June 22, 1943. P. E. GATES 2,322,728

APPARATUS FOR LAMP STEM MANUFACTURE

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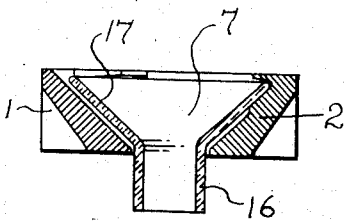


Fig. 2

Fig 1

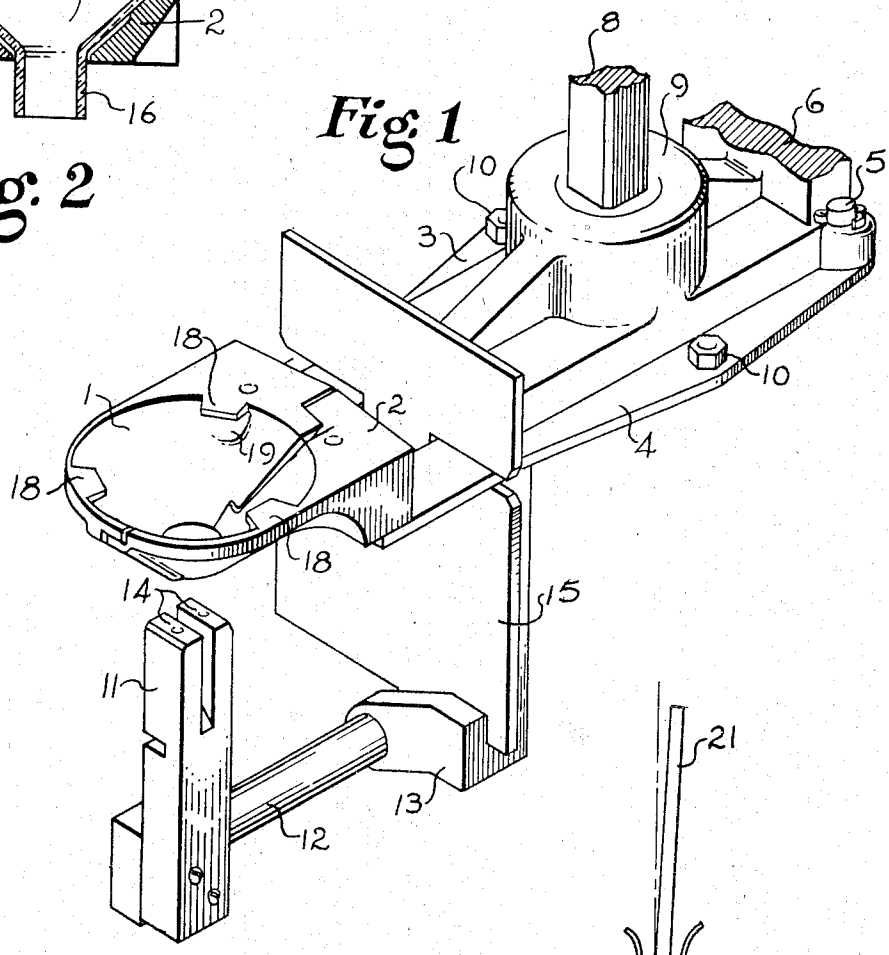
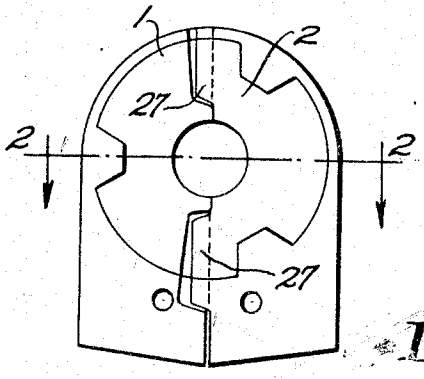


