

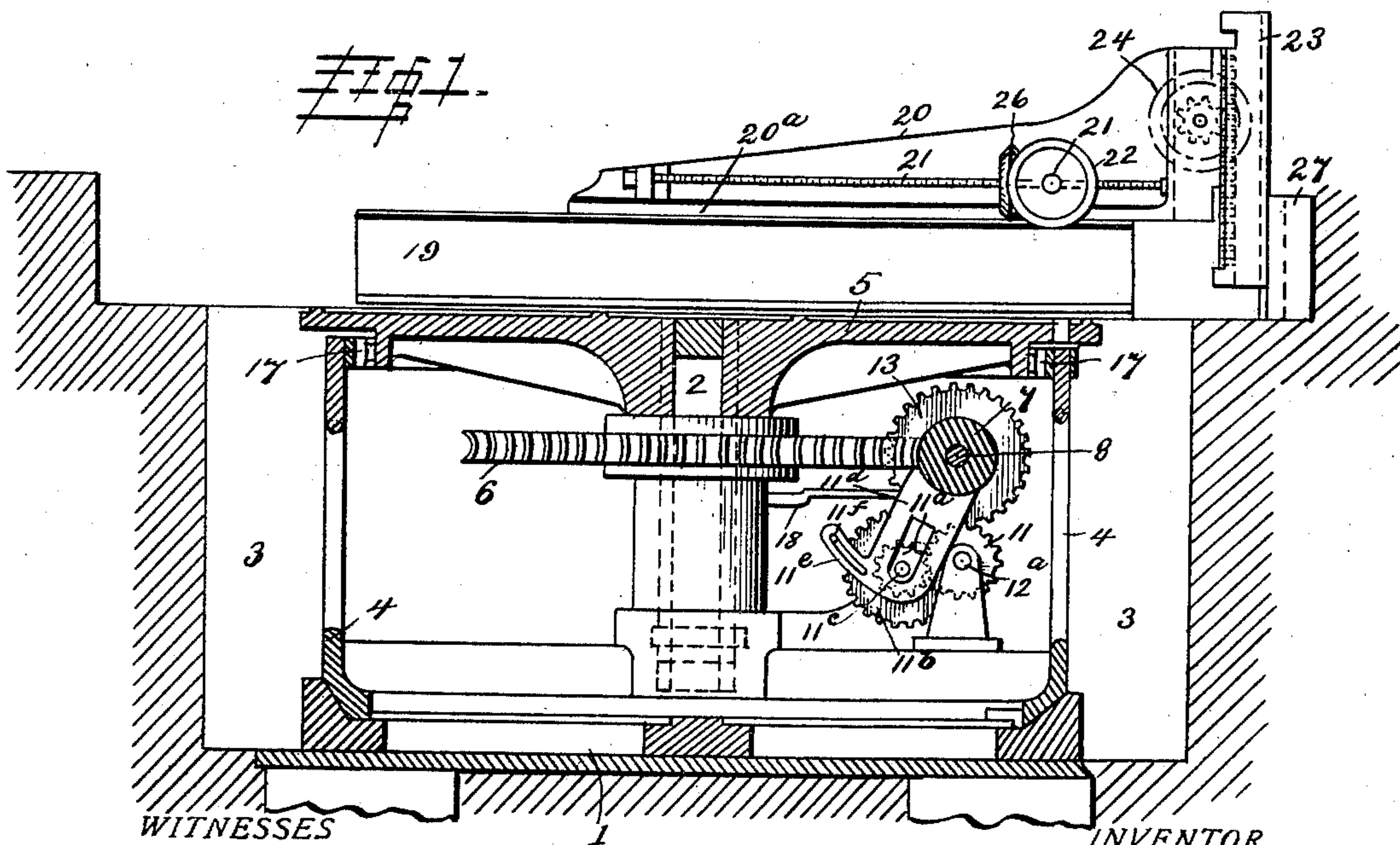
