

(No Model.)

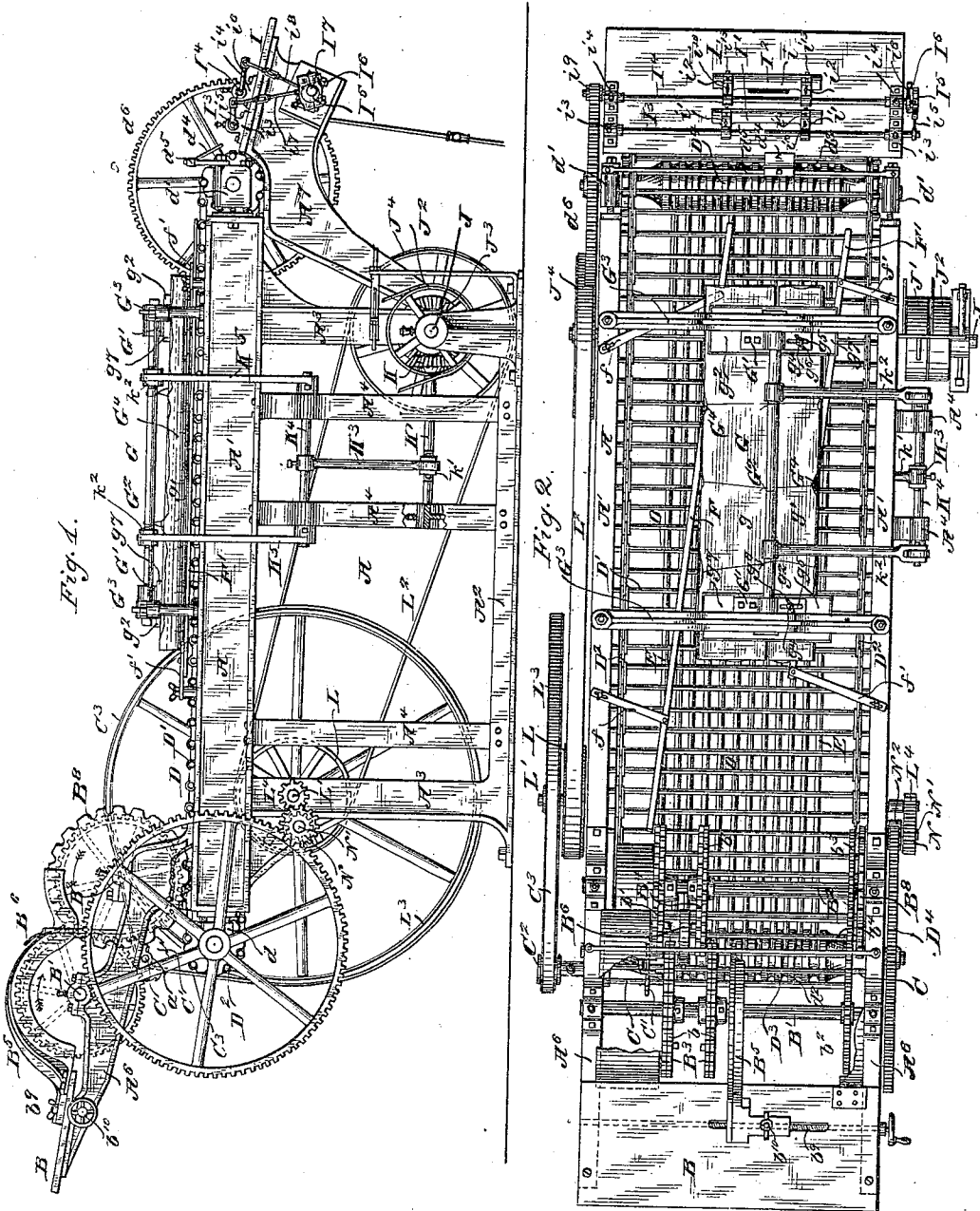
2 Sheets—Sheet 1.

