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FORMING MACHINE FOR GLASSWARE
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2,180,766

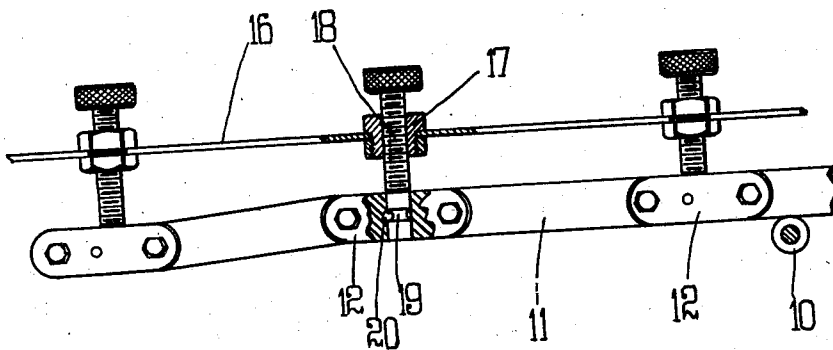


FIG. 1.

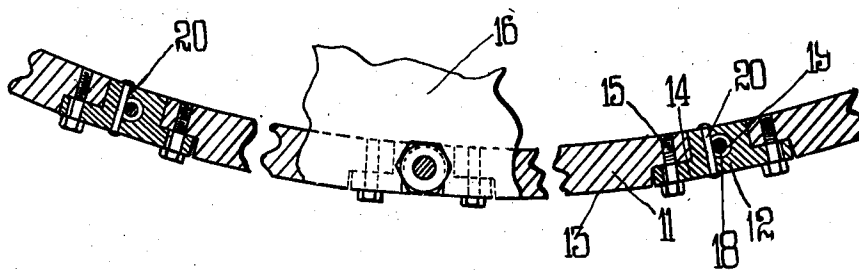


FIG. 2.

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FORMING MACHINE FOR GLASSWARE

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6 Claims. (Cl. 74-568)

The present invention relates to cam tracks for varying the path of travel of movable objects. Whilst being of general use the invention is particularly applicable for use with forming machines for glassware.

In so far as the invention is applicable to glassware forming machines it has for its primary object the provision of a cam track adapted for engagement by valve controlled means for varying the time period and degree of opening of the valve as said valve controlled means is displaceable along the track in unison with the mould to vary the blowing operation on a charge in said mould.

According to the present invention a cam, associated with mould closing means or again with means for establishing vacuum or applying pressure to a mould having a charge of molten glass therein, is carried by a rotating frame supporting the moulds and is adapted to engage with a track consisting of a band made up of a number of detachably interconnected strips each adjustable separately relatively to a member supporting the track whereby the contour of the track may be varied throughout its length to vary the actuation of the cam to suit particular requirements.

In a preferred form of construction as applied to a continuously rotating bottle forming machine for example, and wherein the cam is associated with the air pressure supply to a number of blow moulds in succession, a rotating frame carries the blow moulds and also a number of arms through which compressed air is supplied to the blow moulds at the required periods of time. The outer ends of the arms carry blow heads each containing a valve associated with a cam which during rotation of the frame is brought into engagement with a cam track adjustably supported relatively to a stationary cover for the rotating frame.

The invention is more particularly described with reference to the accompanying drawing, in which—

Figure 1 is a view in elevation of a portion of the cam track.

Figure 2 is a corresponding sectional plan view.

In the drawing a cam track or band is shown the lower surface of which is adapted for engagement by a roller 10 associated with a valve for permitting a supply of blowing air to a mould such as, for example, in the type of machine to which reference is made in my co-pending patent application No. 111,517 filed on November 18, 1936. The cam track or band is made up of a number of strips or sections 11, 12, the adjacent

ends of the sections 11, 12, being complementarily formed so that when placed in abutting relationship they present an unbroken surface to the movable roller 10.

In the particular construction illustrated the sections 11 are recessed at each end of their faces 13 to receive complementary projections 14 on the ends of the sections 12, the sections being bored to receive bolts 15 to prevent separation of the sections after assembly, and to constitute pivots for their relative angular adjustment when desired.

If desired, instead of providing an overlapping arrangement as shown in the drawing, the individual sections 11 or 12 may be bifurcated at their ends to receive a projection on the sections 12, or 11, respectively with each bolt 15 passing through one arm of each bifurcated end, thence through the projection of the adjacent section, and finally through the other arm of the bifurcated section.

