

No. 632,900.

Patented Sept. 12, 1899.

L. P. HAWKINS.
MATCH MACHINE.

(Application filed Apr. 18, 1896.)

(No Model.)

2 Sheets—Sheet 1.

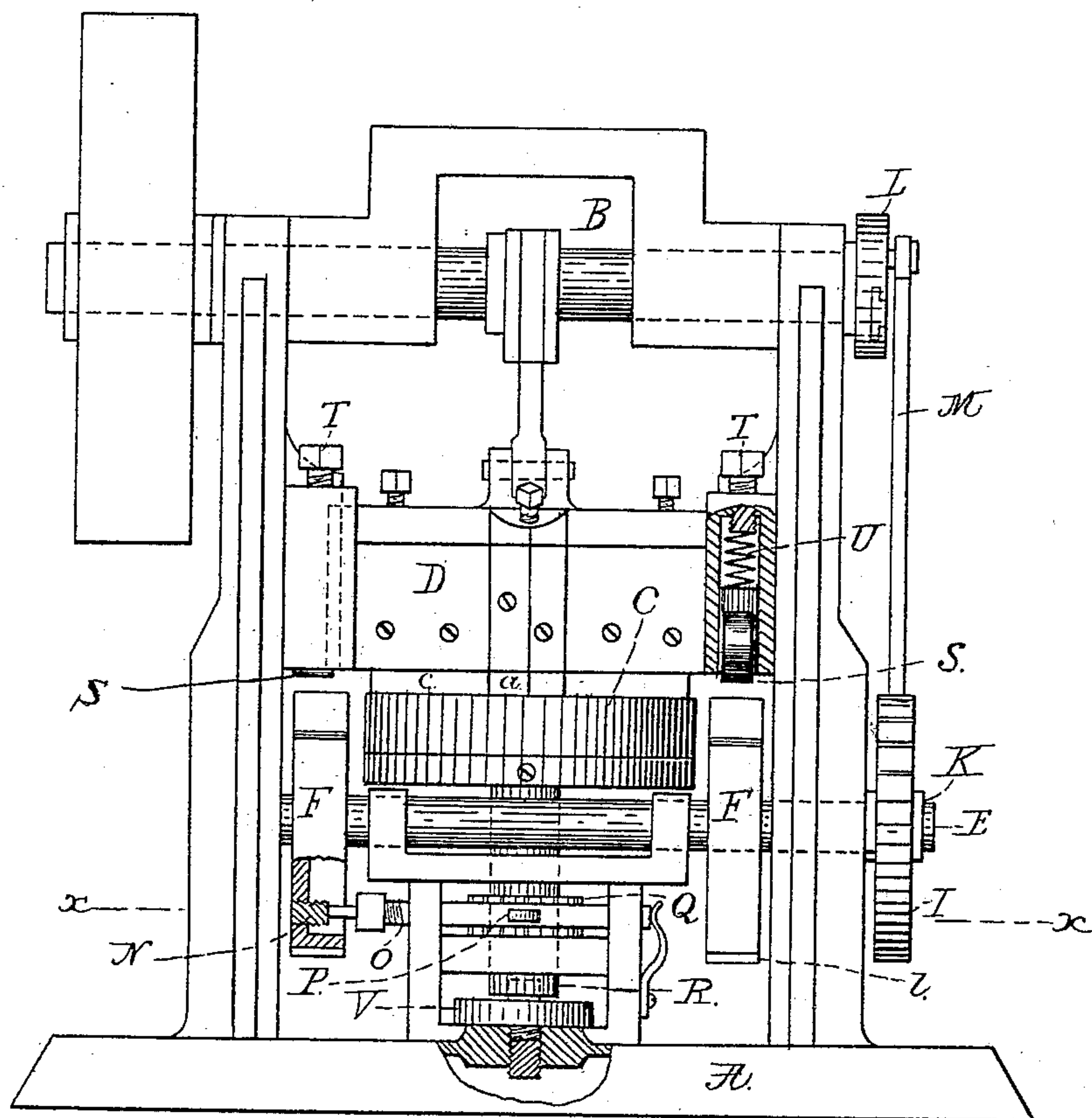


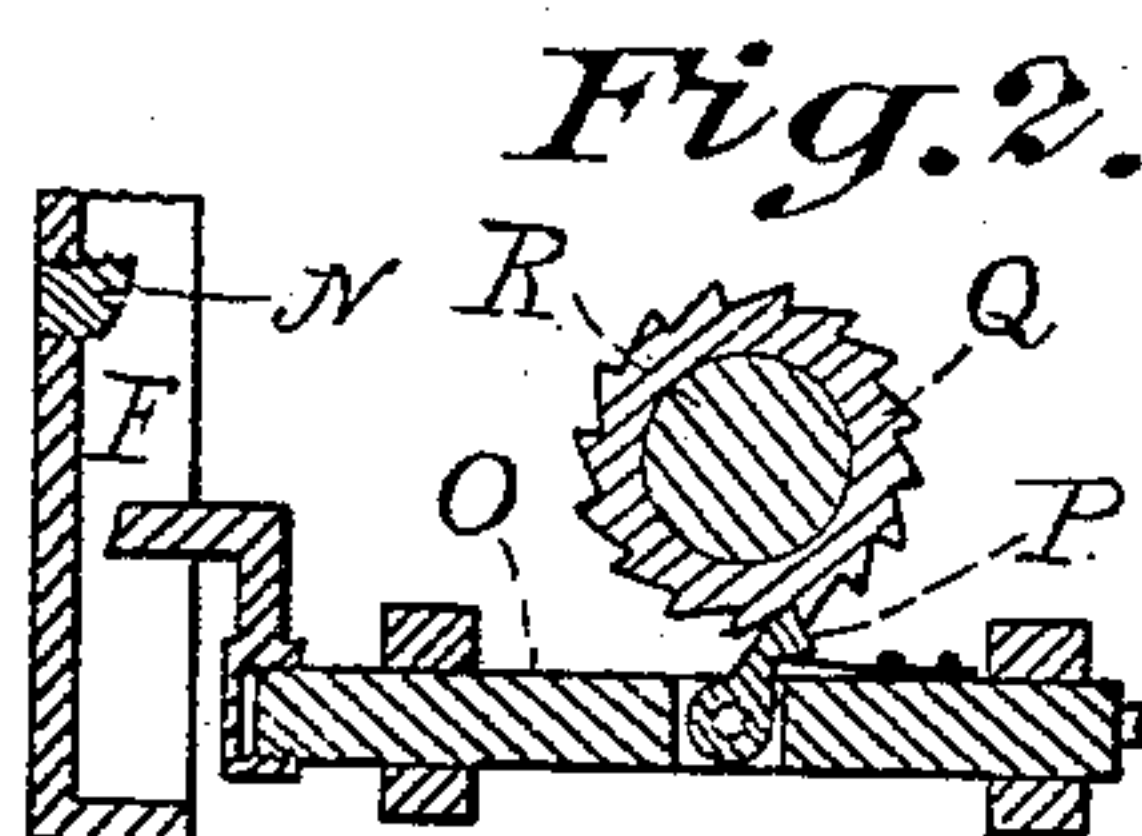
Fig. 1.

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2 Sheets—Sheet 2.

