

(No Model.)

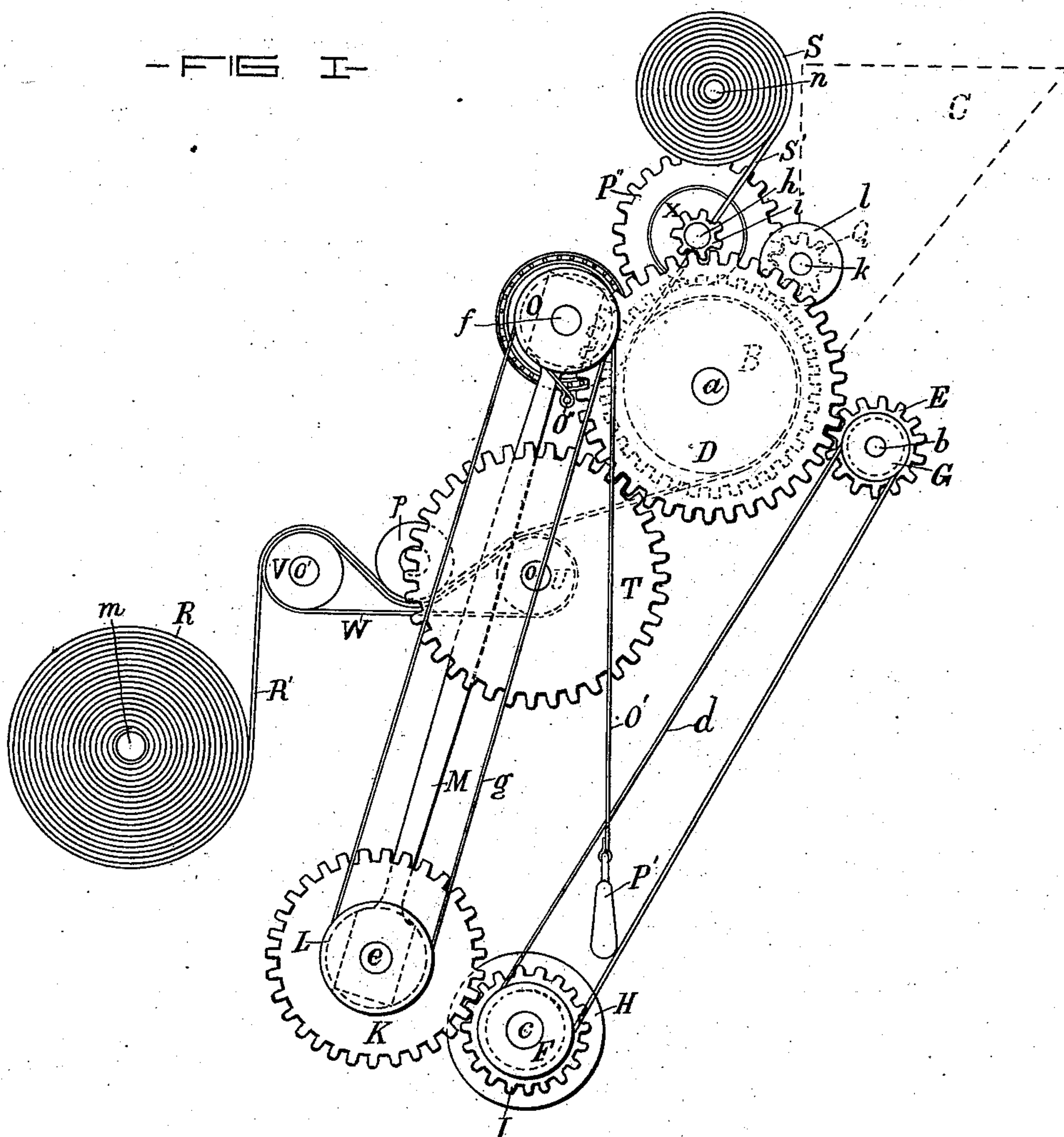
C. J. & J. M. DONNELLY.
MATCH MAKING MACHINE.