The bolts may be screw threaded over that portion of their length adapted to engage with the sections 11 whilst the bores in the sections 12 through which the bolts pass may be slightly larger than the diameter of the bolts. Again, if desired, the bores through the sections 12 for the reception of the bolts 15 may be slightly elongated. Each section, but preferably each alternate section, which in the construction illustrated is each section 12, is supported from a stationary table or cover 16 through the intermediary of a bracket 17 rigidly secured to the table and an adjusting screw 18, each screw having a threaded engagement with its bracket 17 and a circumferential groove 19 at its lower end at the part which passes vertically through a section 12 of the cam track which is vertically bored to receive the screw.

In the construction illustrated each bracket 17 is formed by a pair of nuts, one of which passes through the support 16 and the other of which engages therewith so that opposite radial faces of the nuts engage with the upper and lower faces of the table to enable the nuts and the table to constitute a firm support for the screw 18. Pins 20 are provided which are adapted to be passed through the sections 12 and engage tangentially within the annular grooves 19 in the screw threaded adjusting member 18 to maintain the sections 12 in engagement with the screws.

It will thus be seen that by adjusting the individual screws 18, and thus varying the height of the individual sections 12 relatively to the sup-

port 16, the path of travel taken by the roller 10 during its rotary movement relatively to the support 16 may be varied as desired and when such roller 10 is associated with a valve mechanism of a mould rotatable with it relatively to the table 16, the time, period and degree of opening of the valve is varied to suit the needs of different forms and sizes of glassware to be blown in the moulds.

10 It will also be appreciated that adjustment of the cam track may be effected independently of the operation of the roller, i. e., it may be made while the roller is moving relatively to the support. In this way in so far as bottle forming machines are concerned the adjustment of the time and period of blowing may be made without stopping the machine.

I declare that what I claim is:

1. A cam track for varying the path of travel of a movable object engaged thereby comprising two types of sections, the ends of the sections of one type being complementary to the ends of the sections of the other, means for pivotally interconnecting the ends of said sections in tandem with certain faces of the sections forming a continuous surface for engagement by said object, a fixed support and screw threaded means carried by the support and connected to each of the sections of one type for adjusting said sections relatively to said support to vary the contour of said continuous surface.

2. A cam track for varying the path of travel of a movable object engaged thereby comprising a plurality of sections, means for pivotally interconnecting said sections in tandem with faces of the sections forming a continuous surface for engagement by said object, a fixed support, and screw threaded means depending from said support in circumferentially spaced relationship for supporting said sections and for adjusting said sections relatively to said support to vary the contour of said continuous surface.

3. A cam track for varying the path of travel of a movable object engaged thereby comprising a plurality of sections, means for pivotally interconnecting said sections in tandem with faces of

the sections forming a continuous surface for engagement by said object, a fixed support, means disposed in circumferential relationship about said support and adjustable relative to said support, and means for securing said adjustable means to said sections.

4. A cam track for varying the path of travel of a movable object engaged thereby comprising a plurality of sections, a fixed support, adjustable means connected to said support and to said sections, and additional sections intermediate the first named sections pivotally connected thereto, with faces of all of the sections forming a continuous surface for engagement by said object, the contour of the continuous surface being variable by adjustment of the first named sections relative to the support.

5. An adjustable cam track carried by a fixed horizontally disposed cover plate associated with a glassware forming machine or the like, said cam track comprising a plurality of sections linked together in tandem relation with the lower faces of the sections forming a continuous surface for engagement by a cam follower, and a plurality of threaded spindles carried by and depending from the cover plate and connected to alternate sections, whereby said sections may be raised and lowered relative to the cover plate to change the angles of inclination of intermediate sections, to vary the contour of said continuous surface.

6. An adjustable cam track for varying the path of travel of a cam follower, comprising a plurality of separate, independent sections linked together in tandem, each section having a substantially plane cam face, a fixed support for the track, a plurality of pins carried by the support and connected to alternate sections of the track and disposed on axes perpendicular to the plane of the cam faces of said alternate sections and to the plane of the support, and means for adjusting the pins to vary the distance between the support and said alternate sections and to change the angles of inclination of the planes of the cam faces of the intermediate sections.

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