F. F. SCHMITT.

CANDLE FINISHING MACHINE.

No. 309,885.

Patented Dec. 30, 1884.



Witnesses:
C. C. Poole
Jno. W. Joekett.

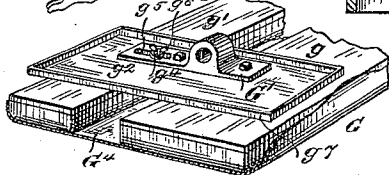
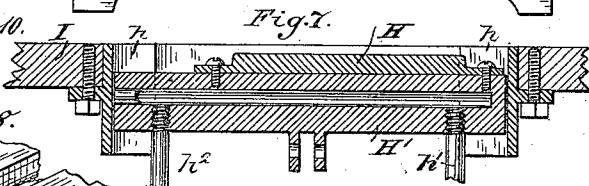
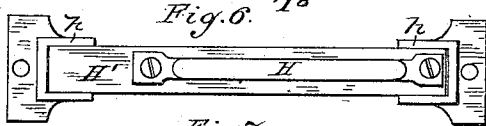
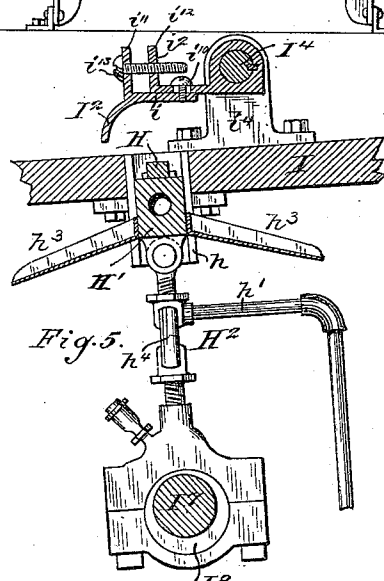
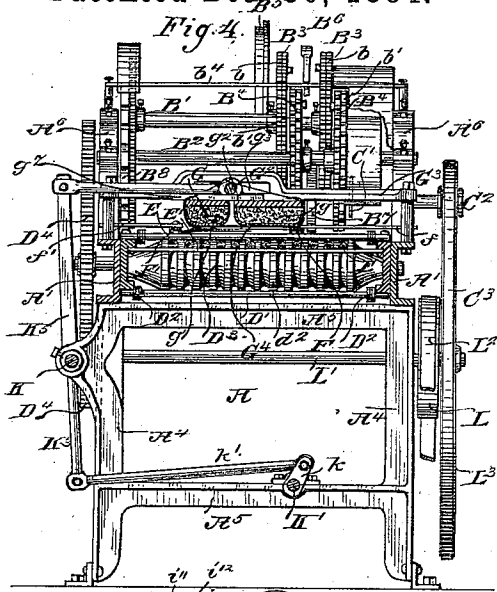
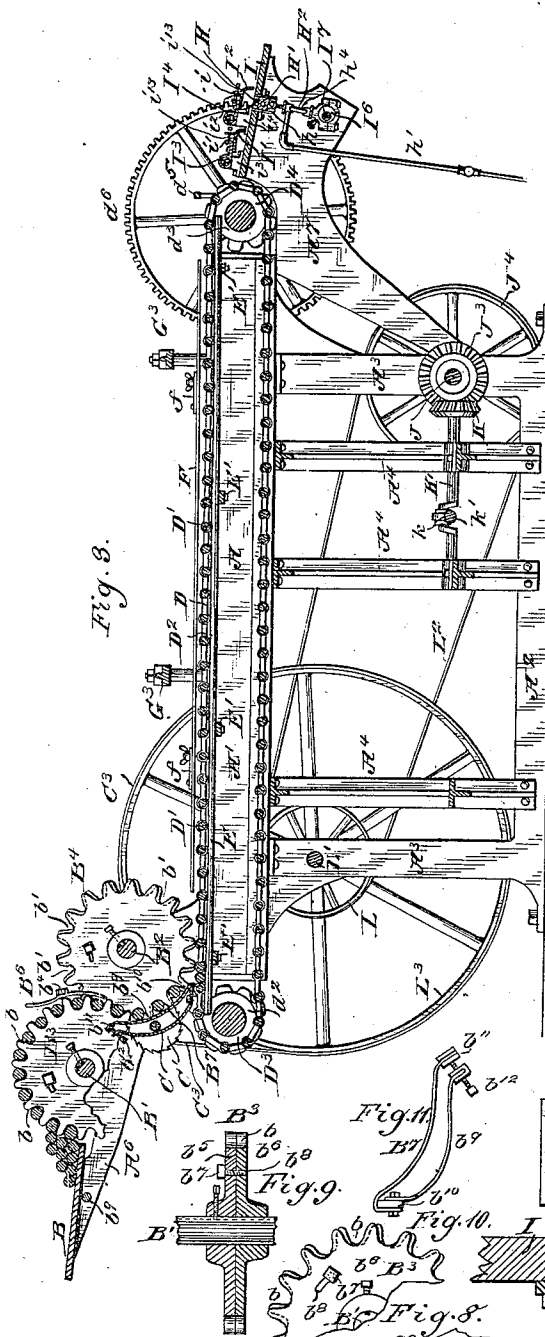
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Felix F. Schmitt
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Attorney.

