April 15, 1952 S. J. SPURGEON ET AL 2,592,831

TROUGHING ROLL

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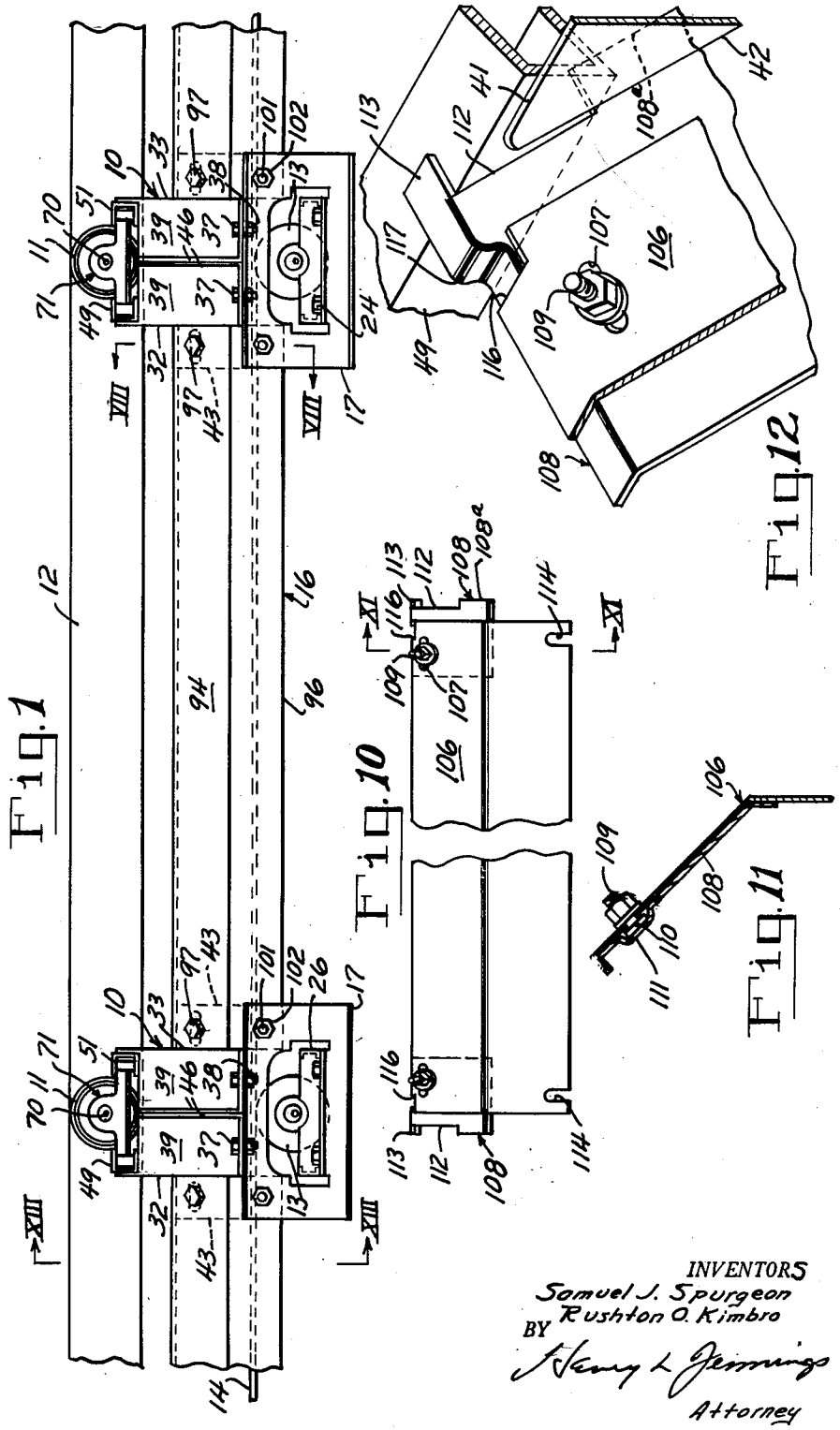

