No. 614,813. Patented Nov. 22, 1898.

F. KEPP & G. MESTA.

GEAR MOLDING MACHINE.

(Application filed Mar. 9, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

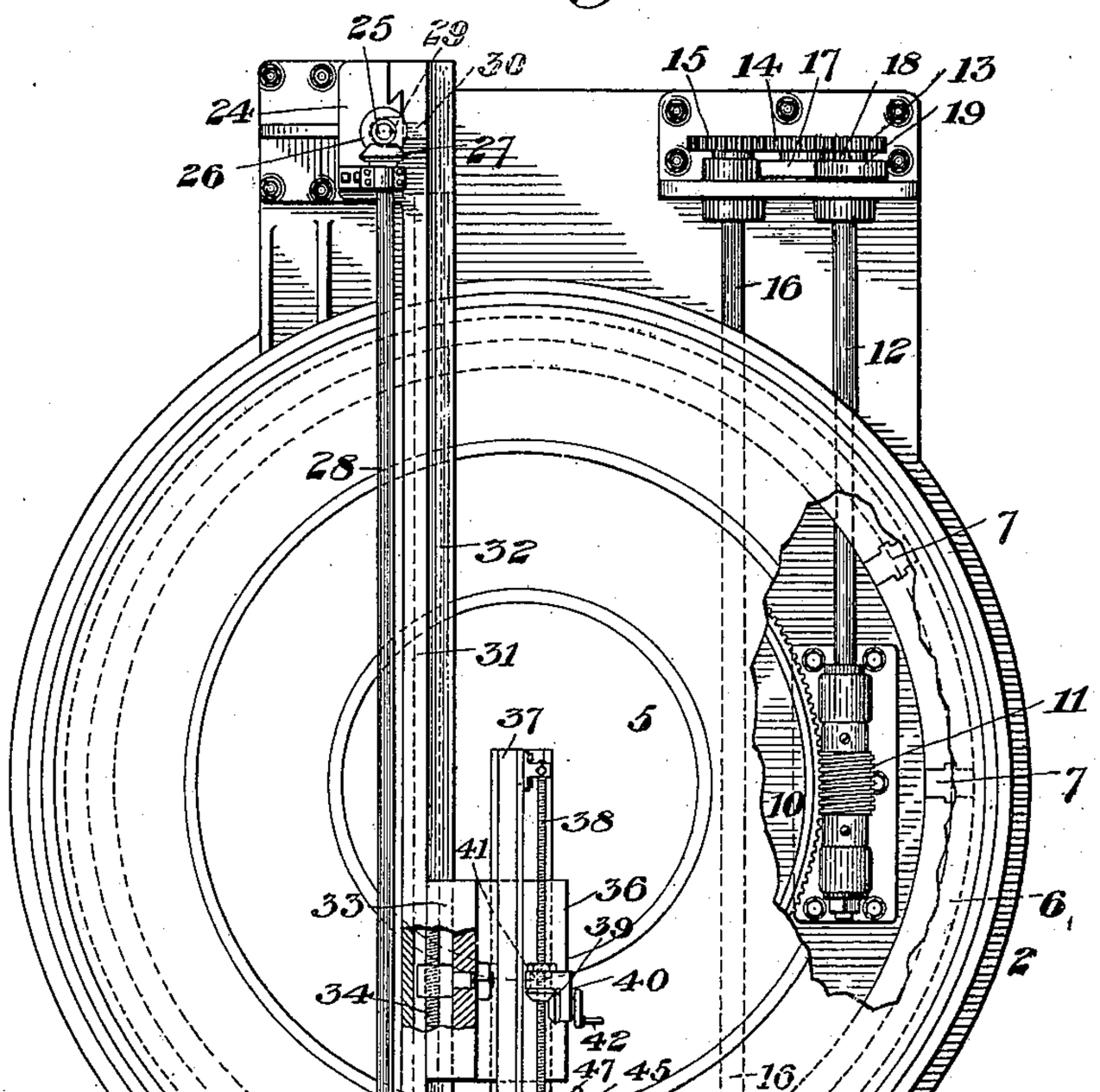

Fig. 6.

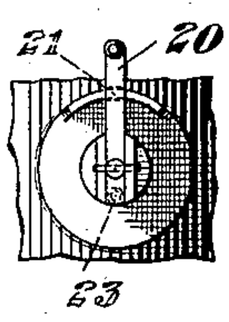

Fig. 2.