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UNITED STATES PATENT OFFICE.

FELIX F. SCHMITT, OF CHICAGO, ILLINOIS.

CANDLE-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 309,885, dated December 30, 1884.

Application filed September 3, 1884. (No model.)

To all whom it may concern:

Be it known that I, FELIX F. SCHMITT, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Candle-Finishing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to candle-finishing machines, or machines in which candles after coming from the mold are cut to a uniform length, polished upon their cylindrical surfaces, and stamped or impressed with a heated die to form upon them the name of the maker or other mark or inscription.

The object of the invention is to improve the construction of said machine in several particulars, as will be hereinafter fully set forth; and the invention consists in the matters hereinafter described, and defined in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a plan view of the same. Fig. 3 is a vertical longitudinal section of the same, taken upon the line *x x* of Fig. 2. Fig. 4 is a vertical cross-section of the same, taken upon the line *y y* of Fig. 2. Fig. 5 is a vertical transverse section on an enlarged scale of the stamping devices and portions of the machine-frame to which they are attached. Fig. 6 is a top view of the die, the sliding die-block to which it is attached and by which it is actuated, and the guides in which it slides. Fig. 7 is a vertical longitudinal section of the die and die-block and the guides in which it travels, also showing portions of the adjacent parts and their relation to the said die. Fig. 8 is a perspective view of a reciprocating rubber by which the cylindrical surfaces of the candles are polished. Fig. 9 is a vertical axial section in detail of one of the adjustable slotted feed-wheels by which the candles are fed to the machine. Fig. 10 is a fragmentary side view of one of the feed-wheels, showing the devices by which the two parts of the wheel are adjusted. Fig. 11 is a side view in detail of a strap used to

hold the candles immovable in the feed-wheels while their ends are being sawed off.

In the form of the machine illustrated in the drawings, A is the frame of the machine, which consists of two longitudinal upper side pieces, A', and two lower longitudinal pieces, A², connected by legs or standards A³ and A⁴, the latter being tied together in pairs by cross-girts A⁵. In the feed end of the machine a pair of arms or brackets, A⁶, are bolted to the side pieces, A', which support a feed-table, B, and are provided with bearings for shafts B' and B², carrying two pairs of notched feed wheels or disks, B³ and B⁴, and a saw-mandrel, C, mounted in a bearing, *a*, cast on one of the arms A⁶, and provided with a circular saw, C', located adjacent to the outer face of one of the feed-wheels B⁴ and in position to encounter and cut off the butt-ends of the candles held in and carried by said wheels, as hereinafter more fully described. At the discharge end of the machine a second pair of arms, A⁷, is bolted to the frame A, to furnish supports for the stamping-dies and parts connected therewith.