Fig. 1

Fig. 12

Fig. 10

Fig. 11

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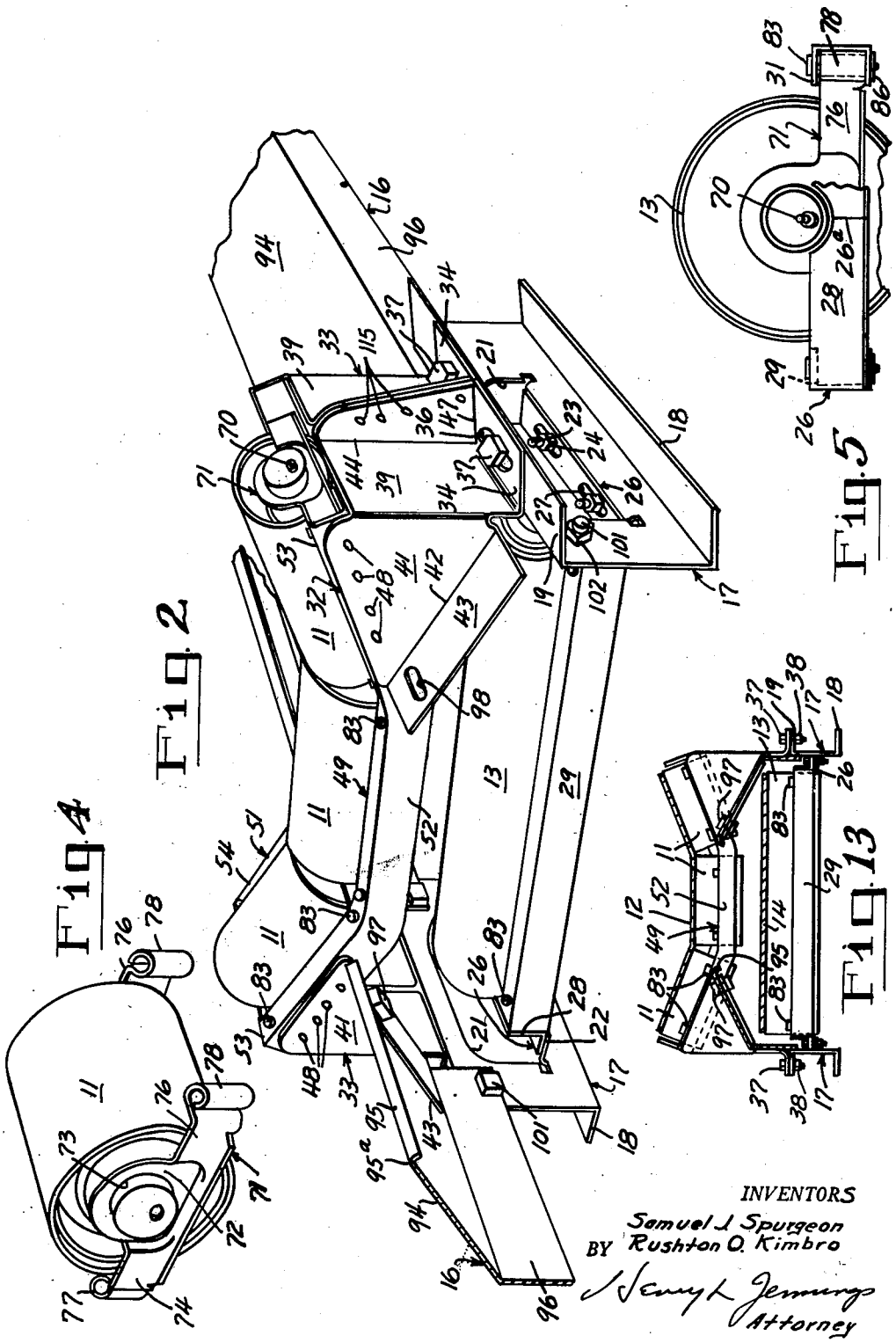

Fig. 2

Fig. 4

Fig. 5

Fig. 13

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TROUGHING ROLL

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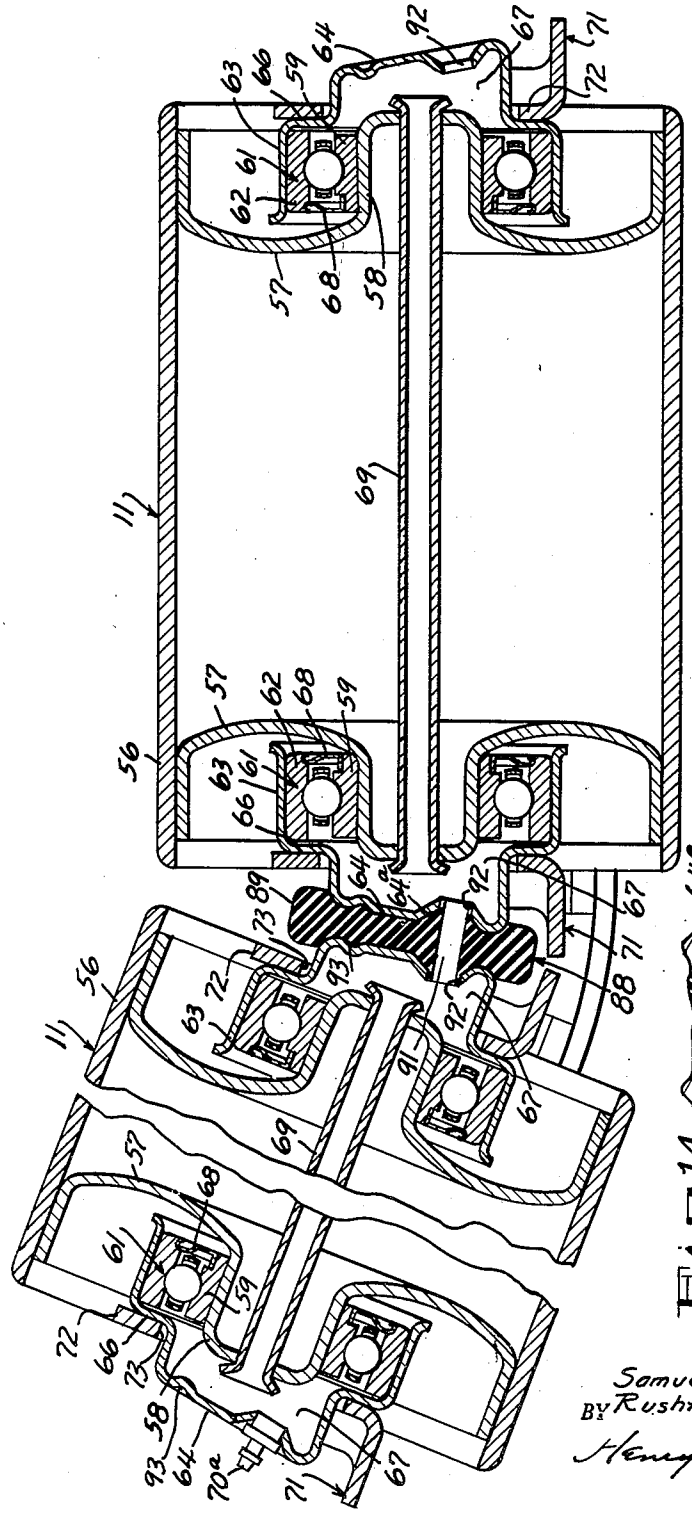

