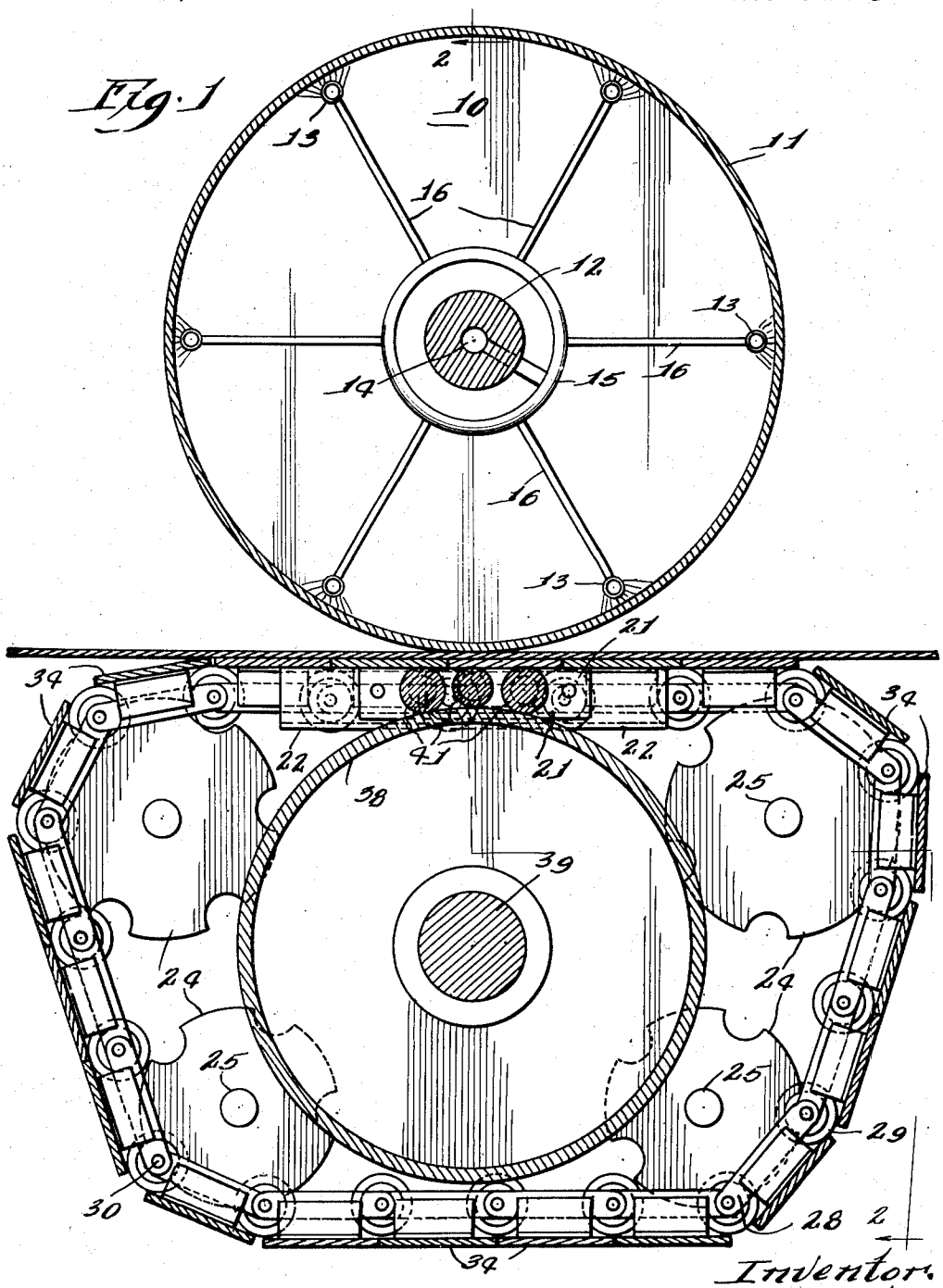
Nov. 20, 1951 G. H. BURT 2,575,744

IRONER APPARATUS

Filed Dec. 21, 1948 2 SHEETS—SHEET 1

