Feb. 19, 1952

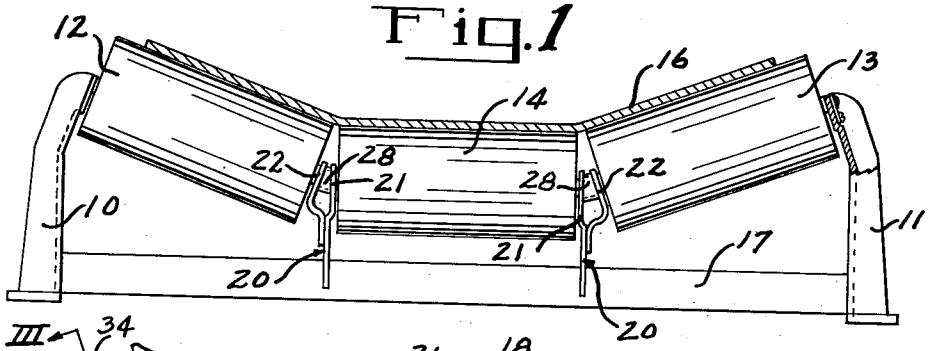
S. J. SPURGEON

2,586,270

HOLD-DOWN CLIP FOR IDLER ROLLS

Filed Oct. 15, 1949

Fig. 1



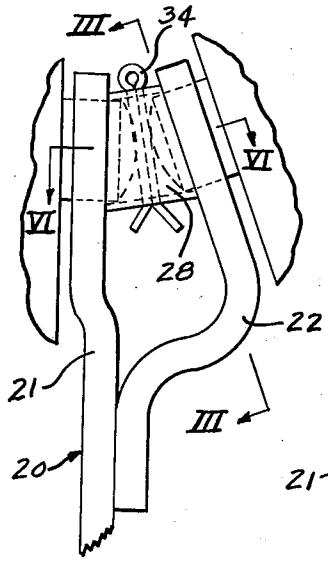


Fig. 2

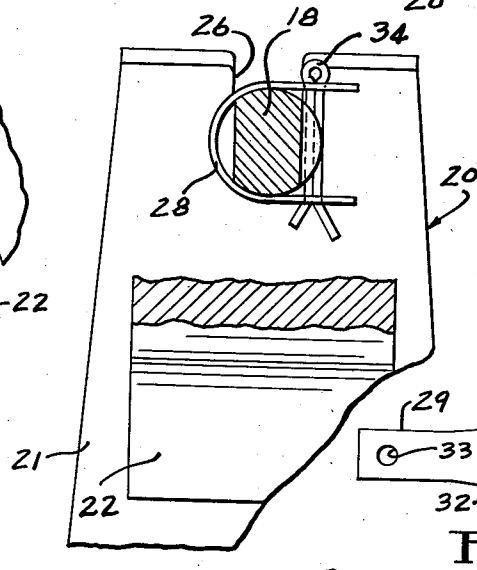


Fig. 3

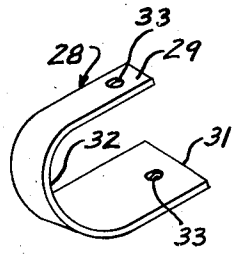


Fig. 4

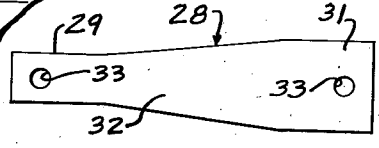


Fig. 5

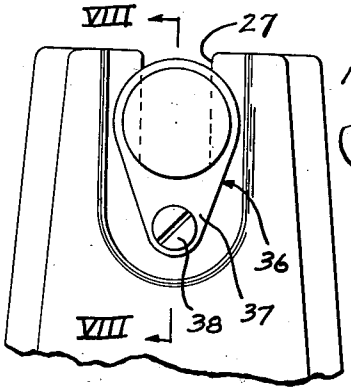


Fig. 7

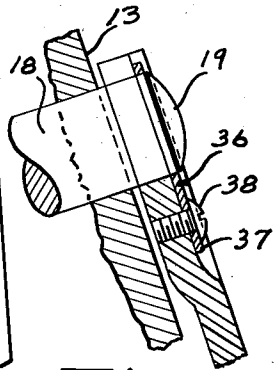


Fig. 8

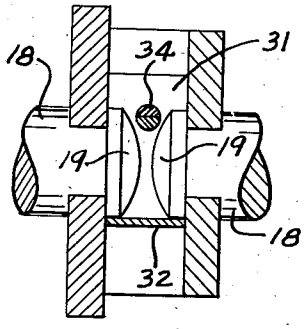


Fig. 6

INVENTOR

SAMUEL J. SPURGEON

BY Jennings & Carter

ATTORNEYS

Patented Feb. 19, 1952

2,586,270

UNITED STATES PATENT OFFICE

2,586,270

HOLD-DOWN CLIP FOR IDLER ROLLS

Samuel J. Spurgeon, Birmingham, Ala.

Application October 15, 1949, Serial No. 121,577

6 Claims. (Cl. 198—192)

1

My present invention relates to means for securing idler rolls against vertical displacement relative to the supporting framework therefor.

One type of idler roll for belt conveyors and the like embodies a central shaft or axle supported at each end in upwardly opening slots provided in suitable brackets. When placed in alignment transversely of the belt to form a troughing support therefor, the ends of the axles of adjacent rolls are supported in brackets disposed angularly to each other, the slots for receiving the axles being provided in the upper ends of such brackets. In shipping such an assembly and after it is installed it is necessary to employ some form of readily detachable means for holding the axles against upward movement in the slots. One prior means to accomplish this result has consisted of clips engaging the ends of the axles and pins or the like passing through the upper ends of the supporting frame. Such means is difficult to install and remove and generally is not entirely satisfactory.

An object of my invention is to provide a clip for holding the ends of a pair of angularly disposed axles against relative vertical movement whereby the axles are both held within the grooves of their supporting brackets.

An object is to provide a hold-down clip for the adjacent ends of idler roll axles which is so constructed that when placed about the axle it cooperates with the supporting brackets to hold the axles seated in the slots.