Fig. 3

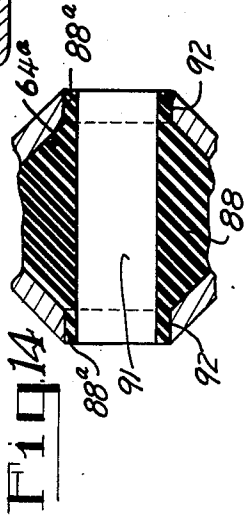

Fig. 4

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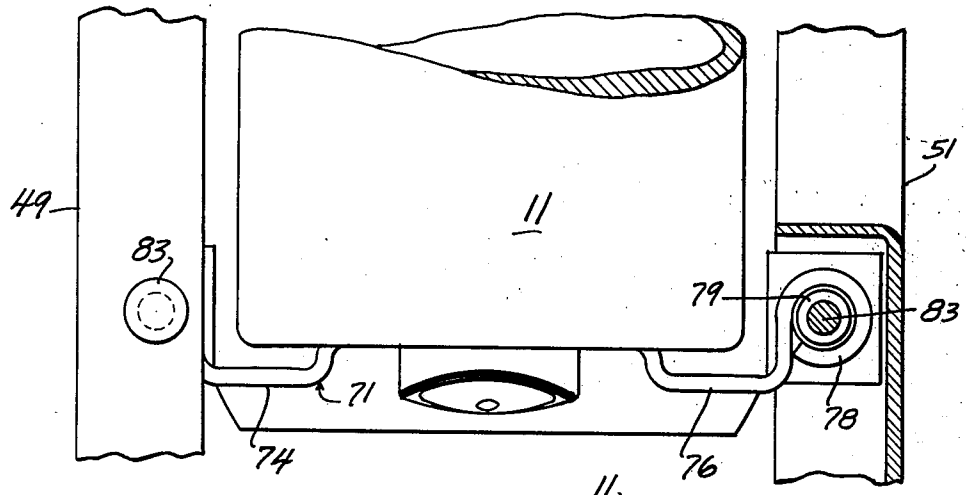


Fig. 6

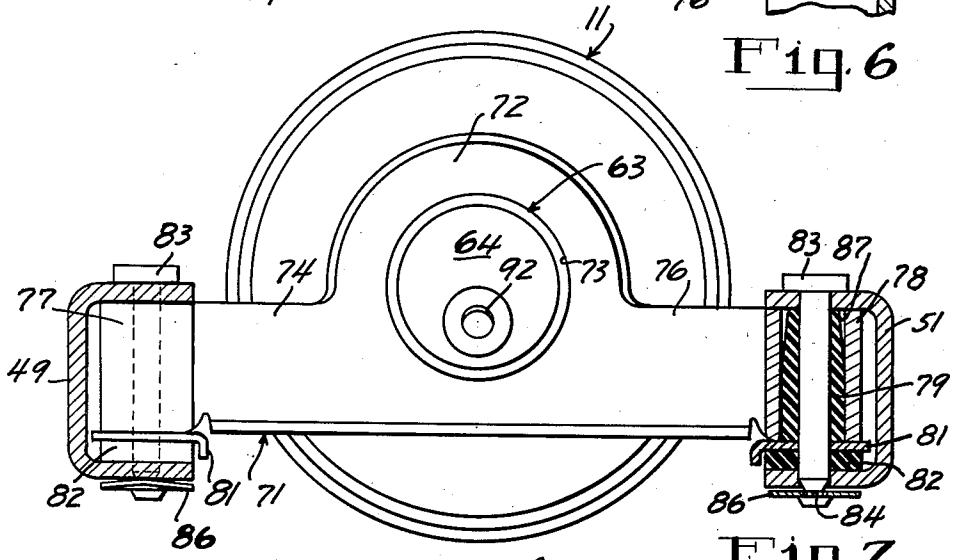


Fig. 7

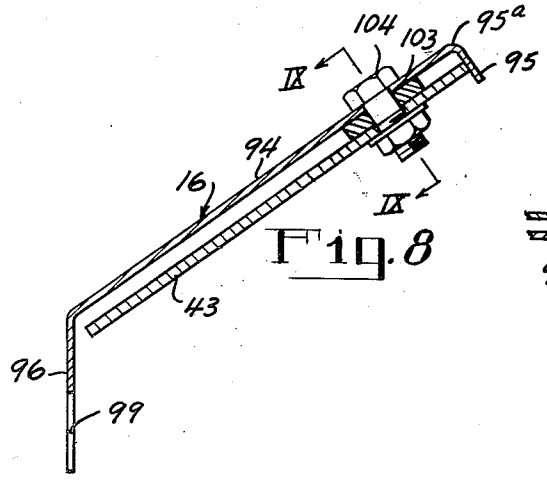
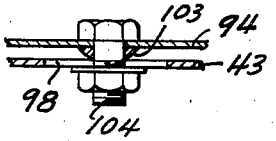


