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Patented Oct. 25, 1898.

L. H. DOLAN.

MACHINE FOR SHAPING BOTTOMS OF LAMP CHIMNEYS.

(Application filed Apr. 23, 1897.)

(No Model.)

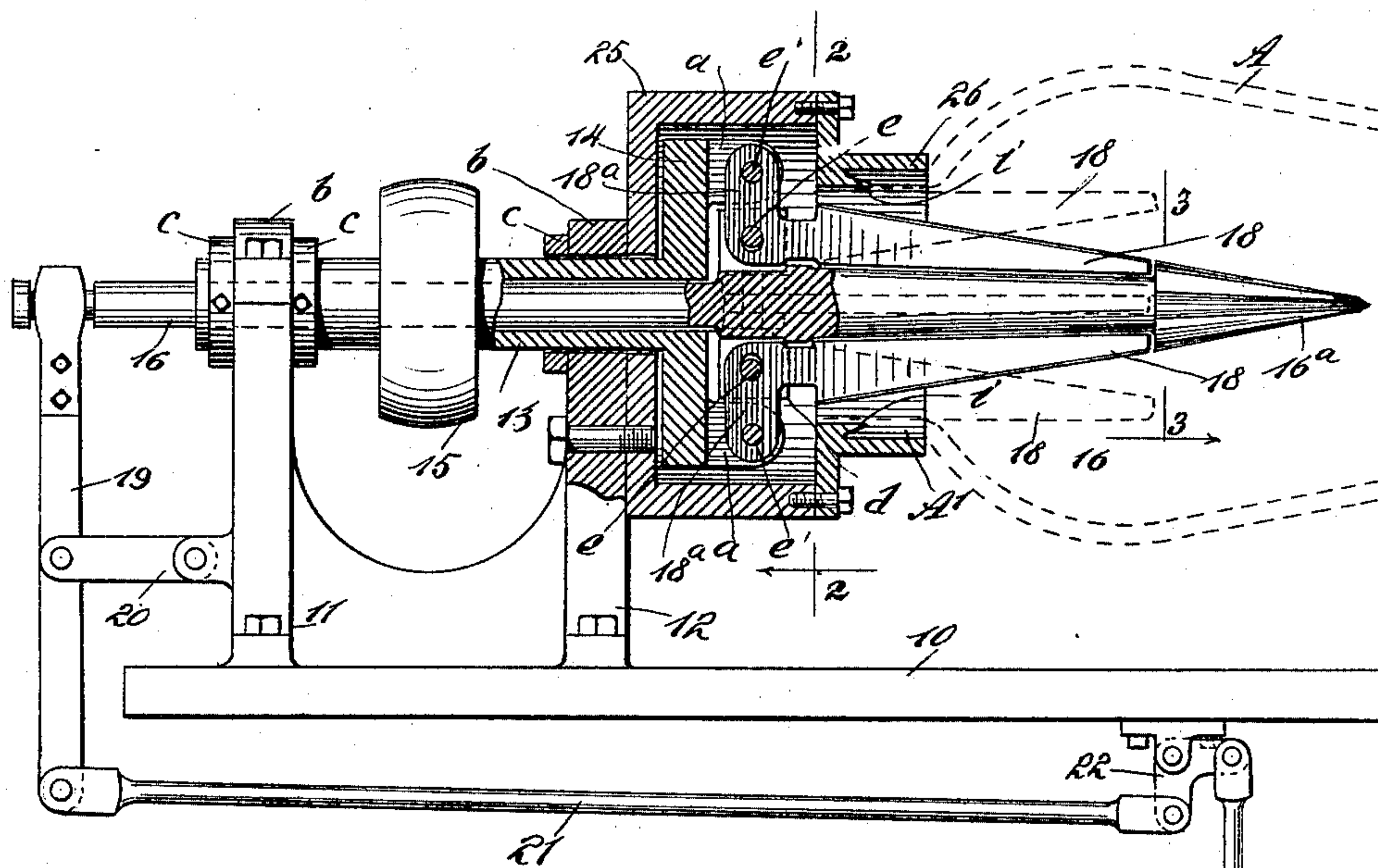


Fig. 1

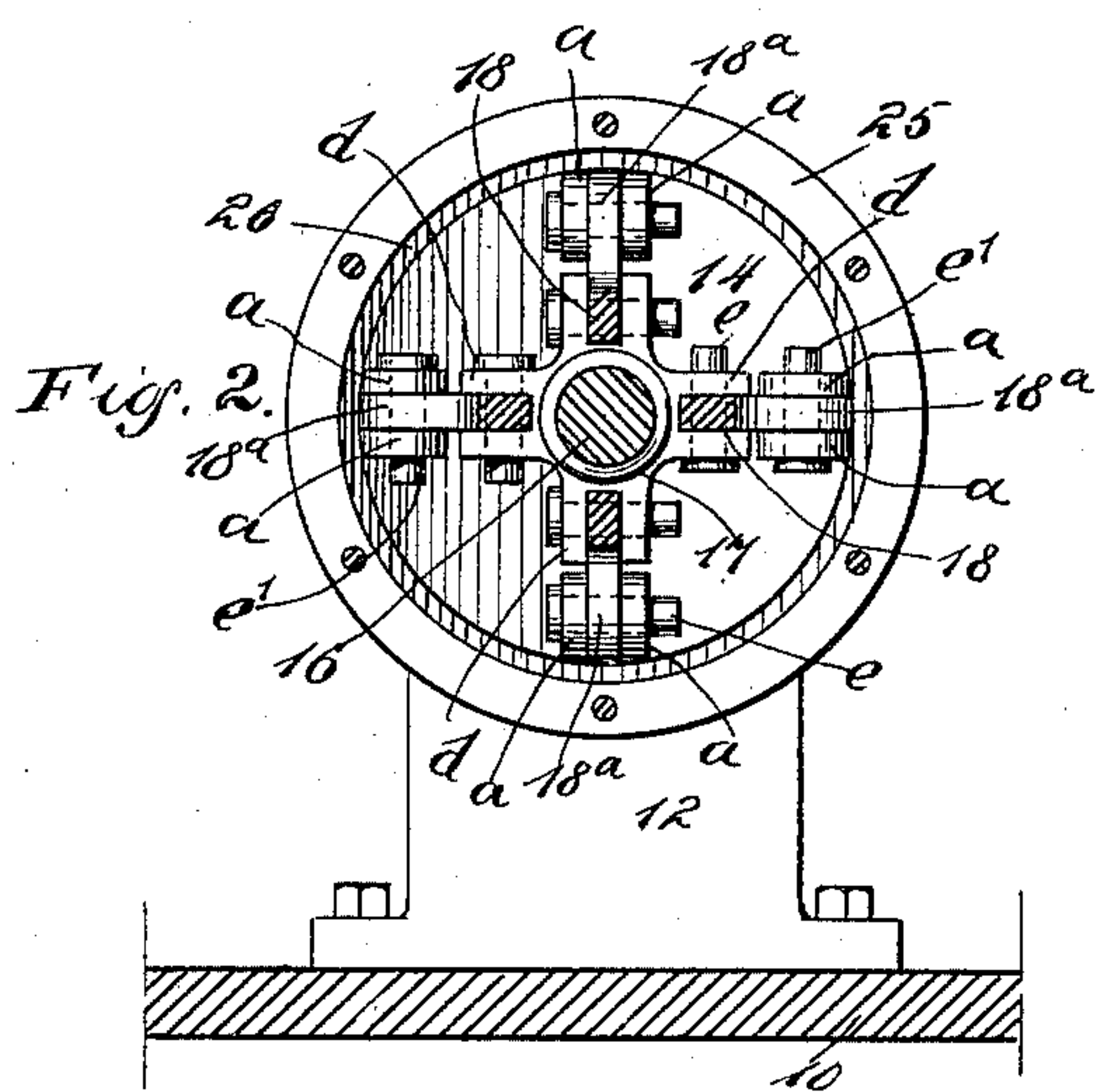


Fig. 2

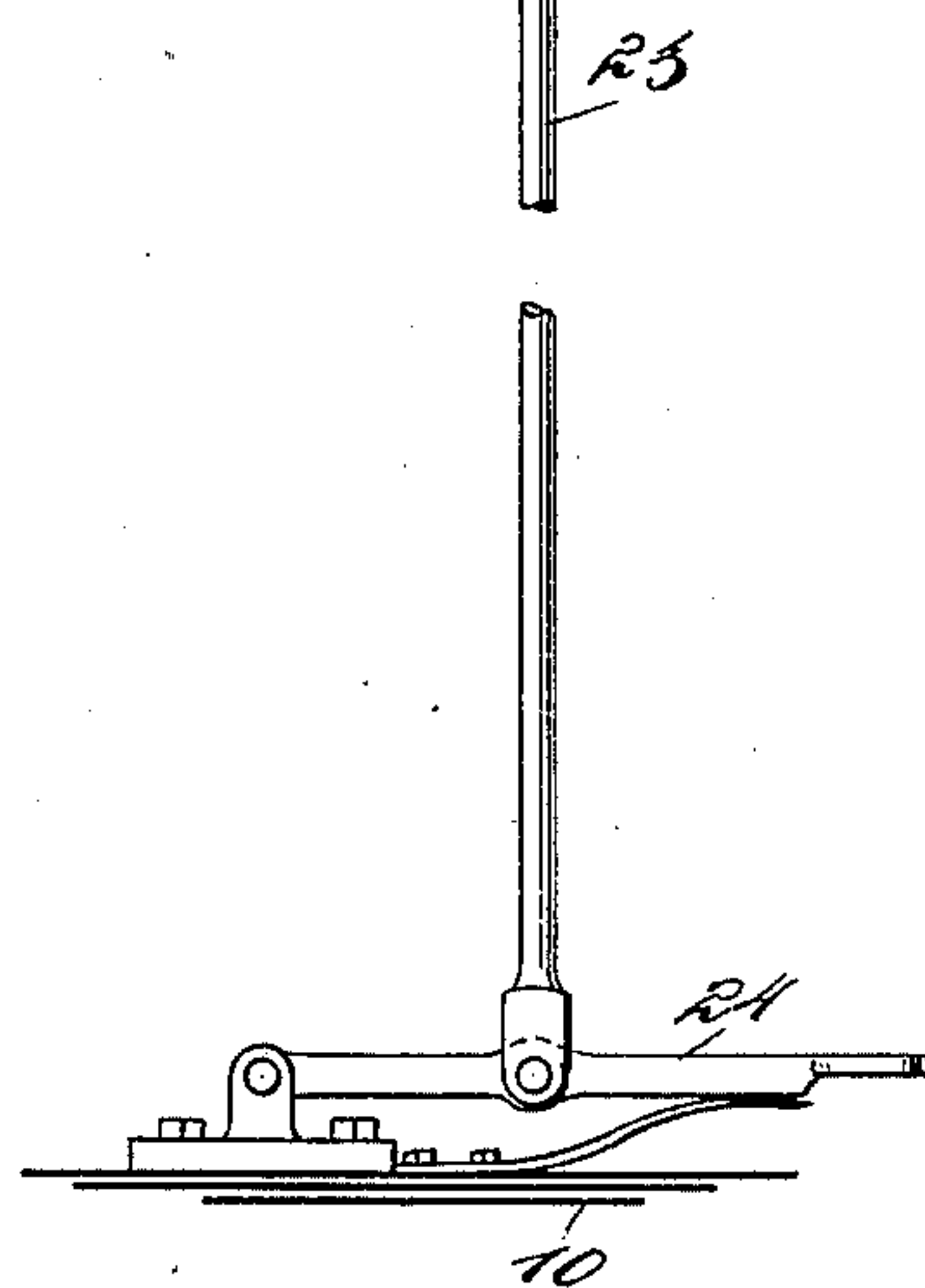


Fig. 3

WITNESSES:
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UNITED STATES PATENT OFFICE.

LAWRENCE H. DOLAN, OF ALEXANDRIA, INDIANA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO THE LIPPINCOTT GLASS COMPANY, OF CINCINNATI, OHIO.

MACHINE FOR SHAPING BOTTOMS OF LAMP-CHIMNEYS.

SPECIFICATION forming part of Letters Patent No. 612,835, dated October 25, 1898.

Application filed April 23, 1897. Serial No. 633,463. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE H. DOLAN, of Alexandria, in the county of Madison and State of Indiana, have invented a new and Improved Machine for Shaping the Bottoms of Lamp-Chimneys, of which the following is a full, clear, and exact description.

This invention relates to a novel machine for aiding the manufacture of blown lamp-chimneys, and has for its object to provide a simple and convenient device for the indicated purpose which will enable the operator to give a number of lamp-chimneys exactly the same shape and dimensions in their base portions as they are being blown from molten glass.

A further object is to provide the lamp-chimney machine with means for notching the lower edge of each lamp-chimney as it is produced, so as to afford a desired number of air-inlets at the point designated.

