

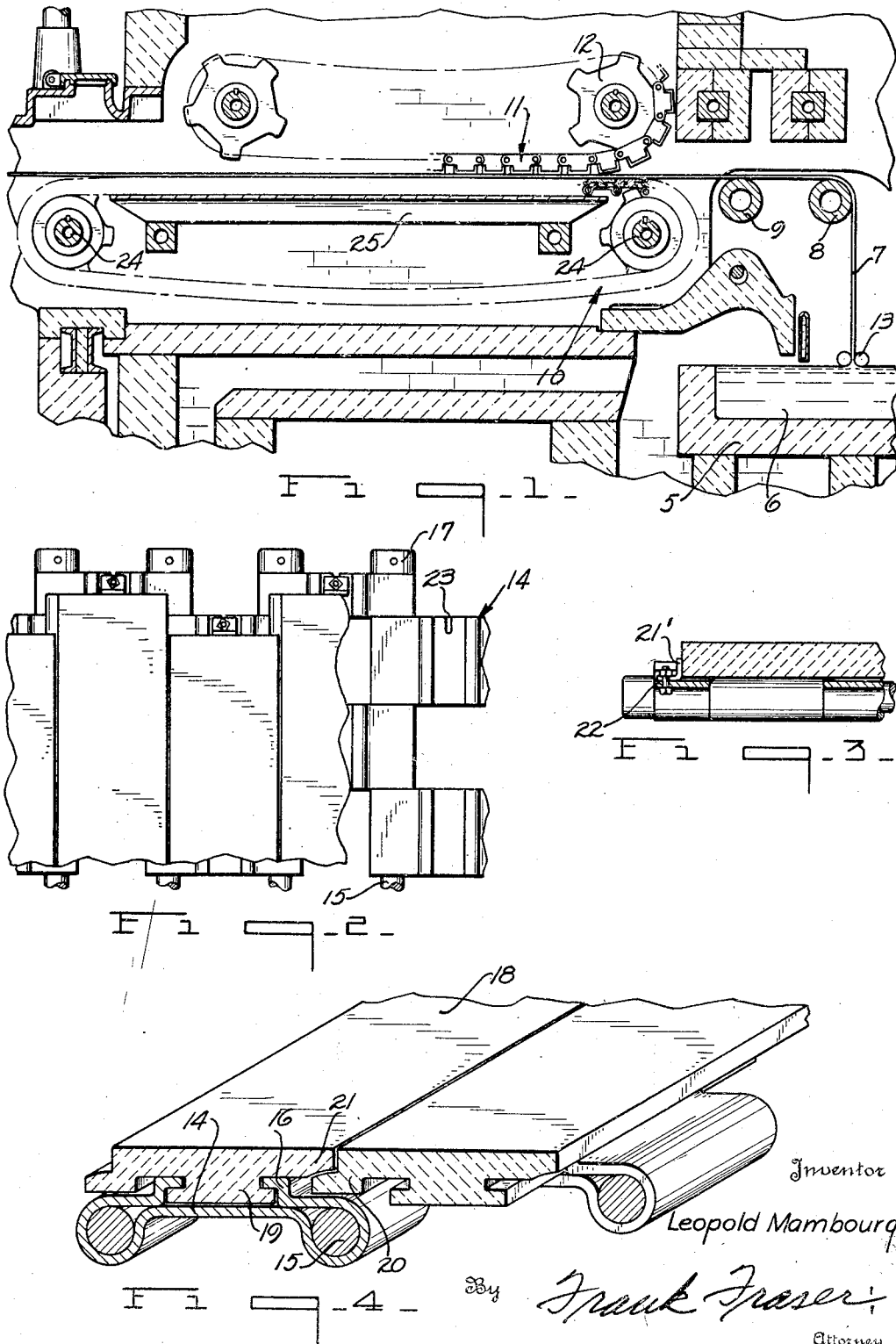
Nov. 10, 1931.

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1,831,629

SHEET GLASS APPARATUS

Filed April 30, 1928



UNITED STATES PATENT OFFICE

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SHEET GLASS APPARATUS

Application filed April 30, 1928. Serial No. 273,828.

The present invention relates to sheet glass apparatus and has particular reference to a drawing and flattening table therefor.

An important object of the invention is to provide an improved drawing and flattening table adapted for use in sheet glass apparatus, which table is designed to present a substantially flat and unbroken surface to the sheet of glass adapted to come in contact therewith, the table also being such that its temperature can be readily controlled, which temperature is substantially uniform throughout the entire dimensions of the table.