The upper feed-wheels, B³, which are adjacent to the feed-table, are provided with opposite equidistant peripheral notches *b*, adapted to receive and hold a series of candles with their axes parallel with the axis of the wheels, and the lower feed-wheels, B⁴, are provided with corresponding notches arranged at the same distance apart as the notches in the wheels B³. The feed-wheels B³ and B⁴ are driven at equal speeds one from the other by means of intermeshing spur-wheels *b*² *b*³, fixed to the shafts B' B², respectively, and the said feed-wheels are relatively so arranged that the projections between the notches *b* and *b*² overlap, and the notches are opposite and in alignment with each other. By this construction the candles which are fed from the feed-table to the upper feed-wheels, B³, are obviously carried to the second pair of feed-wheels, B⁴, and delivered one at a time into the notches *b*² in the peripheries of the latter. The said wheels B³ and B⁴ are secured to the shafts by set-screws, which are tapped into their hubs and engaged with grooves in the shafts so as to permit the longitudinal adjustment of the

wheels on the shafts to adapt them to receive and feed candles of different lengths, while at the same time holding the wheels with the notches therein in the same relative position.

5 The candles are placed in the notches of the wheels B³ with their butt-ends in one direction, and at the left of the attendant, and while the candles are being carried forward in the wheels B³ they are usually adjusted longitudinally on said wheels by having their conical ends pushed against an inclined guide-piece or gage, B⁵, which is secured to the table B, and may be adjusted thereon and secured in its adjusted position by means of adjusting and clamping screws b⁹ and b¹⁰, as clearly shown in Figs. 1 and 2. The candles are prevented from falling out of the notches in the wheels B³ while descending toward the wheels B⁴ by a guard plate or finger, B⁶, fastened to and held in position by a rod, b⁴, bolted at its ends to the brackets A⁶. The guard-plate B⁶ holds the candles securely in the notches in the wheels B³ until they enter the notches in the wheels B⁴. At the downwardly and forwardly curved part of the wheels B⁴ is located a strap, B⁷, adapted to rest against the middle portions of the candles between the said wheels, and to thereby hold the candles in place within the notches while they are carried past the rapidly-rotating saw C' and their ends are cut off to a uniform length.

D is a horizontal endless-belt conveyer consisting of a series of parallel transverse rods, D', and two chain belts, D², arranged at opposite sides of the machine-frame, with which the ends of the rods D' are connected. The belt-carrier is supported at opposite ends of the machine-frame by means of two drums or rollers, D³ D⁴, mounted in suitable bearings, d d', at opposite ends of the longitudinal frame-pieces A', and provided at their ends inside of the said bearings with notched disks d² d³, which are engaged by the end portions of the rods D'. Motion is given to the belt by suitable driving-connections actuating the drum D³, as hereinafter described. The portion of the chain-carrier between the drums D³ D⁴ is supported by the ends of the rods D', which extend outwardly beyond the chains and rest upon the upper surfaces of the frame-pieces A'.

Beneath the upper horizontal portion of the chain-carrier are located a series of longitudinal rods, E, supported upon cross-bars E', attached at their ends to the side frame-pieces, A', said rods E preferably being located with their upper surfaces below the rods D', and composed of iron cores or centers and an outer covering of rubber, the latter affording a soft bearing-surface for the candles, whereby they are preserved from injury while passing over the rods. The carrier D at the feed end of the machine is extended past and beneath the feed-wheels B⁴, and adjacent to the lower surface of the said feed-wheels, and the rods D' of the said carrier are placed approximately the same distance apart as the notches b' in

the feed-wheel B⁴. The said feed-wheels are actuated from the chain-carrier by means of a notched disk, B⁸, upon the shaft B², engaged with the end portions of the rods D' of the carrier, so that the peripheries of the notched feed-wheels B⁴ are moved at the same speed as the rods D'.