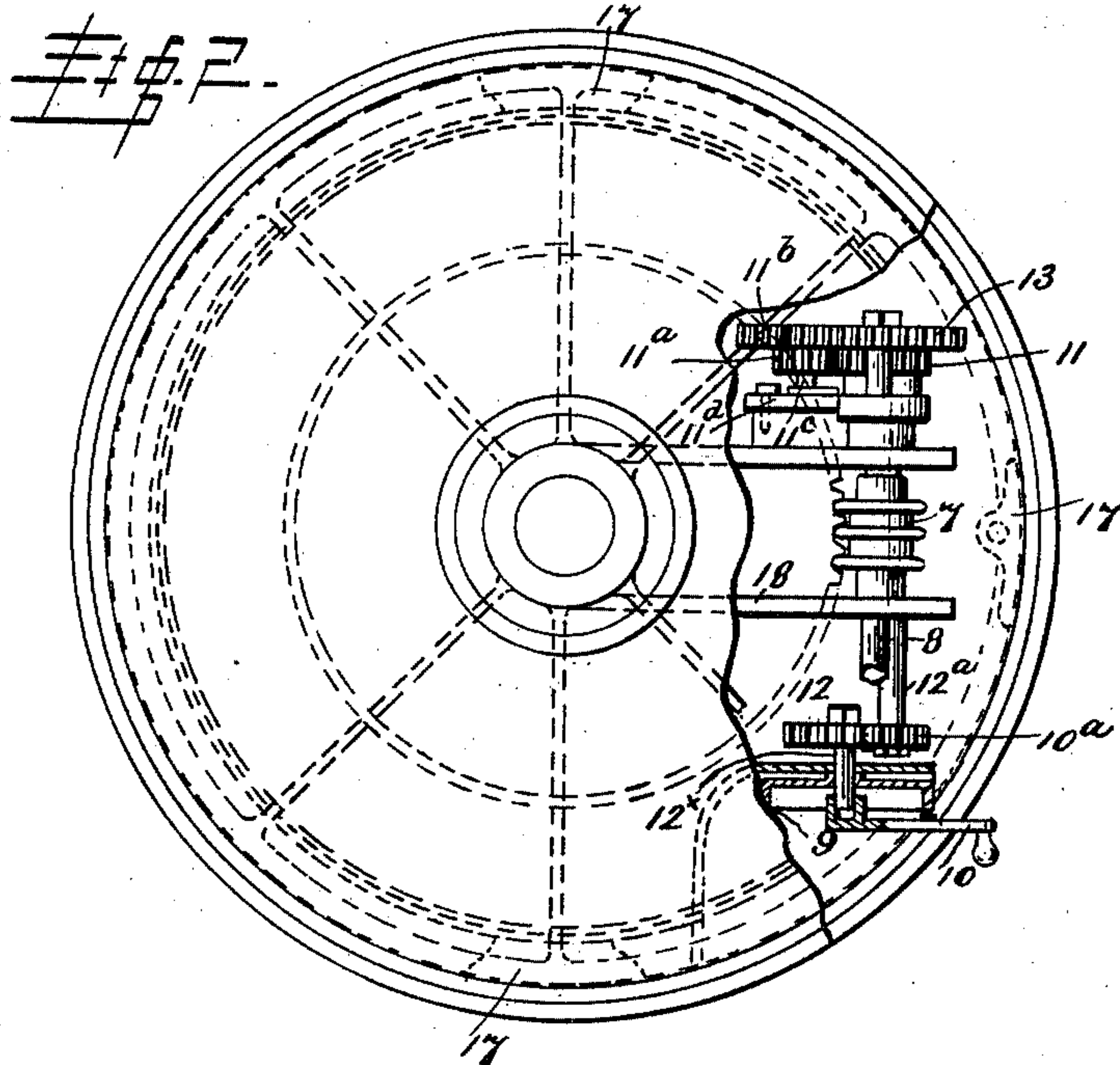
(No Model.)

