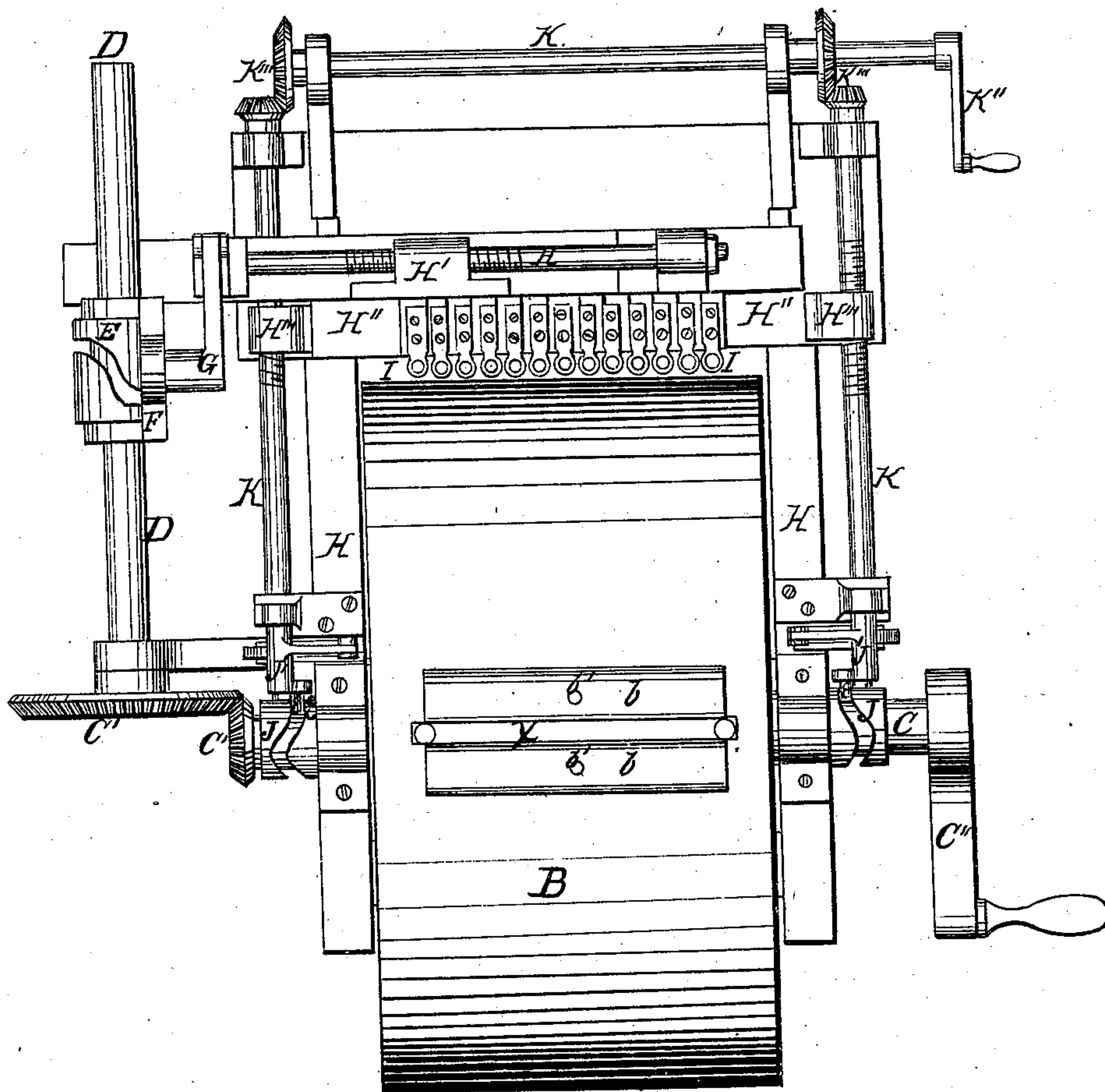


Sheet 1, 2 Sheets.
W. B. Eltonhead.