From this construction it is obvious that the candles held in the notches b' of the feed-wheels B⁴ will, after passing the strap B⁷, fall one into each of the spaces between the rods D', and while resting upon the rods E will be carried or rolled along by said rods E toward the opposite end of the machine.

G is a laterally-reciprocating horizontal rubber for polishing the cylindrical surfaces of the candles, which is located over the central part of the carrier D in contact with the candles supported and carried beneath it by the rods E and the said carrier D.

Above the carrier D, and between the rods thereon and the rubber G, are located two inclined or diagonal guide-pieces, F F', adapted to move the candles endwise and laterally of the machine as they are carried along upon the rods E and beneath the rubber G, and to hold the candles from end movement under the action of the rubber. The guide-piece F, against which the butt-ends of the candles are arranged to rest, is extended to a point adjacent to the feed-wheels B⁴, and the said guide-strips are connected with the frame-pieces A' by means of arms f f', pivotally connected with the said strips and adjustably attached at their outer ends to the top surfaces of the frame-pieces A'.

The rubber G is, as herein shown, made in two parts, g and g', each consisting of a pad or cushion having a wooden back or base, with a stuffed cushion secured to its under surface. The said parts g g' are attached at their ends to transverse metal plates G', which are pivotally connected with a longitudinal rod, G², having bearings at its ends in rectangular blocks g² g², adapted to slide freely in guide-slots g³, formed in transverse stationary horizontal bars G³, located over the machine-frame and upheld at their ends from the longitudinal frame-pieces A' thereof, as shown. The rubber is reciprocated by means of suitable actuating devices connected with the bar G², as will be hereinafter described. The part g of the rubber is permanently attached to the plates G', and the part g' is adjustably secured thereto, preferably by means of bolts g⁴, secured in the said parts g' and extending through slots g⁵ in the plates G', and provided with suitable clamp-nuts, g⁶, at their upper ends. The object of this construction is to enable the effective width of the rubbing-surface to be increased or diminished for candles of different lengths. The rubbing-pads g and g' are preferably covered by a sheet, G⁴, of cloth or other flexible material, which is drawn tightly over the space between the pads, so as to form a continuous rubbing-surface. As

shown in the drawings, sheet-metal pans g' are attached to the plates G' between said plates and the top surfaces of the parts $g'g'$ of the rubber, in order to catch any oil that may drop from the end bearings of the rod G^2 .

The several parts of the machine above mentioned are actuated from a transversely-arranged main driving-shaft, J , journaled upon the machine-frame and provided with suitable fast and loose belt-pulleys J' J'' .

Motion is given to the reciprocating rubber G from the shaft J by means constructed as follows: Upon the said shaft J is mounted a beveled spur-wheel, J^3 , which intermeshes with a beveled pinion, K , fixed upon a longitudinal shaft, K' , mounted in suitable bearings upon the vertical frame-pieces A^1 A^4 . Said shaft is provided with a crank, k , which is connected by means of a pitman, k' , with a depending arm, K^3 , upon a rock-shaft, K^4 , also journaled in bearings on the frame-piece A^4 . Upon the ends of the said rock-shaft, outside of the said bearings, are fixed two upwardly-projecting arms, K^5 , the upper ends of which extend above the top of the machine-frame, and are connected by means of links k^2 with the rod G^2 , before described as being connected with and supporting the rubber G .

As a preferred means of actuating the belt-carrier D and the saw C' , the shaft J is provided with a pulley, J^1 , arranged in the same vertical plane with a pulley, L , upon a transverse shaft, L' , supported in suitable bearings in the uprights A^3 at the feed end of the machine, a suitable belt, L^2 , being trained over the said pulleys J^1 and L . Upon the shaft L' , adjacent to the pulley L , is fixed a second and larger belt-pulley, L^3 , over which is trained a belt, C' , extending around a pulley, C , upon the saw-mandrel C . Upon the shaft L' also, at its end opposite the pulleys L and L^3 , is fixed a spur-wheel, L^4 , which engages a pinion, N , on a shaft, N' , the said shaft being provided with a second pinion, N^2 , which intermeshes with a large spur-wheel, D^4 , fixed upon the end of the roller D^3 , carrying the notched disks D^2 , which are engaged with the rods D' of the belt-carrier, as before described.

