Feb. 24, 1953

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2,629,484

CONVEYER

Filed May 14, 1949

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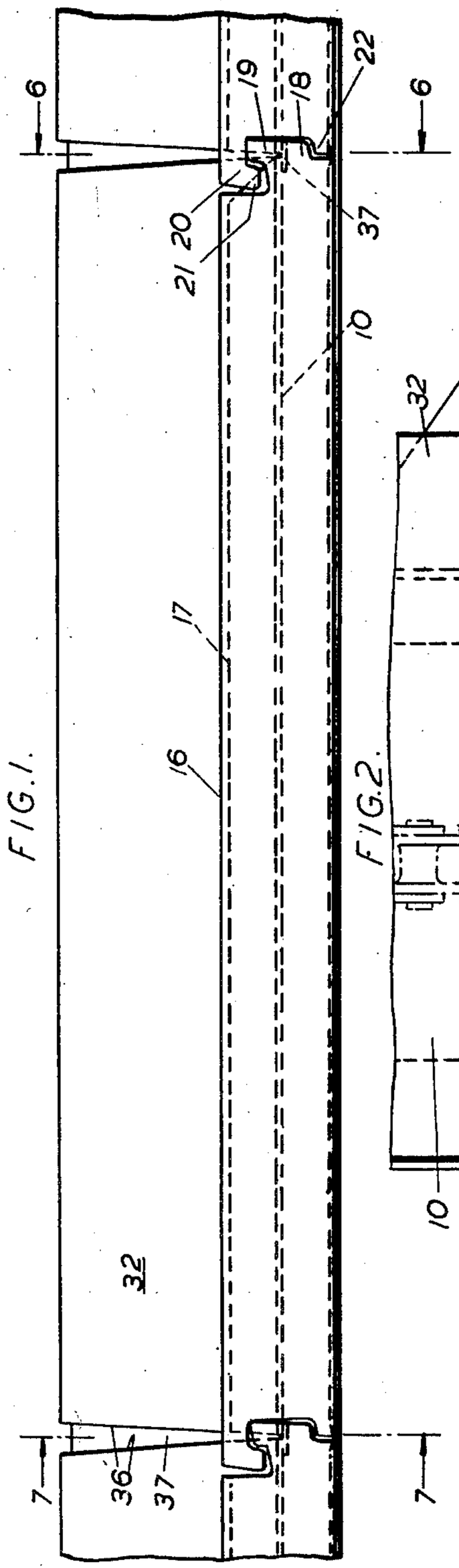

FIG. 1.

