to actuate the needles and points to effect the transfer of stitches independently of but simultaneously with the operation of the mechanism for operating the needles for knitting, substantially as and for the purpose set forth. 4th. The combination, with a row of needles, of a straight latch needle knitting machine, mechanism for actuating the same, for the purpose of knitting, and a main driving shaft of mechanism, substantially as described, by which the needles are operated forward and backward to facilitate the transfer of stitches arranged to follow the knitting movement, pattern mechanism for controlling the operation of the said mechanism for operating the needles, forward and backward transfer points mechanism, substantially as described, whereby the same are operated from the main driving shaft and caused to move in unison with the needles, and devices substantially as described, under the control of the pattern mechanism, whereby the shifting mechanism is operated automatically and simultaneously with the knitting movements, substantially as described. 5th. The combination, with the rows of needles, of a straight latch needle knitting machine, the mechanism for operating the same for the purpose of knitting, the main driving shaft, mechanism substantially as described, for operating the needles forward and backward to facilitate the transfer of stitches arranged to follow the ordinary knitting movement, and connected to the main driving shaft, a pattern mechanism for controlling the operation of the said mechanism for moving the needles forward and backward, transfer points, mechanism substantially as described, for causing them to move forward and backward in unison with the needles, and laterally to shift the stitches, said mechanism being connected substantially as described, with the main driving shaft and controlled also by the pattern mechanism, and mechanism, substantially as described, for throwing the empty needles out of work, whereby the shaping mechanism is operated automatically without interrupting the operation of the knitting mechanism, substantially as described. 6th. The combination, with the two rows of needles, of a straight latch needle knitting machine, the mechanism for operating the same for the purpose of knitting, and the main driving shaft and independent operating mechanism for each row of needles, consisting of mechanism, substantially as described, by which the needles are operated forward and backward to facilitate the transfer of stitches arranged to follow the ordinary knitting movements, and connected to the main driving shaft, a pattern mechanism, substantially as described, controlling the action of the said operating mechanisms, independent sets of transfer points for each row of needles, and independent sets of operating mechanisms, substantially as described, connected with the main driving shaft and controlled independently by the pattern mechanism for moving said points forward and backward in unison with the needles, and laterally to shift the stitches, all substantially as described. 7th. The combination with the rows of needles, of a straight latch needle knitting machine, the means for operating the same for the purpose of knitting, and the main driving shaft and operating mechanism, substantially as described, for operating the needles forward and backward to facilitate the transfer of stitches connected independently with the main driving shaft, and arranged to follow the knitting movement and constructed to advance the needles to a point where the loops rest upon the open latches, transfer points connected with the main driving shaft mechanism, substantially as described, for moving said points forward and backward in unison with the needles, and laterally to shift the stitches, and a pattern mechanism controlling the operation of the transferring mechanism, all substantially as described. 8th. The combination with a row of needles, of a straight latch needle knitting machine, mechanism substantially as described, for operating the needles backward and forward to facilitate the transfer of stitches, a transfer point or points, a point carrier arranged to slide forward and backward approximately in the plane of the row of needles, mechanism for moving said carrier backward and forward, mechanism substantially as described, for depressing the point for engagement with the needles, and mechanism substantially as described, for automatically moving the points laterally upon the frame by which they are carried, and a pattern mechanism substantially as described, for controlling the operation of the parts, all substantially as described. 9th. The combination, with a row of needles, of a straight latch needle knitting machine, of mechanism substantially as described, for operating the needles to transfer loops to the transfer points, a point carrier which is arranged to slide forward and backward approximately in the plane of the row of needles, mechanism for moving said carrier forward and backward, mechanism substantially as described, for depressing the points for engagement with the needles, and a pawl and slide rack mechanism for automatically moving the points laterally from needle to needle in either direction at the will of the operator, substantially as described. 10th. The combination, with the needles and the slide bar and needle cam, of a straight latch needle knitting machine, a longitudinally grooved cam having a flaring mouth adapted to receive the heels of the needles, mechanism substantially as described, for moving it forward and backward, and transfer points to effect the transfer of stitches, substantially as described. 11th. The combination with the needles and the slide bar and needle cam, of a straight latch needle knitting machine, of a longitudinally grooved cam having a flaring mouth and adapted to receive the heels of the needles, mechanism for moving it forward and backward to facilitate the transfer of stitches consisting of a sliding plate having suitable inclined slots, studs connected with the grooved cam, a gear, a link by which said gear is connected to the slide, a rack, and means substantially as described, by which said rack is thrown into engagement with the gear at the proper time, substantially as described. 12th. The combination with the longitudinally grooved cam, a gear connected to said slide by a pitman, the sliding bar, a rack 20 having lateral movement into and out of engagement with the gear, and means for holding the gear from turning when not in engagement with the rack, a lever adapted to be operated by the main driving mechanism, means for connecting said rack with said lever, the main driving mechanism, a pattern chain, and means controlled by the pattern chain for causing the said driving mechanism to act upon the lever, all substantially as described. 