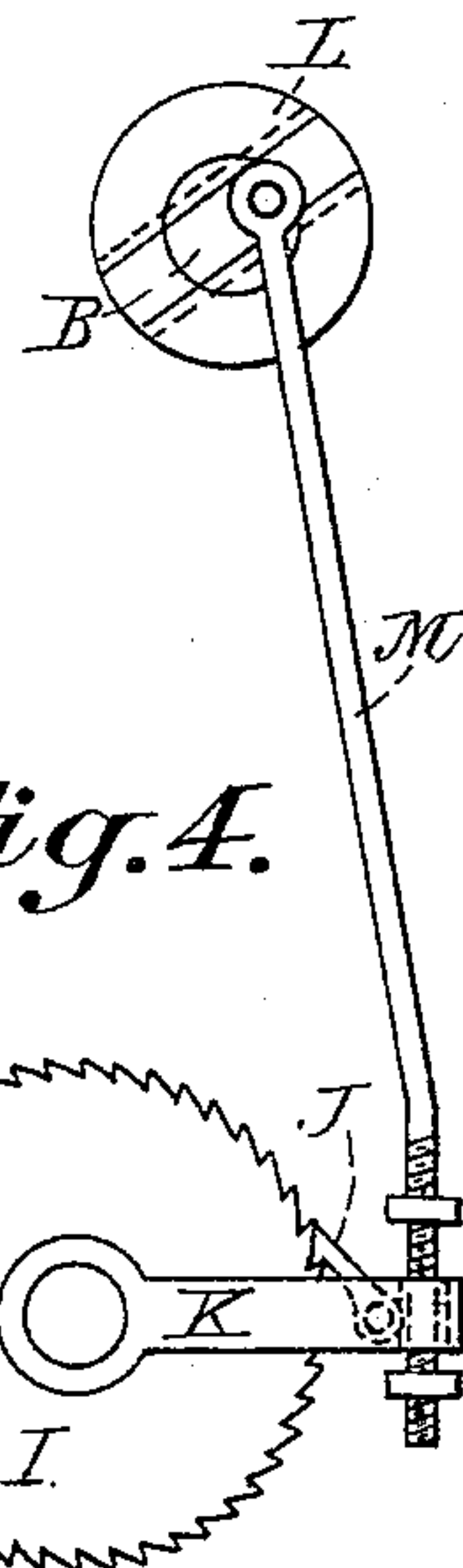
