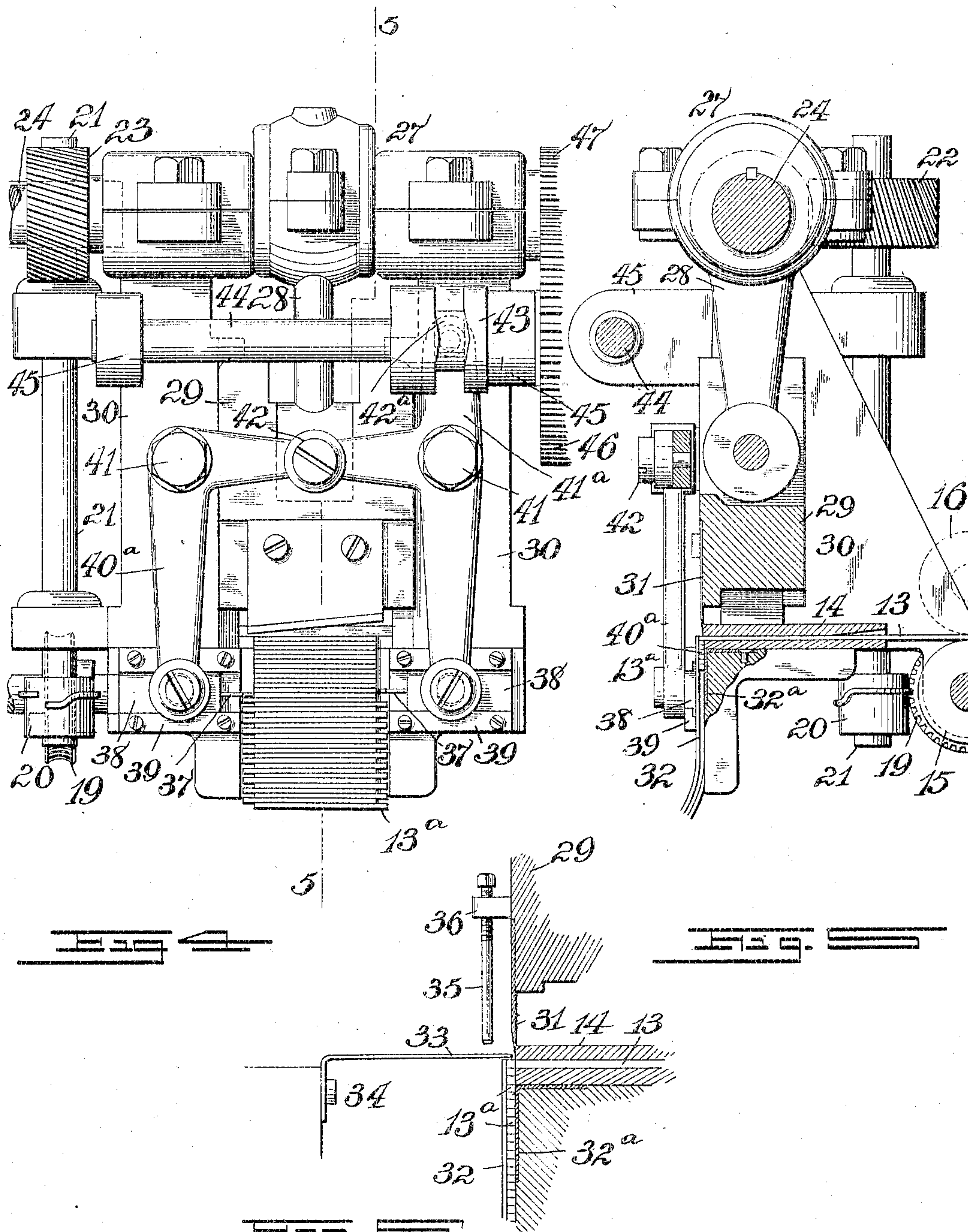
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UNITED STATES PATENT OFFICE.

WILLIAM H. PARKER, OF PASSAIC, NEW JERSEY, ASSIGNOR TO DIXIE MATCH COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MATCH-MACHINE.

SPECIFICATION forming part of Letters Patent No. 780,223, dated January 17, 1905.

Application filed April 14, 1904. Serial No. 203,070.

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 Match-Machine, of which the following is a full, clear, and exact description.

My invention relates to improvements in machines for making matches from veneer.

The object of my invention is to produce a simple form of machine which will cut splints smoothly and rapidly from a strip of stock the width of which corresponds to the length of the match, which will hold the severed splints in close contact side by side, so as to form practically a continuous web similar in shape to the stock before it is severed, which will then move the alternate splints endwise in relation to each other, so as to leave projecting ends spaced apart yet level, and which will finally roll the web of formed splints up in a belt, this forming a match-coil. In this way the match-splints are held in such close contact that they cannot become readily displaced in relation to each other. The endwise movement given them provides for separating them in one direction to prevent double heads, and the belt serves to separate the splints row-wise, so that when the coil is formed a great quantity of splints will be held in position to be conveniently dipped. The coil thus formed differs from the match-coils generally made a few years ago in that the splints are in close contact side by side, so that they cannot be easily displaced.

