

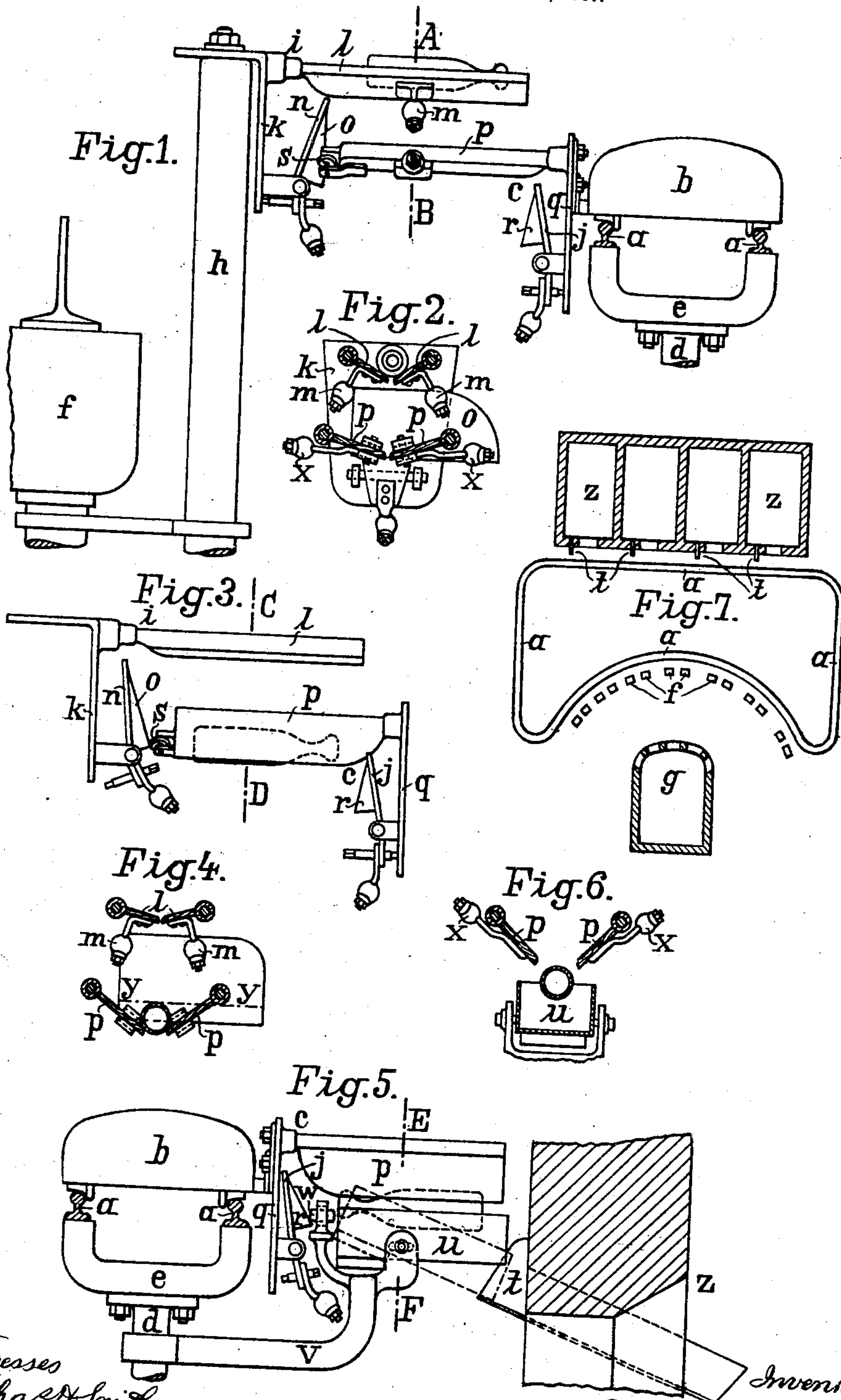
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APPARATUS FOR AUTOMATICALLY CONVEYING BOTTLES, &c., INTO
ANNEALING FURNACES.

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APPARATUS FOR AUTOMATICALLY CONVEYING BOTTLES, &c., INTO ANNEALING-FURNACES.