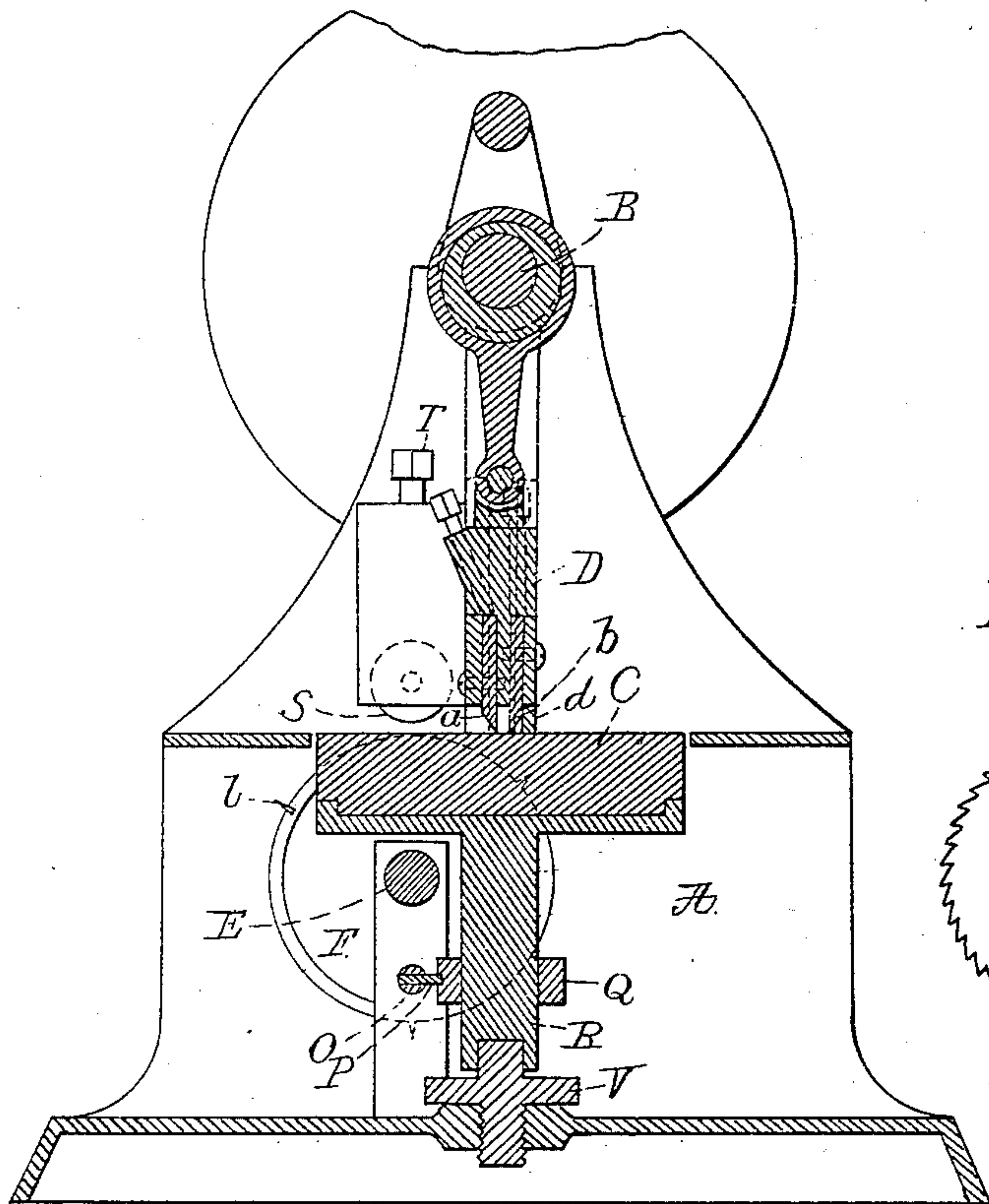


