Oct. 30, 1923. 1,472,049

A. L. CLARK

ENDLESS CONVEYER

Filed April 13, 1922 2 Sheets-Sheet 1

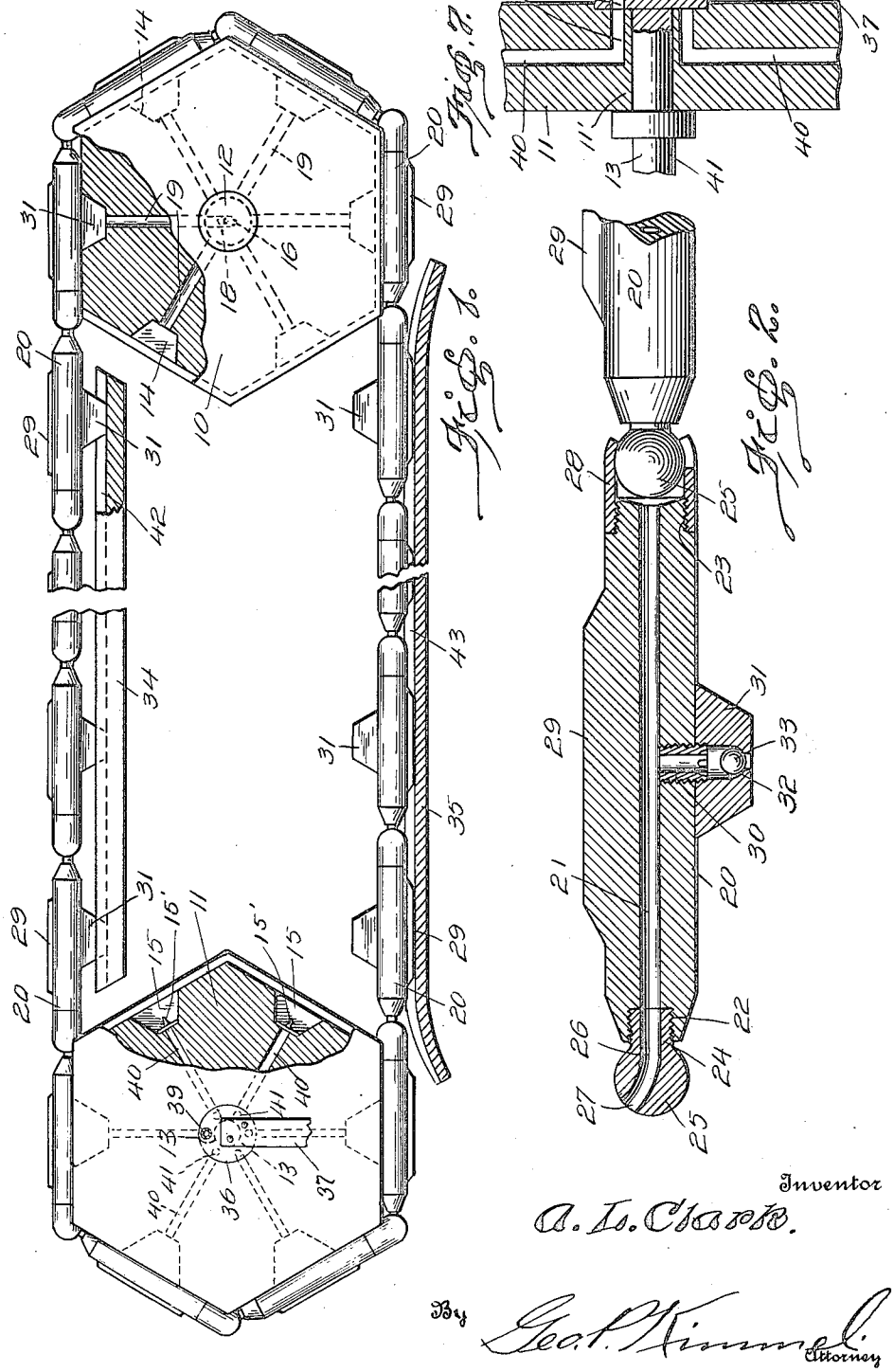


Fig. 1.

Fig. 3.

Fig. 2.