Another object of the invention is to provide such a device consisting primarily of a plurality of slabs arranged in a manner to form a substantially flat, unbroken surface to the glass coming in contact therewith.

A further object of the invention is to provide an improved drawing and flattening table for use in sheet glass apparatus, which table comprises a plurality of pivotally associated links arranged in an endless belt formation, and a plurality of slabs carried by the links, which slabs are preferably formed from a refractory clay.

Other objects and advantages of the invention will become more apparent during the course of the following description when taken in connection with the accompanying drawings.

In the drawings wherein like numerals are employed to designate like parts throughout the same,

Fig. 1 is a fragmentary vertical longitudinal section through one form of sheet glass apparatus in which the present device may be used,

Fig. 2 is a fragmentary plan view showing structural details,

Fig. 3 is a fragmentary detail, and

Fig. 4 is a fragmentary perspective view of my improved device.

For the purposes of illustration, my improved device is shown as being used in the type of machine covered in the patent to Colburn, No. 1,248,809, granted December 4, 1917. However, it is to be understood that

the use of this invention is not necessarily limited or restricted to such a machine.

Referring to the drawings, the numeral 5 designates a draw pot or working receptacle adapted to contain a mass of molten glass 6 which may be continuously supplied to the working receptacle from a tank furnace or the like, which is not shown. A sheet 7 is adapted to be drawn from the mass of molten glass 6, the sheet being drawn initially in a vertical plane, and being deflected from such plane over a so-called bending roll 8 whereby the sheet may be run in a horizontal plane over a roll 9 and my improved drawing and flattening table designated in its entirety by the numeral 10. The sheet then passes into an annealing leer which is not shown. It is customary to arrange a clamp bar construction 11 above the drawing and flattening table 10. The clamp bars are constructed in a manner that they contact with the border portions of the sheet only, although obviously these clamp bars may contact with the sheet throughout its entire width if it is so desired. The clamp bars are pivotally associated and are arranged in an endless belt formation so that sprockets 12 may be used to rotate the same. To prevent narrowing of the sheet in its vertical run, edge engaging means 13 are disposed at the base of the sheet and in contact with its edges.

The draw table ordinarily used in conjunction with the Colburn machine comprises a plurality of links pivoted together. With the types of links commonly used, there is a plurality of gaps or openings in the table which, in my opinion, are objectionable. There are several reasons why I consider the regular type of draw table inferior to the present construction. In the first place, it is an extremely difficult, if not impossible, task to control the temperature of the usual draw table in a manner that it is of a uniform nature. The links used in the construction of the table are relatively small, and due to the gaps between the links, the transmission of heat from one link to the other is comparatively slow, thus making it hard to properly heat the table. The problems of properly heating the table are increased in the

larger machines where wider sheets are formed. Further, the gaps present between the links offer places for the sheet to sag causing, if the sheet is sufficiently plastic, as it sometimes is, an irregular surface to be formed on said sheet.

In the present case the draw table comprises a plurality of preferably metallic links 14 adapted to support slabs which will be more fully explained hereinafter. As shown in Fig. 4, the links may be made from sheet metal. The links are pivotally associated by means of rods or the like 15, the rods passing through suitable apertures formed in the links. It is preferred that the ends of the metal forming the links terminate in the extensions 16 shaped substantially as shown. Although I have disclosed one type of link construction, it will be understood that the links can be cast or otherwise formed as the present invention is not restricted to any particular type of link construction. Referring to Fig. 2, it will be seen that the links 14 are pivotally associated in a manner to form an endless belt construction. Locking means 17 are provided on the ends of the rods 15 to hold them in proper relation.

Arranged transversely of the table is a plurality of slabs 18 formed preferably from a refractory clay material, although they may be formed from carbon, metal, or the like. The slabs 18 carry the tongues 19 adapted to be received in the groove formed between the extensions 16. Each slab preferably carries lips or flanges 20 adapted to cooperate with a similar lip or flange 21 on the adjacent slab, and the faces of the flanges may be curved to permit movement of the slabs with respect to each other. The slabs 18 may be placed in position by sliding the same transversely across the table formed by the pivotally associated links 14, the tongues 19 being received in the grooves formed between the lips 16. To prevent lateral displacement of the slabs after they have been arranged in proper position, angle pieces 21' may be bolted in position as shown in Fig. 3, the bolts 22 passing through the slots 23. Although it is desirable to make each slab the entire width of the draw table, in some instances it may be necessary or desirable to make them sectional, in which event it is preferred to stagger the joints, and this may be done in the manner illustrated in Fig. 2. In this case it is only necessary to use the angle pieces 21' at the sides of the draw table as the slabs can abut end to end satisfactorily.