Fig. 8

Fig. 9



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UNITED STATES PATENT OFFICE

2,592,831

TROUGHING ROLL

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Application December 31, 1947, Serial No. 795,070

6 Claims. (Cl. 198—192)

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Our present invention relates to belt conveyor mechanisms, including idler assemblies and their associated parts, supporting and spacing members and belt protecting means therefor, and has for an object the provision of apparatus of the character designated which shall be simple of design, economical of manufacture, light in weight, and sufficiently rugged to withstand the hard usage to which such mechanism usually is put.

A more specific object of our invention is to provide apparatus of the character designated in which the belt supporting rolls are resiliently mounted so as to absorb shocks imposed by the load on the belt, and simultaneously to make the roll bearing assembly self-aligning, thereby to prolong the life of the roll bearings.

Another object of our invention is to provide apparatus of the character described in which all the roll bearings of a series are positively lubricated from one end of the series of rolls and in which the bearings and lubricant passages are so constructed and arranged that adequate lubrication is maintained with a minimum of lubricant.

Another object is to mount the load carrying idlers in such a way that the bottom of the idlers project beneath the supporting framework therefor, whereby the return flight of the belt, when deflected upwardly for any reason, strikes the lower surface of the load carrying idler instead of the framework, thus preventing damage to the belt.

Other objects of our invention are to provide apparatus of the character described embodying downwardly sloping spill plates disposed well beneath the outer edges of the upper flight of the conveyor belt and well beyond and below the edges of the lower flight, thereby to deflect away from the lower flight any material spilled from the upper flight; to secure the spill plates to the idler support structures and idler frames in such a manner that the same serve as longitudinal frame and spacing members between adjacent idler support structures and their associated idlers, and so connected as to permit individual adjustment of the idlers thereby to compensate for variations in elevation between adjacent idlers and their supports; to provide a conveyor assembly suitable for permanent or temporary installation; to reduce the overall weight and cost of the idlers and framework through the general use of fabricated rolls, light gauge stampings, shapes, and sheets; to utilize portions of the idler frame as scraper cleaning means to remove any

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sticky material which may collect on the rolls, thereby to maintain a concentric roll even though there is some building up of conveyed material thereon; and to provide an improved lubricating system embodying means permitting the escape of air in the lubricant spaces, thus assuring the filling of such spaces with an adequate supply of lubricant.

Apparatus embodying the features of our invention is illustrated in the accompanying drawings forming a part of this application in which:

Fig. 1 is a side elevational view of a pair of assemblies, each of which comprises a troughing idler roll, a return idler roll and an associated chair support connected together by our improved spill plates;

Fig. 2 is a perspective view of the assembly comprising a troughing idler, a return idler, a chair support and associated spill plates with one of the spill plates removed and the other spill plates broken away and in section;

Fig. 3 is a detail sectional view through two of the rolls of the troughing idler;

Fig. 4 is a perspective view of a troughing roll together with the roll bearing housing and mounting bracket assembly therefor;

Fig. 5 is an end view partly broken away of the return idler and supporting framework therefor;

Fig. 6 is a plan view partly broken away and in section showing one end of a typical roll mounted in its supporting framework;

Fig. 7 is an end view, partly in section, of the roll and associated framework shown in Fig. 6;

Fig. 8 is a detail sectional view taken along line VIII—VIII of Fig. 1 illustrating the means provided for connecting one of the spill plates to the troughing idler and chair support;

Fig. 9 is a detail sectional view taken along line IX—IX of Fig. 8;

Fig. 10 is a side elevational view partly broken away showing a modified spill plate and adaptor plate for connecting the same to the troughing idler frame and to the chair support;

Fig. 11 is a detail sectional view taken along line XI—XI of Fig. 10;

Fig. 12 is a fragmental perspective view partly in section showing the modified spill plate connected to one of the frame members of the troughing idler frame;

Fig. 13 is a detail sectional view taken on line XIII—XIII of Fig. 1; and,

Fig. 14 is an enlarged fragmental sectional view showing the lubricant passages in the bearing housing and resilient pads.

Referring now to the drawing for a better un-

derstanding of our invention, and more particularly to Figs. 1 and 2 thereof, our improved conveyor mechanism comprises a plurality of troughing idler frames indicated generally by the numeral 10. Rotatably mounted in the troughing idler frame in a manner later to be described are a plurality of troughing rolls 11 for supporting the upper load carrying flight 12 of a conveyor belt, which together form the troughing idler. Mounted beneath the troughing idler rolls 11 is a single roll 13 for supporting the lower return flight 14 of the conveyor belt. Roll 13 with its associated parts and immediate framework constitute the return idler. Both the troughing and return idlers are mounted on chair supports 17 which may be channels with the flanges 18 and 19 outturned. The webs of the channels 17 are cut as indicated at 21 and are turned in to provide inwardly projecting flanges 22. The chair supports are spaced apart by longitudinally extending spill plates 16 which are connected at one point on the ends in longitudinally fixed relation to the chair supports, at another point in adjustable relation to each troughing idler in a manner to be described later in detail. As is well understood, the conveying apparatus is provided with head and tail sections, not shown, by means of which the belt is driven and at which the return flight begins.

