

Feb. 5, 1929.

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D. K. WRIGHT

APPARATUS FOR MARKING GLASS ARTICLES

Filed March 16, 1923

Fig. 1.

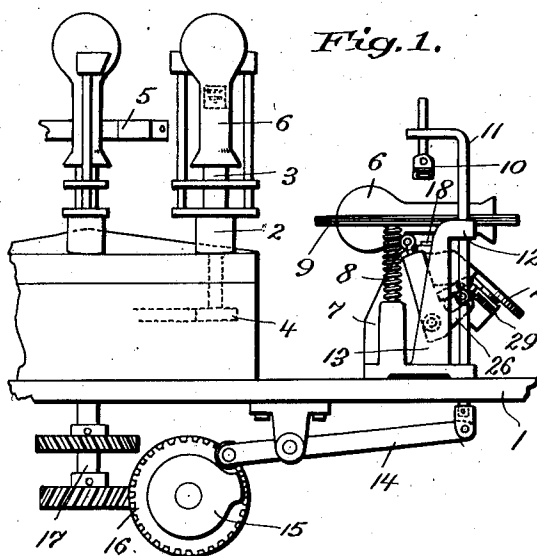


Fig. 5.

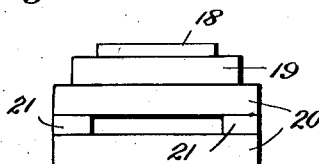


Fig. 6.

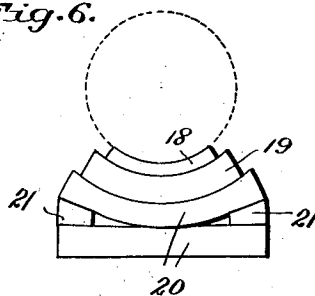


Fig. 2.

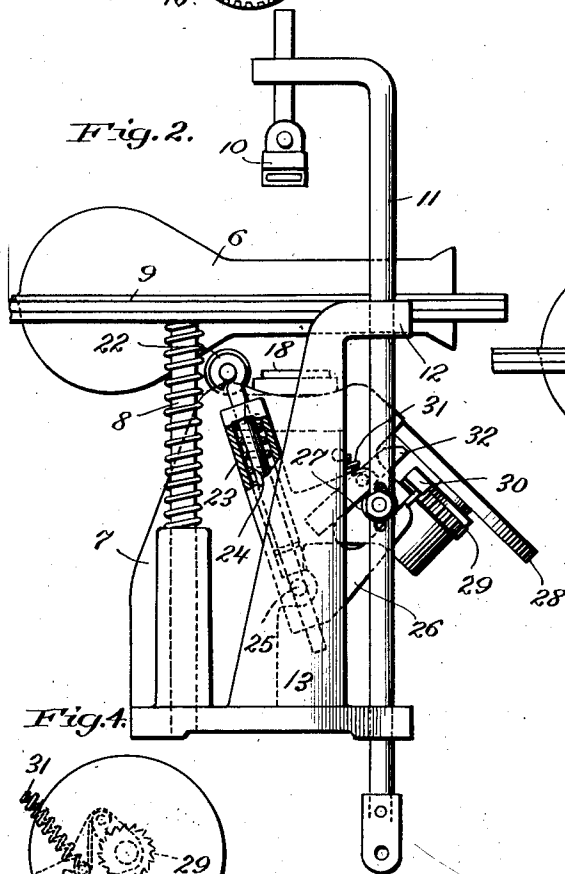


Fig. 3.

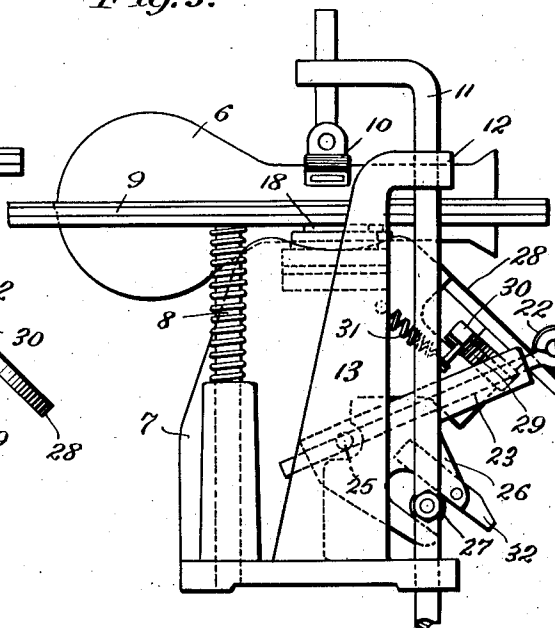
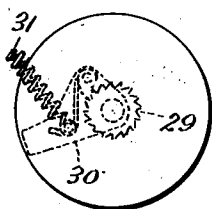


Fig. 4.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MARKING GLASS ARTICLES.