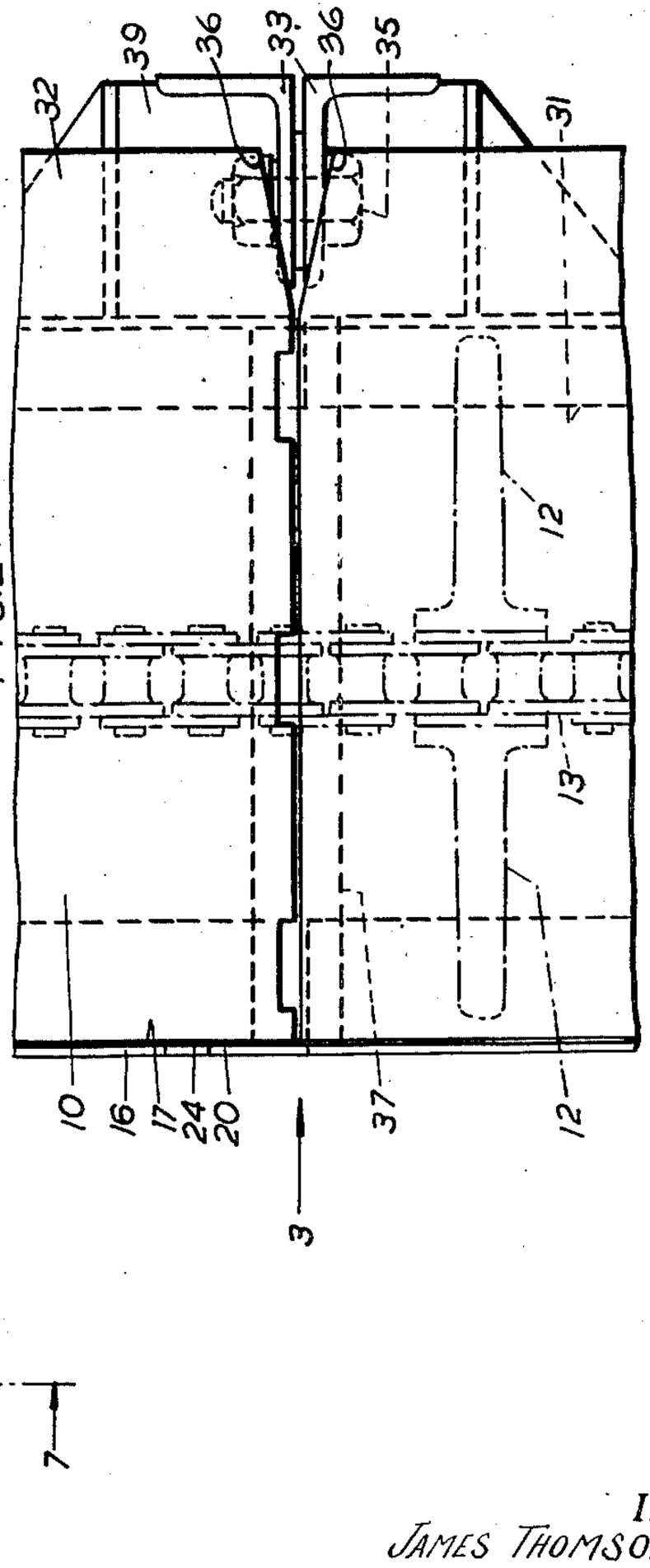

FIG. 2.

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FIG.3.

