This invention refers to a conveyor for glass bulbs and more particularly to a conveyor for carrying fluorescent lamp bulbs from the machine in which they are baked to the machine at which the glass stems are sealed to the bulbs.

In the manufacture of fluorescent lamps it is desirable to pass the glass bulb to which a coating of luminous material has been applied through a heating oven which will bake the luminous coating in a manner so to drive off all impurities such as the binder used to obtain the proper suspension of the luminous materials, and thus leave the coating of luminous material that is desired. The next step after this baking is the sealing-in.

Accordingly, therefore, an object of this invention is to provide a means for conveying the bulbs from the baking machine to the sealing-in machine.

Another object is to provide a mechanical means by which the bulbs may be transferred from the position at which they are unloaded from the baking machine to the position at which they are loaded on to the sealing-in machine.

A further object is to provide a means for conveying the bulbs that will reduce the number of times they are handled and thus reduce the losses often caused by unnecessary handling.

Other objects, advantages and features will be apparent from the specifications which follow taken in conjunction with the accompanying drawings in which:

Figure 1 is a top view of the pendulum assembly.
Figure 2 is a front elevational view of the pendulum assembly.
Figure 3 is a side elevational view of the pendulum assembly showing a bulb in position.
Figure 4 is a side elevational view partly in section of the bulb conveyor.
Figure 5 is a front elevational view of the bulb conveyor.

Similar reference characters refer to similar parts throughout the several views of the drawings.

This invention consists of a series of pendulum devices for carrying bulbs attached at various points along an endless chain conveyor. This conveyor may be in a horizontal, a vertical, or an acute angular plane without departing from the spirit of my invention. However, I have found that the conveyor is more readily adaptable, in my particular case, when it is in a vertical plane, due to the relative location of my baking and sealing-in machines. If the conveyor in my invention were to be used in a horizontal or angular plane, a few minor changes, readily apparent, would be necessary to adapt the conveyor to the desired plane.

The metal pendulum 2 is attached to the conveyor chain 7 through the metal pendulum stud 5. This stud 5 is attached to the pendulum at its upper extremity so as to create the pendulum effect. The metal pendulum strap 4, through which the pendulum stud 5 passes is bolted to the pendulum 2. The pendulum stud 5 which holds the pendulum to the conveyor chain 7 passes through the metal pendulum spacer 6 and the pendulum strap 4 and is held therein by the cotter pin 16. The use of a pendulum spacer and pendulum strap through which the pendulum is attached to the conveyor chain provides a firm and positive connection and at the same time provides the proper and necessary spacing of the pendulum away from the conveyor chain.

At the upper extension of the pendulum 2 is attached the pendulum clip 3 made of Phosphor bronze or some similar flexible material. At the lower extension of the pendulum 2 is the pendulum cup 31. The operator takes the bulb 9 as it comes out of the baking machine and sets it in the pendulum bulb carrying device by inserting the bulb 9 into the pendulum clip 3 at a point such that the bottom of the bulb will rest in the pendulum cup 31. Thus the bulb is held by the pendulum clip 3 and the pendulum cup 31.

By providing a means for raising or lowering the position of the cup 4 on the pendulum 2 and by providing pendulum clips of various sizes, the pendulum bulb carrying devices may be readily adapted to bulbs of various lengths and diameters.

The conveyor chain 7, to which is attached a series of spaced pendulum bulb carrying devices as described above, is geared on the idler sprocket 8 and the drive sprocket 13 through the idler shaft 10 and the drive shaft 14 respectively. The drive shaft 14 may be driven by the motor 22 through the belt 19 and drive pulley 17.

I have used this conveyor in a vertical plane because my bulb baking machine is on one floor and my sealing-in machine is on the floor above, directly over it. Thus the conveyor runs up from one floor to another. The sprockets 8 and 13, about which the conveyor chain 7 turns, are firmly attached to the frame channel 12 which is bolted to the floor through the bottom floor angle 28 and the top floor angle 32. Thus this frame
channel 12 provides a base on which the entire conveyor mechanism is mounted.

Due to the fact that the pendulum 2 pivots about the pendulum stud 5, some check must be provided to limit the area through which the pendulum 2 may swing. This is done by providing the pendulum guides 26 which are attached to the frame channel 12 through the series of pendulum guide braces 27.

It is important that the pendulum 2 pivots freely on the pendulum stud 5, for it is desirable that the pendulum maintain its perpendicular position throughout the complete circuit of the conveyor chain. This is especially true when the pendulum makes its circuit about the idler sprocket 8 and the drive sprocket 13. To further aid in making sure that the pendulum 2 is always perpendicular, the pendulum cup is made of a metal of sufficient weight to exert a continuous downward pull on the pendulum.

The chain guide 23 is attached to the channel frame 12 through the chain guide braces 29 to act as a guide for preventing the chain 7 from swinging into the center.

The pulley 17 is of the variable pitch diameter type as shown in Figure 5. Thus this pulley may be adjusted to synchronize the speed of the conveyor with the speed of the machines between which it operates.

The chain tightening mechanism 33 is attached to the idler shaft 10 and the idler sprocket 8, thus serving as a means for inserting or taking out links of the chain 7 in order to keep the chain from getting loose.

Safety guards and devices similar to those now in common use in belt or conveyor chain machines may be used to encase all parts of the conveyor but those which must be free in order for the conveyor to operate.

What I claim is:

Apparatus for conveying elongated tubular bulbs on an endless chain conveyor, said apparatus comprising: a plurality of studs projecting from said endless chain; a pendulum suspended from each of said studs at the outer ends thereof; a pendulum spacer concentric with each of said studs and through which said studs extend; a pendulum strap supporting each of said pendulums, said strap being attached to the back of each of said pendulums and having its rearward extremity attached to the inner end of said stud from which the pendulum is suspended; a fixed flexible clip attached to the top of each of said pendulums; and a cup mounted at the bottom of each of said pendulums.

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