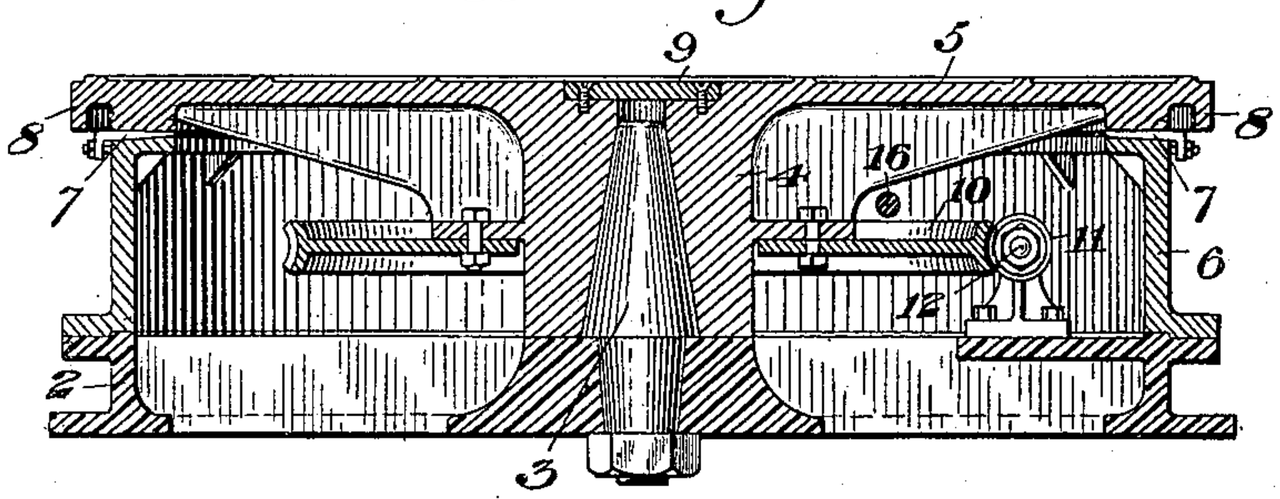

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Fig. 3.