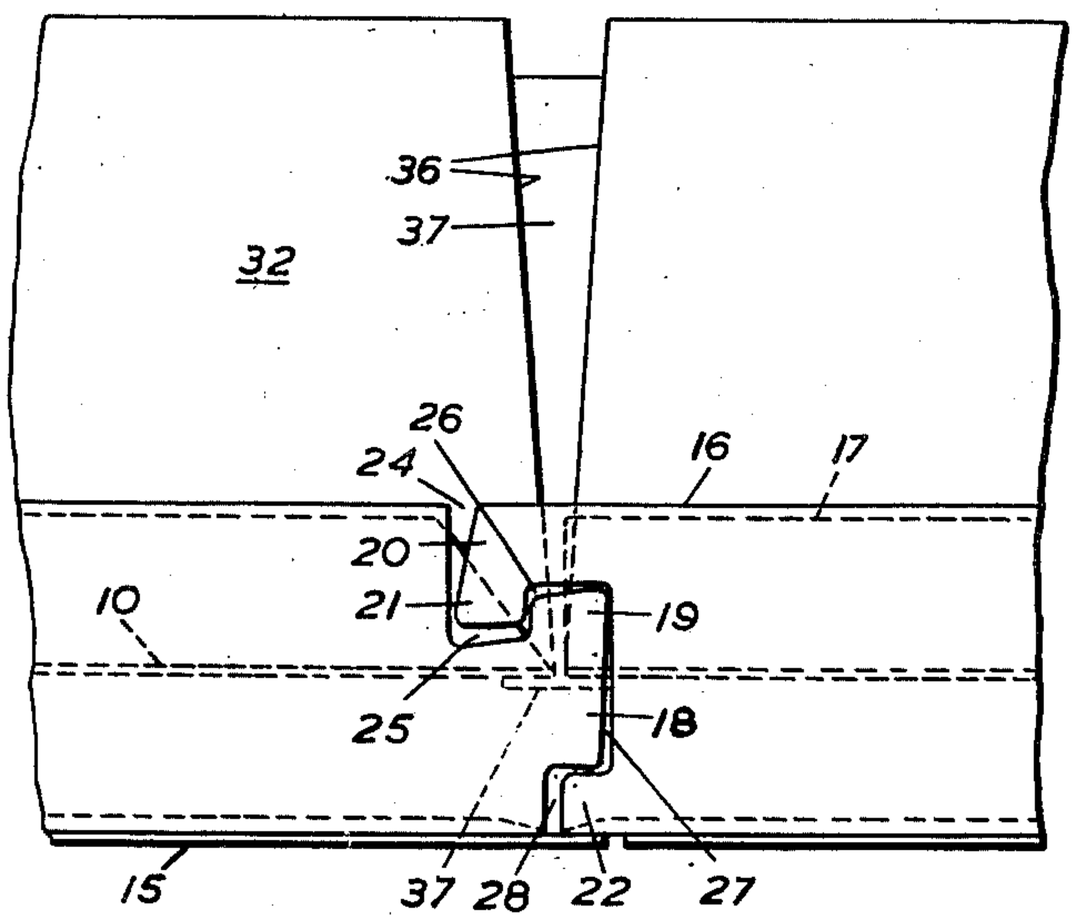

FIG.4.

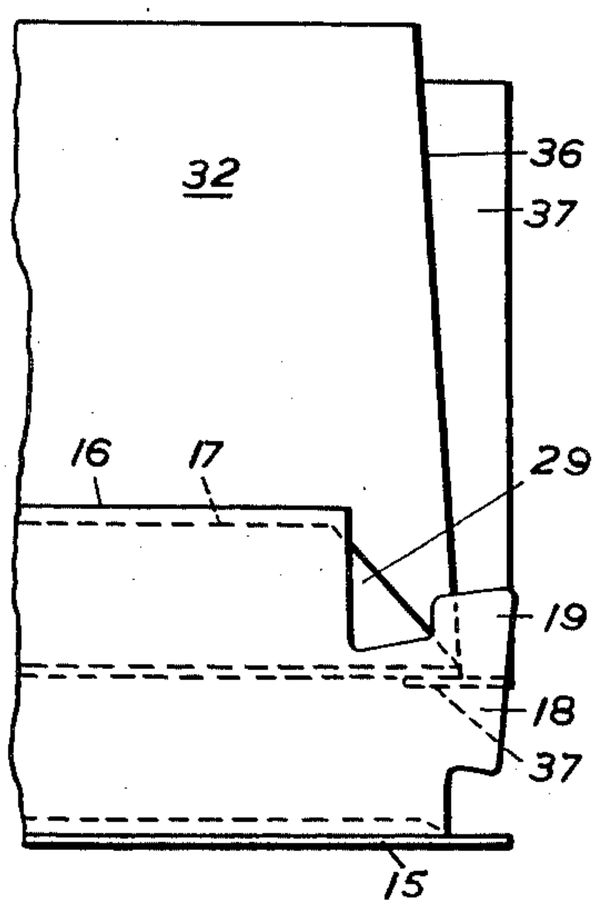

FIG.5.