Fig. 1



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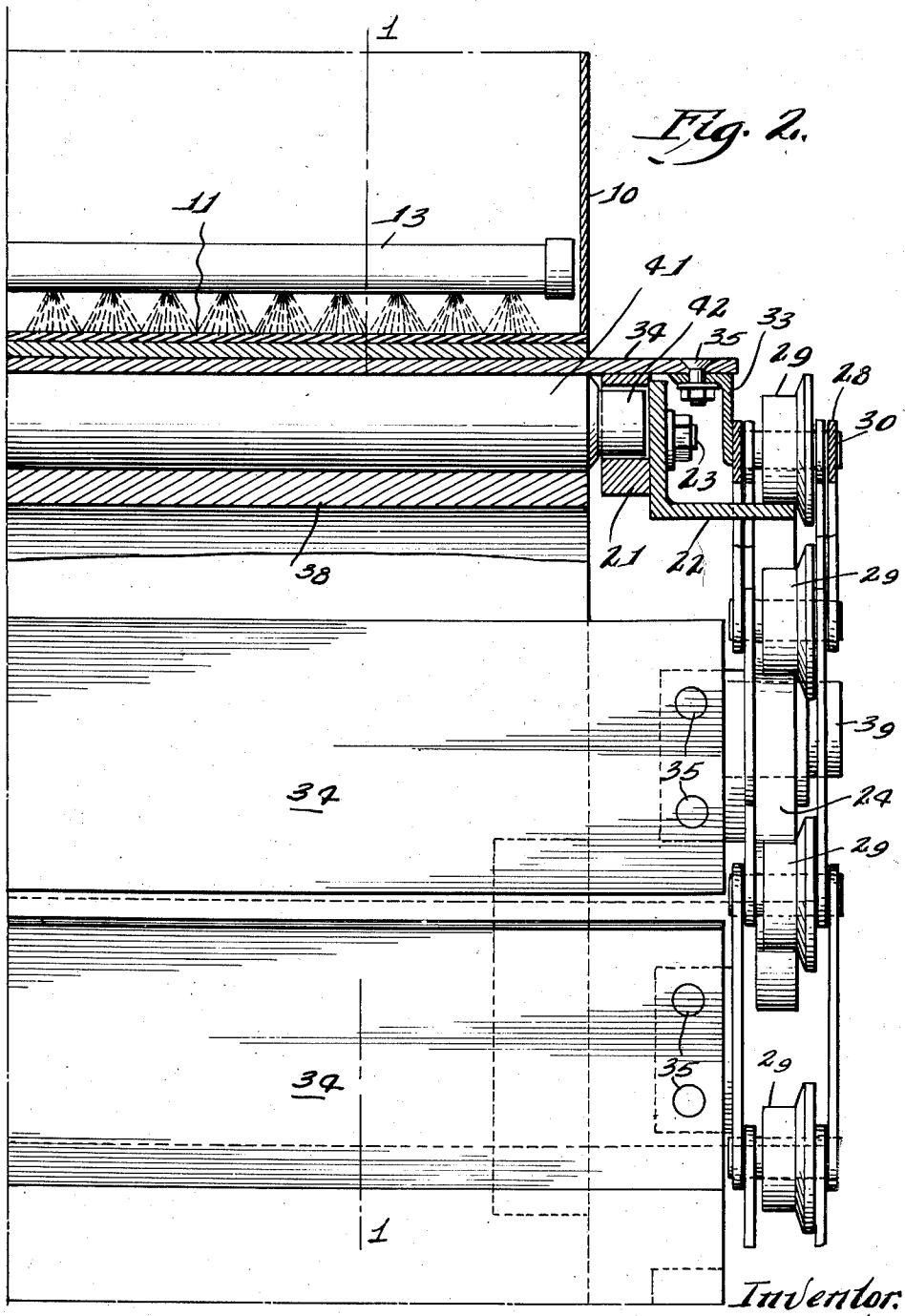

Fig. 2.