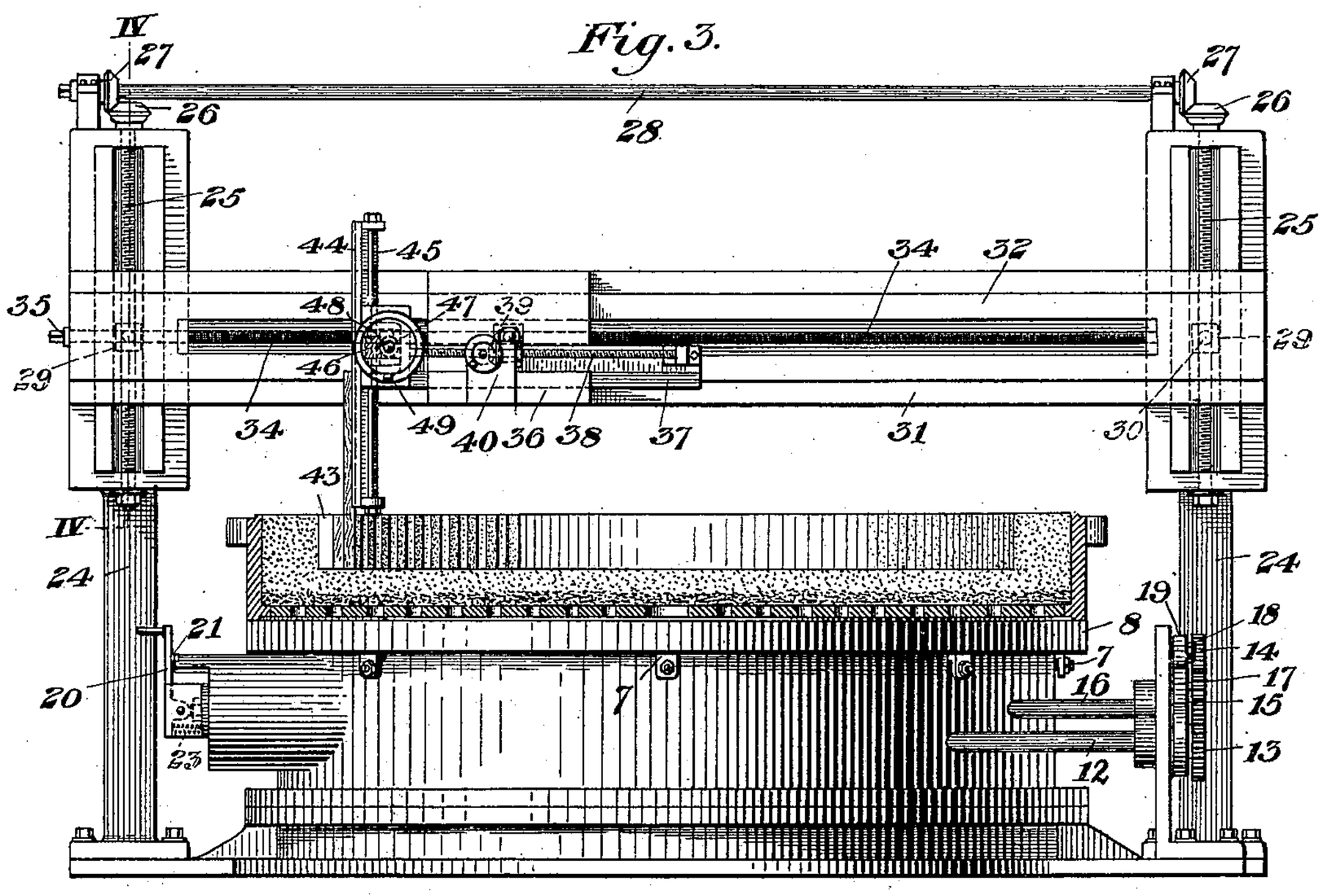


Fig. 4.

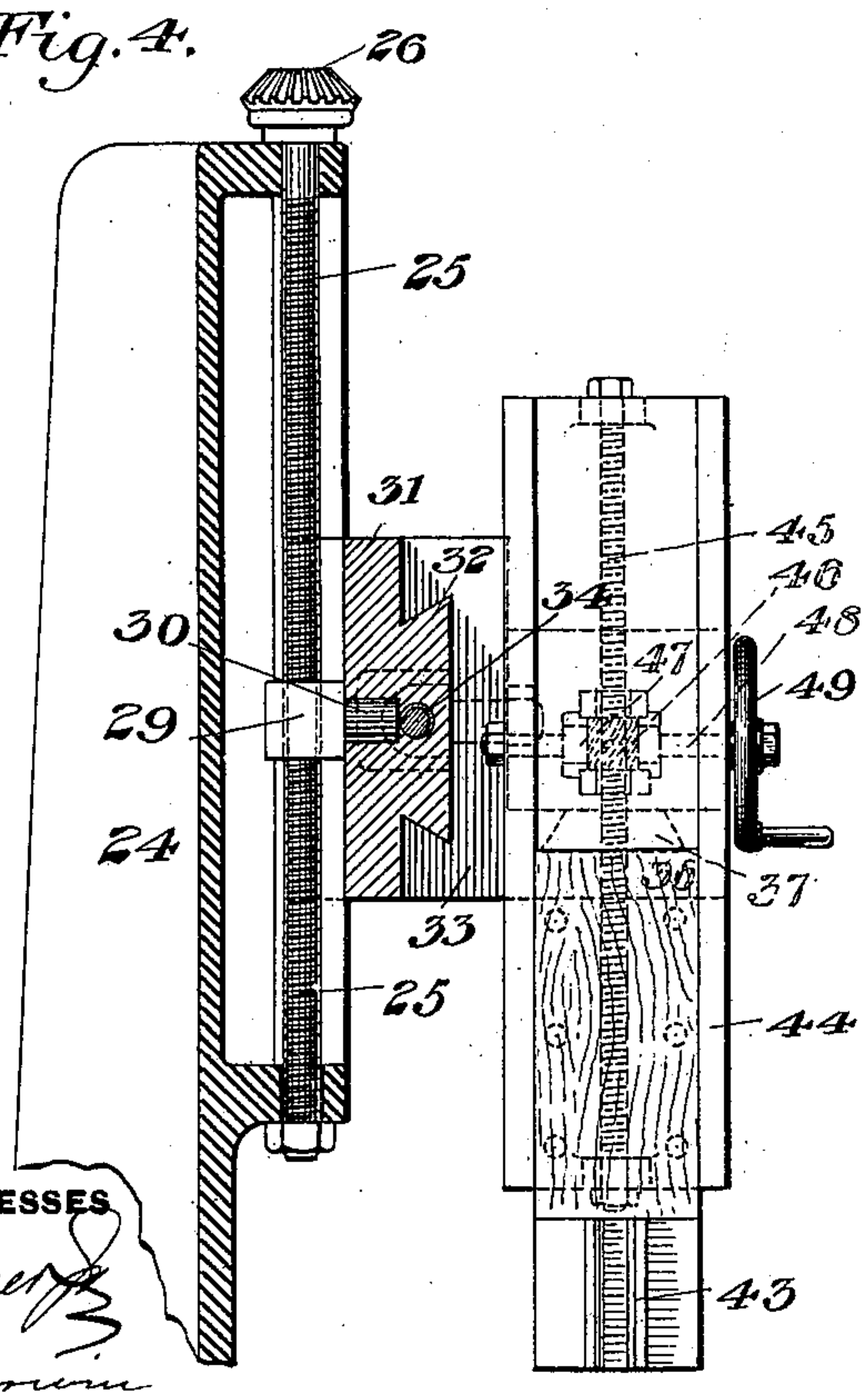
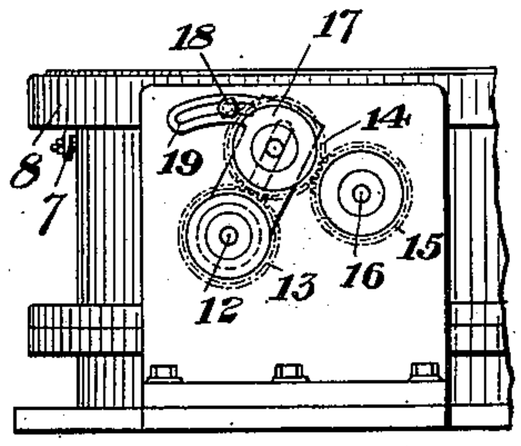