No. 898,179.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CARL BRAUER, working manager, a subject of the Emperor of Germany, and resident of Hostomitz, near Teplitz, Bohemia, Empire of Austria-Hungary, have invented a new and useful Improvement in Apparatus for Automatically Conveying Bottles or the Like into Annealing-Furnaces, of which the following is a specification.

The invention relates to an apparatus for automatically conveying bottles and the like from the workmen's benches or places where they are produced or worked, into the cooling annealing furnaces.

The novelty of the invention lies more especially in the fact that a conveyer for receiving bottles of any shape and size is laterally attached to each of a number of trolleys or carriages running on rails, and is so arranged that the bottle received by the conveyer can be at once transferred into the annealing furnace slide and annealing furnace by opening the conveyer.

The invention further consists in forming the bottle feeding or depositing device and the bottle conveying device with downwardly opening flaps or wings and retaining the said flaps or wings by a support when a bottle is in the depositing device or conveyer in such a way that the flaps cannot open downwards. The flaps of the depositing device and conveyer are opened in accordance with the invention by automatically moving the support to one side, so that the flaps can open downwards under the weight of the bottle lying upon them and the bottle can fall through. For forcing the support to one side a wedge shaped piece with a curved face is provided on it, and a roller, nose, wheel or the like is provided on one or both flaps of the conveyer in such manner that in the travel of an empty conveyer past a depositor containing a bottle, the nose or wheel runs against the wedge shaped piece and forces the support back so that the bottle can drop from the depositor into the conveyer. At the same time the flaps of the conveyer are pressed down by the weight of the bottle so as to come on to a support provided on the conveyer. The nose or wheel on the conveyer is thus brought into a depressed posi-

tion such that when the conveyer travels past the other depositors, the conveyer passes under the wedge shaped piece inoperatively and the succeeding depositors are not opened.

When a conveyer containing a bottle reaches the annealing furnace slide, a roller, wheel or nose disposed before the slide strikes the wedge shaped piece of the conveyer, so that the flaps of the latter are opened and the bottle is transferred into the annealing furnace. This transference of the bottle into the annealing furnace can be effected by disposing before the annealing furnace slide a laterally weighted tilting carrier, into which the bottle dropping from the opened conveyer passes, the carrier being adapted to tilt and automatically move into an inclined position before the slide so that the bottle in consequence of its weight passes on to the slide and through the same into the annealing furnace, the carrier returning automatically to its original position.

Apparatus constructed in accordance with the present invention possesses the great advantage that the bottle does not fall through between the rails, but laterally from the track, and that the different devices for opening and closing the feeders or depositors are constructed without any complicated mechanical arrangements such as levers, springs and the like in such manner as to insure satisfactory operation in all cases.

The accompanying drawings represent one form of the above described apparatus arranged for example for automatically conveying bottles into the annealing furnace of a bottle making plant, the parts being shown in three different working positions.

Figure 1 shows in elevation and Fig. 2 in section on line A—B Fig. 1, the position of the parts at the workman's bench with a finished bottle inserted in the depositor or feeder cradle. Fig. 3 shows in elevation and Fig. 4 in section on line C—D Fig. 3, the position of the flaps of the feeder cradle and of the conveyer with the bottle delivered to the conveyer for transport to the annealing furnace. Fig. 5 is an elevation partly in section, and Fig. 6 a section on line E—F, Fig. 5 showing the position of the parts of the apparatus in front of the annealing furnace

slide; a bottle is shown as just dropping from the opened conveyer into the tilting carrier. Fig. 7 is a diagrammatic view showing the glass melting furnace, the work benches or places and a number of annealing furnaces, together with the rails for the conveying apparatus.

Upon the track *a* run a number of trolleys *b* driven by electric motors or the like and each having attached to it at the side a conveyer *c* constructed as hereinafter described. The rails *a* are suitably mounted on pillars *d* having upwardly branched top pieces *e*.

