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W. L. McNAMARA ET AL

2,487,355

CONVEYER

Original Filed Feb. 14, 1945

2 Sheets-Sheet 1

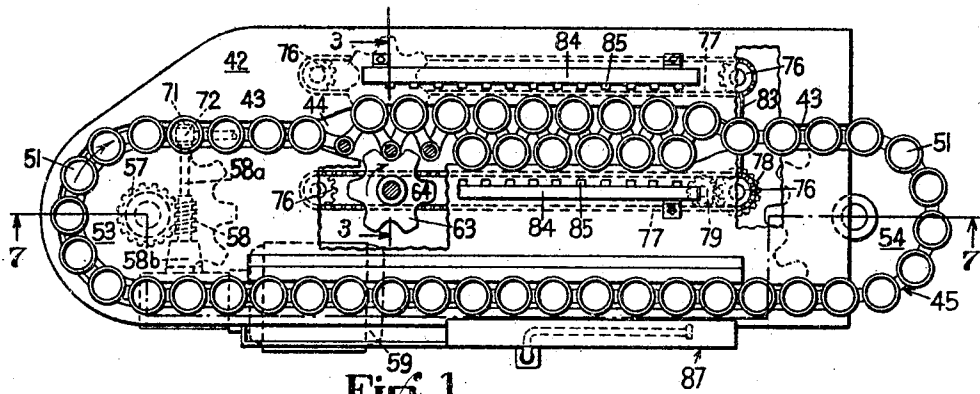


Fig. 1

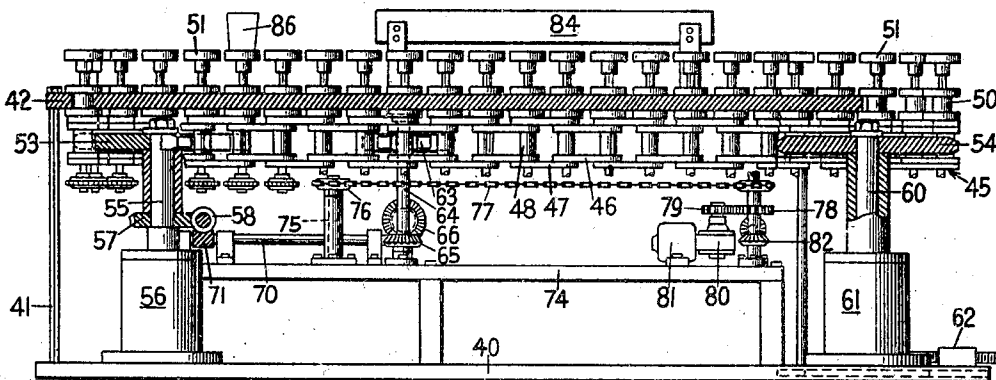


Fig. 2

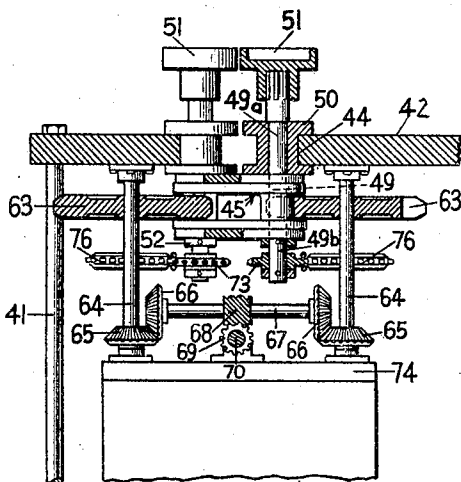


Fig. 3

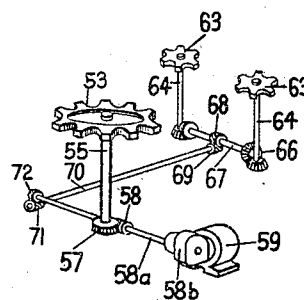


Fig. 4

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2. Sheets-Sheet 2

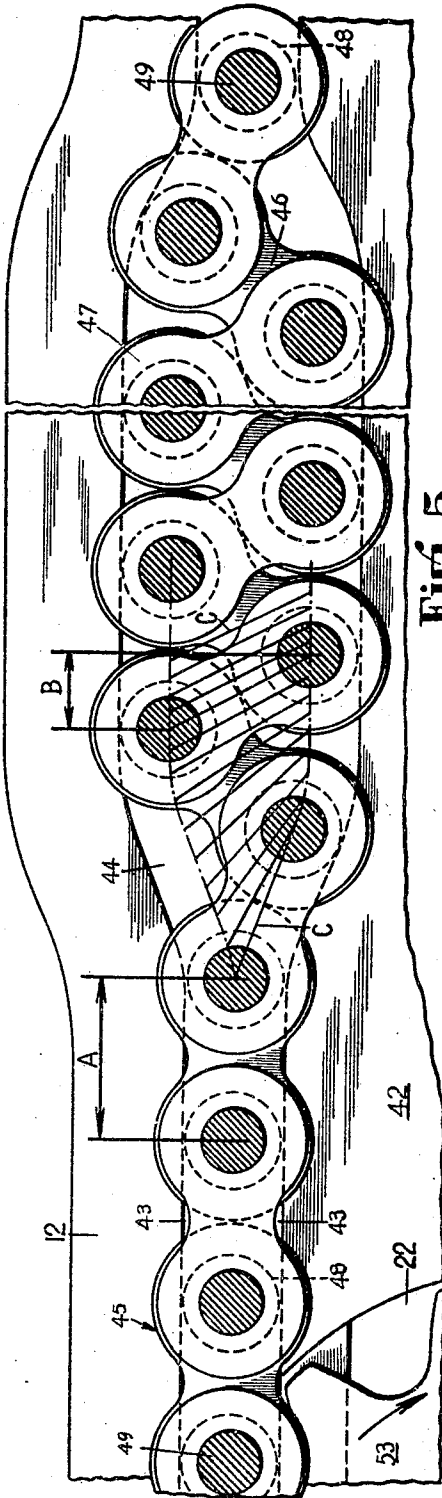
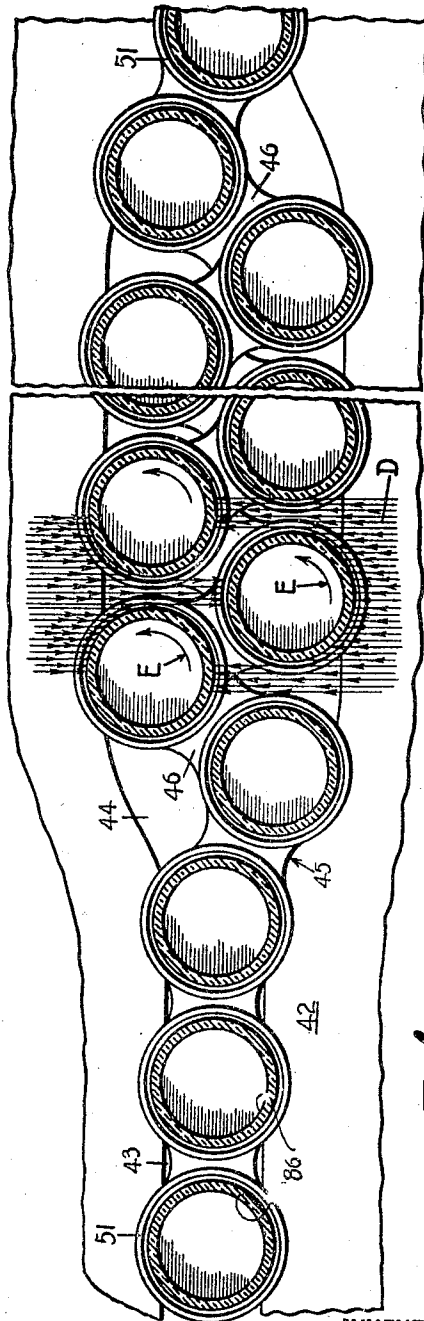


Fig. 5



Fin. 6

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CONVEYER

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Original application February 14, 1945, Serial No.
577,811. Divided and this application February
8, 1946, Serial No. 646,287

11 Claims. (Cl. 49—58)

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Our present invention relates to glazers and more particularly to conveyers for moving or transporting various articles to, through, and away from a glazer, or into and out of association with a battery of gas burners, or other heat emitting devices, which may be arranged on one or both sides of the path of travel of the conveyer and articles. The present application is a division of our copending application Serial No. 577,811 filed February 14, 1945.

One of the objects of the present invention is to provide, in connection with a glazer, an improved conveyer which is preferably driven at a constant rate of speed, and which is capable of traveling for a predetermined distance in a single file until it approaches a battery of burners in the glazer, whereupon it travels in a path between the burners at a reduced rate of speed and in double file relationship, again assuming a single file relationship after emerging from the space between the battery of burners.