The parts of the machine above mentioned, with the exception of the two-part adjustable rubber or polisher G , are constructed and operate in a manner heretofore well known.

As an improved construction in the feed-wheels B^3 B^4 , by which the candles are fed to the saw C' and to the endless-belt conveyer D , each of said wheels is, as shown more clearly in Figs. 3, 9, and 10, formed of two concentric disks, b^5 b^6 , suitably connected so as to rotate together and attached to each other by adjusting devices whereby one disk may be turned slightly with reference to the other and the projections between the notches b b' thereon thereby shifted so as to make said notches of greater or less width to fit candles of different diameters. In the construction herein illustrated, and more clearly shown in Fig. 9, both

of the plates b^5 and b^6 are provided with central hubs for attachment to the shaft, and the plates are adjustably connected by means of a set-screw, b^7 , passing through a curved slot, b^8 , in the plate b^6 , and tapped into the plate b^5 .

The particular means shown for relatively supporting the plates b^5 and b^6 is obviously not essential in carrying out the invention, and the equivalent construction, in which one plate is provided with a hub upon which the other plate is centered, or other suitable construction whereby one plate is rotatably supported upon or adjacent to the other one, may obviously be used.

The purpose of adjusting the width of the notches b b' to fit candles of different sizes is more particularly to cause the candles to fit closely in the said notches at the time they are held therein by the strap B^7 and are passing the saw, so that said candles will be held from rotation and accurately parallel to the shaft B^2 at the time they are being operated upon by the saw.

Both pairs of wheels B^3 B^4 are, as herein shown, constructed of two adjustable parts, as above described; but it is not always essential that the upper wheel, B^3 , should be so adjusted, inasmuch as the peripheries of the wheels being rotated at the same speed and the notches being equal in number and at the same distance apart the candles will in all cases be delivered one from each of the notches in the wheels B^3 to each of the notches in the wheels B^4 . It is preferred to use the adjusting devices in the wheel B^3 , however, for the reason that the candles are thereby held from objectionable movement while supported upon the said wheel B^3 and delivered accurately to the notches in the wheels B^4 .

The retaining-strap B^7 is, as herein shown, permanently attached at its lower end to a transverse bar, b^9 , upon the machine-frame, and supported at its upper end by a bent rod, b^8 , secured at its lower end to the bar b^9 . The upper end of the strap is preferably attached to a metal block, b^{11} , held upon the end of an upwardly and forwardly inclined screw, b^{12} , inserted through the upper end of the rod b^8 , the end of the screw engaged with the block being cylindrical and adapted to turn freely in a suitable aperture in the said block. By this construction it is obvious that the upper end of the strap may be carried upwardly and forwardly by advancing the screw through the end of the bar b^9 , and the strap thereby tightened and caused to bear more closely against the candles held in the notches of the wheels B^4 .

The candles delivered from the carrier D , after being subjected to the action of the polishing-rubber, as above described, are delivered to an inclined table, I , supported upon the brackets A^7 at the rear end of the machine. The candles may pass from said table to a suitable receptacle; or, as herein shown and hereinafter described, suitable devices

may be provided thereon for impressing or marking with a heated die the name of the manufacturer or other desired words or characters thereon. The said table I is, as herein shown, located with its upper edge adjacent to the outer surface of the drum D⁴, and the candles which rest upon the rods E in their movement lengthwise of the machine are carried forward upon and over the surface of the said drum by the downward movement of the said rods D' until they fall upon the said table. In order to properly sustain the candles in passing from the rods E to the drum D⁴ the ends of the said rods are preferably extended to a point vertically over the axis of the drum, the drum preferably being grooved to receive the ends of the rods, as shown. The drum D³ at the opposite end of the machine is, as herein shown, similarly grooved; but such construction is obviously not essential. As the candles pass from the rods E to the drum D⁴ they will obviously roll forward upon the downwardly-curved surface thereof until they reach and are stopped by the rod D', which is in advance of the one by which they have been carried along the rods E, and in order to prevent the candles from falling forcibly to the table I in this movement a guide-plate, d', is located over the drum in position to hold the candles until they reach a point adjacent to the upper surface of the table. Said guide-plate is, as shown, attached to a transverse bar, d^b, attached at its ends to the side piece, A', of the machine-frame.