At each of the work benches *f*, a number of which for example are disposed in front of or around the glass melting furnace *g*, is provided a feeder or depositor cradle *i* (Figs. 2 and 4) mounted on a pillar *h* and consisting of two flaps or leaves *l l* pivotally mounted on a plate *k* and projecting freely therefrom. The flaps are faced in the known way with a layer of asbestos to prevent injury to the still red hot bottles which are placed as finished in the feeder cradle. The flaps of the feeder cradle, after delivering the bottle to the conveyer *c* traveling under them, are automatically returned to their original position (Figs. 3 and 4) by counter weights *m*. To prevent the bottle inserted in the feeder cradle from at once falling through, there is pivotally mounted on the plate *k* a counterweighted support *n* against which the flaps *l l* depressed by the bottle laid upon them bear (Fig. 1). At the side of the support *n* is a wedge shaped piece *o* having a curved face and serving the purpose explained below.

Similarly to the feeder cradle, the conveyer *c* at the side of the trolley *b* is formed of two flaps *p*, pivotally mounted and projecting freely from the plate *q* attached at the side of the trolley frame. On this plate is likewise pivoted a support *j* having at the side a wedge shaped piece *r* with a curved face. This counterweighted support is usually beneath the flaps *p p*, so that these cannot at once descend with the bottle on receiving it from the feeder cradle *i*; the bottle is thus prevented from prematurely falling from the conveyer *c*.

When a conveyer *c* traveling with the trolley *b* comes under a feeder cradle *i* containing a bottle, a roller *s* (or it may be a wheel or nose), on one of the flaps *p*, or preferably on each of the flaps of the conveyer *c*, strikes against the wedge-shaped piece *o* and rocks the support *n* aside so that the flaps *l l* cease to be supported and open under the weight of the bottle, which falls on to the closed flaps *p p* of the conveyer depressing them slowly until they rest on the support *j* on the conveyer plate, Figs. 3 and 4.

When the flaps *p p* and bottle are in this

position the conveyer *c* travels with the trolley *b* until it comes in front of the annealing furnace slide *t* shown in Fig. 5, before and above which a box-shaped counterweighted tilting carrier *u* is mounted for the reception of the bottle delivered by the conveyer. The carrier *u* which is suspended so as to be adjustable, is mounted on an arm *v* projecting laterally from a pillar disposed just in front of the annealing furnace slide, on which arm is mounted a roller or a nose *w* located in the path of the wedge shaped face *r*. When the wedge shaped piece *r* in its travel with the conveyer *c* strikes the roller *w*, the support *j* is rocked out laterally and thus moved out of the path of the roller *w*; consequently the flaps *p* of the conveyer *c* are no longer supported and swing open under the weight of the bottle, allowing this to drop through into the tilting carrier *u*. The flaps *p* are automatically returned to their normal position during the return of the trolley *b* to the work benches, by the counterweights *x* attached to them, so that as the trolley travels past the work benches the conveyer can again take a bottle from the feeder cradle *i*. When the bottle falls on to the normally horizontal carrier *u*, this tilts into the position shown in dash and dot lines Fig. 5 and delivers the bottle to the annealing furnace slide *t*, whereupon the carrier returns to its horizontal position. Likewise the wedge shaped piece *r* returns to its normal position on leaving the roller *w* in the further travel of the trolley.

In Fig. 7 the annealing furnaces served and filled by the described conveying apparatus are lettered *z*. The feeder cradles *i* are situated between the work benches *f* and the track *a*.

If desired the conveying apparatus may be arranged in such manner as to deliver the bottles or the like from the conveyer on the trolley direct into the annealing furnace slide.

In the described apparatus, the conveyers containing the bottles or the like pass under the other feeder cradles not intended to be operated by them so that these feeder cradles are not opened by the conveyers traveling under them, the roller on the conveyer missing the wedge shaped piece of the feeder cradle as is shown by the line *y y* in Fig. 4.

In order to make sure that the conveyer flaps shall remain in their open position during the travel of the conveyer past the annealing furnace slide, it may be advisable, instead of providing only one roller or nose in front of the tilting carrier *u*, to mount two such rollers at a distance apart corresponding to half the distance apart of the pivoting points of the conveyer flaps.