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IRONER APPARATUS

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5 Claims. (Cl. 18—19)

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The apparatus illustrated in the accompanying drawings and hereinafter described is a device for hot ironing or smoothing the surface of fiberboard, usually more specifically referred to as fiber insulating board.

In the past it has been more or less common practice to smooth the surface of fiber insulation board or a surface finish applied to a surface of such board by a hot ironing operation which, so far as is known, has comprised a hot ironing of a surface of the board by passing the board between a pair of superposed rolls, one of which is suitably heated. It will be understood, of course, since the ironing is carried out with the application of considerable pressure, that the such ironing rolls are suitably loaded, as by springs or the like. When fiberboard is passed through an apparatus of the type just described, there is a considerable compression of the fiberboard between the rolls, and this causes a certain amount of breaking down of the structure of the board and tends to cause the board to become more flexible and occasions a loss in the strength characteristics.

The apparatus hereof has been designed for the purpose of avoiding the just above-referred to undesirable features of the fiberboard ironers as heretofore used.

It is a particular object of this invention to provide an apparatus for hot ironing fiberboard, particularly fiber insulation board, in such a manner that the board may be ironed without the considerable loss of strength, as has heretofore been common in connection with such operation, and to avoid to a considerable degree the breaking down of the structure of the board in the course of such ironing. It is also an object of this invention to provide a hot ironing apparatus which is simple in construction and in connection with which upkeep and maintenance is at a minimum.

In the accompanying drawings the device hereof is illustrated in Figure 1, a cross-section taken on line 1—1 of Figure 2, and Figure 2 is a cross-section taken on line 2—2 of Figure 1.

In connection with the device as illustrated, it is to be understood that for the purpose of simplifying the illustrations, the various drives and details insofar as possible have been left out, since such are conventional and the showing thereof would not aid in an understanding of the disclosure. It is also to be understood that the devices for loading the ironing roll have been omitted, but again these being conventional, as, for example, the loading may be by a conventional spring, or by hydraulic means, or by suitable weights or the like, they have not been shown.

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Generally, the apparatus may be described as a traveling or endless flat bed over which there is suitably positioned a rotating hot roll which is suitably heated.

The apparatus comprises a hot roll 10 having a shell 11 and central shaft 12. Mounted within the roll, provided with supply conduit 14 in shaft 12, there is provided a gas distributor 15 which is connected to conduit 14, from which there extend pipes 16 carrying burners 13. The gas flames from such burners suitably heat the shell of the hot roll, and it is to be understood that since such gas piping and burners are but conventional heating means, the shell 11 may alternatively be heated by other suitable means, as, for example, electrically or by steam.

The hot roll 10 is superposed over a traveling table or conveyor formed by table plates 34 mounted on angles 33 and secured thereto by bolts 35. Parts of the apparatus are suitably mounted in a frame, a small portion of which is shown at 21, and to which part 21 there is secured an angle 22 by bolt 23, which angle serves as a track on which run rollers 29.

The endless conveyor or table is mounted on and operates over sprockets 24 which are mounted on shafts 25. The conveyor comprises side links 28 on which are mounted rollers 29 by means of pins 30. On link 28 there is secured an angle member 33 either by welding, bolting, riveting, or the like. The upper horizontal part of this angle 33 has mounted thereon the conveyor or table plates 34 secured thereto by bolts 35 or equivalent securing means. From the foregoing description of the conveyor it will be readily understood that as the conveyor is advanced by the rotation of the sprockets, the rollers 29 will, in the upper run of the conveyor, travel on the upper surface of track 22, and that consequently the conveyor plates 34 will be held to a uniform level and will constitute an endless conveyor table.