2 Sheets—Sheet 1.

F. KEPP.
GEAR MOLDING MACHINE.

No. 592,566.

Patented Oct. 26, 1897.



WITNESSES
Wm. H. Foster
W. E. Bowen

INVENTOR
Ferdinand Kepp
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Attorney.

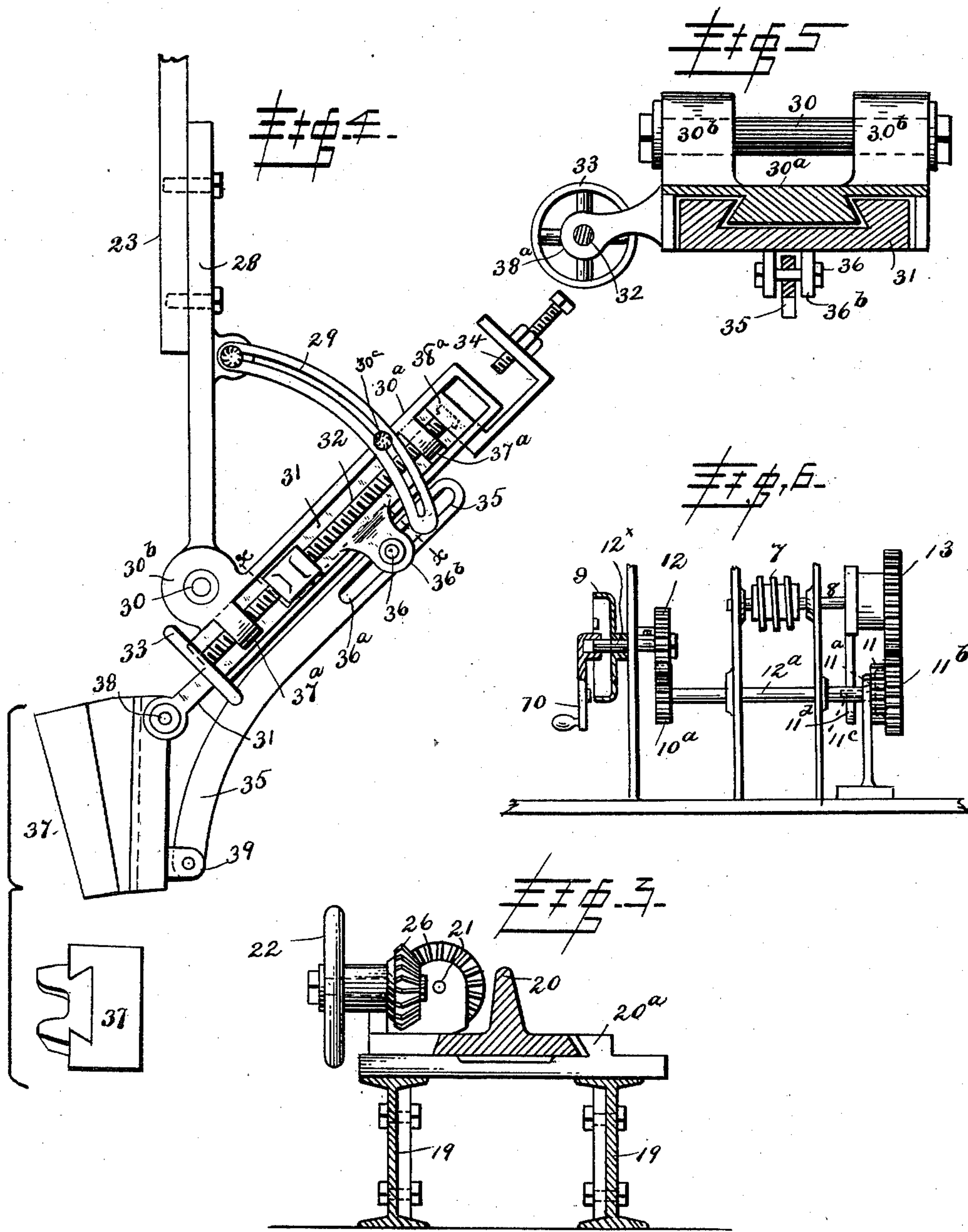
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UNITED STATES PATENT OFFICE.

FERDINAND KEPP, OF ALLEGHENY, PENNSYLVANIA.

GEAR-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 592,566, dated October 26, 1897.

Application filed November 1, 1894. Serial No. 527,615. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND KEPP, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gear-Molding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved gear-molding machine; and it consists in certain details of construction and combination of parts, substantially as hereinafter more fully set forth, and specifically pointed out in the claim.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of my invention. Fig. 2 is a plan thereof. Fig. 3 is an enlarged end sectional elevation of the horizontal slide and its supporting-beams. Fig. 4 is a side elevation of an attachment for the invention whereby bevel-gearing may be molded. Fig. 5 is a sectional view of the same, taken on the line X X. Fig. 6 is a detailed side view more especially of the revolving-table-operating mechanism or gearing.

To construct a gear-molding machine in accordance with my invention, I provide a base-plate 1, having a vertical shaft 2 arranged at the center, and arrange the same in a pit 3, excavated at a suitable point in the foundry-floor. Arranged upon the top of this base-plate 1 is an annular frame 4, upon which is mounted a revolving table 5. This table is operated by means of a large worm-wheel 6, meshing with a worm 7, mounted upon a shaft 8. The shaft 8 is operated through a lever 10, fitted to the shaft 12^x and centered with relation to and turning in front of an index-plate 9, of the ordinary construction, secured to the frame 4, a gear-wheel 12, carried by shaft 12^x and meshing with a pinion 10^a, carried by a shaft 12^a, suitably supported in position. Upon the shaft 12^a is also carried a second pinion 11, geared with a pinion 11^a, fixed in common with a second larger pinion 11^b on a shaft 11^c, the pinion 11^b gearing with a still larger pinion 13, se-