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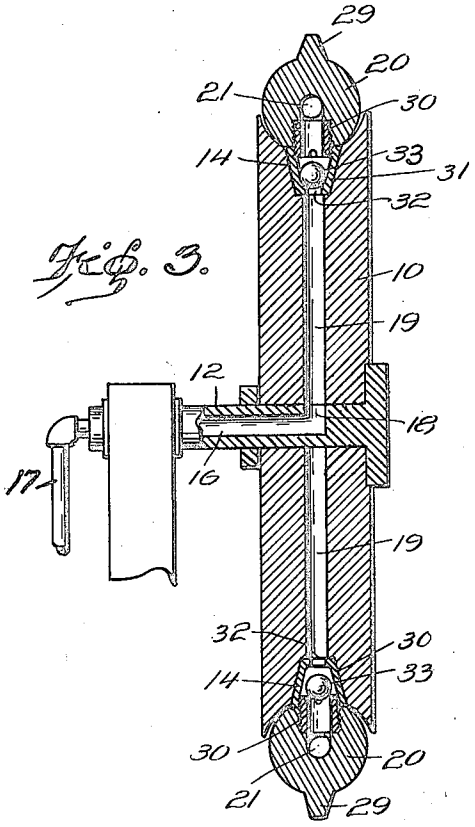


Fig. 3.

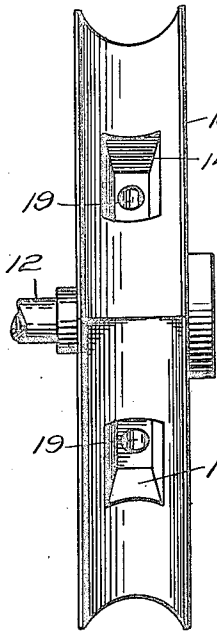


Fig. 4

Fig. 5.

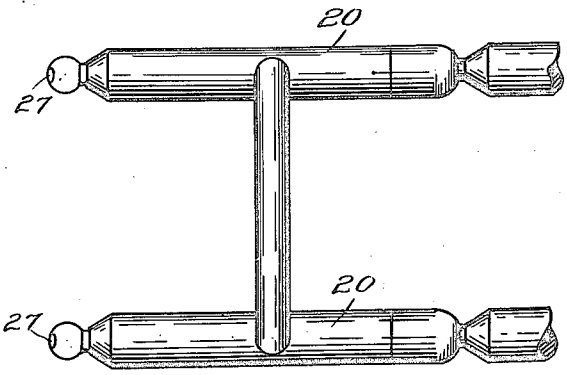
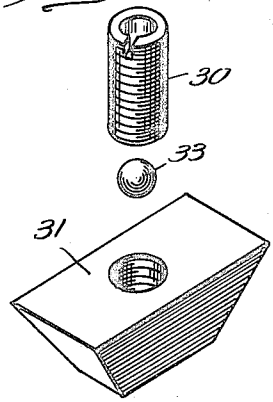


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALFRED L. CLARK, OF WELLSVILLE, OHIO.

ENDLESS CONVEYER.

Application filed April 13, 1922. Serial No. 552,203.

To all whom it may concern:

Be it known that I, ALFRED L. CLARK, a citizen of the United States, residing at Wellsville, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Endless Conveyers, of which the following is a specification.

This invention relates to conveyer chains, more particularly to chains employed in heating ovens, kilns, and the like, where the chains are subjected to more or less intense heat, and has for one of its objects to provide a chain of hollow links through which a heating medium is caused to pass to counteract the heat imparted by the oven or kiln.

Another object of the invention is to provide a device of this character including a chain of hollow links having means whereby a heat imparting medium is consecutively supplied to the links at one point in the transit of the chain and consecutively exhausted therefrom at another point in the transit.

Another object of the invention is to provide a device of this character including a chain of hollow links each having a valved projection and operating over a chain wheel having a plurality of marginal recesses to consecutively receive the projections, and with means carried by the wheel for consecutively supplying a heat imparting medium to the links as they pass over the wheel.

With these and other objects in view the invention consists in certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims, and in the drawings illustrative of the preferred embodiment of the invention:—

Fig. 1 is a side elevation, partly in section, of the improved device,

Fig. 2 is an enlarged sectional detail illustrating the construction of one of the links,

Fig. 3 is a sectional view of the main power transmitting wheel and through which the heat imparting medium is conducted,

Fig. 4 is an edge view of the wheel as shown in Fig. 3,

Fig. 5 represents one of the projections of the links together with the valve and the coupling member,

Fig. 6 is a view of a pair of the links illustrating a modification of the construction.

Fig. 7 is a sectional detail illustrating the construction of the exhaust of the device.