Fig. 9.

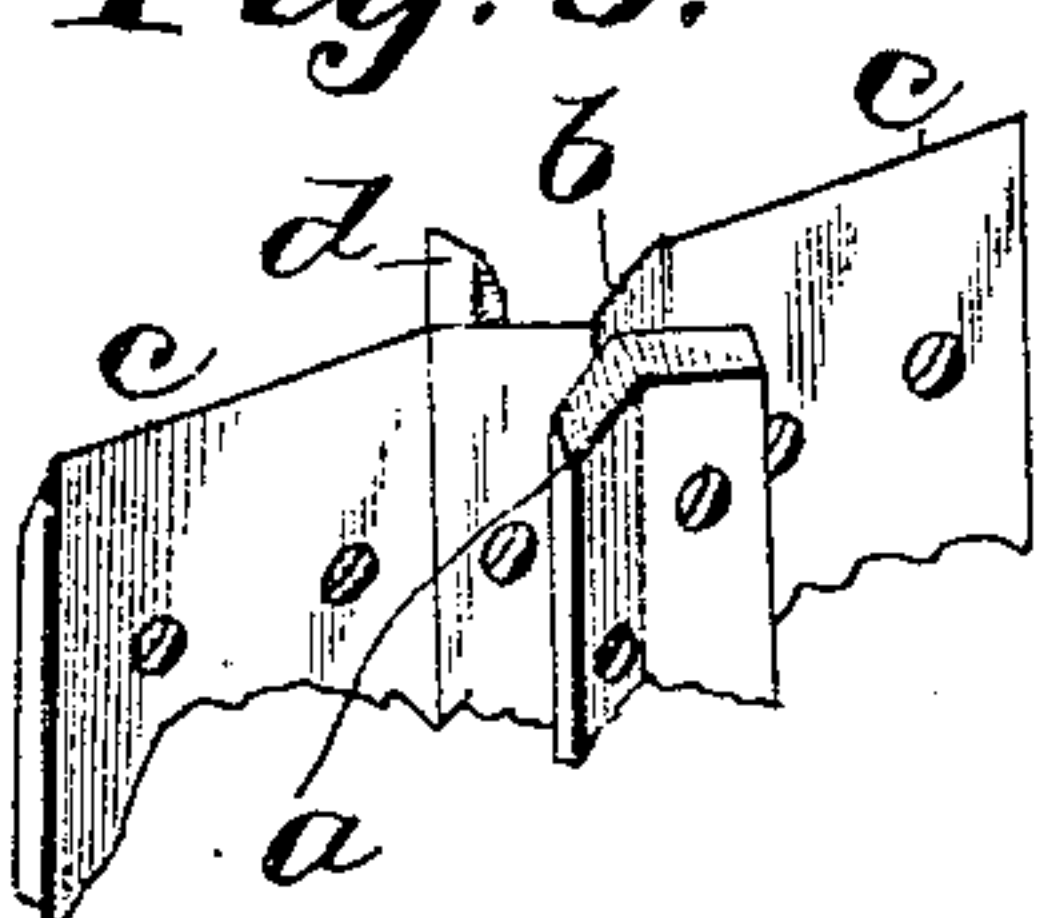


Fig. 3.

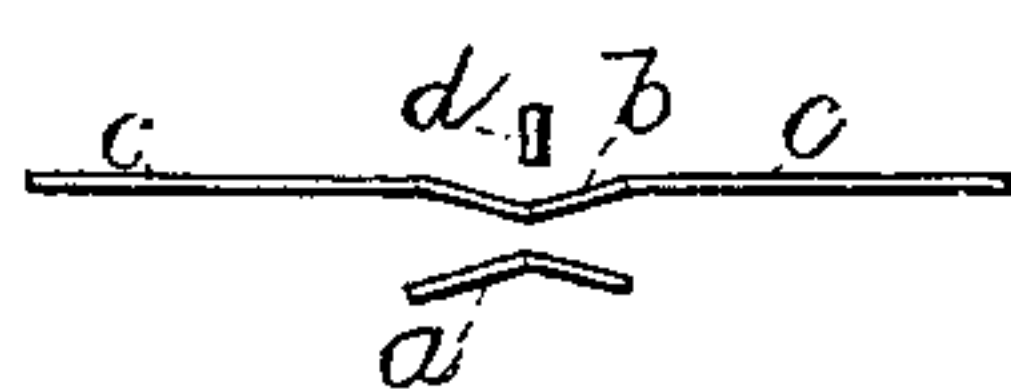


Fig. 5.

Fig. 6.