Another object of our invention is to provide an improved glazer or furnace conveyer having an endless conveyer chain provided with spaced article supporting means which latter are capable of being rotated or revolved at various speeds during a portion of the travel of said conveyer chain, particularly while it is moving through the zone in which the glazer burners are located.

A further object of our invention is to provide an improved endless conveyer of the foregoing character which is adapted particularly for use in connection with a glazer for glassware, ceramics, et cetera; it being an important object of the invention when used in this connection, to cause the conveyer chain and its article supporting means to assume a double file relationship and travel at a reduced rate of speed when in said double file, whereby to obtain a maximum amount of heat energy in a minimum length of travel through a battery or series of opposed burners for glazing purposes.

A further object of our invention is to provide an improved conveyer such as that mentioned above for use in connection with a glazing apparatus whereby to obtain a maximum amount of heat from a minimum number of gas burners to effect a very substantial saving of fuel gas; it being another object of the invention to effect the crowding together of a number of articles carried by the conveyer chain into a relatively short space and to cause said articles to be rotated so as to expose all sides thereof directly to the gas flames of the glazer unit.

Another object of our invention is to provide

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an improved glazer structure for glassware, ceramics, or the like, which includes an endless conveyer for carrying the articles to be glazed between a pair of opposed relatively short batteries of gas burners, in which the endless conveyer is provided with a plurality of spaced article supporting means and in which the conveyer and its article supporting means travel in single file throughout the major portion of their travel and in double file in staggered relationship through that portion of their travel which is located between the opposed pair of batteries of burners, the speed of travel being greatly reduced while said conveyer and its article supporting means are passing between said batteries of burners.

It is another object of our invention to provide improved means for rotating the article supporting means of the conveyer chain which is independent of the driving means for the conveyer chain and which is capable of rotating or revolving the article supporting means at variable speeds and in different directions.

Generally speaking, the present invention relates to an improved conveyer of the character above mentioned in which the conveyer comprises a framework carrying a trackway or guideway through which an endless conveyer chain travels, said guideway throughout a portion of its length causing the endless conveyer chain and its article supporting means or members to travel in a single file, with another portion of said trackway or guideway being so formed and proportioned that the conveyer chain and article supporting means will shift from single file relationship into double file staggered relationship and travel in said relationship throughout a given portion of the guideway, and in which the endless chain and its supporting means will again shift into single file relationship and continue its travel through the guideway. The conveyer structure includes, merely by way of example, a driving sprocket or sprocket wheel and a driven sprocket or sprocket wheel with which the endless conveyer chain is in operative engagement, the driving sprocket having applied thereto a source of power which operates at a constant speed for driving the conveyer chain. When the conveyer chain shifts from its single file relationship into its double file relationship it travels at reduced, approximately half speed as compared to its speed of travel when in single file. Thus, the conveyer chain and its article supporting means move at half speed when in double file relationship.

When and if desired, auxiliary or "booster" means may be provided for assisting in the movement or travel of the conveyer chain when in its double file relationship. Such auxiliary means is preferably driven by the constant speed power means applied to the driving sprocket.

When, as now, it is desirable to employ our improved conveyer in connection with a glazer, means is provided for effecting the rotation of the article supporting means of the conveyer chain while said chain and means are traveling in double file relationship. The means for rotating the article supporting members is preferably driven by a source of power which is independent of the power driving means for the conveyer chain and is preferably in the form of a variable speed reversible electric motor which is suitably and drivingly connected to suitable means which contact and revolve the article supporting means or members. When the apparatus is used in connection with a glazer, relatively short batteries of gas burners are disposed at opposite sides of the trackway or guideway through which the conveyer chain and its article supporting means are caused to travel in double file relationship. It will be appreciated that by the doubling-up of the conveyer chain and its article supporting means, articles carried thereby will be in relatively close relationship so that all of the heat energy emitted by the batteries of gas burners will impinge directly upon the articles with very little, if any, loss of heat. By automatically slowing down the speed of travel of the conveyer chain when in its double file relationship it will be understood that the desired glazing operation can be performed by means of considerably shorter gas burner batteries than was heretofore possible with conventional types of glazers.

The improved glazer or furnace conveyer apparatus of our invention is also provided with suitable means for forcing lubricant to the conveyer chain to reduce friction and wear of the parts.

The foregoing and other objects of our invention will appear from the following description and appended claims when considered in connection with the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

In said drawings:

Fig. 1 is a top plan view, partly in section and partly broken away for clarity, of an apparatus embodying our invention, said apparatus being particularly a glazer.