The improved device is designed for use in tempering ovens, kilns, and the like and through which molded articles of glass and the like are slowly conveyed and subjected to more or less intense heat during the passage, to "temper" the articles, and consists primarily of one or more endless chains formed of hollow links through which steam, hot air or the like, is caused to pass while passing through the oven or kiln and to prevent warping or disintegrating the links by the heat of the oven, and to counteract its effects.

The improved device includes coacting wheels 10 and 11, the wheel 10 being preferably mounted for rotation on a shaft 12 and the wheel 11 mounted to rotate with a shaft 13, the shaft 13 being the power shaft and the wheel 11 the power wheel.

The wheels 10 and 11 are formed respectively with hollow rims, and with a plurality of sockets or pockets 14 and 15, uniformly spaced.

The shaft 12 is longitudinally bored as shown at 16 and a conductor 17 for steam, hot air, or the like, coupled to the shaft as shown in Fig. 3. At its inner end the bore 16 of the shaft 12 is directed laterally as shown at 18, and communicates with the inner face of the hub of the wheel 10. Each of the sockets 14 of the wheel 10 is provided with a radial conductor 19 communicating respectively with the interior of the hub of the wheel, as shown in Fig. 1. By this arrangement, as the wheel 10 is rotated on the stationary shaft 12, the conductor passages are caused to consecutively communicate with the branch 18, and receive a portion of the steam or other heat imparting medium.

The shaft 13 is keyed to the wheel 11 as shown at 11′ and is supplied at its outer face and preferably partly embedded therein, with a disk 36, the latter held stationary as by a bracket indicated at 37. Extending through the disk 36 near one edge is a port 38 and connected into the disk and communicating with the port is a supply pipe 39 for the steam, hot air or the like.

Leading inwardly from each of the pockets 15 is a duct 40 each having a lateral branch 41 adapted to register consecutively with the port 38 as the wheel 11 is rotated.

Located in the bottom of each of the pockets 15 is a small spur 15′ so constructed as not

to obstruct the flow of the steam through the ducts 19, the object to be hereinafter explained.

The improved chain which operates over the wheels 10 and 11 is formed of a plurality of links 20, each longitudinally bored as shown at 21 in Fig. 2, and with an internally threaded socket 22 at one end externally threaded as at 23 at the other end.

Fitting in each socket 22 by a threaded stem 24 is a ball 25, the stem 24 being bored as at 26 to register with the bore 21 of the link and with a lateral branch 27 leading through one side of the ball. At its opposite end an internally threaded tubular cap 28 engages over the externally threaded portion 23 of the link and forms a socket to receive the ball 25 of the next link, and is contracted at its outer end to prevent the disengagement of the ball.

By this means the links are flexibly coupled, to form an endless chain operating around the wheels 10 and 11, the margins of the latter being a plurality of flat faces corresponding to the lengths of the links.

Each link is formed with a longitudinally directed rib 29 and with an internally threaded aperture at the side opposite to the rib and communicating with the bore 21 of the link, to receive an externally threaded sleeve 30, the latter extending beyond the face of the link. Engaging over the projecting portion of the sleeve is a chock or projection 31 conforming to and engageable consecutively with the sockets 14 in the wheel 10 and in the sockets 15 in the wheel 11.

With the chain formed of the flexibily coupled links 20 and disposed around the wheels 10 and 11, as shown in Fig. 1, and motion imparted to the shaft 13, the chocks or projections 31 engaging in the pockets of the wheels, motion will be imparted to the chain, as will be obvious.

Each chock or projection 31 is transversely bored with each bore internally threaded at one end to receive one of the sleeves 30 and reduced at the other end to form a valve seat to receive a valve 33, preferably a ball valve, as shown.

The bores of the members 30 are thus adapted to communicate respectively with the conductor passages 19.

By this means as the wheel 10 is rotated around the shaft 12, the passages 19 consecutively register with the branch 18, and the bores 21 of the links are thus supplied consecutively with steam, hot air, or the like, and so long as the links are maintained in longitudinal alinement, or moving between the wheels, the steam or the like will be retained within the links and keep them heated while passing through the oven or kiln. So long as the links are retained in longitudinal alinement, as the wheel 11 rotates the chocks 31 consecutively enter the sockets 15 and the spurs consecutively engage the ball valves 33 and unseat them and permit the heating medium to exhaust through passages 40 and 41 and port 38 and pipe 39.