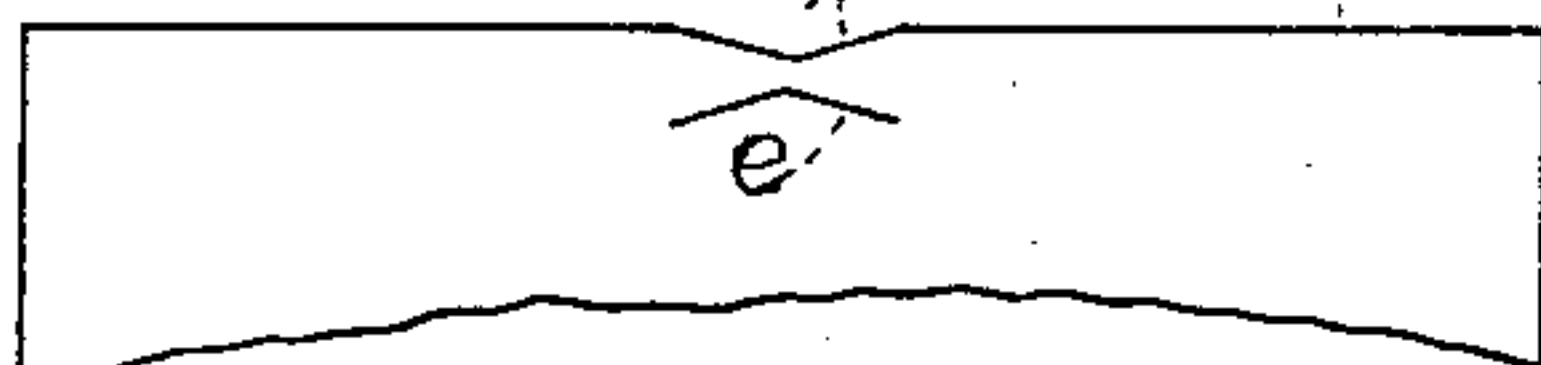
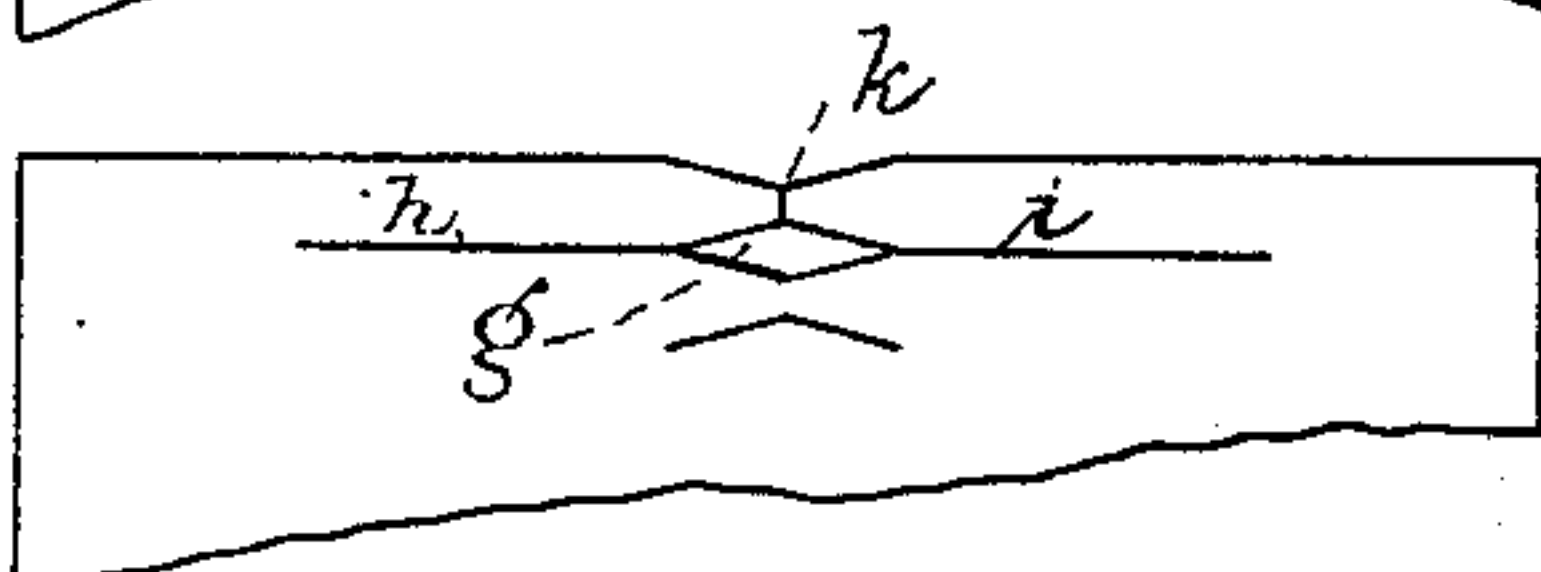


Fig. 7.



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UNITED STATES PATENT OFFICE.

LORENZO P. HAWKINS, OF DEERING, MAINE.

MATCH-MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,900, dated September 12, 1899.

Application filed April 18, 1896. Serial No. 588,176. (No model.)

To all whom it may concern:

Be it known that I, LORENZO P. HAWKINS, a citizen of the United States of America, residing at Deering, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Methods of and Machines for Making Matches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in machines for making matches. Matches having a tapered point have formerly been and are at the present time being made from veneer in various ways; but in all cases where knives are used to form the point, so far as I am aware, the V-shaped portion in the veneer which is removed between two adjacent matches is wholly removed at a single operation of the knives. This has been found to be objectionable for various reasons. To obviate this, I have devised a machine provided with knives spaced apart so as to remove the V-shaped portion of the card from between two adjacent matches by two separate operations of the knife, first cutting one side of the V and by a succeeding operation cutting the other side. By this plan the points always have a uniform taper and a uniform thickness in cross-section.