Fig. 2 is a vertical longitudinal sectional view taken substantially along the line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a fragmentary vertical transverse sectional view, partly in elevation, taken substantially along the line 3—3 of Fig. 1, looking in the direction of the arrows.

Fig. 4 is a diagrammatic view, in perspective, illustrating the driving means for the endless conveyer chain of the apparatus shown in Figs. 1, 2 and 3.

Fig. 5 is a fragmentary top plan view, on an enlarged scale, illustrating a portion of the trackway or guideway of the apparatus of our invention and indicating, diagrammatically, the shifting or conversion of the conveyer chain and its article supporting means from its single file relationship into its double file staggered relationship and also indicating the reduction in the

speed of travel of the conveyer when in its double file condition; and

Fig. 6 is a top plan view generally similar to Fig. 4 and also on an enlarged scale, showing articles in position upon the article supporting means of the conveyer chain and indicating the fact that said articles may be rotated while in double file relationship.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. It is to be understood also that the phraseology and terminology employed herein is for the purpose of description and not of limitation, and it is not intended to limit the invention herein claimed beyond the requirements of the prior art.

Referring now to the drawings and particularly to Figs. 1 to 4, inclusive, thereof, there is shown in these figures a glazer for glazing glassware, ceramics, or the like, embodying the present invention. The apparatus of these figures comprises a supporting base 40 upon which up-rights 41 are positioned. The uprights 41, as shown, support a frame structure above the base 40. This frame structure is shown, merely by way of example, as a horizontal plate or table 42. The plate or table 42 is provided with a trackway or guideway having narrow portions 43 and a widened portion 44 which latter merges with and forms a continuation of the narrow portions 43. It will be noted, see particularly Fig. 1, that the widened portion 44 of the guideway is located in the far side of the platform or table 42 and represents a minor portion of the entire trackway or guideway.

An endless conveyer chain, shown as a whole at 45, is associated with the guideway portions 43 and 44. This endless conveyer chain comprises inner pairs of link members 46 and cooperating outer pairs of link members 47, the two cooperating pairs of link members being maintained in spaced relationship by the usual spacer sleeves 48. Adjacent pairs of the inner and outer link members are pivotally connected together by link pins 49 which extend upwardly and downwardly through and beyond the pairs of links to provide upper pin extensions 49a and lower pin extensions 49b. Rotatably mounted upon each of the pin extensions 49a is a flanged roller 50. Mounted upon the upper end of the extension 49a above the roller is a substantially cup-like article support or member 51. The member 51 is preferably keyed or splined to the extension 49a so as to be rotatable therewith.

As clearly seen in Figs. 2 and 3, the flanged rollers 50 fit within and are adapted to travel in the narrow slots or guideway portions 43 and in the wider guideway portion 44. Thus, as the chain is moved, the flanged rollers 50 will travel freely in the guideway portions, carrying with them the article supporting means or members 51.

The lower extension 49b of the link pins carry collars 52 which are fixed thereto in any suitable manner and which serve to maintain the adjacent pairs of links 46 and 47 in assembled relationship.

As shown, the means for driving the endless conveyer chain 45 comprises a driving sprocket 53 located adjacent one end of the apparatus and

a driven sprocket 54 located adjacent the opposite end of the apparatus. The sprocket 53 is mounted upon an upright drive shaft 55 whose lower end is located in a supporting bearing or base member 56. The shaft 55 carries a worm gear 57 with which a worm 58 is in mesh, the worm 58 being mounted upon a drive shaft 58a projecting from a reduction gear box 58b whose gears are driven by an electric motor 59, see Fig. 1.

The driven sprocket 54 is mounted upon an upright supporting shaft 60 whose lower end is carried by a bearing support or base member 61. The endless conveyer chain 45 may be adjusted and maintained taut by means of a suitable adjusting device shown at 62 in Fig. 2. It will be understood, that the driving and driven sprockets are in mesh with the spacer sleeves 48 of the conveyer chain and that the chain is driven by the driving sprocket 53.