The invention essentially consists in the novel construction and combination of parts, as is hereinafter described, and defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a partly-sectional side elevation of the machine, showing in full and dotted lines different adjustments of the working parts. Fig. 2 is a transverse sectional view essentially on the line 2 2 in Fig. 1, and Fig. 3 is a transverse sectional view of a detail substantially on the line 3 3 in Fig. 1.

On a frame comprising a base 10 and two transversely-disposed uprights 11 12 a hollow spindle 13 is rotatably supported.

On the forward end of the spindle 13 the disk-like head-plate 14 is formed or secured, having a plurality of spaced ears *a* forwardly projected therefrom, four pairs of said ears being shown in Fig. 2; but this number may be decreased, if desired.

The spindle 13 is journaled in boxes *b* on the upper ends of the standards 11 12 and is held from longitudinal displacement by the collars *c*.

On the spindle 13 a pulley 15 is mounted and secured between the standards 11 12.

Within the axial bore of the spindle 13 an arbor 16 is loosely inserted and projects at each end from the spindle a sufficient distance to adapt it for efficient service.

At the forward extremity of the arbor 16 a fulcrum-head 17 is formed or secured, whereon a plurality of spaced ears *d* are produced, equal in number to the pairs of spaced ears *a* on the head-plate 14.

A number of similarly-shaped spreading fingers 18 are provided, and said fingers are each substantially L-shaped, having a short member 18^a laterally extended from the main portion of the finger, as clearly shown in Figs. 1 and 2.

The pairs of ears *d* are transversely perforated, and an alined perforation is formed in each L-shaped finger 18 at the angle where the limb 18^a projects therefrom.

Pins or bolts *e* are inserted in the alined perforations of the ears *d* and fingers 18, whereby the L-shaped fingers are loosely secured on the fulcrum-head 17.

The ears *a*, between which the limbs 18^a are introduced, have perforations in them which register with like perforations in the limbs 18^a near the ends of the latter, so that pins or bolts *e'* may be introduced for effecting a jointed connection between the ears *a* and outer ends of the limbs 18^a, as is clearly shown in Figs. 1 and 2.

The arbor 16 is forwardly extended from the fulcrum-head 17, passing between the inner edges of the fingers 18 and projecting beyond the latter a sufficient distance. It will be seen that the longitudinal movement of the arbor 16 for a limited distance will rock the fingers 18 from and toward the extension of the arbor 16, as indicated by dotted lines in Fig. 1.

The fingers 18 have their outer edges tapered from near the limbs 18^a to the outer ends of said fingers.

The portion 16^a of the arbor 16 that projects in advance of the fingers 18 is preferably given a taper corresponding thereto and is longitudinally grooved to produce spaced

radial ribs, which in service become prolongations of the fingers, so that when the latter are in a closed condition the part 16^a forms a stile or piercing-point, the use of which will be presently explained.

At the rear end of the arbor 16 an upright arm 19 is loosely secured by its upper end, said arm being pivoted between its ends to the outer end of the link 20, loosely secured at the opposite end upon a projection from the standard 11, which is near the rear end of the spindle 13.

For effective service the lamp-chimney machine is sustained upon a suitable support, (not shown,) so that an operator may work at it while standing or seated sufficiently high. As it is essential that the arbor 16 be adapted for reciprocation by a foot of the operator, so as to leave his hands free, the following-described construction of parts is provided: A connecting-rod 21 has its rear end pivoted upon the lower end of the vibratile arm 19, and thence forwardly extends for a suitable distance, its front end being jointed upon the depending member of a bell-crank 22, held to rock on the base 10. A treadle-lever 23 is pivoted at its upper end to the horizontal member of the bell-crank 22, and the lower end of the lever 23 is jointed to a treadle 24, adapted to rock from a horizontal plane and spring-pressed upwardly, whereby the fingers 18 are normally closed toward the arbor 16. On the forward standard 12 a hollow and preferably cylindrical box 25 is secured by its rear end wall, as is clearly indicated in Fig. 1. The box or case 25 incloses the working parts located on the head-plate 14 and fulcrum-head 17, except the forward portions of the fingers 18.

On the front edge of the cylindrical box 25 a cylindrical forming-shell 26 is secured, which may have a less diameter than the box that supports it.