My invention contemplates a simple U-shaped clip one leg of which is narrower than the other leg whereby when engaged over the axles between the angularly disposed brackets the clip is held against upward movement by the brackets and in turn holds the axles against upward movement and firmly seated in the bottoms of the slots.

Another object is to provide a clip of the character designated which shall be held against movement laterally of the axles and brackets by means of a pin passing through the legs of the clip itself, there being no physical connection between the clip and roll supporting brackets.

A further object is to provide an improved form of clip for the outer ends of the axles of the outer rolls which shall be effective, in combination with the clip at the inner ends of the axles, to hold the rolls in place in the supporting stand or framework therefor.

My improved hold down clips are illustrated in the accompanying drawing forming a part of this application in which:

2

Fig. 1 is a transverse elevational view of a roll stand showing my improved clips for holding the axles of the rolls in place therein, and partly in section;

Fig. 2 is an enlarged fragmental detailed view of the supporting brackets for adjacent ends of a pair of roll axles with a clip in place therebetween;

Fig. 3 is a detail sectional view taken generally along line III—III of Fig. 2;

Fig. 4 is an isometric view of the U-shaped clip down in Figs. 1 to 3 inclusive;

Fig. 5 is a developed plan view of the clip shown in Fig. 4;

Fig. 6 is a detail sectional view taken generally along line VI—VI of Fig. 2;

Fig. 7 is a fragmental end elevational view showing my improved form of clip for use at the outer ends of the axles of the outer rolls; and

Fig. 8 is a detail sectional view taken generally along line VIII—VIII of Fig. 7.

Referring now to the drawings, and more particularly to Figs. 1 to 6 inclusive, I show at 10 and 11 a pair of end supporting brackets or standards adapted to support the outer rolls 12 and 13 of an idler roll assembly. The intermediate roll 14 together with the rolls 12 and 13 form a troughing support for the upper flight 16 of a conveyor belt. The standards are cross-braced by a suitable member 17, and the upper ends of the standards 10 and 11 are inwardly bent as indicated.