While the driving means just described is usually sufficient for driving a conveyer chain of usual or normal length and weight, it may prove desirable to provide some auxiliary means for assisting in the driving of the conveyer chain where said chain is of relatively heavy structure and of considerable length. Therefore, in accordance with the present invention, there is provided a pair of auxiliary driving sprockets 63. These sprockets 63 are mounted upon vertically disposed shafts 64 which carry at their lower ends bevel gears 65. These bevel gears are in mesh with bevel gears 66 mounted upon a transversely extending shaft 67, which shaft carries at a point intermediate its ends a spiral gear 68. This gear is in mesh with a similar spiral gear 69 mounted upon a longitudinally extending shaft 70 whose opposite end carries a similar spiral gear 71 which is in mesh with another spiral gear 72 carried by the transversely extending drive shaft 58a from the gear reduction mechanism 58b. Thus, as the driving sprocket 53 is driven by the electric motor and gear reduction assembly, the auxiliary or "booster" sprockets 63 will likewise be driven. It will be understood that the sprockets 63 engage the spacer sleeves 48 of the endless chain assembly to assist in the movement of said chain. As shown, the pair of auxiliary driving sprockets 63 is located adjacent the entrance or throat portion of the enlarged or wider slot or guideway portion 44. As seen in Fig. 1, as the links of the endless chain and their article carrying or supporting means 51 shift from their single file relationship in which condition they travel through the guideway portion 43 into their double file and staggered relationship within the widened guideway portion 44, the sprockets 63 at opposite sides of said portion 44 engage the successive spacer sleeves 48 of the chain and move them forwardly through the slot portion 44. It will be understood that the travel or movement of the conveyer chain and article supporting means when in double file relationship within the guideway portion 44, is considerably slower than the speed of movement of said members when in single file relationship while traveling in the guideway portions 43. In fact, the chain travels in its double file relationship at approximately half the speed of its travel when in single file relationship. This is due to the fact that as the chain links are continuously pushed into the widened portion 44 of the guideway, they veer off the original line of travel that they followed while in the narrow portion 43 of the guideway, and fold first to one side and then

to the other of the widened portion, thereby traveling through a greater distance than when they were moving in the narrow portion. The delay in the progressive movement of the folding links of the chain not only slows the progressive movement of such links but also slows the progressive movement of all the previously folded links which are being pushed through the widened portion. At the exit end of the widened portion 44, as the links are continuously pushed from such widened portion, they unfold first from one side and then from the other of such portion and move into single file, which action requires the same amount of time as the original folding action and further delays progressive movement of all the folded links still in the widened portion. That the speed of movement of the chain through the widened portion 44 of the guideway is substantially one-half the speed of its movement through the narrow portion 43 is evident from Figure 1 which shows that there are substantially twice the number of article-supporting members 51 in the widened portion of the guideway as in the same length of the narrow portion of the guideway.

If it is desirable to rotate or revolve the article supporting means 51 when said means is traveling in double file staggered relationship within the guideway portion 44, suitable means may be provided for this purpose. Merely by way of illustration, and with particular reference to Fig. 3 of the drawings, the lower extensions 49b of the link pins carry sprockets 73. Mounted upon a platform or support 74 carried by the base 40 are two pairs of upright shafts 75, these being spaced transversely and longitudinally of the support 74. Each of the shafts carries at its upper end a sprocket 76 and associated with each pair of these sprockets and extending longitudinally of the frame is a sprocket chain 77. One of the upright shafts 75 is provided with a gear 78 which is in mesh with a driving gear 79 carried by the drive shaft of a gear reducing mechanism 80, said gear reducer being preferably driven by a variable speed reversible electric motor 81. The two upright shafts 75 at the right side of Figs. 1 and 2 are drivingly connected together by bevelled gearing 82 and an interconnecting shaft 83, Fig. 1. Thus, when the electric motor 81 is driven, all of the shafts 75 will be rotated and will in turn drive the sprockets 76 and the two endless sprocket chains 77. When the elements of the endless chain 45 move through the widened guideway portion 44, the sprockets 73 carried by the shaft extensions 49b will come in contact with the endless sprocket chains 77 and the article supporting members 51 will be rotated during their travel in double file relationship through the slot portion 44. Since the electric motor 81 is of the variable speed reversible type, the speed of rotation, as well as the direction of rotation of the article supports may be varied and controlled at will.

It will be seen that the widened portion 44 of the guideway represents a minor portion of the whole guideway and that at its opposite ends it merges with the narrow guideway portions 43.