2 Sheets—Sheet 1

No. 292,474.

Patented Jan. 29, 1884.

- FIG I -



- WITNESSES -

Danl. Fisher
Edw. J. Diggs

- INVENTORS -

Charles J. Donnelly,
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Atty -

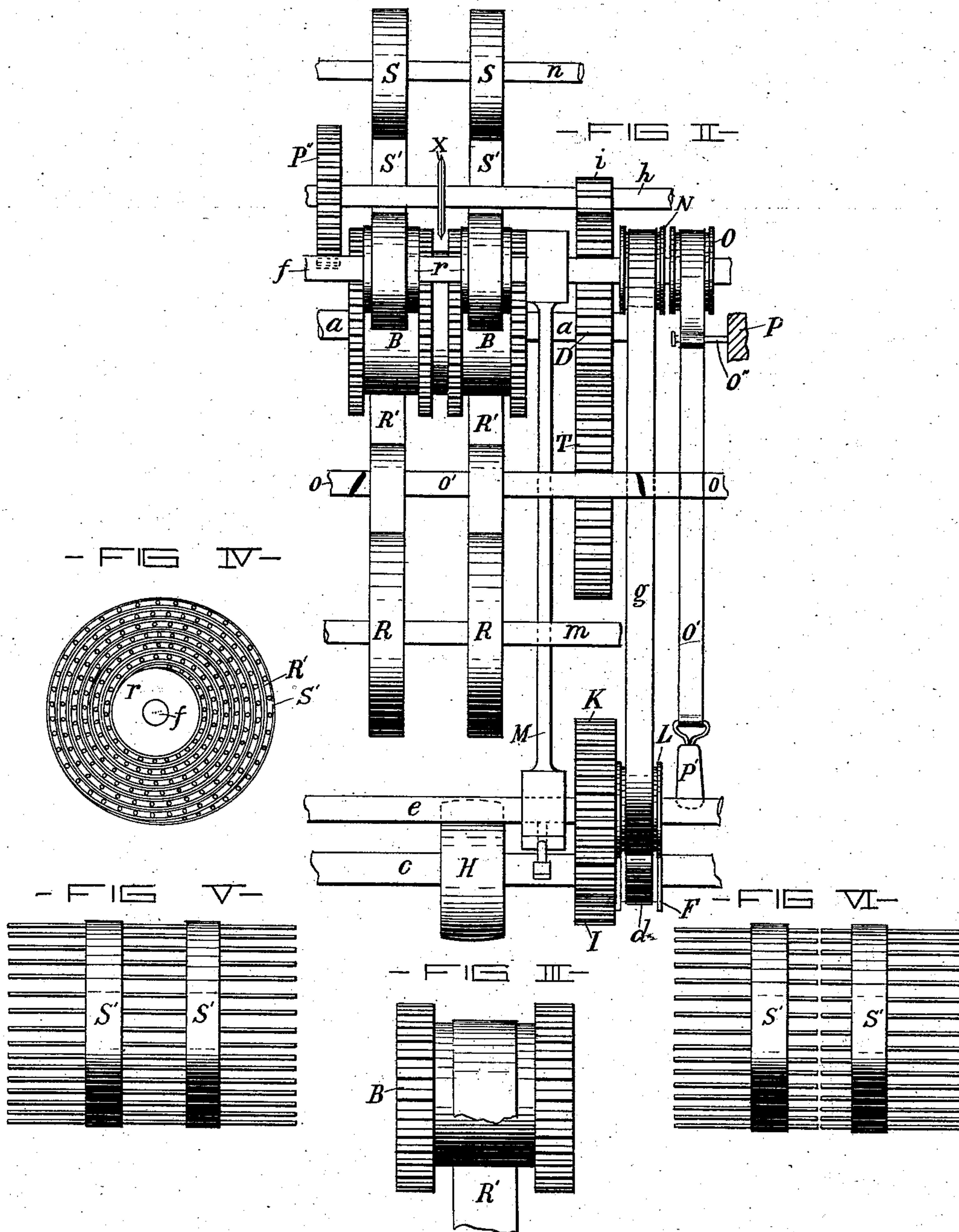
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UNITED STATES PATENT OFFICE.