Match Mach.

N^o 93,525. Patented Aug 10, 1869.
Fig. 1



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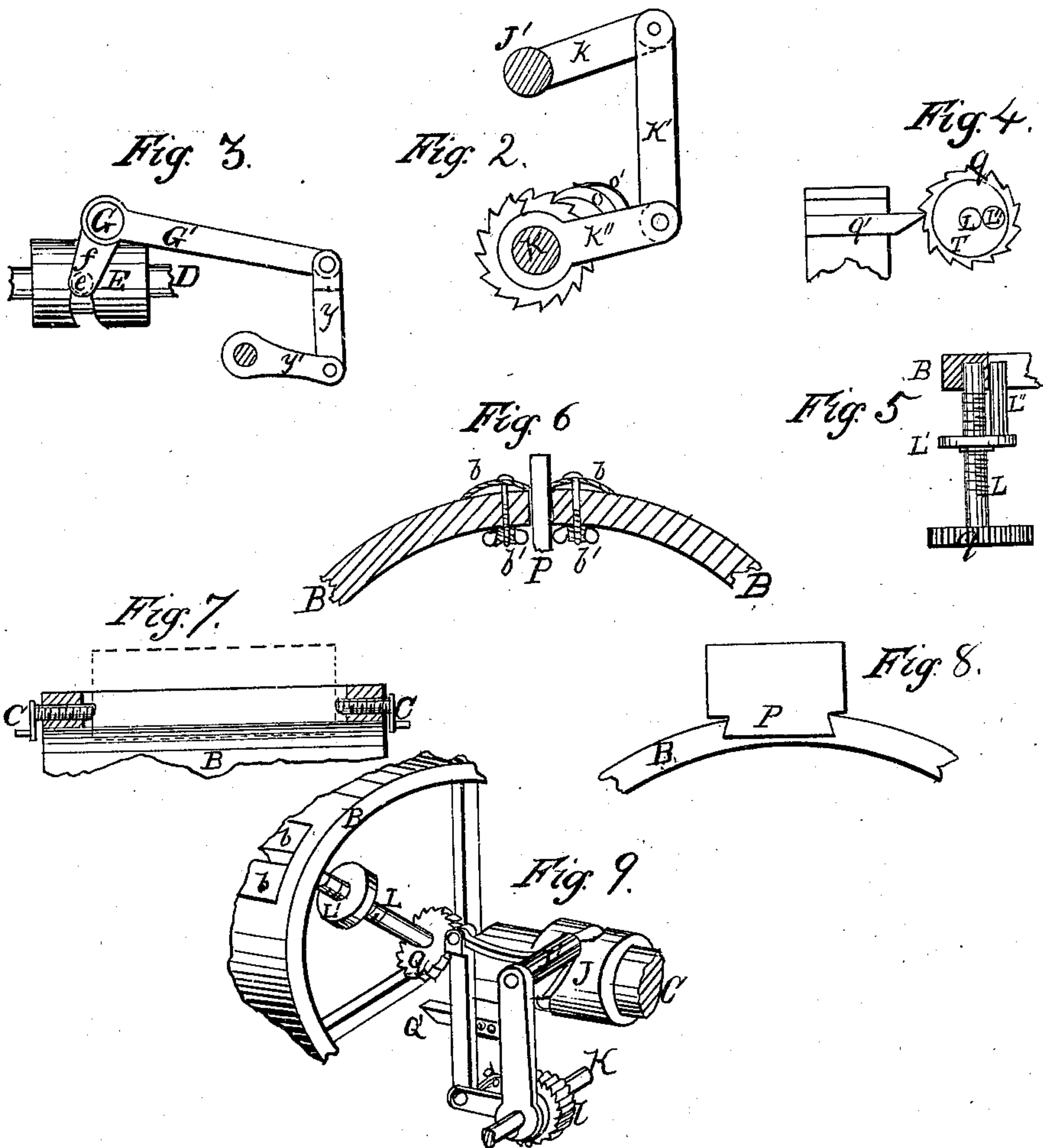
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Sheet 2. 2 Sheets.