Located on opposite sides of and extending substantially throughout the length of the widened guideway portion 44, is a battery of gas burners 84, each of which has a series of nozzles 85 (Fig. 1). The gas burners are in opposed relationship and discharge gas flames directly onto the surfaces of articles 86 traveling at a low rate of speed, in double file relationship and

being revolved while so traveling between the batteries of burners. Thus, by reason of the grouped-together double file of articles, any flames which pass through spaces between adjacent articles will impinge against the surfaces of the articles in the opposite row or file. In this manner there is practically no waste or loss of the gas flames, by virtue of which a material saving in fuel costs is achieved. The action of the gas flames upon the articles is illustrated clearly by the arrows D in Fig. 6. By virtue of our invention, the glazing operation can be performed satisfactorily by a greatly reduced number of burner nozzles and hence shorter batteries of burners than was heretofore possible with conventional glazers wherein long stretches of burners were used and wherein the articles were passed between the burners in single file spaced relationship. Much fuel was wasted since a goodly proportion of the flames passed through the spaces between the articles without contacting those articles and was lost. Moreover, with our improved structure, a more even and uniform temperature can be and is maintained.

The shifting of the elements of the conveyer chain and of the articles 86 from single file relationship in the guideway portions 43 to the double file relationship in the guideway portion 44, is the same as is illustrated in detail in Fig. 5 of the drawings, wherein the distance between the center lines of the link pins 49 and the article supports 51 when the articles are traveling in the narrow slot portions 43, is indicated at A, whereas the center line spacing lengthwise of the conveyer when the article supporting means are in grouped-together and double file relationship in the enlarged portion 44 of the guideway, is shown at B in this figure. Moreover, the action of the parts and their gradual decrease in speed of travel is the same in Fig. 1 as is indicated by the imaginary center lines shown at C in Fig. 5.

As in our above-mentioned compending application, it is desirable in the present invention to provide lubricant under pressure to the endless conveyer chain. For this purpose, lubricant supplying means, shown as a whole at 87 may be employed. Such means, as shown, comprises a trough-like portion, a reservoir, means for withdrawing lubricant from the reservoir and forcing it onto the moving parts, together with splash boards or guards on opposite sides of the narrow guideway portion 43 to confine the lubricant to a restricted area.

When the electric motor is operated to drive the conveyer chain 45, the drive will be through the driving sprocket 53 directly to the chain. This will tend to move the chain and its article supporting means or members 51 in a single file relationship through the narrow portion 43 of the guideway toward the entrance to the widened portion 44 of the guideway or trackway. When traveling in single file relationship the centers of the article supporting members 51 will be maintained in the spaced relation as indicated at A in Fig. 5. As, however, the chain and its article supporting means are pushed by the sprocket 53 into the throat or opening of the guideway portion 44, the links of the chain and their article supports will be shifted into zig zag relationship as clearly seen in Fig. 5 until they assume the double file relationship in which they are shown, within the confines of the widened portion 44 of the guideway. When in said double file relationship the centers of each of the pairs of staggered article supporting members will be moved to-

gether so as to occupy positions which are approximately one-half the distance apart lengthwise of the widened trackway portion 44, as indicated at B in Fig. 5, as when in their previous positions as shown at A.

As shown, the trackway portion 44 is approximately twice the width of the trackway portion 43, thus permitting the double file relationship of the chain and its article supporting means. It is to be understood that while the driving sprocket 53 is driven at a constant rate of speed, the speed of travel of the grouped-together chain links and article supporting members within the widened portion 44 of the guideway, will be reduced to approximately one-half the speed of travel of these members while they are in their single file relationship and traversing the narrow portion 43 of the guideway. When the members of the chain and their article supporting means reach the exit end of the slot portion 44 at the right of Fig. 1, the links again shift gradually into their single file relationship with the centers of the article supports being again spaced, as at A, before moving into contact with the driven sprocket 54.

Thus it will be seen that by driving the conveyer chain 45 at a constant speed by the electric motor, said chain and its article supporting means will travel at a predetermined rate of speed throughout the narrow portions 43 of the guideway and at a predetermined lower rate of speed, approximately half speed while traveling in their double file staggered relationship through the widened portion 44 of the guideway.

As stated above, the distance between the center lines of the link pins and article supports when the chain is in single file relationship in the narrow slot portions 43 is indicated at A in the enlarged scale view of Fig. 5, whereas the center line spacing lengthwise of the conveyer when the chain and its article supporting means are in grouped-together and double file relationship in the enlarged portion 44 of the guideway, is shown at B in this figure. The imaginary center lines shown at C in this figure serve to indicate the shifting movement of the chain links and article supporting means from their single file relationship into their double file relationship, these lines C also being intended to indicate the slowing down of the movement or travel of the chain as it approaches the center line distances indicated at B while traveling in the enlarged portion 44 of the guideway or track.