cured upon the worm-shaft 8. The shaft 11^c is hung in slotted hangers 11^d, having slotted-arm and adjusting-screw connection 11^e 55 11^f with the casing of the worm-wheel shaft to provide for the adjustment of various-sized pinions 11 11^a, as may be desired to vary the rotation of the worm-shaft with its worm. Arranged beneath the table 5 is a series of brakes 17, as described in my Patent No. 432,243, to take up the lost motion and retard the movement of the table. Placed on the top of the table 5 are two I-beams 19, arranged parallel and connected by suitable 65 cross-pieces to securely attach the two together. Mounted upon the top of these beams is a frame 20^a, having a slide 20 operating in the direction of the length of said frame by means of a hand-wheel 22, actuating bevel-wheels 26, mounted in bearings on the frame 20^a, one of which wheels 26 is internally threaded to engage with a threaded shaft 21, one end of which engages with a nut mounted upon the frame 20^a, and the other end has a 75 swivel connected to the head of the slide 20. The bevel wheel or pinion 26, connected to the shaft 21, has no motion of translation, but is free to revolve in its bearings in a manner which, when the hand-wheel 22 is re- 80 volved, will move the slide in the direction of the length of the I-beams 19. Arranged in a vertical position in the head of the slide 20 is another slide 23, operated by means of a hand-wheel 24, whose shaft is geared to a 85 rack on said slide 23. By means of this hand-wheel 24 the slide 23 may be elevated and lowered. Attached to this slide 23 is the pattern, which consists of a piece of wood 27, having a groove corresponding to the form or 90 contour of a single tooth of the wheel it is desired to mold, said pattern 27 being of a depth equal to the face of the wheel.

In operation the base-plate 1 is placed in the bottom of the pit 3 and the sand formed 95 in an annular wall around the pit. The entire molding-machine is now lifted by suitable means and arranged on the bed-plate, as shown in Fig. 1. The pattern 27 is now moved vertically and then horizontally, and 100 the sand is rammed to form one tooth of the wheel. At the conclusion of this operation the pattern is slightly rapped to loosen the same and the hand-wheel 24 actuated so as

to elevate the pattern above the level of the mold. The index-plate crank 10 is given a predetermined number of revolutions, revolving the table 5 and pattern 27 the space of one tooth of the wheel, after which the pattern is again lowered to form another tooth in the manner before described. After the continued repetition of the aforesaid operation until all the teeth of the wheel have been formed the machine is lifted from the pit and the mold for the rim of the wheel, the hub, and the arms arranged in position.

This machine is especially adapted for molding large gear-wheels from ten to twenty feet in diameter, and by operating the hand-wheel 22 the pattern 27 may be moved radially on the machine to get the proper radius. The gears 11 11^a are interchangeable and may be removed and replaced by others to give the table the correct movement to correspond with the pitch or distance from center to center of the teeth of the gear-wheel it is desired to cast.

To mold a bevel-wheel, I attach to the vertical sliding head 23 a device, such as shown in Figs. 4 and 5, consisting of a plate 28, to which is pivoted, by means of a pin 30, a frame 30^a, supported in an inclined position by a slotted link 29 and set-screw 30^c, said pin passing through ears 30^b on said frame. Placed in this frame is a slide 31, operated by a hand-wheel 33 and threaded shaft 32, engaging with nuts 37^a on said frame and swiveled to slide 31 at 38^a. Beneath this slide 31 is a bar 35, adjustably connected thereto by a bolt 36, passed through a slot 36^a in said bar and through apertured lugs 36^b of said slide 31,

the bar 35 being curved at its lower end and adapted for movement in the direction of its length by sliding on pin 36. Pivoted to this bar 35 at 39 and to the slide 31 at 38 is the pattern which, by means of the hand-wheel 33, may be withdrawn from the sand-mold of the tooth sidewise until free therefrom. By means of a threaded pin 34 at the top of the slide 31 the forward movement of the pattern is limited by the pin striking the frame 30^a, bringing the teeth formed in the sand evenly about the circle. The frame 30^a, together with the slide 31 and pattern 37, may be given any desired inclination by means of the slotted link 29.

I claim and desire to secure by Letters Patent—

In combination with a machine of the character described for molding bevel-wheels, the adjustable inclined pivoted frame, the slide arranged in said frame and having an adjustable stop to limit the forward movement of said slide, a tooth-pattern pivoted to the forward end of said slide, means for actuating said slide, the bar pivoted to said pattern and having an adjustable connection with said slide and the pivoted link having a movable connection with said frame to permit the adjustment of the latter, as set forth.

In testimony that I claim the foregoing I hereunto affix my signature this 1st day of October, A. D. 1894.

FERDINAND KEPP. [L. S.]

In presence of—

ALBERT J. WALKER,
M. E. HARRISON.