As an improved construction in devices for stamping or marking the candles above referred to, said devices are, as herein shown, constructed as follows: H is a vertically-movable die, which is arranged to rise through an aperture in the table I, and I' I² are two vertically-movable or vibrating stops located above the inclined surface of the said table, the lower stop, I², which is located immediately above the die H, being for the purpose of holding the candles during the operation of the said die upon them, and the stop I', which is located between the said stop I² and the end of the carrier D, for the purpose of holding each candle delivered to the table while the candle which precedes it is being operated upon. The stop I² is preferably of curved form, as shown, and is provided with an upper horizontal surface, i, adapted to hold the candle from upward movement when the die is pressed upwardly against it, and the stop I' is conveniently made of the same form. The stops I' I² are preferably supported upon the ends of the arms i' i², attached to transverse rock-shafts I³ I⁴, mounted in suitable bearings, i³ i⁴, at the sides of the table I. The ends of said shafts which project beyond their bearings at one side of the table are provided with arms i⁵ i⁶, the ends of which are connected by suitable pitmen, i⁷ i⁸, with two eccentrics, I⁵ I⁶, upon a transverse shaft, I', supported in suitable bearings upon the brackets

A' beneath the table I. The said shaft I' is preferably actuated from the drum D⁴ by means of a spur-wheel, d^b, upon the projecting end of the journal of said shaft, which intermeshes with a pinion, i⁹, upon the said shaft I'. The die H is attached to the upper surface of a die-block, H', having bearings in its ends in guides h, attached to the table I. The said guide-block is reciprocated by means of an eccentric, I³, upon the shaft I', which eccentric is connected with the die-block by a suitable eccentric-rod, H². The die-block H' is hollow, and the said block and die are heated by steam from a pipe, h', which is connected with the hollow interior of the block in a manner clearly shown in Fig. 7, an exit-pipe, h², being similarly connected with the hollow interior of the block, as is also shown in said figure. The pipes h' and h² may be provided with any suitable flexible connection whereby their upper portions may move with the die-block H. Attached to the sides of the guide-block, as is herein shown, are two deflectors, h³, adapted to receive the material melted from the candles by the heated die, and to discharge it into suitable receptacles beneath the table. The eccentric-rod H² is preferably made in two parts, having oppositely-threaded adjacent cylindrical ends connected by a suitably-threaded turn-buckle, h⁴, whereby the said rod may be lengthened and shortened to throw the die upwardly to a greater or less distance, as desired. The several eccentrics I⁵, I⁶, and I⁸ are usually made rotatably adjustable upon the shaft I', whereby the vibrating stops I' and I² and the reciprocating die-block actuated thereby may be suitably timed for their proper operation. The said eccentrics are desirably arranged so that the stop I' will rise to permit the descent of a candle held thereby at the moment that the stop I² is falling after having discharged a candle and while the die is at or near the lower limit of its movement, and in such manner, also, that the stop I², by which the candle is held during the operation of the die, will reach the lower limit of its movement at the moment that the die reaches its greatest elevation.

In order to enable the position of the candle held in the stop I² to be properly adjusted laterally with reference to the die, the said stop, and preferably also the stop I', is connected with the arms i' i² by screws i¹⁰, passing through slots in one of the parts, so that the position of the stops upon the arms may be changed as desired. As herein shown, and illustrated more clearly in Fig. 5, the stops I' and I² and the arms i' i² are provided, respectively, with upwardly-projecting lugs i¹¹ i¹², connected by horizontal set-screws i¹³, whereby the said stops may be accurately adjusted upon the arms when the screws I' are loosened.