Fig. 3



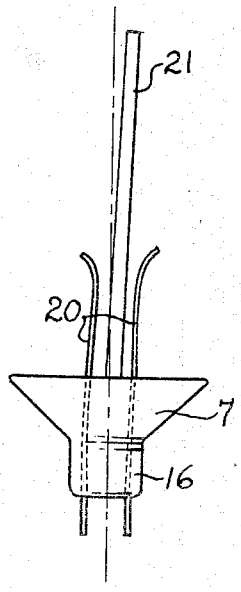


Fig. 4

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Fig. 5

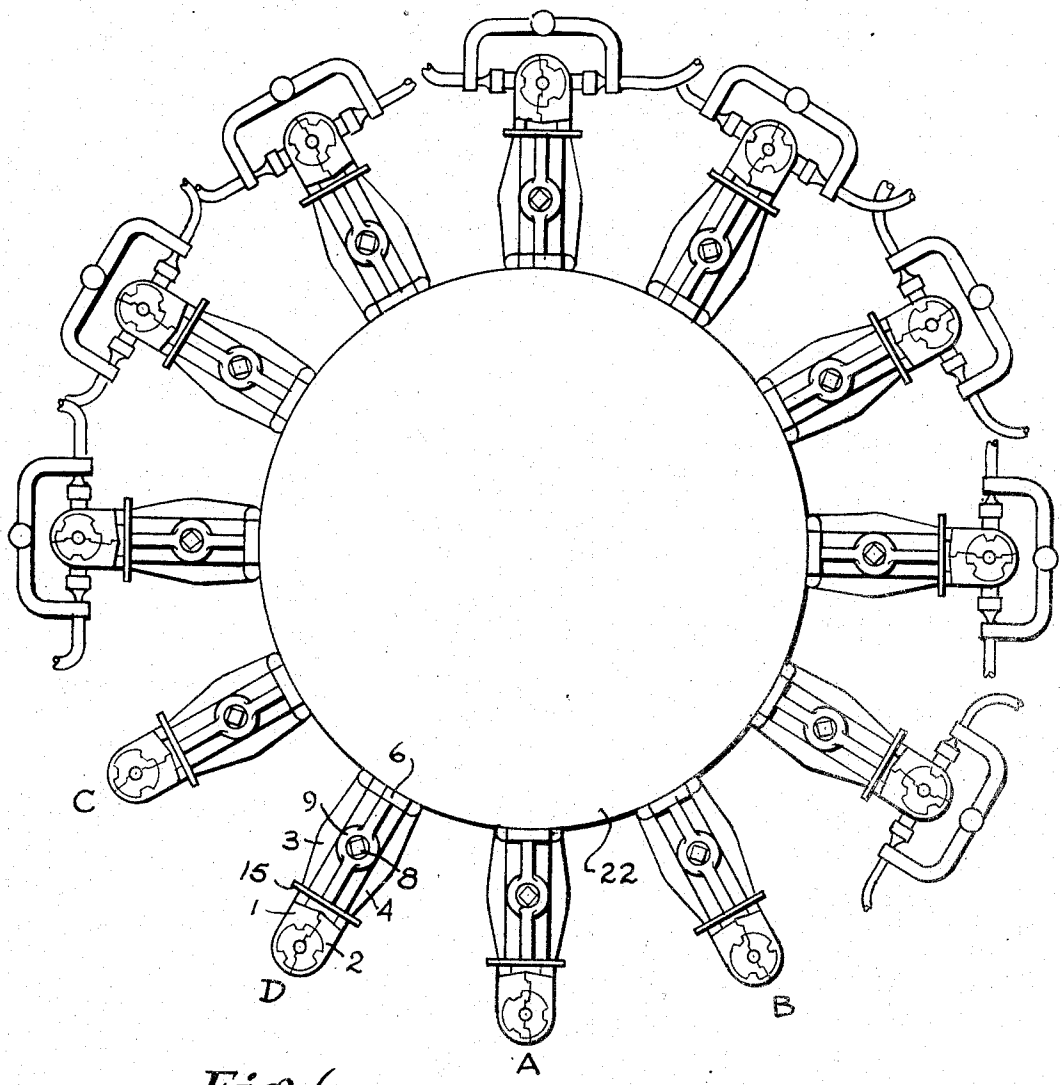
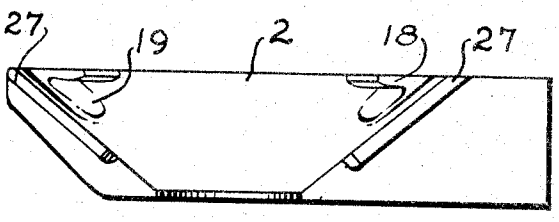