In illustrating my invention I have shown a machine provided with knives adapted to operate in the center of a strip of veneer and to form two matches with a common end; but it will be evident that the points may be formed at the edge of the card and still be within the principle and spirit of my invention; but I have found that the forming of the points in the solid wood produces the better result.

In the drawings herewith accompanying and making a part of this application, Figure 1 is a front elevation thereof, partly in section. Fig. 2 is a horizontal sectional view of a part of Fig. 1, taken on line X X. Fig. 3 is a central vertical cross-sectional view of my improved machine. Fig. 4 is a detailed view in elevation of the ratchet mechanism for operating the feed-wheels. Fig. 5 is a plan view of one form of the cutter. Fig. 6

is a plan view of a strip of veneer, showing the first cut in the veneer. Fig. 7 is a plan view of a strip of veneer, illustrating the appearance of the veneer after the second cut is made therein. Fig. 8 is a plan view of a different form of the cutter for accomplishing the same result, and Fig. 9 is a perspective view showing relative arrangement of the knives.

Same letters refer to like parts.

In said drawings, A represents a suitable supporting frame or base, and B a driving-shaft mounted therein. Mounted in said frame and adapted to rotate horizontally therein is a cutting-block C, and suspended above said block is a plunger D, to which the cutter, as hereinafter described, is attached. Said plunger is attached to a connecting-rod which is eccentrically mounted on the shaft B and is adapted to receive a vertically-reciprocating motion from the revolution of said shaft. Journaled in said frame is a shaft E, carrying feed-wheels F, adapted to feed a strip of veneer across said block. On the end of said shaft E is a ratchet-wheel I, adapted to be operated by a pawl J, secured to a lever K, which lever is connected to a wheel L on shaft B by an adjustable crank M. The feed-wheels are adapted to rotate the block by means of a lug N, engaging periodically a push-bar O, mounted in the frame, and carrying a pawl P, adapted to engage a ratchet Q, secured to spindle R, on which said block is mounted. Secured to the frame in any convenient manner at a point above the feed-wheels are spring-controlled tension-wheels S, adapted to cooperate with said feed-wheels in feeding the veneer and holding it firmly while the cutter is forming the match. The tension can be adjusted by means of a threaded screw T in connection with the spring U. The block can be adjusted vertically by sliding the spindle through the ratchet and securing it in a given position by means of step V on the bottom thereof. This is important, because the block receiving the cutters thereon becomes more or less defaced thereby and would therefore be rendered useless. It may, however, be recut and readjusted by means of the sliding spindle and thumb-nut.

The veneer is fed over the rotary block

by means of the feed-wheels in connection with the tension-wheels. While on the table, the plunger, descending, forces the blades of the cutter into the veneer in the center, forming the points on two matches adjacent to each other and with a common end and a slit transversely to the veneer to facilitate the separation of the match from the card for the purpose of using. To form the match in this way, a peculiar arrangement of the blades becomes necessary. I have illustrated in Figs. 5 and 8 two forms of the blades. In Fig. 5 the cutter consists of a series of five blades: first, the V-shaped blade *a*, the angle opening toward the advancing veneer; second, a V-shaped blade *b*, having the apex of the angle toward the advancing veneer; third, two long thin blades *c*, extending laterally in a straight line in opposite directions and forming a continuation of said last-mentioned blade, and, fourth, a short cutting-off blade, set at a right angle to said splitting-blade and parallel with the edges of the veneer. It will be seen by referring to Figs. 5 and 8 that as the veneer advances on the table the plunger, bringing the cutter down, cuts in the advancing veneer a V-shaped slit (marked *e*) and removes the V-shaped portion at the edge, as seen at *f*. The plunger then rises and the veneer is fed along one match space, when the plunger again brings the cutter down and the blade *b* cuts out a double V-shaped portion *g* and the blade *a* cuts another V-shaped slit in the veneer, while the blades *c* slit the veneer in lines *h* and *i*, which lines mark the division of the matches in the card. At the same time the blade *d* divides the two adjacent matches at the narrowest part, as seen at *k*, and thereafter at each descent of the plunger two complete matches are formed.