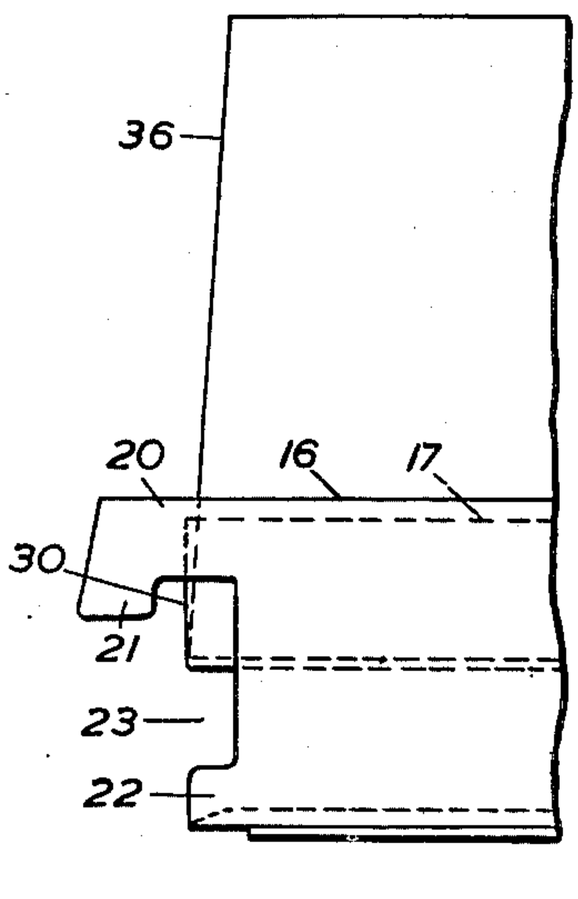

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FIG.6.