Mounted on the flanges 22 and secured thereto by means of bolts 23 and nuts 24 are L-shaped members 26 provided with elongated slots 27 for passing the bolts 23. For ease of fabrication the members 26 may be formed in halves and joined along the line 26a, though they may be made as an integral unit. Secured to the vertical leg 28 of the L-shaped member 26 in any suitable manner, as by welding, are a pair of channel frame members 29 and 31 which form transverse cross members for supporting the return idler roll 13. The return idler roll 13 of each stand is mounted between and supported by the cross members 29 and 31 in a manner identical with the mounting of the rolls 11 of the troughing idlers and which will be described in connection with the latter rolls.

Mounted on the upper flanges 19 of the channels 17 are idler end brackets 32 and 33 which together with channel members 49 and 51 form the support members for all the troughing idler rolls. As shown more clearly in Fig. 2, the members 32 and 33 comprise outwardly bent horizontal sections 34 provided with an elongated slot 36. A bolt 37 passes through the slot 36 and flange 19 of the channel 17 and is provided with a nut 38. Bent upwardly from the sections 34 are vertical sections 39, and bent inwardly from each section 39 is a vertical section 41. The sections 41 are bent outwardly along the line 42 to form a sloping flange 43, normal to the section 41. The section 39 also is bent along the line 44 to provide gusset sections 46 which may be welded as at 47 to the horizontal flanges 34.

Connected to the brackets 32 and 33 at opposite sides of the troughing idler roll stands by welding at 48 are the upwardly sloping ends 53 and 54 of a pair of transverse channels 49 and 51, each of which has a central, horizontally disposed section 52. The channels 49 and 51 form the immediate supports for the series of rolls 11 of the troughing idler mounted thereon as will be described, and as upper transverse braces for the troughing idler frame.

Referring now more particularly to Fig. 3 of the drawing it will be seen that each of the troughing idler rolls 11 is formed of a shell 56. The ends of the shells are closed by means of die-formed heads 57. Each of the heads 57 has a boss 58 projecting outwardly toward the end of the roll to receive the inner race 59 of an anti-friction bearing 61. The inner race 59 preferably is pressed onto the boss 58 so that they rotate together as the roll turns. The outer race 62 of the anti-friction bearing is pressed into the open end of a die-formed bearing housing 63.

The outer end 64 of the bearing housing is reduced in diameter to provide an annular shoulder 66 disposed at right angles to the longitudinal axis of the roll. The outer end wall 64 of each bearing housing is formed so that the plane of the surface thereof is at an angle with respect to the axis of the roll.

It is to be noted that with the bearing housing 63 assembled over the outer race of the bearing 61 and with the inner race 59 on the boss 58, the construction provides a cavity or space 67 which may be filled with lubricant, it being understood that the usual lubricant seal 68 is provided between the inner and outer races of the bearing. A lubricant tube 69 opens at each end to the spaces 67 whereby lubricant supplied to one of the spaces 67 at one end of a given roll may flow to the opposite space 67 at the other end of said roll. A pressure lubricant fitting 70 commonly known in the art and valved to allow the entrance of lubricant only inwardly toward space 67, is placed in the outer end wall 64 of one of the outer idler roll bearing housings. An outwardly vented fitting 70a is placed in the end wall 64 of the idler roll 11 opposite the one carrying fitting 70, whereby air entrapped in the lubricant spaces of a series of rolls is permitted to escape when lubricating the rolls, as will be explained.

The troughing idler rolls 11 and the return idler roll 13 are each supported at either end by means of a roll mounting bracket indicated generally by the numeral 71. These brackets are identical for the rolls 11 and 13 and a description of one will suffice for all. As shown more clearly in Figs. 4, 5, 6 and 7 the bracket 71 comprises a vertical centrally recessed portion 72 having an opening 73 therein. The bearing housings 63 are disposed to project through the openings 73 of the roll mounting brackets as shown more clearly in Fig. 3, and the parts are secured together by welding the recessed portion of the bracket to the annular shoulder 66 of the bearing housing. The roll mounting brackets are provided with opposed arms 74 and 76 which terminate in vertically disposed sockets 77 and 78. The sockets are adapted to fit between the horizontally disposed flanges of the transverse members 29—31 or 49—51. The bearing housing 63 and bracket 71 may be formed integrally but preferably are formed separately for convenience of fabrication and later assembled together by welding to form the composite assembly as shown.

Within each of the sockets 77 and 78 is a bushing 79 formed of resilient material such as rubber. At the lower end of the socket and beneath the bushings 79 is a load distributing washer 81 formed of metal. Beneath the washer 81 is a resilient washer 82 of rubber or other resilient material. A pin 83 passes through the bushing 79, washers 81 and 82, and the upper and lower horizontal flanges of the members 29—31 or 49—51. The lower end of the pins 83 are provided with annular grooves 84 adapted to receive a snap lock washer 86. As shown more clearly in Fig. 7, the upper end of the bushing 79 may be slightly tapered as indicated at 87.