Instead of mounting both flaps of the feeder cradles and conveyers pivotally, one flap may be fixed and serve as a partial sup-

porting surface for the bottle, while the other is arranged to pivot so that when this flap turns downwards, the bottle will slip off the fixed flap into the conveyer or into the carrier in front of the annealing furnace slide as the case may be.

The described bottle conveying apparatus can be employed for bottles of all shapes and sizes and presents the advantage that it enables the bottles to be delivered into the annealing furnace in the "German way", that is to say with the bases leading, which is a recognized advantage.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In an apparatus for conveying bottles and other articles into annealing furnaces and in combination, a plurality of bottle receptacles suitably spaced apart and each comprising pivotally mounted holding members, supports for maintaining said holding members in their closed positions, wedge shaped members for actuating the said supports to release the holding members, a track, a trolley adapted to travel thereon, a conveyer mounted on said trolley and adapted to receive bottles from the said receptacles, means on the said conveyer for automatically actuating the said wedge shaped members to operate the holding members of said receptacles and means for delivering the bottles from the said conveyer to the annealing furnace.

2. In an apparatus for conveying bottles and other articles into annealing furnaces and in combination, a plurality of bottle receptacles suitably spaced apart and each comprising pivotally mounted holding members, supports for maintaining the said holding members in their closed positions, wedge shaped members by which the said supports are actuated for releasing the said holding members, means whereby the said holding members return automatically to their normal positions after delivering a bottle, means whereby the said supports return to their normal positions after having released the said holding members, a track, a trolley adapted to travel thereon, a conveyer mounted on each of said trolleys and comprising pivoted holding members a wedge shaped support for the said pivoted holding members of the conveyers, a roller for actuating the supports for the said holding members of the said receptacles and a projecting member located at the furnace for engaging the said wedge shaped support for releasing the pivoted holding members of the said conveyers.

3. In an apparatus for conveying bottles and other articles into annealing furnaces

and in combination, a plurality of bottle receptacles suitably spaced apart and each comprising pivotally mounted holding members, supports for maintaining the said holding members in their closed positions, wedge shaped members by which the said supports are actuated for releasing the said holding members, means whereby the said holding members return automatically to their normal positions after delivering a bottle, means whereby the said supports return to their normal positions after having released the said holding members, a track, trolleys adapted to travel thereon, a conveyer mounted on each of said trolleys and comprising pivoted holding members, a wedge shaped support for the said pivoted holding members of the conveyers, a roller for actuating the supports for the said holding members of the said receptacles, means whereby the said pivoted holding members of the conveyers are automatically returned to their normal position, means whereby the said wedge shaped supports for the pivoted holding members of the conveyer are automatically returned and maintained in their normal positions, a projecting member located at the furnace for engaging the said wedge shaped supports for releasing the pivoted holding members of the said conveyers, a bottle support and tilting carrier for delivering the bottles.

4. In an apparatus for conveying bottles and other articles into annealing furnaces and in combination, a plurality of bottle receptacles suitably spaced apart and each comprising pivotally mounted holding members, supports for maintaining the said holding members in their closed positions, wedge shaped members by which the said supports are actuated for releasing the said holding members, means whereby the said holding members return automatically to their normal positions after delivering a bottle, means whereby the said supports return to their normal positions after having released the said holding members, a track, trolleys adapted to travel thereon, a conveyer mounted on each of said trolleys and comprising pivoted holding members, a wedge shaped support for the said pivoted holding members of the conveyer, a roller for actuating the supports for the said holding members of the said receptacles, means whereby the said pivoted holding members of the conveyers are automatically returned to their normal positions, means whereby the said wedge shaped supports for the pivoted holding members of the conveyers are automatically returned and maintained in their normal positions, a projecting member located at the furnace for engaging the said wedge shaped support for releasing the

pivoted holding members of the said conveyers, a bottle support, a tilting carrier for delivering the bottles, and a slide from the same in its tilted position to the annealing
5 furnace whereby the bottles are delivered to the same.

In testimony, that I claim the foregoing as

my invention, I have signed my name in presence of two witnesses, this eighth day of October 1907.

CARL BRAUER.

Witnesses:

PAUL ARRAS,
CLARE SIMON.