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United States Patent Office.

WILLIAM B. ELTONHEAD, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 93,525, dated August 10, 1869.

IMPROVEMENT IN MATCH-MACHINE.

The Schedules referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, WILLIAM B. ELTONHEAD, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Machines for Making Match-Splints; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in the construction of such a machine that match-splints and similar sticks can be cut from blocks of wood placed in the periphery of a revolving wheel; in the manner of feeding out the blocks through the rim of the revolving wheel; and in the means used for feeding the series of knives toward the blocks, and in giving them a transverse reciprocating motion to the extent required.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and manner of operation.

In the drawings—

Figure 1 is a plan view of the machine.

Figure 2 is a detached view of the mechanism for feeding the knives up to the blocks.

Figure 3 is a detached view of the mechanism which operates to reciprocate the knife-table laterally.

Figures 4 and 5 are detached views of the devices for feeding the blocks out to the knives.

Figure 6 shows a section of the revolving wheel, and a method of holding the blocks.

Figure 7 shows another method of holding the blocks to the wheel.

Figure 8 shows still another method of holding the blocks to the wheel.

Figure 9 is a view of the devices which force the blocks out of the wheel.

A, in the drawings, represents the frame-work of the machine, and needs no definite description, as any support which gives to the machine the requisite stability and facility of operation, however constructed, is just as good.

B is a wheel, of the desired diameter and width of face to hold the requisite number of blocks of the required size, from which the splints are to be cut, and has a centre-shaft, C, revolving in bearings upon frame A.

Upon shaft C, and outside of its bearings, are grooved cams J J, which revolve with the shaft, and give motion to shafts K K, through pins e e, working in the grooves of cams J J, and operating the arms of rock-shafts J' J', which in turn cause pawls O O, having springs O' O', to take into teeth on ratchet-wheel L. This causes the shafts K K to rotate far enough to draw or force the knife-table H", with the knives I,

toward the revolving wheel B, far enough to cut a match-splint, or only half the diameter, as may be necessary, according as different devices are to be used to hold or feed out the blocks from which the splints are to be cut.

The grooves in cams J J are of such form, that as the centre-shaft C revolves, the rock-shafts J' J' are oscillated, and give to the arms which hold and contain the pawls O O and the springs O' O' an alternate rising-and-falling motion, so that the pawls, when the arms are raised, will take hold of the teeth in the ratchet-wheels L L, and turn the shafts K K.

Upon the end of shaft C, and outside of cam J, is a gear-wheel, C', which gears into another wheel, and revolves shaft D.

Upon shaft D, and revolving with it, is grooved sliding cam E.

F is a bracket, which supports rock-shaft G; and upon rock-shaft G, having arm f, projects a pin, e, which gives motion to the rock-shaft.

By the revolution of the cam E, the shaft H is first turned in one direction a certain distance, and, as the cam finishes its revolution, the shaft is rotated back to its first position.

As shaft H is thus rotated, a screw-thread on said shaft H turns in nut H', which is attached to the knife-table H", causing said knife-table, with the knives or cutters I arranged thereon, to reciprocate in a horizontal direction, and to the amount of half the diameter of the splint.

Usually, the gear-wheel upon shaft D has twice the number of teeth that the gear-wheel has upon shaft C, in order that the wheel B may revolve twice to one reciprocation of the rock-shaft G and screw-shaft H.

Upon the knife-table H" are knives I. Any number of knives may be used, according to the size of the splints to be cut, and the size or length of the blocks on their faces, but enough to cut the whole width of such blocks at once.