By actuating the several stops and the die from the same shaft I', as described, a convenient means of adjustment to give the proper

relative movements to the said stops and die, and a very simple and efficient device for operating the parts mentioned, are obviously obtained.

5 I claim as my invention—

1. In a candle-finishing machine, notched wheels for feeding the candles, having the notches therein adjustable to fit candles of different sizes, substantially as described.

10 2. In a candle-finishing machine, the combination, with a feed-wheel shaft, of feeding-wheels consisting of two separate concentric notched disks, and means, substantially as described, for adjustably connecting said disks, substantially as and for the purpose set forth.

15 3. The combination, with the feed-wheel shaft B^2 , of two longitudinally-adjustable feed-wheels, B^4 , mounted upon said shaft, each of said wheels consisting of two concentric notched disks, b^5 b^6 , and means for adjustably connecting said disks to each other, consisting of bolts b^7 in one of the disks of each pair inserted through slots b^8 in the other disk, substantially as described.

25 4. The combination, with the notched feeding-wheels B^4 B^4 , of the strap B^7 , attached at one end to the machine-frame, a block, b^{11} , supporting the opposite end of the strap, and a screw, b^{12} , inserted through a stationary part of the frame and sustaining the said block b^{11} , substantially as and for the purpose set forth.

30 5. In a candle-polishing machine, the combination, with a carrier, D , of a laterally-reciprocating rubber or polisher, G , made in two relatively-adjustable parts, whereby the rubber may be adapted to operate upon candles of different lengths, substantially as described.

35 6. In a candle-polishing machine, the combination, with a carrier, D , of a laterally-reciprocating rubber or polisher, G , made in two laterally-adjustable parts, and a sheet, G^4 , of cloth or other flexible material placed over the said parts to form a continuous rubbing-surface, substantially as described.

45 7. In a candle-polishing machine, the combination, with the machine-frame and a carrier, D , of a laterally-reciprocating rubber or polisher, G , comprising transverse end plates,

G' , provided with slots g^6 and parts g and g' , the part g being rigidly attached to the said plates, and the part g' connected therewith by bolts g^8 , inserted through the said slots, substantially as and for the purpose set forth. 50

8. In a candle-finishing machine, the combination, with the table I and a suitable candle holder or stop, I^2 , of a reciprocating die, H , guides h h , for the said die, a shaft, I^1 , provided with an eccentric, I^3 , a suitable pitman connecting the eccentric with the die, and suitable driving-connections for actuating the shaft, substantially as and for the purpose set forth. 55 60

9. The combination, with the vertically-movable die H and the stop I^2 , located above said die, of a shaft, I^1 , provided with an eccentric, I^3 , suitable driving-connections for actuating said shaft, and a pitman, H^2 , composed of two connected and longitudinally-adjustable parts, whereby the length of the pitman may be changed as desired, substantially as and for the purpose set forth. 65 70

10. The combination, with the table I , the vertically-movable die H , and the vibrating stops $I' I^2$, of a shaft, I^1 , provided with eccentrics I^3 , I^6 , and I^8 , having operative connection with and adapted to actuate said die and stops, and suitable driving-connections for actuating said shaft, substantially as described. 75

11. The combination, with the table I , the die H , guides h h for said die, and the stops $I' I^2$, of rock-shafts $I^3 I^4$, provided with arms $i^1 i^2$, supporting said stops, and with arms i^3 and i^6 , a shaft, I^1 , provided with eccentrics I^3 , I^6 , and I^8 , pitmen i^1 , i^3 , and H^2 , connecting the said eccentrics, respectively, with the said arms i^3 and i^6 and with the die H , and suitable driving-connections for actuating the said shaft, substantially as and for the purpose set forth. 80 85

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses. 90

FELIX F. SCHMITT.

Witnesses:

C. CLARENCE POOLE,
OLIVER E. PAGIN.