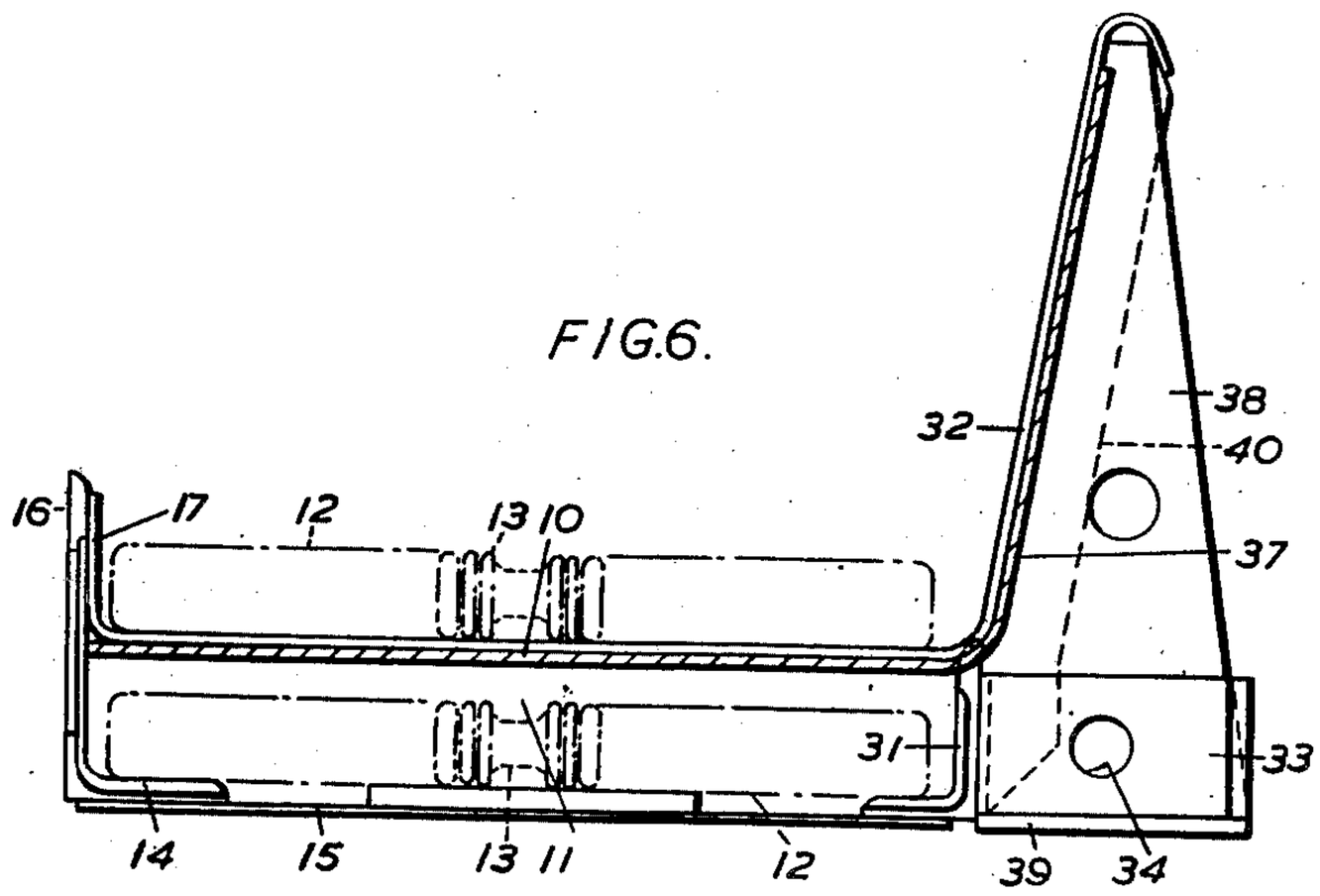
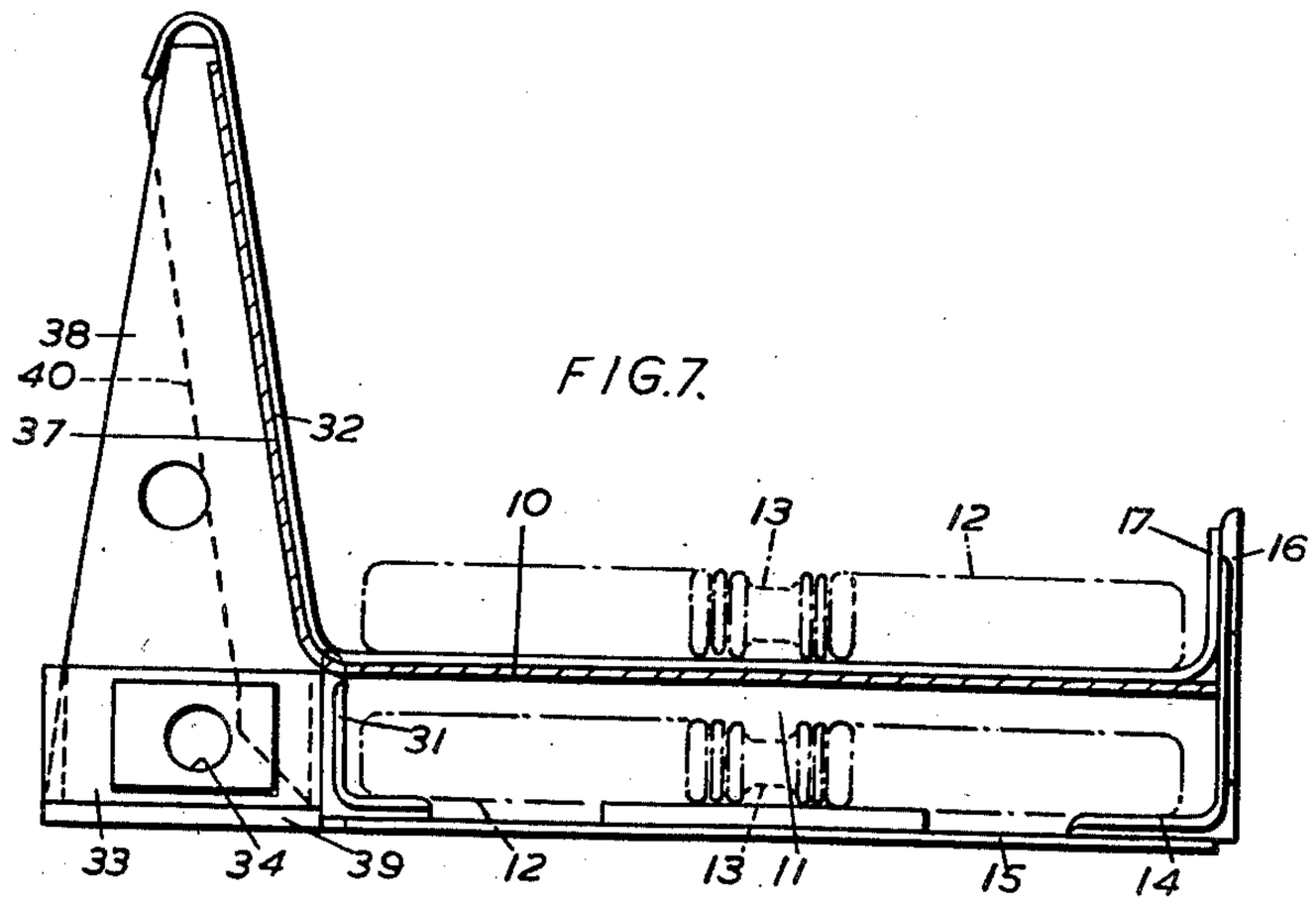