Application filed March 16, 1923. Serial No. 625,640.

The marking of incandescent lamps by sandblasting or etching a design, monogram, or lettering upon the bulb is done by operators who do nothing else, and who take no part in assembling the lamp.

One object of my invention is to provide a means by which an operator engaged in a lamp assembling operation, such as sealing a stem into the bulb, is able, as an incident of that operation and with a negligible expenditure of time and effort, to mark permanently the bulb of an incandescent lamp or similar article with a design or letters. Another object is to provide a marker mechanism which will automatically mark the bulb without attention from the operator other than placing the bulb in the marker mechanism. A further object is to improve and simplify the marking of bulbs and similar articles.

In accordance with my invention I print upon the glass bulb of the lamp or other similar article a monogram or design in an ink which will make a permanent mark on glass, preferably a marking ink containing a finely powdered enamel of low fusing point which, upon heating, is fixed or burned into the glass. Such enamels are well known and are available on the market. I prefer to do this printing by means of an automatic printing device comprising a resilient stamp, preferably of rubber and normally flat, but so constructed that it will yield and fit snugly to the curved wall of the bulb during the printing operation. This mechanism is preferably so constructed that the bulb is brought into engagement with the stamp in such a way that the bulb is bedded in the stamp and a clean sharp even impression is made on the curved wall of the bulb. The bulb with the design printed on it in such a marking ink is subsequently heated, preferably during some of the subsequent operations of lamp making, to a temperature at which the enamel in the ink combines with or is fixed in the glass. I prefer to use in the marking ink an easily fusible enamel which will be fixed to the glass at the temperature attained by the bulb during the sealing-in operation.

The invention will best be understood from the accompanying sketches in which Figure 1 is a side view of a portion of a sealing-in machine showing the relation of the printing mechanism to the sealing-in machine. Figure 2 is a side view of the printing mechanism; Figure 3 is a side view of Figure 2

with the parts in the position assumed by them during printing; Figure 4 is a sectional view of a portion of Figure 3 showing the ratchet mechanism for moving the inking plate; Figure 5 is an end view of the stamp, and Figure 6 is an end view showing the stamp and bulb when the printing is being done.

In the particular machine shown, the table 1 of the lamp making machine carries a sealing-in machine of the usual construction with a rotatable spider 2 carrying a sealing-in head 3 rotated through friction or other suitable gearing 4 in front of the sealing-in burners 5 which fuse the neck of the bulb 6 to the stem.

The printing mechanism, preferably mounted on the table 1 adjacent the sealing-in machine, comprises a frame 7 carrying, on spring pressed rods 8 mounted in the frame to slide longitudinally, a bulb holder 9 which is bodily movable up and down and which holds the bulb 6 as shown in Figures 2 and 3 so that a curved surface of the bulb projects from the holder. The bulb and the holder 9 are moved downward by actuating mechanism comprising a bulb clamp 10 mounted on an actuating member such as a vertically reciprocating plunger 11 sliding through a guide 12 on the upper end of a pedestal 13, and moved by the driving mechanism of the lamp making machine through a rock arm 14 which is moved by a cam 15 driven through suitable gearing, such as the worm or spiral gearing 16, from the drive shaft 17.

The monogram or design to be printed on the bulb is formed upon a stationary flexible rubber stamp 18 which is normally flat, but is constructed to yield under pressure and conform to the curved surface of the bulb, and which is preferably set on the frame 7 beneath the bulb holder. The flexible stamp 18 may be supported, as shown in Figures 5 and 6 upon a cushion 19 and two or more pads 20, preferably of sponge rubber about one quarter of an inch thick, supported at their edges by cushioning stringers 21 about one quarter of an inch square. The rubber stamp 18 supported in this manner will very easily and accurately conform to a curved surface of the bulb, as shown in Figure 6.

