

a supporting plate, and the series of cutter bars sliding over the same, the plate provided with the guiding grooves for the cutter bars, springs attached to the latter plate, movable pieces guided in holes in the plate, and engaging with their opposite ends the springs and the cutter bars, the plate situated on the side of the forward portions of the cutter bars which is opposite to the faces thereof, which are engaged by the movable spring pressed pieces, and having in it the strip guiding openings, one for each cutter bar, situated in front of the respective bars, so that the edges of the latter slide over them, as the bars are advanced, and means for reciprocating the bars, substantially as and for the purpose specified. 22nd. In combination with the series of cutter bars having holes, a reciprocating head having the grooves to receive the bars, and the holes coinciding with those in the cutter bars, pins passing through the holes in the latter and in the head, a plate attached to the head, and having holes to receive the ends of the pins, and a second plate detachably attached to the head, abutting against the ends of the pins opposite to those in the perforated plate, substantially as and for the purpose shown. 23rd. In combination with the strip feeding rolls, the one having a series of strip receiving circumferential grooves, and the other an elastic face opposing the grooved surface of the former roll, the series of clearing pins projecting into the grooves of the grooved roll, adapted to scrape and clear out any clogging material from such grooves, and the scraper plate having its edge close against the periphery of the grooved roll so as to clean the portions of the face thereof which are between the grooves, substantially as and for the purpose set forth. 24th. In a machine for making matches, in combination with a source of supply of a series of strips of material of which the match sticks are to be formed, the drawing rolls to draw such strips from the source of supply, the feed rolls, one provided with a series of grooves to receive the strips, and the other having an elastic face to grip the strips in the grooves, means for intermittently rotating such rolls, and means, beyond the feed rolls, for cutting the strips, to form the required separate match sticks, substantially as and for the purpose described. 25th. In a machine for making matches, in combination with a source of supply of a series of strips of the material of which the match sticks are to be made, the feed rolls, of which one has a series of grooves to receive the strips, and the other has an elastic surface to grip the strips in such grooves, means for intermittently rotating such rolls, the drawing rolls for drawing the strips from the source of supply, means for rotating them so that before each forward turning of the feed rolls, there will be, in the strips between the drawing and feed rolls, slack enough to allow for the next step in the forward feed of the strips, substantially as and for the purpose described. 26th. In a machine for making matches, in combination with a source of supply of a series of strips of material, of which the match sticks are to be formed, the continuously rotating drawing rolls, the feed rolls beyond the latter, means for rotating such feed rolls intermittently, a sufficient amount to feed forward the series of strips a distance equal to the desired length of the match stick to be used, a moving carrier adapted to receive and hold portions of the parts of the strips fed up by the feed rolls, and cutting mechanism to cut the strips, at a point between the carrier and feed rolls, substantially as and for the purpose shown. 27th. In a machine for making matches, in combination with a moving carrier to receive and hold the match-sticks, means for moving it forward with a step-by-step motion, the intermittently rotating feed rolls, gripping between them a series of strips of material to form the match sticks, means for rotating the rolls while the carrier is at rest, to feed the strips up into the grasp of the latter, a piece between the carrier and the feed rolls having strip-guiding openings fitting such strips closely, and cutting mechanism cutting the strips close to the planes of the edges of the upper ends of such openings, substantially as and for the purpose set forth. 28th. In combination with the intermittently rotating feed rolls, and the means for driving the same, made adjustable, to vary the amount of each forward rotation of the rolls, a source of supply of the strips to be used, the drawing rolls for drawing the strips therefrom, and passing them to the feed rolls, and means for rotating the drawing rolls made changeable, to vary the rate of rotation of the rolls, substantially as and for the purpose described. 29th. In combination with the drawing rolls, and the gear-wheel connected therewith, so as to rotate them, a driven gear-wheel, a pivoted frame swinging on a pivot substantially in line with the axis of the latter wheel, a gear-wheel carried by this frame and meshing with the driven gear, and a pinion removably connected with this gear-wheel on the swinging frame, situated so as to be moved towards and from the gear-wheel connected with the drawing rolls as the frame is swung on its pivot, substantially as and for the purpose specified. 30th. In combination with the drawing rolls, and the gear-wheel connected therewith, so as to rotate the same, a driven gear-wheel, a pivoted frame swinging on a pivot substantially in line with the axis of rotation of the driven gear-wheel, a rotating gear-wheel supported on the frame, situated so as to be in gear with the driven wheel, and having a hub adapted to be moved towards and from the gear-wheel connected with the drawing rolls by movement of the swinging frame, a pinion detachably secured upon this hub, so as to be readily removed and replaced by another of a different number of teeth, and a means for fixing the frame at different points in its swing, substantially as and for the purpose shown. 31st. In combination with the drawing rolls, and the gear-wheel connected therewith, so as to rotate them, a driven gear-wheel, the pivoted frame swinging about an axis, substantially in line with that of the