Referring again more particularly to Fig. 3 of the drawing, it will be seen that the upper rolls 11 are mounted in end to end relation to form a trough for the upper flight 12 of the conveyor belt. It is necessary, if all the rolls of such a series are to be lubricated from the end of an outer roll, to provide a passageway for lubricant to flow from the end roll carrying fitting 70 to the intermediate and opposite end rolls. We have found it desirable, when the rolls are supported resiliently as just described, that a resilient axial support between the rolls likewise be provided. To this end, we mount between the parallel adjacent faces of the bearing housing end walls 64, a pad or cushion 88 of resilient material. The pads 88 are relatively thin over the area of contact with the end walls 64, and are provided with an annular portion 89 thicker than the central portion to hold the pads in position. The pad 88 and the end walls 64 of the intermediate bearing housings are provided with openings 91 and 92, respectively, thereby affording a pasageway for lubricant to flow between the spaces 67 of adjacent bearing housings. In order to prevent the possibility of the pads 88 rotating, thus bringing its hole 91 out of alignment with the holes 92, we provide the end walls 64 with slight depressions 93. The resilient material of the pads fills these depressions and prevents the pads from rotating. The openings 92 in the end wall 64 at the outer end of one roll of a series is fitted with the lubricant fitting 70 of the type previously mentioned. The opening 92 on the opposite end of the same series of rolls is provided with one of the vent fittings 70*a*.

As shown in Fig. 14, the outer wall 64 of the bearing housing is provided with an in-formed depression 64*a*, and the hole 92 is located centrally thereof. The pads 88 are provided with outwardly disposed cylindrical projections 88*a* disposed to fit in the holes 92, opening 91 being disposed centrally of the projections. The walls of the projections are relatively thin so as to expand against the walls of the openings 92 when under pressure, thus to form a lubricant seal, as will be explained.

As before stated, the chair supports 17 on which are mounted the troughing and return idlers are held in fixed spaced relation by the spill plates 16. In the type of spill plate shown in Figs. 1, 2, 8 and 9, the same comprises a plate bent to provide an upper, sloping section 94, and a lower vertical section 96. The sloping section 94 is disposed to rest on the sloping flange 43 of the troughing idler end plate 32 or 33, and is connected thereto by means of bolts 97. As best shown in Fig. 2, the bolt 97 passes through an elongated opening 98 in the flange 43. The vertical section 96 is provided with a vertically elongated slot 99 and is secured to the chair support 17 by means of a bolt 101 and nut 102 therefor. A half oval, elongated washer 103 is welded to the underside of and in alignment with holes 104 formed near the ends of the sloping section of the spill plates 16. The washer 103 lies at right angles to and spans the slotted opening 98 of the sloping flange 43 thereby spacing the spill plate from the flange 43. This arrangement affords an adjustable connection between the spill plates and the flange 43, and permits a slight vertical movement between the plate and flange 43 without bending either.

The sloping section 94 of the spill plate 16 extends longitudinally along the belt between adjacent troughing idlers. The upper edge 95 of the spill plate is disposed well under the edge of the upper flight 12 of the belt and far enough below said flight to prevent the same when sagging under load from contacting the upper edge 95. The top of sloping section 95 is formed over at 95*a* to form a rounded edge to prevent damage to the belt if it sags excessively and to provide strength in the upper edge of spill shield 16.

Referring now to Figs. 10, 11, and 12, we show a modified form of spill plate 106 and means to connect the same to the frame members of the troughing idlers. When the modification shown in these figures is used, the flanges 43 of the idler end frames 32 and 33 are omitted entirely and the vertical sections 41 terminate along the line 42. The spill plate 106 is provided at each end with a slotted opening 107. An adaptor plate 108 carries a bolt 109, having its head 110 welded in a depression 111 formed therein. The bolt 109 projects through the slotted opening 107 in the spill plate 106 so that the adaptor may be moved longitudinally on the spill plate and clamped in any desired position.

As best shown in Fig. 12, the adaptor plate is provided at its end with a notch 112 adapted to fit about the upwardly sloping ends of the transverse member 49 or 51, the upper edge of the plate 108 being bent over as indicated at 113 to overlie the upper flange of the members 49 and 51. The end of adaptor plate 108*a* extends well under the vertical section 41 of the end supports 32 and 33, which as stated are cut off along the line 42, and under the transverse member 49 or 52. The spill plate is provided with a downwardly opening, elongated slot 114, similar to the slot 99, and the lower end of the plate is secured to the channel 17 by bolts as already described. The upper end of the spill plate is notched out as indicated at 116 to provide clearance for the shoulder portion 117 resulting from the formation of the overhanging portion 113, as shown clearly in Fig. 12. The notch 116 and the appreciable spacing between the end of the spill plate 106 and frame member 49 allows longitudinal adjustment of the cooperating troughing idler as heretofore described in connection with spill plate 16. At the same time, the space between the end of spill plate 106 and the idler framework is closed to prevent spilled material from falling on the return flight 14 of the belt. With the arrangement shown, the plate 108 may be firmly pressed against channel member 49 or 51, and the nut on bolt 109 tightened. The spill plate is thus fastened to the chair support by a bolt passing through slot 114, and to the idler framework by the notch 112 in the adaptor plate 108. Transverse shifting of the chair support and idler assembly is prevented, since such movement places opposed spill plates on the same side in endwise compression.