The draw table thus formed may be trained about the sprockets 24, either one of which, or both, may be positively driven. To support the table 10 in its upper horizontal run, draw table rails 25 are arranged between the sprockets 24. Due to the fact that the slabs 18 are preferably formed from refractory clay, the lower run of the draw table is per-

mitted to hang down and no idler roll is used. Of course the use of an idler roll is not prohibited by this construction except it is not considered desirable when refractory clay is used as a material from which the slabs 18 are formed. The teeth of the sprockets 24 engage the links between adjacent ends thereof as shown in Fig. 1.

By using the slab members 18, it will be seen that when the table is in its upper horizontal run, such as when it supports the sheet, a substantially solid or flat, unbroken surface is presented. Another advantage obtained by this construction is the relative ease with which the temperature of the table can be controlled, that is, the slabs will very readily attain a uniform temperature throughout their entire links.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the the scope of the subjoined claims.

I claim:

1. A draw table for use in the manufacture of sheet or plate glass, comprising a plurality of pivotally associated links arranged in an endless belt formation, a plurality of slab members arranged transversely of said table and supported upon said links, and means removably carried by certain of the links and engaging the adjacent ends of the corresponding slabs for preventing lateral displacement thereof.

2. A draw table for use in the manufacture of sheet or plate glass, comprising a plurality of substantially parallel rows of links, means for pivotally connecting the rows of links in endless belt formation, each of said links being provided with a groove, and a plurality of slabs supported upon the links, each slab having a tongue member receivable within the grooves of said links.

3. A draw table for use in the manufacture of sheet or plate glass, comprising a plurality of substantially parallel rows of links formed from sheet metal, means for pivotally connecting the rows of links in endless belt formation, the ends of the metal forming the links terminating in extensions, and a plurality of slab members supported upon the links and having grooves within which the extensions on said links are received.

4. A draw table for use in the manufacture of sheet or plate glass, comprising a plurality of substantially parallel rows of links formed from sheet metal, means for pivotally connecting the rows of links in endless belt formation, the ends of the metal forming the links terminating in extensions, a plurality of slab members supported upon the links and having grooves within which the extensions

on said links are received, and means removably carried by certain of the links and engaging the adjacent ends of the corresponding slabs for preventing lateral displacement thereof.

5 5. In sheet glass forming apparatus, a draw table composed of a plurality of substantially parallel rows of links extending longitudinally of the table, means for pivotally connecting the rows of links in endless
10 belt formation, a plurality of slab members arranged transversely of said table and supported upon said rows of links, and means for supporting the links during their sheet
15 engaging run in a manner that said slab members will present a substantially flat, unbroken sheet engaging surface.

6. In sheet glass forming apparatus, a draw table composed of a plurality of substantially parallel rows of links extending
20 longitudinally of the table, means for pivotally connecting the rows of links in endless belt formation, a plurality of slab members arranged transversely of said table and supported upon said rows of links, each of said
25 links being provided with a groove and each slab member having a tongue fitting within said grooves, and means for supporting the links during their sheet engaging run in a
30 manner that said slab members will present a substantially flat, unbroken sheet engaging surface.

7. In sheet glass forming apparatus, a draw table composed of a plurality of links
35 pivotally associated with one another in an overlapping and intermeshing relation to form a link belt conveyor, a plurality of slab members arranged transversely of said table and supported upon said links, and means
40 for supporting the links during their upper horizontal run in a manner that said slab members will present a substantially flat, unbroken sheet supporting surface.

8. In sheet glass forming apparatus, a draw table composed of a plurality of links
45 pivotally associated with one another in an overlapping and intermeshing relation to form a link belt conveyor, a plurality of slab members arranged transversely of said table and supported upon said links, each of said
50 links being provided with a groove and each slab member having a tongue fitting within said grooves, and means for supporting the links during their upper horizontal run in a
55 manner that said slab members will present a substantially flat, unbroken sheet supporting surface.

Signed at Toledo, in the county of Lucas
and State of Ohio, this 19th day of April,
60 1928.

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