The blocks P, from which the splints are to be cut, are placed in openings in the rim of the wheel B, as at X, and are held firmly in place by means of curved springs b b, on the face of the wheel B, which springs are compressed by screws b' b', and caused to bear upon the sides of the block, and to keep it steady in its place in opening or slot X, as shown in fig. 7. Or wedges, drawn and held by screws from within wheel B, or any other equivalent device, may be used for holding and securing the blocks. This feeding-device is only intended to be used when the blocks are held to the cylinder, as shown in fig. 6.

When thus retained in position, the blocks are fed out to the cutters or knives by means of screw-shafts L L, one end resting upon shaft C, and the other in

the rim of wheel B, and having a ratchet-wheel, Q, firmly attached thereto, near the end next to shaft C.

On the screw-shafts L L are nuts L' L', and extending from, and firmly fixed thereto, are forcing-rods L" L". As the wheel B revolves, carrying with it the devices above described, the teeth of the ratchet-wheel Q come in contact with dog Q', which is firmly fixed to frame A, causing the screw-shafts L L to be partially rotated in nuts L' L', thus forcing the rods L" L" upon the splint-block P, which, in turn, is driven out half the diameter of the splint, or the whole diameter, as may be desired, by giving a greater gain to the screw-thread, or by having fewer teeth upon the ratchet-wheel.

When the blocks are fed out to the knives or cutters, through the rim of the wheel, by the devices above described, it is not necessary that the knife-table H", with the knives thereon, should be fed toward the blocks at all, as the blocks may be fed out to the knives or cutters the whole diameter of a matchstick at each revolution of the wheel B. In this case, the rock-shafts J' J' should be detached from the grooved cams J J, so that the knife-table, with the knives, will remain at the same distance from the wheel B, retaining only its lateral reciprocating motion through shaft D, grooved cam E, rock-shaft G, &c.

Another method of attaching the block P, from which the splints are to be cut, to the wheel B, is to cut first a dovetailed-tenon on one side of said block, which fits into a dovetailed-groove in the rim of said wheel B, as seen in fig. 9. When it is thus arranged, the mechanism for feeding the knife-table toward the blocks, or revolving wheel B, must be so arranged that at every revolution of said wheel the table and knives will be fed forward the distance of the diameter of the splint; but when devices are used for forcing the blocks out of, and during one revolution of wheel B, the distance of one-half the diameter of the splint, then, in such case, the knife-table is to be advanced only the distance of half the diameter of the splint. Or the blocks may be held in the rim of the wheel by screws c, as seen in fig. 8.

In this way, the whole of the blocks projecting from

the surface of the wheel are cut into splints, thus avoiding the usual method of gluing the blocks to segments that are bolted upon the wheel, or upon the surface of the wheel itself.

To restore the knife-table and the knives to their former position, in order to commence cutting a new series of blocks, it is only necessary to raise the pawls O O out of contact with the ratchet-wheels l l, then turn the crank-winch K" in the direction to reverse the shafts K K, and the desired effect is produced.

I am aware that blocks of wood have been attached to the periphery of a revolving wheel, to be there held in order to cut such blocks of wood into splints for matches, veneers, &c.; but such mode of attaching, as heretofore practised, is different from mine, as herein described.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The screw-shafts K K and K', gear-wheels K", nuts H", knife-table H", knives I, in combination with shaft C, having grooved cams J J, rock-shafts J' J', with their arms, pawls, and ratchet-wheels l l, constructed and arranged to operate together, in the manner and for the purpose substantially as described.

2. The combination of the main shaft C, gear-wheel C', shaft D, sliding grooved cam E, rock-shaft G, and its arms, screw-shaft H, nut H', knife-table H", and knives I, constructed and arranged to operate together, in the manner and for the purpose described.

3. Slot X, in the rim of revolving wheel B, having spring-plates b b and screw-bolts b' b', arranged to operate in the manner and for the purpose substantially as described.

4. The combination of screw-shafts L L, nuts L' L', push-rods L" L", and ratchet-wheels Q Q, when constructed to operate in the manner and for the purpose substantially as described.

WM. B. ELTONHEAD.

Witnesses:

A. ELTONHEAD,
A. S. MEGUIRE.