The diameter of the forming-shell 26 is interiorly equal to the exterior diameter of a chimney-base that is to be formed therein, and for affording a suitable thickness to said base-wall of the chimney a sufficient space is allowed between the outer edges of the fingers 18 and the interior surface of the shell, when the fingers are spread apart, so as to dispose their outer edges parallel with and spaced from the adjacent surface of the shell, as is represented by dotted lines in Fig. 1.

At the bottom of the forming-shell 26 a plurality of wedge-like projecting blades *i* may be formed thereon, which are designed to produce correspondingly-shaped notches in the lower edge of the base of the chimney as the latter is worked into shape.

The operation is as follows: The operator takes molten glass on the end of the tube used to blow the chimney into form and by air-pressure from his lungs produces a bulb, which by dextrous manipulation while very hot is made to approach the elongated form of the chimney he desires to make. At this

stage the workman presses the bulb of the glass at a point directly opposite the open end of the tube upon the sharp point of the piercing-head 16^a, the fingers 18 being in closed condition. The spindle 13 is at this time being rotated at a proper speed by a belt that connects the pulley 15 with a source of motion and power which correspondingly revolves the arbor 16. When the hot bulb has been forced upon the head 16^a, an aperture of sufficient size is produced therein to freely admit the closed ends of the fingers 18 and a continuation of pressure on the bulb will introduce the edge of the same within the forming-shell 26. An engagement of the hot wall of the bulb with the shell 26 serves to compress the glass into cylindrical form, which shape is completed by a depression of the treadle 24 at a proper time, so as to spread the revolving fingers 18 and cause their outer edges to impinge upon the inner surface of the bulb, thereby producing a base A' upon the chimney A, as shown by dotted lines in Fig. 1. If the chimney is of a style in which draft-notches are to be formed in the lower edge of its base, then the notch-forming blades *i* are employed and will obviously indent the soft lower edge of the base while the chimney is being formed. As the forming-shell 26 is removable from the cylindrical case or box 25, different sizes of such forming-shells may be provided and be exchanged as desired.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a supported rotatable hollow spindle, and means for rotating said spindle, of an arbor slidable in the spindle, a stationary forming-shell, fingers on the arbor, adapted for divergence concentrically within the forming-shell, and means for spreading the fingers, substantially as described.

2. The combination with a base, standards thereon, a hollow rotatable spindle supported by the standards, a concentric box or case, and a removable forming-shell on the front of said case, of a slidable arbor within the spindle and rotatable therewith, spaced fingers pivoted to the spindle and arbor, and adapted for divergence when the arbor is slid forwardly, and means for sliding said arbor, substantially as described.

3. The combination with a supported rotatable hollow spindle, and means for rotating the spindle, of an arbor slidable in the spindle rotatable therewith, an exterior forming-shell, a piercing-head on the forwardly-extended body of the arbor, fingers on the arbor loosely engaging the spindle, and adapted for divergence when the arbor is slid forwardly, and a treadle device adapted to slide the arbor, substantially as described.

4. The combination with a suitable support, a hollow rotatable spindle and means to rotate said spindle, of an arbor rotatable with

and slidable in the spindle, a forming device for the base of a lamp-chimney, controlled by the spindle and arbor, and notching devices adapted to indent the edge of the chimney-base, substantially as described.

5 5. A chimney-base-forming machine having expansible rotary spreader devices with free ends for acting interiorly upon the glass of the bulb forming the base, with means for
10 forming indentations in the edge of such base and for supporting and operating such spreader devices, said devices being pivoted adjacent to the means for forming the indentations, and the free ends of the spreaders
15 projecting forwardly, that is toward the front of the forming-machine, substantially as described.

6. In a chimney-base-forming machine, the combination of a frame, a rotating spindle, a
20 reciprocal arbor carried by and rotating with such spindle, a number of radially-movable spreader-fingers pivotally connected with

such arbor, and means for reciprocating such arbor, the spreader-fingers being pivoted at their inner ends adjacent to the reciprocal
25 spindle and the free ends of the fingers projecting forwardly, that is, toward the front of the machine, for the purpose set forth.

7. In a chimney-base-forming machine, the combination of a frame, an expansible rotary
30 spreader formed of a number of radially-movable fingers having free ends and normally converging at their free ends to a central point when contracted, one or more projecting blades extending from such frame means
35 for carrying the fingers, means for retaining them in their normal position, and means for rotating the spreader for the purpose set forth.

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Witnesses:

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