CHARLES J. DONNELLY AND JOHN M. DONNELLY, OF PHILADELPHIA, PA.

MATCH-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 292,474, dated January 29, 1884.

Application filed April 4, 1883. (No model.)

To all whom it may concern:

Be it known that we, CHARLES J. DONNELLY and JOHN M. DONNELLY, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain Improvements in Match-Making Machines, of which the following is a specification.

This invention relates to certain improvements in a machine for coiling match-splints between tapes preparatory to the dipping operation, in which the said splints are headed, as hereinafter described.

In the accompanying drawings, forming a part hereof, Figure I is a side view of the machine with the frame removed. Fig. II is an end view of Fig. I, with a small portion of the frame shown. Fig. III is a view of a part of the machine, illustrating a modification in its construction. Figs. IV, V, and VI are views of the coiled splints, as hereinafter described.

Similar letters of reference indicate similar parts in all the views.

B is a pocketed drum, (shown in dotted lines in Fig. I,) adapted to revolve under and partially within a hopper, C, containing the splints to be rolled into a coil for dipping. The said pocketed drum receives the said splints from the hopper and conducts them between plain belts or tapes, as hereinafter described.

D is a spur-gear wheel secured to the shaft *a* of the pocketed drum B, and E is a pinion on a shaft, *b*, in gear with the wheel D. The pinion E is driven from the driving-shaft *c* through the medium of the sheaves F and G, secured, respectively, to the shafts *c* and *b*, and the endless belt *d*. The driving-shaft *c* is provided with a pulley, H, to which power is applied by means of a belt, which belt is not shown in the drawings, and it has secured to it a gear-wheel, I, which meshes with another of larger size, (denoted by K,) which runs loosely on the shaft *e*.

L is a sheave fastened to or cast as a part of the gear-wheel K, and consequently revolves with it.

M is a vibratory arm, fastened to the shaft *e* by means of a set-screw, and it extends in an upward direction to a point somewhat above the center of the shaft *a*. This arm is fitted with a revoluble spindle, *f*, carrying a sheave, N, which is united to the one, L, on the shaft *e* by means of an endless belt, *g*. The spindle

f is also fitted with a spool, O, over which a belt, O', one end of which is fastened to a pin, O'', projecting from a part of the frame P, (shown only in Fig. II,) is reeved. To the other end of the belt O' is secured a weight, P', which has the effect of influencing the upper end of the vibratory arm M toward the pocketed drum B. A shaft, *h*, having a pinion, *i*, in gear with the toothed wheel D, carries a spur-wheel, P'', which in turn is in gear with a pinion, Q, on the shaft *k* and the rubber roller *l*, which are fastened thereto. This roller is over the pocketed drum B and within the hopper C, and in its rapid revolution in a contrary direction to the drum prevents the clogging of the splints against the said drum and assists the same to receive a single splint in each pocket.

R R and S S are rolls of tape, respectively, on spindles *m* and *n*.

T is a gear-wheel on a shaft, *o*, and it meshes with the gear D.

U and V are spools, the former secured to the shaft *o*, and the latter on an independent shaft, *o'*. These spools are united by an endless belt, W, and the center of the belt W is depressed by a tightening-pulley, *p*, for a purpose hereinafter described. The upper tapes (represented by S') extend from the coils S over a portion of the periphery of the pocketed drum, and are connected to small hubs, *r*, fastened to the spindle *f*. The object of these tapes is to bind the upper side of the splints as they pass around with the drum. The lower tapes (represented by R') extend from the coil R over the belt W on the spool V, under the tightening-pulley *p*, and over the spool U, and thence around the recessed portion of the pocketed drum, and under the splints to the hub *r*.

By referring to Fig. I of the drawings it will be seen that the splints, after passing from the hopper, are clamped between the upper and lower tapes and coiled around the hub *r* at a regular distance apart. As the coil of wound splints increases in size it is carried back, in view of its periphery at all times resting against the pocketed drum B, and in this movement the weight P' is elevated.