So far as the apparatus has been described, the conveyor table plates 34 are supported only at their ends and are unsupported intermediate their ends. Since there is considerable downward pressure exerted on the surface of the conveyor by the superposed hot roll, there are provided supporting rolls 41 for supporting conveyor table plates 34 across substantially their entire widths. These supporting rolls 41 are journaled at their ends as at 42 in the part 21 of the frame of the device, and it will be obvious that these rollers will provide a support under the conveyor table

plates 34 substantially across their entire widths and under that portion where the downward thrust of the hot roll 10 is greatest. Since the load on the rollers 41 may be relatively large, there is provided a further support to support and strengthen rollers 41. This further support comprises a roller 38 on shaft 39, which shaft, of course, is suitably mounted in the framework of the apparatus. The diameter of roll 38 is such that it supports the rollers 41 which, it will be noted, are of different size, the one in the middle being smaller than the two outside rollers, so that all the rollers 41 may ride on large roll 38 and yet a single horizontal tangent will contact the highest portion of the surface of each of the rolls 41. Obviously, as roll 38 revolves, rollers 41 will or may revolve and thus supporting rolling contact surfaces are provided under that portion of the endless conveyor table at the point where the downward thrust of the hot ironing roll 10 is principally concentrated.

From the foregoing description the operation of the device should be obvious, that is, a board, the surface of which is to be ironed and with its surface preferably slightly moistened, either absorbed moisture or as moisture present in a coating applied thereto or the like, is run on the table and under the heated roll 10, the under surface of such sheet will be firmly supported on an endless, forwardly moving table on which it may be suitably ironed by the ironing action of the heated roll 10. Heated roll 10 will preferably be operated at a peripheral speed slightly different from the forward speed of the endless conveyor table, so that in addition to applying pressure to the surface of the sheet being run through the apparatus, there will be some sliding or frictional ironing effect obtained due to such difference in speeds.

Of course, as previously referred to, suitable driving mechanisms are to be provided for driving shaft 12, shaft 25 and shaft 39 at properly coordinated speeds, but any conventional drive will suffice and, therefore, this as well as the conventional means for loading ironer roll 10, by applying a downward thrust thereto, have been omitted from the drawings in order that the novel features of the apparatus may be clearly disclosed and readily understood.

The invention hereof having been described in detail, I claim:

1. In an apparatus for hot ironing a surface of fiberboard, in combination, a frame, a forwardly traveling flat bed, a heated roll superposed over the flat bed, a cylindrical thrust receiving abutment journaled to the frame under the roll and beneath the bed, and thrust transfer rollers interposed between the flat bed and the rotating abutment.

2. In the apparatus defined in claim 1, the traveling flat bed comprising an endless plate conveyor.

3. In the apparatus defined in claim 2, the thrust transfer rollers comprising rollers of different diameters and the periphery of the rollers in contact with both the under side of traveling flat bed and the rotating thrust receiving abutment.

4. Apparatus for hot ironing fiberboard and comprising, in combination, spaced conveyor chains, the chains made up of links and connecting pins, rollers mounted on the pins, plane surface plate members extending between the chains and mounted thereto, tracks mounted in operative relation to each of the chains and constituting a leveling support for the plate members whereby there is formed an endless traveling bed, a hot roll journaled for rotation over the traveling bed, a cylindrical thrust receiving abutment rotatably mounted below the traveling bed and thrust transfer rollers mounted between the underside of the traveling bed and the thrust receiving abutment.

5. Apparatus for hot ironing fiberboard and comprising in combination, spaced conveyor chains, the chains comprising spaced side links, and connecting pins spacing the side links and to which the side links are pivoted, rollers mounted on the pins between the spaced side links, support members mounted to the side links of the chain, plane surface plate members extending between the spaced conveyor chains and mounted to the support members thereon, support rails mounted in operative relation to each of the chains and comprising a guide for the rollers mounted on the pins of the conveyor chains and constituting leveling supports for the plate members, whereby there is formed an endless traveling bed, a hot roll journaled for rotation over the traveling bed, a cylindrical thrust-receiving abutment rotatably mounted below the traveling bed, and thrust transfer rollers mounted between the under side of the traveling bed and the thrust-receiving abutment.

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