Instead of having the blades which form the cutter arranged as shown in Fig. 5 they may be arranged as shown in Fig. 8, in which the V-shaped blades are arranged so as to have their apexes pointing in opposite directions, the slitting-blades and cutting-off knife being arranged substantially as before. It will be seen that in both cases the slit is made and the point formed in the solid card. This affords a solid unyielding surface to cut from, insuring a clear sharp well-defined point on every match.

In connection with the mechanism for feeding the veneer and for forming the match in the veneer I place in the periphery of the feed-wheels at convenient distances apart cutters *l*, which are adapted to register with the slitting-blades at stated times—for example, usually at every twenty-third descent of the plunger—and to divide the veneer into cards containing a given number of matches.

Having thus described my invention and its use, I claim—

1. In a machine for making match-cards, a suitable supporting-frame, a cutting-block, mechanism for feeding a card of veneer over said block, and a reciprocating plunger pro-

vided with angularly-disposed blades spaced apart in the direction of the feed of the veneer, whereby by two separate reciprocations of said plunger a portion of the card is removed between two adjacent matches to form the points, substantially as and for the purposes set forth.

2. In a machine for making match-cards, a suitable supporting-frame, a cutting-block, mechanism for feeding a card of veneer over said block the distance of the width of a match for each reciprocation of the plunger, and a reciprocating plunger provided with angularly-disposed blades spaced apart in the direction of the feed of the veneer sufficiently to include an even one or more times the width of the match, whereby by two separate reciprocations of said plunger a diamond-shaped cut is made in the veneer at the center, substantially as and for the purposes set forth.

3. In a machine for making match-cards, a suitable supporting-frame, a cutting-block, mechanism for feeding a card of veneer sufficiently to include an even one or more times the width of a match, over said block, the distance of the width of a match for each reciprocation of the plunger and a reciprocating plunger provided with cutting-knives spaced apart in the direction of the feed of the veneer whereby by two reciprocations of said plunger a diamond-shaped cut is made in the veneer at the center, laterally-extending knives to partially separate the matches in the card, and a cutting-off knife placed at right angles to the separating-knives and behind the center of the diamond-cutting knives to sever adjacent matches at their common point, substantially as and for the purposes set forth.

4. In a machine for making match-cards, a suitable supporting-frame, a cutting-block, mechanism for feeding a card of veneer over said block, the distance of the width of a match for each reciprocation of the plunger and a reciprocating plunger provided with knives spaced apart in the direction of the feed of the veneer sufficiently to include an even one or more times the width of the match, whereby by two reciprocations of said plunger a diamond-shaped cut is made in the veneer at the center, the entire periphery of said cut being in the solid veneer, substantially as and for the purposes set forth.

5. In a machine for making match-cards, a suitable supporting-frame, an intermittently-rotating cutting-block, mechanism for feeding a card of veneer over said block, a reciprocating plunger provided with angularly-disposed blades spaced apart in the direction of the feed whereby by two reciprocations of said plunger a diamond-shaped cut is made in the veneer at the center, laterally-extending splitting-knives and a cut-off knife, substantially as and for the purposes set forth.

6. In a machine for making matches, in combination, a suitable supporting-frame, a

rotary cutting-block, veneer-feeding wheels
arranged at the sides of said block and
adapted to feed a strip of veneer thereover,
a reciprocating plunger carrying cutting-
5 blades adapted to form the match in the cen-
ter of said veneer, cutters arranged in the
periphery of said feed-wheels adapted to reg-
ister at stated times with the slitting-blades
of the plunger and mechanism for imparting
10 an intermittent rotary motion to said cutting-

block and feed-wheels, substantially as and
for the purposes set forth.

In testimony whereof I affix my signature,
in presence of two witnesses, this 13th day of
April, 1896.

LORENZO P. HAWKINS.

Witnesses:

ELGIN C. VERRILL,

E. B. GARDNER.