Fig. 5.



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FERDINAND KEPP, OF ALLEGHENY, AND GEORGE MESTA, OF PITTSBURG, PENNSYLVANIA; SAID KEPP ASSIGNOR TO SAID MESTA.

GEAR-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 614,813, dated November 22, 1898.

Application filed March 9, 1898. Serial No. 673,176. (No model.)

To all whom it may concern:

Be it known that we, FERDINAND KEPP, of Allegheny, and GEORGE MESTA, of Pittsburg, in the county of Allegheny, State of Pennsylvania, have invented a new and useful Improvement in Gear-Molding Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view, partly broken away, of a gear-molding machine constructed in accordance with our invention. Fig. 2 is a vertical sectional view of the supporting-table. Fig. 3 is a front elevation, partly in section, showing the mold being formed. Fig. 4 is an enlarged vertical section on the line IV IV of Fig. 3, looking toward the right. Fig. 5 is an end elevation of the connecting gear mechanism between the hand-operated shaft and the shaft which turns the table, and Fig. 6 is a broken detail showing the lever and stop for the hand-operated shaft.

Our invention relates to the class of gear-molding machines and is designed to afford improved means for supporting the pattern-carrying mechanism, so as to make it firm and rigid in all positions of the pattern.

In the drawings, 2 represents a circular bed-plate having centrally secured therein a post or stud-shaft 3, the upwardly-projecting portion of which is made in the form of the frustum of a cone. This conical portion forms a central bearing for the downwardly-projecting hub 4 of a circular table, the rim portion of which bears upon an annulus 6, secured to the base-plate 2. The upper portion of this annulus is provided with liners 7, which are located at diametrically opposite points around its circumference, and which are preferably protected by a depending flange 8 upon the table. The lower end of the hub 4 bears upon the central portion of the base-plate, and as the parts wear in continued service the hub will move downwardly slightly upon the conical bearing and the rim portion of the wheel may be leveled up by means of the liners. The conical bearing also assists in keeping the table centrally located upon its axis of rotation.

9 is a cover-plate which is secured centrally in the table and covers, the hole extending through the hub. The table is rotated by means of a worm-wheel 10, secured to its hub and engaged by a worm 11 upon the shaft 12, which extends beyond the circumference of the table and is provided at its end with a toothed wheel 13, intermeshing with an idler-wheel 14, which engages a toothed wheel 15 upon the hand-shaft 16. The idler 14 is mounted upon a swinging arm 17, which may be secured in any adjusted position by bolts 18 passing through a slotted extension 19 of the arm, thus providing for changing the pitch of the wheel being molded by changing the toothed wheels intermeshing with this idler. The shaft 16 extends beneath the rotary table, and its opposite projecting end is provided with a pivoted handle 20, having a tooth 21, which at each rotation of the shaft will engage with an offset 22 upon a tubular extension of the frame, being forced inwardly against this offset by a spiral spring 23, bearing upon the other end of the hand-lever. It is evident that by pulling the hand-lever outwardly against the action of the spring the shaft may be rotated freely and when the lever is released the offset will serve to stop the table at the desired point, the number of rotations being determined according to the wheel being molded.