13th. The combination with the slide bar, the longitudinally grooved cam and the needles, of the lever 31 and intermediate mechanism, substantially as described, whereby said point carrier is operated from said levers, the driving shaft, cams 45 82 and 76, a spline to which said cams are connected, and a pattern mechanism, whereby said cams may be thrown into range with the levers, substantially as described. 14th. The combination with the two rows of needles, the described mechanism for operating the needles to facilitate the transfer of the loops, of transfer points for each row, and levers, and intermediate devices, substantially as described, for operating the same in unison with the movement of the needles, the main driving shaft, two independent sets of cams and independent movable spline to which each set of cams is connected, a pattern mechanism, and mechanism substantially as described, operated by the pattern mechanism for moving the cams on the main shaft into range with the levers for operating the transfer points, and means for returning the cams to their normal position, substantially as described. 15th. The combination with the lever 35, and the movable roller connected thereto, of the lever 41 having a spur 49, and intermediate connections, substantially as described, between said lever and the roller upon the lever 35, and the pattern chain, substantially as described. 16th. The combination, with the series of latch needles, the grooved transfer cam, means substantially as described, for operating the same, and the ordinary needle operating mechanism, of a point carrier having forward and backward movement, substantially parallel with the needles, and carrying points adapted to move laterally on the point carrier, the main driving shaft mechanism, substantially as described, driven from the main shaft for causing the carrier to move forward and backward, mechanism substantially as described, for moving the points laterally also connected with the main driving shaft and a pattern mechanism, substantially as described, for controlling the operation of the mechanism for operating the points and point carrier, all substantially as described. 17th. The combination, with the series of latch needles, the grooved transfer cam, and means for operating said cam, substantially as described, and the ordinary needle operating mechanism, of a point carrier having forward and backward movements substantially parallel with the needles, and transfer points adapted to move laterally on the point carrier, a main driving shaft mechanism, substantially as described, driven from the main driving shaft for causing the carrier to move forward and backward, mechanism substantially as described, for moving the points laterally also connected with the main driving shaft mechanism, substantially as described, for depressing the points for bringing them into engagement with the needles also connected with the main driving shaft, and the pattern mechanism for controlling the operation of the mechanism for operating the points and point carrier, substantially as described. 18th. The combination, with the points and the point carrier and its guide ways, of the pinions meshing with racks upon the carrier, the lever 33 provided with a rack 72 and with the anti-friction roller 75, and the cam 76, substantially as described. 19th. The points and point block, the point barrier, a sliding rack on the point carrier, and a pawl connected with the point block adapted to engage with said rack, in combination with a push pin, a movable frame carrying said push pin, the slide bar, said frame being adapted to be moved by the slide bars near the end of their movement, and means for returning the frame and the rack, substantially as descried. 20th. The points and point block, the point carrier, the sliding rack 66 on the point carrier, a pawl connected with the point blocks adapted to engage therewith, a second sliding rack 112 with reversing connections substantially as described, between the rack 66 and rack 112, and the pawl 115 on the point block, in combination with a push pin, a movable frame carrying said push pin, the slide bars, said movable frame being adapted to be moved by the slide bars near the end of their movement, and means for returning the frame and the sliding racks, substantially as described. 21st. A slide having a finger 101, and a rack upon its face, in combination with a pawl 102, a sliding bar 103 having a lug adapted to be moved by the spur of a plate 107, spring 199, plate 107, and a cam slide, all substantially as described. 22nd. A sliding bar having a finger 101, and two racks set reversely to each other, in combination with pawl 102 and 116, means substantially as described, for connecting said pawls, the sliding rods 103 provided with a lug and adapted to be moved by the plate 107, spring plate 199, plate 107, and the cam slide bar, all substantially as described. 23rd. In combination with the slide bar carrying the finger 101, and formed with a rack, the pawl, the sliding rod formed with a lug and carrying said pawl, the spring 199, the sliding plate 107 having a spur and held in place by frictional contact, the cam slide bar, the elongated grooved cam, means to move the same, and the screws set in the elongated grooved cam and projecting through the slot to strike the plate 107, all substantially as described. 24th. In a knitting machine, the combination of a series of needles, and mechanism for raising the inactive needles above the plane of the operating needles, with a thread carrier having the delivery end thereof adapted, substantially as described, to pass under the inactive needles, substantially as described. 25th. The combination, with a spindle having a reversible thread guide on its lower end, of a sleeve surrounding the spindle and having an inclined slot therein, a stud set in the spindle and projecting into the inclined slot in the sleeve surrounding the spindle, a stud set in the sleeve, and mechanism substantially as described to operate upon this stud for giving the sleeve vertical movement at the end of the stroke, substantially as described.

No. 26,041. Saw, (*Scie.*)

James E. Emerson, Beaver Falls, Penn., U. S., 18th February, 1887; 5 years.

Claim.—1st. A detachable saw section, reducted in thickness at its rear edge, and provided with elongated slots near its ends, and one or more apertures intermediate of the ends, substantially as described. 2nd. A saw blank or back, provided with teeth or projections on one edge, the teeth being reduced in thickness on opposite sides, and a suitable number of the teeth provided with a locking pin or stud, substantially as described. 3rd. A detachable saw section, in combination with a saw blank or back having teeth or projections on one edge, the saw section being supported laterally by said projections and secured thereto, substantially as described. 4th. A detachable saw section, in combination with a tooth back, the section being supported by the back and having its eads protected by