FIG.7.



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UNITED STATES PATENT OFFICE

2,629,484

CONVEYER

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Application May 14, 1949, Serial No. 93,280
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3 Claims. (Cl. 198—204)

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This invention relates to conveyors of the type including a sectional frame structure which supports the working and travelling parts of the conveyor.

The invention, although applicable to conveyors in general of the type stated, is designed more especially to meet conditions that are met with in longwall coal-mining by methods which involve the use of a conveyor between which and the coal face works a machine for leading coal (cut from the face by the machine or by some other agency) upon the conveyor. Such a conveyor should be designed so that its frame structure comes close to the space provided for the coal-loading machine, and so that it has no projecting parts to obstruct the working of the machine, and so that its frame structure can be displaced sidewise from time to time as the coal face recedes without bringing adjoining sections out of alignment, and so that adjoining sections can rise and fall in accordance with undulations in the mine floor.

An object of the invention is to provide for a conveyor of the type stated, a sectional frame structure having the side longitudinals of adjoining sections formed with interlocking projections which can be interconnected and disconnected by a manipulation involving tilting of the one section in relation to the other and which when inter-connected come flush and prevent endwise and sidewise motion of each longitudinal in relation to the other.

An example of a conveyor embodying the invention is shown in the accompanying drawings, in which:

Fig. 1 is a front elevation showing a complete structural section with portions of two adjoining sections. Fig. 2 is a plan, drawn to a larger scale than Fig. 1 showing adjoining portions where they are inter-connected. Fig. 3 is an elevation of the inter-connected portions as viewed in the direction of the arrow 3 in Fig. 2. Figs. 4 and 5 show separated the same portions as Fig. 2. Figs. 6 and 7 are end elevations, partly in cross-section, of a structural section viewed as at the lines 6 and 7, respectively, in Fig. 1.

In the example shown, the invention is applied to a scraper conveyor designed for use in a coal mine in association with a mining machine which moves along a coal face, shears off coal from the face and deflects and raises the broken down coal sidewise upon the conveyor.

As shown by Figs. 6 and 7, each section of the frame structure comprises an open-top upper trough 10 and a closed lower housing 11. The

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conveyor would include the usual endless series of cross members 12, namely the scrapers. The conveyor also would include one central or two side endless chains to which the scrapers 12 are attached; in the drawings a single chain 13 is shown. As the scrapers and their chain are not features of the present invention they are represented merely in dot-dash outline (Figs. 2, 6 and 7). The working run of the conveyor extends along the continuous upper trough formed by the interconnected sections, and the return run extends along the continuous lower housing.

At that side of the conveyor which in use will be the nearer to the coal face, each section includes an angle-section member, a horizontal flange 14 of which is secured to the base 15 of the structure and a vertical flange 16 of which is secured to a vertical flange 17 of the trough, forming a low wall. It is those two vertical flanges 16 and 17 which together with the flanges 14 form the side longitudinal that is formed at each end with projections made to interlock with complemental projections of the corresponding side longitudinals of adjoining sections, as hereinafter described.