With these ends in view my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and 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 a vertical cross-section on the line 1 1 of Fig. 2 of the machine embodying my invention. Fig. 2 is a side elevation with parts in section. Fig. 3 is a detail perspective showing the formation of the coil. Fig. 4 is an enlarged detail view showing the knife and splint-adjusting mechanism in elevation. Fig.

5 is a cross-section on the line 5 5 of Fig. 4, and Fig. 6 is a detail sectional view showing the means for cutting the splints and for delivering them evenly in their guide-chute.

The machine has a suitable frame 10, which can be of any approved form, but which preferably has a flat top, with a transverse recess 11 therein to provide for the movement of the knife and the splint-adjusting plungers, which will be hereinafter referred to. The formation shown, however, is not essential. On the top of the machine and at one end are pedestals 12 for carrying the spindle 12^a, which supports the veneer 13 in the form of a coil; but, if preferable, the veneer or match-stock can be fed to the machine in the form of strips. The stock is fed to the cutting-off knife through a suitable guide 14, as shown best in Fig. 5, and it passes between ordinary feed-rolls 15 and 16, (see Figs. 2 and 5,) the upper roll 16 being preferably journaled in an arm 17, which is weighted, as shown at 17^a, to hold the roll in close contact with the stock, and the arm is pivoted, as shown at 18. This arrangement is not claimed as novel, but is provided so that the feed-rolls may be readily separated whenever it is necessary to get at the feed or guide 14 of the machine. The means of driving the feed-rolls is not material; but I have shown the lower roll driven by a gear 19, (see Fig. 5,) which is turned step by step or tooth by tooth from the screw-gear 20 on the vertical shaft 21, the latter being mounted in suitable supports and having a spiral gear 22 connecting with a gear 23 (see Fig. 4) on the driving-shaft 24.

The driving-shaft 24 is journaled transversely in suitable bearings at the top of the machine and is provided with a driving-pulley 25 or equivalent means of driving, and preferably with a balance-wheel 26, which also serves as a drive-wheel whenever it is desirable to turn the shaft by hand. The shaft 24 has an eccentric 27 connecting with a pitman 28, and the latter is pivoted to a cross-head or knife-block 29, which slides in a vertical way made in the pedestals 30 on the machine-frame, and the knife-block has a knife 31, which shears across the front of the guide 34,

and so cuts a match-splint from the stock 13 at each stroke of the knife. It will be seen that the gear mechanism connecting the driving-shaft with the feed-rolls is such as to feed the stock forward the thickness of a match-splint at each knife-stroke. I claim no novelty for the cutting means shown, nor do I limit myself to this cutting mechanism.

As the splints are cut they are carried downward one by one into the guide-chute 32, (see Fig. 5,) which chute is open at the sides and is preferably springy, so that the splints can move endwise, and in order that the splints may be held evenly and delivered flatwise into the chute I use a striking-plate 33, (see Fig. 6,) which can be either hinged or a spring, (I show the latter form,) said plate having one end secured, as at 34, to a fixed portion of the machine and its free end arranged to overlap the part of the stock 13 which projects from the guide 14; but the plate does not project far enough to come beneath the knife-edge. As the knife descends to cut off a splint an abutment 35, which moves with the knife, comes down on the striking-plate 33 and causes the latter to push the severed splint 13^a evenly into the chute 32. The abutment 35 is preferably adjustable, and I show, therefore, a bolt which fits in a suitable boss 36, projecting forward from the knife-block or cross-head 29. As shown, the springiness of the chute 32 is caused by the flat spring 32^a, which lies on the back of the chute, or any equivalent springy means can be substituted.

While the splints are held in the chute 32 it will be seen that they form a continuous web, although they are separated from each other, and when in this condition the alternate splints are moved endwise, but in opposite directions, by plungers 37, which thus cause the edges of the web of splints to have a serrated appearance. In other words, the alternate splints will project from opposite edges of the body portion of the web. This is to bring them into such a position that they may be dipped in the firing composition without causing the heads to stick together. Obviously any number of plungers 37 may be used for this purpose; but I have shown one on each side of the web of splints, and while any suitable means can be used for actuating the plungers I have shown them carried by slide-blocks 38, which move in suitable ways 39, and the slide-blocks are actuated by bell-cranks 40 and 40^a, which are oppositely arranged, are pivoted at their elbows, as shown at 41, and are pivoted together at their upper ends, as shown at 42, so that the two bell-cranks will work in unison, but oppositely. I have not shown any play at the joint 42, because the play required is very slight; but in practice there is a little play left in the joint, so that the bell-crank levers may have the necessary slight movement at this point.