By referring to Fig. II it will be seen that the drum B is recessed, in order that the lower tapes shall pass below the splints.

In Figs I and II it will be seen that the pocketed drum is adapted for the reception of two sets of tapes, and it is the intention, when such drum is employed to use in connection with it two hubs and a circular-cutting knife, X, on the shaft *h*, to divide the splints into two match-sticks. Consequently in the completion of the coiling operation two independent coils are formed, the sticks in each one of which may be dipped separately. We may, however, use a single upper and lower tape, and a pocketed drum with one tape-depression only, as shown in Fig. III. When this last-described drum is employed no knife is used, and the splints are in a single coil, and have to be dipped at both ends and cut into matches in a subsequent operation. Power being applied to the pulley H, revolution is first imparted to the driving-shaft *c*, and then successively to the shafts *b*, *a*, *h*, and *k*, through the medium of the endless belts and gearing described. The movement of the driving-shaft *c* is also communicated to the gear K, with its sheave L, and thence to the sheave N on the shaft *f*, through the medium of the endless belt *g*, as described.

It will be seen that the motion of the spools U and V is derived directly from the gears D and T.

As some force is required to remove the splints from the pockets in the drum B, we obtain a certain resistance to the coiling of the tapes R' by running them under the friction-pulley *p*, which forces it closely in contact with the endless belt W. While it is necessary to offer some resistance to the coiling of the tapes R', it is also necessary that some means should be employed to effect the unwinding of the coil of tape R. We therefore effect the revolution of the spools U and V through the medium of the gear T, which is driven from the gear D.

We have described the gear-wheel K and its sheave L as running loosely on the shaft *c*, and the vibratory arm as secured to the said shaft; but this arrangement may be changed and the said gear and sheave keyed to the said shaft, and the arm M made to vibrate loosely on it. After the coiled splints are dipped, they may be placed in a machine corresponding in some respects to the one described, except that the movement of the tapes is reversed. By means of this last-named machine the packed coils are unwound and the splints delivered to a trough, box, or other suitable receptacle.

Fig. IV is a side view of a completed coil of splints, and Fig. V an edge view of the coil

with the splints uncut. In Fig. VI the splints are shown as divided into two match-sticks by means of the rotary knife or cutter X.

It will be understood that we do not limit ourselves to the number of pocketed drums and tapes or to the number of coils of match-sticks produced at once, as these may be increased to almost any extent.

We are aware that match-machines have been made in which the splints are taken from the hopper by means of a toothed or pocketed drum, and transferred from the said drum to a second drum by what is termed a "count-wheel," and finally lifted from the second drum by means of a tape in which the said splints are coiled, and this combination of devices we disclaim; but

We claim as our invention—

1. In a match-making machine, the combination of a hopper for the splints, a pocketed drum adapted to revolve partially within the said hopper and to remove the splints separately from the same, plain tapes which pass under and remove the splints from the said pocketed drum, other plain tapes to press the said splints in contact with the first-named tapes, and mechanism to roll the clamped splints into a coil or coils, substantially as specified.

2. In a match-making machine, the combination of a hopper for the splints, a pocketed drum adapted to revolve partially within the said hopper and to remove the splints separately or one by one from the same, and tapes to remove the splints from the said pocketed drum and at the same time clamp them so that they may be wound into a coil, substantially as specified.

3. In a match-making machine, the combination of a hopper for the splints, a pocketed drum adapted to revolve partially within the said hopper and to remove the splints separately therefrom, a pair of plain tapes which pass under and remove the splints from the said pocketed drum, a second pair of plain tapes to press the said splints in contact with the first-named tapes and hold them so that they may be wound into a coil, and a rotary knife to cut the said splints into two parts, and thereby produce two independent coils of splints, which may be dipped separately, substantially as specified.

CHARLES J. DONNELLY.
JOHN M. DONNELLY.

Witnesses:

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JOHN SPARHAWK, Jr.