The stamp may be inked by hand, but preferably by an inking mechanism comprising an inking roller 22 made of gelatine or glue and yieldingly mounted on a pivoted arm 23

by means of a spring mounting 24 which permits bodily movement of the roller. The arm 23 is swung about its pivot 25 through a yoke 26 cooperating with a projection or roller 27 in the plunger 11. Each time the plunger 11 is lowered the arm 23 swings in a clockwise direction and the inking roller 22 travels from its normal position shown in Figure 2 over the stamp 18, and stops on an inking plate 28. It returns to normal position as the plunger rises. To distribute the ink evenly and supply fresh ink each time to the inking roller 22 I prefer to rotate the inking plate slightly each time by some automatic mechanism such as a ratchet wheel 29 engaged by a pawl on the ratchet arm 30. To move the ratchet arm 30 against the retracting spring 31, I provide a ratchet lug 32 on the arm 23 to move the arm 30 each time the arm 23 is swung to the end of its travel by the plunger 11.

For marking ink I prefer to use castor oil or a similar vehicle containing a finely powdered enamel, for example, a powder which will pass through a screen of 500 mesh to the inch, which will become permanently fixed to the glass at the temperature attained by the lamp bulb during the sealing-in operation. Various enamels of this character are available on the market.

In carrying out my invention the bulb 6 is placed in the bulb holder 9 with some of its curved surface, such as a part of the neck, projecting below the holder. As the plunger 11 is lowered the inking roller 22 is moved over the stamp 18 before the bulb is moved. As the plunger 11 continues to descend the bulb clamp 10 encounters the bulb 6, and moves it and the bulb holder 9 downward until finally the curved part of the bulb projecting from the holder is bedded in the stamp 18 which yields and conforms to the bulb as indicated in Figure 6, and thereby prints the design of the stamp on the surface in contact with it. During the downward movement of the plunger 11 the inking roller is moved on to the inking plate 28, which is rotated one step when the projection 32 moves the ratchet arm 30. As the plunger 11 returns to its initial position, shown in Figure 2, the inking roller 22 moves back over the stamp 18 thereby inking it ready for the next operation. The bulb with the monogram or design printed on it in marking ink is then transferred to the head 3 of the sealing-in machine where, during the sealing-in operation, the glass on which the monogram is printed becomes hot enough to cause the enamel to combine with or even partially fuse into the glass, making a permanent mark.

My printing mechanism may be used for

printing upon the bulb with any kind of ink, or with etching compounds, and is not restricted to use with an ink which is fixed by heating the bulb.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In a device of the character described the combination of a stationary yielding stamp normally flat and constructed to conform to the curved wall of a bulb or similar article pressed into said stamp, a bulb holder mounted to move toward and away from said stamp and constructed to hold a bulb with a curved portion in registry with said stamp and means for automatically moving said holder toward the said stamp to bed the curved portion of the bulb in said stamp and print a mark upon it and then move said holder away from the stamp.

2. In a device of the character described a stationary stamp constructed to yield and to conform to the curved wall of a bulb pressed against the stamp, a movable bulb holder for holding a bulb with a portion of its curved wall in position to engage said stamp, inking mechanism for supplying said stamp with ink, and automatic means for actuating said inking mechanism and said bulb holder in succession to ink said stamp and then press the curved portion of the bulb in said holder against the freshly inked stamp to print a mark or design upon the curved wall of the bulb.

3. In a device of the character described, the combination of a stationary resilient stamp normally flat and adaptable to a curved surface, a movable holder for a bulbous article, and actuating mechanism for moving said holder bodily to bring said holder into registry with said stamp and thereby press a curved portion of the article in said holder into engagement with said stamp sufficiently to bed said curved portion in said stamp.

4. In a device of the character described the combination of a stationary resilient stamp normally flat and adaptable to a curved surface, a movable holder for a bulbous article, actuating mechanism for moving said holder bodily to bring said holder into registry with said stamp and to press a curved portion of the article therein against said stamp to bed said curved portion into said stamp, and inking mechanism for said stamp connected to said actuating mechanism to be actuated thereby to ink said stamp while said stamp is flat.

In witness whereof, I have hereunto set my hand this 12th day of March, 1923.

DANIEL K. WRIGHT.