driven gear-wheel, the gear-wheel journaled upon a suitable bearing on the frame, and meshing with the driven wheel, the pinion detachably secured on the hub of the wheel carried by the frame, a threaded pin on the frame projecting through a slot in a fixed plate, and a nut on such pin engaging the fixed plate so as to hold the pivoted frame from swinging, substantially as and for the purpose set forth. 32nd. In a machine for making matches, the moving carrier for carrying the match sticks while they are being made into matches, having a series of grooves to receive the sticks, and springing clamping devices to hold the sticks in such grooves, substantially as and for the purpose described. 33rd. In a machine for making matches, the moving carrier for receiving and holding the match sticks, having a series of grooves to receive the sticks, spring clamping devices to hold the sticks in the grooves in combination with means for inserting the match sticks in the grooves of the carrier, and an opener to press the spring devices back from the grooved faces of the carrier, to permit the insertion of the sticks in the grooves and there release them, so that they spring against the groove-held sticks, substantially as and for the purpose specified. 34th. In a machine for making matches, the match stick holding carrier, having a portion provided with a series of stick receiving grooves, and a series of spring fingers for the different grooves, to engage and hold the sticks inserted therein, substantially as and for the purpose shown. 35th. In combination with the carrier having a portion provided with a series of grooves to receive the match sticks, and the series of spring fingers opposite such grooves, an opener to force such fingers away from the grooved face on the carrier, to allow the insertion of the match sticks in the grooves, and then release the fingers to allow them to engage the sticks in the grooves, substantially as and for the purpose set forth. 36th. In combination with the carrier having a portion provided with a series of grooves to receive the match sticks, and a series of spring fingers opposite such grooves, the opener to press such fingers back, to allow insertion of the sticks in the grooves, having the series of fingers to engage the stick holding spring fingers on opposite sides of the grooves or the carrier, substantially as and for the purpose described. 37th. In combination with the carrier, a bar provided with a series of grooves, and a series of separate spring fingers, one for each groove, springing towards the grooved face of the bar, an opener to force such fingers back from the grooved face, having the fingers to engage the spring fingers separated from each other by spaces coinciding with the grooves in the carrier bars, substantially as and for the purpose specified. 38th. In a carrier for match sticks and the like, in combination with a bar having a series of grooves, a plate having formed on it a series of spring fingers, and means for supporting such plate, so that the fingers will spring towards the grooves and press upon the sticks therein, substantially as and for the purpose shown. 39th. In a carrier for match sticks and the like, in combination with two adjoining bars having grooves in their opposing faces, a plate having its opposite sides made into a series of spring fingers to engage the contents of the grooves in the respective bars, substantially as and for the purpose set forth. 40th. In a carrier for match sticks and the like, in combination with two adjoining bars having grooves in their inner or opposing faces, a plate bent on a longitudinal line to bring its opposing sides down opposite grooved faces of the bars, and having such sides divided to form series of separate spring fingers for the different grooves and a support for such plate, substantially as and for the purpose described. 41st. In a carrier for match sticks and the like, in combination with two adjoining bars having grooves in their inner or opposing faces, a rod supported on the carrier, and a plate supported on such rod, bent so that its sides extend down into the space between the grooved bars, and having such sides divided to form separate outwardly springing fingers, one for each groove, in the adjoining face of the carrier bar, substantially as and for the purposes specified. 42nd. In a carrier for match sticks and the like, in combination with three parallel bars having their opposing sides and faces grooved, the plates bent to bring their sides down close to the opposite grooved faces of adjoining bars, and such sides divided up into separate spring fingers, one for each groove, in the respective bar face, substantially as and for the purpose shown. 43rd. In a carrier for match sticks and the like, in combination with three parallel bars having their opposing faces grooved, the rods supported over the spaces between the bars, and the plates supported on these rods, having on their opposite sides a series of separate spring fingers projecting downward between the adjoining bars, and tending to normally spring outward toward the grooved faces of such bars, substantially as and for the purpose set forth. 44th. The carrier, consisting of sections formed of parallel grooved bars, with spring-holding devices to hold the sticks in the grooves, in combination with links connecting the sections together, substantially as and for the purpose described. 45th. The carrier, consisting of sections having bars to receive the match sticks and links connecting the sections, in combination with rotating toothed wheels engaging the projecting ends of the bars, substantially as and for the purpose specified. 46th. The carrier, consisting of sections having bars to receive the match sticks, in combination with links attached to one section and engaging the projecting ends of one of the bars of the next section, substantially as and for the purpose shown. 47th. The carrier consisting of sections having bars to receive the match sticks, in combination with links attached to one section and provided with an opening with convex face to engage the projecting ends of one of the bars of the next section, substantially as and for