In Fig. 6 of the drawings there is shown the parts illustrated in Fig. 5 with the article supporting means or members having articles 86 carried thereby. In the event the conveyer is being used in conjunction with heat treatment of the articles 86 it will be noted, as indicated by the series of arrows D, that the heat waves are concentrated on the surfaces of the double file articles and that any heat which might have a tendency to pass through the space between an adjacent pair of articles arranged lengthwise of the apparatus would come in contact with the surface of an article disposed directly behind the said pair of articles. Moreover, if the apparatus was being employed in connection with a spraying operation, all of the fluid sprayed or forced upon the articles would, in like manner, find its way onto the surface of the articles. Additionally, if the apparatus were in the form of a glazer, with a battery of gas burners disposed on each side of the guideway portion 44 (said burners not being shown in Fig. 6) any flames from

said batteries of burners which happen to pass through spaces between adjacent pairs of articles would contact articles located behind said pairs, thus effecting a substantial saving in fuel. It will be understood that, if desired, the articles 86 may be rotated as indicated by the arrows E.

Having thus described our invention, what we claim as new is:

1. A glazer for glazing glassware or the like comprising a supporting frame including a horizontal plate, a guideway formed in said plate, said guideway having a narrow portion and having a widened portion which merges with and forms a continuation of the narrow portion, an endless conveyer associated with said guideway, said conveyer comprising a chain composed of a plurality of links pivoted together by vertically disposed pivot pins which carry anti-friction sleeves that fit within and engage said guideway, said chain passing around horizontally disposed sprockets associated with said plate and one of which is a driving sprocket, said widened portion of said guideway being disposed between said sprockets, opposed glazing burners mounted above said plate on opposite sides of the widened portion of the guideway, and article-supporting members disposed on the upper ends of said pivot pins above said plate substantially at the same level as the burners, the total extended length of the portion of the chain between said sprockets and which extends through the widened portion of the guideway being greater than the distance between said sprockets so that as the chain is moved into said widened portion the links will fold and articles supported on said article-supporting members will change from single file relationship to double file relationship so that while the articles are along the widened portion of the guideway each of the glazing burners will direct heat onto the adjacent row or articles and through such articles onto the articles of the other row.

2. A glazer for glazing glassware or the like comprising a supporting frame including a horizontal plate, a guideway formed in said plate, said guideway having a narrow portion and having a widened portion which merges with and forms a continuation of the narrow portion, an endless conveyer associated with said guideway, said conveyer comprising a chain composed of a plurality of links pivoted together by vertically disposed pivot pins, said chain passing around horizontally disposed sprockets associated with said plate and one of which is a driving sprocket, said widened portion of said guideway being disposed between said sprockets, a glazing unit mounted above said plate along the widened portion of the guideway, and article-supporting members disposed on the upper ends of said pivot pins above said plate substantially at the level of the glazing unit, the total extended length of the portion of the chain between said sprockets and which extends through the widened portion of the guideway being greater than the distance between said sprockets so that as the chain is moved into said widened portion the links will fold and the articles supported by said article-supporting members will change from single file relationship to double file staggered relationship so that while the articles are in the widened portion of the guideway the glazing unit will direct heat onto the adjacent row of articles and through such articles onto the articles of the other row.

3. Apparatus according to claim 2 wherein the

driving sprocket is disposed ahead of the widened portion of the guideway so as to push the links of the chain into said widened portion and including additional means for forcing the chain through the widened portion of the guideway, said additional means including driven sprockets located just inside the mouth of said widened portion and engaging the folded chain on opposite sides thereof.

4. Apparatus according to claim 2 wherein lubricating means is provided for said chain and comprises a trough for containing the lubricant disposed beneath said horizontal plate and beneath the narrow portion of said guideway, a nozzle disposed above said plate and above said trough for spraying the lubricant on the chain from whence it will drop into the trough, and a pump for withdrawing the lubricant from the trough and forcing it into said nozzle.

5. A glazer according to claim 2 including means associated with the lower ends of said pins and with the widened portion of said guideway for rotating said pins and thereby rotating the articles while they are moved along said glazing unit.

6. Apparatus according to claim 5 wherein the means for rotating the pins comprises a sprocket keyed on the lower end of each pin, a chain disposed at the level of said sprockets and engaging said sprockets as they are moved past said chain, said chain extending along the widened portion of the guideway and being positively driven.