24 24 are vertical standards secured to the base at either side of the machine and in which are supported the vertical screw-shafts 25, carrying at their upper ends the beveled wheels 26, intermeshing with bevel-wheels 27 upon a common shaft 28. Upon the shafts 25 are carried the screw-threaded sleeves 29, having studs 30, upon which is carried the horizontal cross-rail 31. This cross-rail has vertical dovetailed connections with the standards at each end, as indicated in Fig. 1, which guide it in its movements and hold it in position. The cross-rail is provided with a longitudinal dovetailed guide or rib 32, upon which is supported a carriage 33, which is moved longitudinally of the cross-rail by the screw-threaded shaft 34, passing through a screw-threaded hole in a sleeve secured to the carriage, this sleeve moving within a lon-

gitudinal groove in the cross-rail, as shown. The shaft 34 is provided with a squared extremity 35, by which it may be rotated to adjust the carriage longitudinally. The carriage is provided with a projecting plate 36, which serves as a guide and support for a slide 37, having a dovetailed engagement therewith, and this slide is provided with a screw-threaded shaft 38, actuated by bevel-gear 39, mounted upon the bracket 40, secured to the plate 36 of the carriage. The bracket is provided with an inner-screw-threaded sleeve 41, carrying the bevel-wheel at one end, and the shaft 38 extends through this sleeve, so that when the bevel-gear is actuated by the hand-wheel 42 the slide will be moved longitudinally of the carriage to obtain a fine adjustment of the pattern. This pattern 43 is bolted to a vertical slide 44, which has a sliding dovetailed engagement with the end portion of the horizontal slide 37. The slide 44 is provided with a screw 45, which extends through an inner-screw-threaded collar 46, which is externally provided with spiral teeth engaging a similar screw 47 upon a horizontal shaft 48, carrying at its end a hand-wheel 49. It is evident that when the hand-wheel 49 is rotated the pattern will be moved vertically to or from its proper position in the mold. The position of the cross-rail and the carriage, with its slides, is such that as the carriage is moved along the cross-rail the pattern will move across the center of the table along a diameter, so that it may be brought to the proper position in the mold for molding different diameters of gear-wheels.

The operation of the machine is substantially the same as in prior machines of this character, the mold being centrally placed upon the table, which is moved one tooth or more at a time, the molder packing the sand into the cavity between the two half-teeth upon the pattern at each movement of the table.

The advantages of our construction will be apparent to those skilled in the art. The use of the cross-rail extending across the table is of great advantage, since a much more rigid support is thus obtained than in the case of the radial arm heretofore employed for supporting the pattern-carrier, the support being as firm and rigid in molding small gear-wheels as for larger sizes of wheels. A fine and a coarse horizontal adjustment are provided for the pattern-carrier, which moves along a diameter of the table.

Many variations in the form and arrangement of the cross-rail, the leveling devices, and the other parts may be made within the scope of our claims without departing from our invention, since

We claim—

1. In a gear-molding machine, a rotary table, a cross-rail extending across the table and supported at opposite sides of the same, means for moving the cross-rail vertically, and pattern-carrying mechanism supported upon and movable along the cross-rail; substantially as described.

2. In a gear-molding machine, a horizontal rotary table, a cross-rail extending across the table and supported at opposite sides of the same, means for moving the cross-rail vertically, a carriage mounted upon and movable along the cross-rail, and a vertically-movable pattern-carrier mounted upon the carriage; substantially as described.

3. In a gear-molding machine, a rotatory table, a cross-rail extending across the table and supported at opposite sides of the same, means for moving the cross-rail vertically, a carriage mounted upon and movable along the cross-rail, a horizontally-movable slide mounted upon the carriage, and a vertically-movable pattern-carrier mounted upon the slide; substantially as described.

In testimony whereof we have hereunto set our hands.

FERDINAND KEPP.
GEORGE MESTA.

Witnesses:
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G. I. HOLDSHIP.