The assembly of the troughing idler is accomplished by first constructing two sub-assemblies each composed of the channel supports 49 and 51, one right hand end bracket 32 and one left hand end bracket 33 assembled as in Fig. 2 and welded together at 115. Prior to welding the three troughing rolls 11, including their associated parts and brackets 71, resilient bushings 79, washers 81 and 82, and the pads 88 are assembled in place as shown in the drawings. The pins 83 are then installed as indicated to secure the roll brackets to the transverse channels 49 and 51, and are locked by the washers 86. A grease fitting 70 is installed in one end of the outer bearing housing of each series of rolls 11, and a vent fitting 70*a* is installed in the opposite bearing housing of the series.

The roll 13 is assembled in a manner similar to the assembly of the troughing idler rolls previously described, the mounting brackets, resilient members and holding pins being the same. The roll 13 is assembled with channels 29 and 31 complete with their half sections of L-shaped brackets 26 fixed to the ends of the channels. The half sections of end brackets 26 are joined at 26a in a satisfactory manner as by welding. It is to be noted that the upper edges of channels 29 and 31 are mounted in close proximity to the roll 13, thereby serving to reject any large pieces of material inadvertently falling between the channels and roll. At the same time, the channels act as roll cleaners if the roll is built up due to accumulation of sticky material.

When assembling the complete conveyor, the required number of chair supports 17 carrying the return rolls 13 are distributed approximately the correct distance apart. The upper assemblies comprising end brackets 32 and 33 and the troughing rolls 11 are placed on the upper flanges 19 of the chair supports and nuts 38 on bolts 37 are tightened. The upper and lower flights of the belt are threaded over their respective rolls. The spill plates are now attached, the fixed distance between the opening 99 or 114 serving to accurately space the chairs 17 apart. Bolts 97 are inserted through the slot 98 in the flange 43, together with the oval washer 103, permitting angular adjustment of the spill plates to accommodate any differences in elevation between adjacent assemblies. Finally, by loosening the nuts carried by bolts 23, 37 and 97, the upper and lower rolls may be shifted to accurately train the belt, and may then be tightened to maintain the alignment. The overall assembly of the chair supports, upper idler framework, and spill plates is thus rigidly connected to prevent either transverse or longitudinal movement of the component parts. Similar adjustability and rigidity are obtained when using the spill plate shown in Figs. 10, 11 and 12. It will be apparent that any material spilled from the upper flight is positively deflected away from the lower flight of the belt throughout the entire length of the conveyor.

Referring particularly to Fig. 3, lubricant is supplied to each series of rolls 11 and to each roll 13 by a suitable pressure gun through the fittings 70. As is customary, the rolls preferably are lubricated while rotating. Lubricant first enters the space 67 adjacent fitting 70, and due to centrifugal force and spreading action of the rotating parts, fills the space 67 from the outside toward the center, thereby forcing air from the space 67 through the tube 69 into the space 67 at the opposite end of the roll. As rotation continues and more lubricant is supplied, all of the space 67 adjacent the fitting 70 is filled and lubricant is forced through the tube 69. Air is discharged ahead of the lubricant through vent 70a. As lubricant leaves the tube 69 of the first roll of the series, it impinges against the inner side of the wall 64 of the stationary housing 63, and fills the space 67 at that point from the inside outwardly. Entrapped air is forced out through the aligned holes 91 and 92 into the next adjacent bearing housing and tube. Lubricant continues to fill the space 67 until it covers the opening 92. When this occurs, lubricant commences to flow to the next space 67 through holes 91 and 92. Entrapped air is not completely expelled from the space 67 being supplied with lubricant from the tube 69, but a sufficient amount thereof is removed to assure that adequate quantity of lubricant remains. As the lubricant enters the next space 67, through holes 91 and 92, it is acted upon by the same forces as described in connection with space 67 adjacent fitting 70. As soon as the flow of lubricant through fitting 70 ceases, lubricant immediately adjacent spaces 67 between rolls equalizes, thus assuring adequate lubrication of all bearings.

It will be apparent that lubricant thus fills all of the spaces 67 of a series of rolls regardless of the number of rolls in the series, the actions just described being repeated from roll to roll. The operator ceases supplying lubricant to the rolls when he observes the same coming out of the vent fitting 70a, and is assured that all bearings are adequately lubricated.

As shown more clearly in Fig. 14, the thin rings 88a cooperating with the openings 92 in the bearing housings act as seals to prevent lubricant from escaping during the time the lubricant is being forced in under pressure. During normal operation the pressure in all of the lubricant passageways and spaces is substantially atmospheric. The informed recesses 64a, cooperating with the surfaces of the pads 88 in contact therewith, form, in this condition, an effective seal to prevent leakage of lubricant.

From the foregoing it will be apparent that we have devised an improved conveyor mechanism in which the rolls are resiliently supported to absorb shock and in which the axially disposed tubes 69 permit lubricant to flow from one roll to the next. The arrangement shown permits the expelling of excess air and assures adequate lubrication. It will be apparent that the pads 88, being resilient, when used in combination with the resilient bushings 79 and resilient washers 82, permit the bearings of the rolls to completely align themselves. The pads also serve as effective grease seals to prevent leakage of lubricant when passing between cavities 67 of adjacent rolls. The relatively thin resilient extensions 88a of the pads 88 compress against the surface of holes 92 to form a seal when pressure is applied during times when lubricant is being supplied to the bearings. The taper at the top of the resilient bushings 79 permits a slight motion of the roller mounting brackets 71 relative to the channels 49 and 51, although this same action may be obtained by using a cylindrical bushing 79 of very resilient material. Misalignment in the bearings 61 is thus corrected by the resilient mountings afforded by the pads 88 and bushings 79 and these elements absorb shocks that may be imposed on the rolls during operation of the conveyor. If in a special installation it is desired to omit the resilient bushings 79 it will be apparent that the pads 88 may be used solely as grease seals and to provide a passageway for lubricant between rolls.