In the example shown, one end of the vertical flange 16 of each angle-section member has a mid-projection 18, which may be termed a tongue, having an upturned end 19. The other end of the flange 16 has a top projection 20, which may be termed a nose, having a downward end 21, and said end also has a bottom lip 22. The nose and lip form between them the recess 23 (Fig. 5). The dimensions of each tongue 18 in relation to the dimensions of each nose 20 and lip 22 are such that the tongue locks into the recess 23 leaving angular clearances 24, 25, 26, 27 and 28 (Fig. 3) by virtue of which each angle-section member 14, 16 jointed to another can freely tilt to a substantial extent without breaking joint. Moreover, one angle-section member can be jointed to and detached from the other by a substantial tilting movement of the longitudinal 14, 16, 17. In such a movement, the longitudinal being tilted will pivot upwards about the projections 18, 20 and 22 as the approximate axis.

In the example shown, the trough flanges 17 of adjoining sections are formed to project at 29 and 30 (Figs. 4 and 5) along the inner sides of portions of the tongue 18 and nose 20. The arrangement is such that the projections 29, 30 of the flanges 17 prevent sidewise displacement

or misalignment of each section in relation to an adjoining section.

At the side of each section opposite to the coal face, the housing 11 is closed by an angle iron 31, and the trough 10 has a high side wall 32 which serves as a coal retainer. At both ends of each section, laterally projecting flanged members 33 are secured to the angle iron 31; and these members have bolt holes 34 through which loose fitting bolts 35 (Fig. 2) are inserted so as to connect adjoining interlocked sections securely together, while permitting slight tilting of either or both of the sections. Also in order to permit such tilting the adjacent ends of the high side walls 32 are angularly cut away at 36.

To seal the space between the adjoining troughs 10 and their high side walls 32, a strap 37 is provided at one end of each section on the outer side of the trough and its high side wall, and this strap projects sufficiently to overlap the adjacent end of the adjoining parts 10, 36. In Fig. 2 the strap 37 is shown in dotted lines below the bottom 10 of each trough but for clearness is omitted where it rises behind the high walls 32.

Strengthening webs 38 are provided at each end of the high walls 32 in combination with the flanged members 33 and laterally projecting bases 39. Moreover, strengthening ribs 40 (Figs. 6 and 7) may be provided on each high wall 32 at appropriate intervals throughout the length of the section.

The entire arrangement is such that the two sections can be interconnected by a single tilting manipulation and by use of a single bolt 35. The interconnected sections can be displaced sidewise without possibility of misalignment or separation between the sections. Either section can be tilted to suit undulations in the mine floor. The coal-face side of the frame structure (that is, the left hand side in Figs. 2 and 6) is flush where the sections adjoin, so that there is an absence of projections at that side of the conveyor.

I claim:

1. A sectional frame structure for a conveyor of the type having a travelling part which works along a continuous upper portion of the structure and returns along a continuous lower portion thereof, said structure consisting of sections each having a side longitudinal detachably connected by joints to corresponding side longitudinals of adjacent sections and all of said longitudinals coming flush with one another where they adjoin at their ends to avoid lateral projections there and maintain the continuity of said portions, and each joint comprising complemental projections on the respective longitudinal ends, one of said projections being an upturned tongue and the other being a downturned nose which inter-locks to prevent relative endwise displacement between said projections, and an outstanding lip forming in conjunction with the downturned nose a recess in which the upturned tongue engages to prevent relative vertical displacement between said projections, said downturned nose extending longitudinally a substantial amount beyond said lip so that engagement and disengagement between said tongue and recess can be effected only by a relative vertical tilting movement between the associated sections.

2. A conveyor as claimed by claim 1 in which the tongue, nose and lip are formed to leave angular clearances giving the adjoining sections freedom to tilt without disengaging the upturned tongue from the recess.

3. A conveyor as claimed by claim 1 in which the inter-locking projections are associated with inner projections each arranged to engage an interlocking projection of an adjoining section and prevent sidewise displacement of each section in relation to the other.

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