Fig. 6



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Patented June 22, 1943

2,322,728

UNITED STATES PATENT OFFICE

2,322,728

APPARATUS FOR LAMP STEM MANUFACTURE

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Application October 1, 1941, Serial No. 413,140

3 Claims. (Cl. 49—2)

This invention relates to lamp making machinery and more particularly to machines for making fluorescent lamp stems.

In the manufacture of stems for use in fluorescent lamps, many difficulties, not previously encountered in incandescent lamp practice, were encountered. For example, it was found desirable to cut down as much as possible on the size of the stem as a whole and of the throat in particular. This increased the difficulty of properly sealing the lead-in wires and the exhaust tubulation therein and at the same time keeping the sealing fires from also melting a portion of the flange of the stem.

Accordingly, therefore, an object of this invention is to provide a seating assembly for fluorescent lamp stem manufacture.

Further objects, advantages and features will be apparent from the following specification taken in conjunction with the accompanying drawings in which:

Figure 1 is a projection of the head assembly;

Figure 2 is a section of the cup in which the flare is held, taken as on line 2—2 of Figure 3;

Figure 3 is a top view of the cup in which the flare is held;

Figure 4 shows a stem with an improperly aligned exhaust tubulation, one of the undesirable conditions which the apparatus of my invention eliminates.

Figure 5 is a top view of a machine with a plurality of the heads shown in Figure 1 mounted thereon;

Figure 6 is an elevation of one of the jaws in the open position showing the nubs and baffles.

The cup-like flare holder of my invention consists of a pair of jaws 1 and 2 which when abutting each other form a truncated cone. These jaws are mounted on the jaw arms 3 and 4 which pivot about the studs 5 in the head 6. A plurality of head assemblies such as shown in Figure 1 may be mounted on a rotatable turret thus constituting the stem making machine. These jaws 1 and 2 are opened and closed to permit the insertion of a flare 7 such as shown in Figure 2 within the jaws and the withdrawal therefrom of the finished stem. The opening and closing of these jaws is accomplished through a cam and linkage mechanism through a cam shaft 8 extending into a housing 9. The movement of the cam shaft 8 is transmitted to the jaw arms 3 and 4 through some mechanism well known in the stem machine art, for example, a jaw arm cam and a pair of links located beneath the support one end of each of said links being connected to said jaw arm cam and the other end of each of said links being connected to the jaw arms 3 and 4 through the nuts 10.

The block 11 in register with the truncated cone formed by the abutting jaws 1 and 2 is mounted on the arm 12 projecting from the support 13. This block has two small holes 14 in the top thereof into which the lead-in wires which are to be sealed into the throat of the flare are inserted and in which they are held during the stem making operation. This block 11 also serves as a support for an exhaust tubulation when a stem having such tubulation is to be made. The baffle 15 mounted in the support 13 protects the jaw actuating mechanism consisting of parts 3, 4, 8, 9 etc., from the fires which melt the throat of the flare.

The jaws 1 and 2 when abutting each other form a truncated cone in which the flare 7 is held. This flare consists of a throat 16 and a flange 17 as shown in Figure 2. The periphery of the base of the cone, i. e., the periphery of the top of the abutting jaws has three tangs 18 projecting inwardly therefrom. Directly beneath and in register therewith are the three nubs 19 on the inner walls of the cone.

This particular type of jaw structure has many advantages. First and foremost the flare is entirely supported by a three point contact. This enables the attainment of a proper alignment of the several elements of the stem structure when the flange is not uniform in its contour, either with respect to the walls thereof or the rim thereof or both. If the walls of the flange were not perfectly round and a flare seat other than the type herein described were used the flange of the flare would be flush with the walls of the cone on one side and apart therefrom on the other. This lopsided seating of the flare would cause incorrect alignment of the stem elements.