7. A glazer for glazing glassware or the like comprising a supporting frame, a guideway carried by said frame, said guideway having a narrow portion and having a widened portion which merges with and forms a continuation of the narrow portion, an endless conveyer associated with said guideway, said conveyer comprising a chain composed of a plurality of links pivoted together for relative movement, guide means associated with said chain and engaging said guideway, said chain passing around sprockets associated with said guideway and one of which is a driving sprocket, said widened portion of said guideway being disposed between said sprockets, a glazing unit disposed along the widened portion of the guideway, and article-supporting members carried by said chain at spaced intervals, the total extended length of the portion of the chain between said sprockets and which extends along said widened portion of the guideway being greater than the distance between said sprockets so that as the chain is moved into said widened portion the links will fold and the articles will change from single file relationship to a double file staggered relationship so that while the articles supported by said article-supporting members are associated with the widened portion of the guideway the glazing unit will direct heat onto the adjacent row of articles and through such articles onto the articles of the other row.

8. A glazer for glazing glassware or the like comprising a supporting frame, a guideway carried by the frame, said guideway including a widened portion and narrow portions leading to and from said widened portion and merging therewith, an endless conveyer associated with said guideway, said conveyer comprising a chain composed of a plurality of links pivoted together for relative movement, guide means associated with said chain and engaging said guideway, said chain passing around sprockets associated with said guideway, one of said sprockets being a driving sprocket and engaging said chain ahead of said

widened portion of the guideway so as to push the chain into the guideway, a glazing unit disposed along the widened portion of the guideway, and article-supporting members carried by said chain at spaced intervals, the total extended length of the portion of the chain between said sprockets and which extends along said widened portion of the guideway being greater than the distance between said sprockets so that as the chain is pushed into said widened portion the links will fold against each other and the articles supported on said article-supporting members will change from a single file relationship to a double file staggered relationship so that while the articles are associated with the widened portion of the guideway the glazing unit will direct heat onto the adjacent row of articles and through such articles onto the articles of the other row, the folded links being unfolded as they are pushed from the exit end of the widened portion of the guideway into the narrow portion of the guideway which leads therefrom.

9. A glazer according to claim 8 including means for rotating the article-supporting members while they move past said glazing unit.

10. A glazer for glazing glassware or the like comprising a supporting frame including a plate, a guideway formed in said plate, said guideway having a narrow portion and having a widened portion which merges with and forms a continuation of the narrow portion, an endless conveyer associated with said guideway, said conveyer comprising a chain composed of a plurality of links pivoted together by pivot pins, said chain passing around sprockets associated with said plate and mounted for rotation about axes disposed substantially at right angles thereto, one of said sprockets being a driving sprocket, said widened portion of said guideway being disposed between said sprockets, a glazing unit mounted substantially parallel to said plate along the widened portion of the guideway, and article-supporting members disposed on the ends of said pivot pins and spaced from said plate substantially at the plane of the glazing unit, the total extended length of the portion of the chain between said sprockets and which extends through the widened portion of the guideway being greater than the distance between said sprockets so that as the

chain is moved into said widened portion the links will fold and the articles supported by said article-supporting members will change from single file relationship to double file staggered relationship so that while the articles are in the widened portion of the guideway the glazing unit will direct heat onto the adjacent row of articles and through such articles onto the articles of the other row.

11. A glazer for glazing glass articles or the like comprising a supporting frame, a guideway carried by said frame, said guideway having a narrow portion and having a widened portion which merges with and forms a continuation of the narrow portion, a flexible conveyer associated with said guideway, guide means associated with said conveyer and engaging said guideway, spaced members which engage said conveyer and one of which is a driving member, said widened portion of said guideway being disposed between said members, a glazing unit disposed along the widened portion of the guideway, and article-supporting members carried by said conveyer at spaced intervals, the total extended length of the portion of the conveyer between said members and which extends along said widened portion of the guideway being greater than the distance between said members so that as the conveyer is moved into said widened portion it will fold and the articles will change from single file relationship to a double file staggered relationship so that while the articles supported by said article-supporting members are associated with the widened portion of the guideway the glazing unit will direct heat onto the adjacent row of articles and through such articles onto the articles of the other row.

WILLIAM L. McNAMARA.
FREDERICK Z. FOUSE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
914,188	Robinson	Mar. 2, 1909
1,557,368	Kershaw et al.	Oct. 13, 1925
2,368,350	Ellison	Jan. 30, 1945
2,393,521	Duncan et al.	Jan. 22, 1946
1,856,498	Miller	May 3, 1932