Thus while the chain is passing between the wheels 10 and 11 during the outward traverse the links 20 will retain the steam or hot air, and be exhausted and freed from the heating medium during the return traverse, and then be recharged as the pasages 19 consecutively pass the branch 18, as before described.

A carrier or track 34 is located beneath the upper portion of the chain, while a similar track 35 is located beneath the lower side of the chain, to prevent the sagging of the chain.

The track 34 is longitudinally channeled as indicated at 42 to receive the chocks 31 and thus hold the links from rotation during the outward traverse and the track 35 is likewise longitudinally channelled as at 43 to receive the ribs 29, to hold the links from rotation during the return traverse.

The improved device is simple in construction, can be manufactured of any required size and capacity, and provides means for preserving the links from distortion by the intense heat to which they will be subjected when in use.

The preferred embodiment of the invention is disclosed in the drawings and set forth in the specification, but it will be understood that modifications within the scope of the claimed invention may be made in the construction without departing from the principle of the invention or sacrificing any of its advantages.

Having thus described the invention what is claimed as new is:—

1. A chain belt formed of links flexibly coupled with continuous connecting passages therethrough, means for supplying a heat imparting medium consecutively to the passages through said links at one point of the transit of the belt, and means for exhausting the heat imparting medium of each link at another point of the transit.

2. An endless chain belt formed of links flexibly coupled with continuous connecting passages therethrough, chain wheels in spaced relation over which the said chain operates, means carried by one of said wheels for supplying heat imparting medium consecutively to the passages of said links, and means for exhausting the heat imparting medium from each link at one point in the transit of the belt.

3. A chain belt formed of links, each link having a ball at one end and a ball receiving socket at the other end, and a continuous passage through each link and the ball thereof, and means for supplying a heat imparting medium consecutively to the passages of said links and balls.

4. A device of the class described comprising coacting wheels having marginal pockets and a radial duct leading from each pocket, a chain belt formed of hollow links flexibly coupled and operating over said wheels, each link having a projection adapted to consecutively engage in said pockets, a valve in each projection, and means whereby a heating medium is supplied to said links while passing over one of said wheels and exhausted therefrom while passing over the other wheel.

5. A chain belt formed of hollow links flexibly coupled, a projection from each link having a valved passage communicating with each link, a chain wheel over which said chain operates and provided with marginal pockets to consecutively engage said projection, each pocket communicating with a conductor for a heat imparting medium, whereby said links are consecutively supplied as they traverse over said wheel.

6. A chain belt formed of hollow links flexibly coupled, a projection from each link having a valved passage communicating with each link, a stationary shaft having a longitudinal bore and a lateral branch at the inner end of the bore, a wheel mounted for rotation on said shaft and constantly covering said branch, said wheel having marginal sockets to consecutively receive said valve projection and with a passage leading from each socket and communicating respectively with said branch as the wheel is rotated, whereby a heat imparting medium supplied to the bore of said shaft is consecutively supplied to the links as they pass over the wheel.

7. An endless chain belt formed of hollow links flexibly coupled, chain wheels in spaced relation over which the said chain operates, means carried by one of said wheels for supplying heat imparting medium consecutively to said links, and means carried by the other wheel for exhausting the heat imparting medium as the chain passes over said last mentioned wheel.

8. A device of the class described comprising spaced shafts one of which is stationary and longitudinally bored, the bore having a lateral branch, a wheel mounted for rotation on said stationary shaft and having a plurality of marginal pockets and with a duct leading radially from each pocket and adapted to consecutively register with the lateral branch of the bore of said shaft, a wheel rotative with the movable shaft and having a plurality of marginal pockets with a duct leading radially from each pocket and each duct with a lateral terminal branch, a stationary disk having a lateral exhaust port with which said lateral branches consecutively register as the wheel is rotated on the shaft, an endless chain belt formed of hollow links flexibly united and operating over said wheels, each of said links having a valved projection adapted to consecutively engage in said pockets, whereby a heat imparting medium supplied to the bore of said shaft is consecutively supplied to the links as they pass over the wheels.

9. A device of the class described comprising coacting wheels having marginal pockets, longitudinally channelled supports between said wheels, an endless chain of links flexibly united and operating over said wheels, each link having a projection on one side to engage in the channel of one of said supports and to consecutively engage in said pockets and with a stop rib on the opposite side of each of said links to engage in the channel of the other support, whereby the chain is operated and prevented from sagging and rotating.

March 22, 1922.

In testimony whereof, I affix my signature hereto.

ALFRED L. CLARK.