The three tang holding means for keeping the flare seated in the cone insures adequate and uniform holding of the flare therein even when the rim of the flange is not perfectly round. Thus the flare is seated on the nubs and its seating is made firm and positive by the tangs mounted on the periphery of the base of the cone formed by the abutting jaws and projecting inwardly above the nubs. If holding means other than the three tang means herein shown and described were used the holding force exerted would not be uniform in the case where the rim of the flange were untrue because greater force would be exerted by the holding means at the higher points on the rim of the flange than would

be exerted thereby on the lower points thereof. This uneven holding of the flare would be another cause of incorrect alignment of the stem elements.

Figure 4 shows a completed stem in which the elements are improperly aligned as a result of faulty flare contour described above. The lead-in wires 20 and the exhaust tubulation 21 have been sealed into the throat 16 of the flare 7. Due to flare irregularities and failure to use jaws of the type above described the exhaust tubulation which has been sealed in the throat of the flare is not exactly perpendicular to the flare as it should be nor is it located exactly along the center line of the flare as it also should be. A stem of the type shown in Figure 4 cannot be made on my stem machine due to the jaw structure described above.

As is partly shown in Figure 1 and is more clearly brought out in Figure 3, the walls of the conical jaws at the forward and rearward extremity thereof are milled out to form baffles to protect the flange of the flare when the throat thereof is being melted. A baffle of some sort is necessary in cases where the jaws do not lock perfectly tight due to the presence therein of a slightly larger than ordinary flare. Incorporation of the baffles in the jaw enables the attainment of a unity of structure and a simplicity in design.

Figure 5 shows a plurality of the head assemblies shown in Figure 1 mounted about the periphery of the rotatable turret 22. Positions A and B may be utilized as loading positions and C and D as unloading positions. At these positions a suitable cam mechanism may be employed to open the jaws 1 and 2 acting through the cam shaft 8 and the jaw arms 3 and 4.

Figure 6 is an elevation of one of the jaws in the open position and serves to clearly illustrate the nubs 19, the tangs 18, and their relationship to each other as well as the baffles 27 which are integral with the jaws 1 and 2.

What I claim is:

1. In apparatus for making electric lamp stems, the combination: a pair of jaws which, when abutting each other, form a hollow, inverted, truncated, circular cone; a plurality of tangs disposed equidistantly about the periphery of the base of said cone and projecting inwardly therefrom; and a corresponding number of nubs on the inner wall of said cone, said nubs each being adjacent to and immediately below one of said tangs; said jaws having overlappingly disposed meeting edges which form baffles.

2. In apparatus for making electric lamp stems, the combination: a pair of approximately semi-conical jaws meeting to form a hollow, inverted, truncated, circular cone; three tangs spaced about the periphery of the base of said cone, said tangs being spaced equi-distant from each other when said jaws are abutting each other; and three nubs on the inner wall of said cone, each of said nubs being in vertical alignment with one of said tangs; said jaws having, at their forward and rearward ends, overlappingly disposed meeting edges which form baffles.

3. In apparatus for making electric lamp stems, the combination: a horizontally extending support; a pair of jaw arms extending along said support on opposing sides thereof, each of said arms having one extremity mounted on said support for pivotal movement about a separate vertical axis adjacent one end of said support; means for moving said arms toward and away from each other about their respective pivots; a pair of approximately semi-conical jaws, one on each of said arms, which meet, when said arms are moved toward each other, to form a hollow, inverted, truncated, circular cone with three tangs spaced substantially equidistantly about the periphery of the base of said cone and projecting inwardly therefrom, and three nubs on the inner wall of said cone, said nubs each being in vertical alignment with one of said tangs; a downwardly extending member secured to said support; lamp stem wire holding means mounted from adjacent the lower end of said member; and a heat baffle mounted adjacent the lower end of said member and disposed between said wire holding means and said means for moving said arms.

PAUL E. GATES.