It is to be noted that the upper legs of the cross channels 29—31, 49—51 are disposed slightly below the maximum diameter of their associated rolls. This arrangement minimizes the possibility of foreign matter lodging between the channel supports and the rolls and also affords a scraper to clean the rolls if any sizable quantity of sticky material is deposited thereon. Likewise, the bottom surface of rolls 11 project below the lower legs of channels 49 and 51 as indicated clearly in Figs. 7 and 13. If the lower return flight of the belt is displaced upwardly for any reason, the same contacts the rolling surface of the upper rolls 11 instead of a part of the framework, thereby preventing damage to the belt.

A further advantage of the resilient mounting

disclosed herein lies in the fact that through its use rolls of small diameter may carry larger loads than has heretofore been the practice due to providing shock protection for the bearings, thus making the smaller bearings adequate to take the usual shock loads. Heretofore, in order for rolls to carry large loads, it has been the practice to increase the roll diameter, thereby to decrease the roll speed and to make available more room for larger bearings. It has likewise been the practice to provide oversize bearings for rolls and to operate them at a greatly reduced capacity in order to take care of overloading of the bearings due to misalignment. The resilient mounting of the roll mounting structure provides automatic alignment of the bearings thereby utilizing the entire capacity of the bearings for useful work, making oversize bearings unnecessary. We are therefore enabled to operate relative small bearings at high speed and at a greater percentage of their normal load rating than is the case with present apparatus.

While we have shown and described apparatus embodying a plurality of upper rolls **11** and a single roll **13**, it will be apparent that single or multiple rolls may be used in either location without departing from the spirit of our invention. Likewise, the upper flight may be supported on a plurality of rolls disposed to form a flat or non-troughed support for the belt, with but minor modifications in our improved mounting and supporting arrangement. The idler may be resiliently supported in conventional manner from other types of framework. As is customary, every other idler roll **13** may be omitted since the lower flight need not be supported at as many points as the load carrying flight.

The bearing housings **63** and brackets **71** may be formed integrally if desired, and a retaining ring provided to receive the resilient pads. All of the advantages of our resilient mounting are maintained in such an arrangement.

While we have shown our invention in but two forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications, without departing from the spirit thereof, and we desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What we claim is:

1. In conveyor mechanism embodying a plurality of rotatably mounted belt supporting rolls disposed end to end, a bearing housing and roll supporting means at the ends of each roll, a resilient member disposed between and engaged by the ends of adjacent bearing housings, there being a passage through said resilient member permitting a flow of lubricant from roll to roll, and means to supply lubricant to one of said rolls.

2. Apparatus as defined in claim 1 in which the bearing housings are provided with passages aligned with the passage in said resilient member, and in which the resilient member is provided with outwardly disposed cylindrical projections having relatively thin walls disposed in the passages of the bearing housings, said passage in the resilient member being located centrally of the projections.

3. In conveyor mechanism embodying a plurality of belt supporting rolls disposed end to end, a bearing housing at the end of each roll relative to which the rolls are adapted to turn, a pad of resilient material disposed between and engaged by the ends of adjacent bearing housings, framework for supporting the bearing housings, and resilient members interposed between the supporting framework and bearing housings.

4. In a conveyor mechanism embodying a plurality of belt supporting rolls disposed end to end, a bearing in each end of each roll, stationary bearing housings relative to which the rolls are adapted to turn, a member of resilient material between and engaged by the ends of adjacent bearing housings, means to supply lubricant to the bearings of said rolls embodying a lubricant passage connecting the bearing housings of each roll, there being a passage through said member of resilient material and bearing housings to permit a flow of lubricant from one adjacent bearing housing to the next, a frame for supporting the bearing housings, and resilient members interposed between the housings and supporting frame.

5. Apparatus as defined in claim 4 in which the plurality of rolls are disposed to form a trough-like support for the conveyor belt, and in which the bearing housings at adjacent ends of the rolls have substantially parallel outer surfaces between which said pad of resilient material is received.

6. In a conveyor mechanism embodying a series of rolls disposed end to end and angularly to form a trough-like support for a conveyor belt, each of said belt rolls being formed of a shell, a head at each end, a bearing boss on the heads, an anti-friction bearing having its inner race mounted on the boss for rotation therewith, a bearing housing for receiving the outer race of the bearing, an axially disposed lubricant tube for each roll having its ends communicating with the bearing housings, means to supply lubricant to the outer bearing housing of the end roll of a series, a resilient member disposed between and contacting the ends of adjacent bearing housings, there being aligned openings in the bearing housings and associated resilient member to permit a flow of lubricant from one bearing housing to the next, a roll mounting bracket secured to the bearing housing, a frame for supporting the roll mounting bracket, and a second resilient member interposed between the mounting bracket and its supporting frame.

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RUSHTON O. KIMBRO.

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