The lever 40 has an extension 41^a, carrying a roller 42^a, (shown by dotted lines in Fig. 4,)

which runs in the grooved cam 43, and thus the rotation of the cam-shaft 44 actuates the levers 40 and the plungers 37. The shaft 44 is mounted in suitable supports 45 and connects by gears 46 and 47 with the shaft 24, the speed of the shaft 44 being half that of the shaft 24, and thus at the right time the plungers 37 are moved forward, so as to position the splints 13^a, as already described.

After the splints 13^a are moved endwise in the chute 32 the web of splints is forced downward and wound up in a coil on the spool 48. This may be any suitable core; but I have shown the customary spool 48, adapted to be slipped on and off the shaft 49 and having a circumferential slot 48^a to receive the end of the coiling-belt, to be presently referred to. The shaft 49 is mounted in the end of a tilting arm 50, which is hung so as to swing vertically on the shaft 51, (see Fig. 2,) and this shaft is mounted in suitable bearings, so that it may be driven by a belt, to be presently described. The tilting arm 50 has a suitable counterbalance 52 to counterbalance the coil, which is carried at the other end of the arm. The belt 53 is of the right thickness to separate the match-splints rowwise and is of such a width that the protruding ends of the splints will extend from both side edges of the belt, as shown clearly in Fig. 3. The belt is generally and preferably arranged in a coil and supported on a spindle 54, which is mounted in suitable arms 55 on the top of the frame 10, and the belt is fed to the coil between the feed-rolls 56 and 57 and over a guide-roll 57^a, which is located just above and a little to one side of the shaft 49, so that the chute 32 will discharge its web of splints directly between the spool 48 and the guide-roll 57^a, as shown in Fig. 2. The shaft 51 is driven by a chain belt 58, extending from the shaft of the feed-roll 15, and a similar belt 59 connects the shaft 51 with the shaft 49, while a second belt 60 extends from the shaft 51 to the shaft of the feed-roll 56. I have shown this driving arrangement simply to illustrate an operative connection between the several parts; but obviously the driving means is immaterial so long as it be operative.

From the foregoing description it will be seen that I have devised a very simple machine which holds the cut splints in a web, which displaces them endwise, and which finally rolls them up in a coil ready for dipping. When a coil is formed as described, it is slipped off the shaft 49, another center put on the shaft, and a second coil formed, and so on.

The advantage of having a continuous web of severed splints displaced endwise and collected in a coil is that the work goes on uninterruptedly until a large coil is completed or until the stock in the machine is exhausted, and, further, that frequent stops and much mechanism is thus dispensed with. Where

the splints are displaced and arranged in holding-frames, it is necessary and usual to have a step-by-step movement in the machine and to provide mechanism which will shift some form of holding device, such as a comb, whenever it is full and substitute another for it; but the coiling arrangement dispenses with all this and enables a great quantity of matches to be held with the use of very little mechanism.

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

1. A match-machine, comprising splint-cutting mechanism arranged to cut successive splints from a strip of stock and deliver the splints automatically side by side and in contact, means for holding the splints temporarily as they are delivered from the cutting mechanism, means for displacing the alternate splints longitudinally, and means for holding the splints in the said displaced position and in the form of a continuous web.

2. A machine of the kind described, comprising splint-cutting mechanism, means for temporarily holding the splints in a continuous web, means for displacing the alternate splints longitudinally and in their temporary holder, and a coiling device to collect and secure the web of splints.

3. A match-machine, comprising splint-cutting mechanism, means for temporarily holding the splints in contact side by side, plungers engaging the alternate splints to move them sidewise while they are temporarily held, and a coiling device following the temporary

holder and acting to receive the web of splints and form it into a coil.

4. A match-machine, comprising a guide-chute acting as a temporary holder of match-splints, means for cutting splints and delivering them in contact side by side into the chute, means for displacing the alternate splints endwise while they are in the chute, and a coiling device arranged to receive, in the form of a web, the splints as they are forced from the chute.

5. A match-machine, comprising a guide-chute, splint-cutting mechanism delivering the splints in contact side by side into the chute, means for displacing alternate splints longitudinally, and a coiling device arranged to receive the web of splints as it issues from the guide-chute.

6. In a match-machine, the combination with the guide-chute arranged to hold a body of splints in a continuous web, means for displacing the alternate splints endwise while they are in the chute, and a coiling device to receive the web of splints as it issues from the chute.

7. In a match-machine, the combination with the guide-chute arranged to hold a web of splints therein, of the reciprocating plungers at the sides of the chute, and a coiling device to receive the web of splints as it issues from the chute.

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Witnesses:

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