Each of the rolls 12, 13 and 14 embodies a centrally disposed axle 18. The rolls proper are mounted on suitable bearings, not shown, in turn supported on the axles 18. The ends of the axles project outwardly of the ends of the rolls, and the inner ends of the axles for the rolls 12 and 13 may be headed as indicated at 19. Likewise, both ends of the axles 18 of the roll 14 may be provided with the heads 19.

In the manner well understood the adjacent inner ends of the axles for the rolls 14—13 and 14—12 are supported in Y-shaped brackets 20 secured in a suitable manner to the cross member 17. One leg 21 of the brackets 20 may be formed integrally with the portions secured to the cross member 17. Welded or otherwise secured to a side of the bracket 20 is the leg 22 thereof and which is inwardly directed with respect to the leg 21 whereby the legs lie normal to the axes of the axles for the rolls 12 and 13, namely, parallel to the inwardly directed upper ends of the brackets 10 and 11. The upper ends

of the legs 21 and 22 are provided with upwardly openings slots 26. Likewise, the upper ends of the standards 10 and 11 are provided with upwardly opening slots 27. The axles for the rolls are placed in these slots, and rest in the bottoms thereof.

The above described construction is old in the art, and as such forms no part of my invention. My invention consists in part in the provision of the U-shaped clip indicated generally at 28 adapted to be placed over the projecting ends of the axles between the legs of the brackets 20. With a clip 28 placed over the ends of the axles the axles are restrained against relative vertical movement. Consequently, if one axle moves upwardly the other moves in unison therewith. Under these conditions the ends thereof contact after a small amount of vertical movement due to the increase in the angle between the axes thereof, thus preventing further movement. The clip 28 may be made of a piece of flat steel stock. In the preferred embodiment I so shape the clip 28 that it wedges between the legs of the bracket 20 after a slight upward movement of the ends of the axles. To this end, the stock is so cut that there is a section 29 at one end which is narrower in width than the section 31 at the opposite end. The sections 29 and 31 are joined by a tapering section 32. With a piece of steel cut as shown in Fig. 5 I then bend the same to U-shape as shown in Fig. 4, thus to provide a clip in which the upper leg 29 is narrower than the lower leg 31, and in which the legs are joined by the tapering section 32, which latter section forms the base of the U. In each leg I provide a hole 33 for receiving a cotter pin 34 or the like.

In use, it will be seen that when the clips are inserted between the legs 21 and 22 the upper leg 29 contacts the upper portion of the faces of the brackets and the lower leg 31 contacts the faces of the brackets at a lower point. The rolls are thus held effectively against upward movement, since the edges of the clip are in contact with the converging sides of the legs of the bracket. The section 32 of the clip evenly contacts the surfaces of the legs 21 and 22 due to the gradually increasing width thereof commencing at the inner end of the leg 29 and proceeding downwardly. The bracket is held against lateral displacement of the ends of the axles by means of the cotter pin 34, the cotter pin being of such a size as not to pass between the headed ends 19 of adjacent roll axles.

It will be apparent that the clip prevents the axles and rolls from moving upwardly out of the slots 26, and further that due to the shape thereof the clips cannot rotate about the axles. This is due to the fact that the legs and portion 32 are in contact with the faces of the legs 21 and 22 when the legs of the clip are substantially horizontal.

My invention further consists of the clip now to be described. At the outer end of the axles of the rolls 12 and 13 I provide a ring type clip 36 having an extension 37 thereon. The upper or ring portion of the clip fits over the headed end of the axle 18, and the clip is held to the end standards 10 and 11 by means of set screws 38. With the combination of the clips 28 and 36 it will be apparent that the axles of the rolls are effectively prevented from becoming displaced upwardly out of the slots 26 and 27.

From the foregoing it will be apparent that I have devised clips for holding the axles of conveyor rolls and the like in place within the supporting framework therefor. From a consideration of the drawings and the disclosure herewith, it will be apparent that the clips may be readily removed by withdrawing the cotter pins 34, or by removing the screws 38. It will be further apparent that with the exception of the screw 38 for the clips 36 there is no physical attachment of the clips to the supporting framework for the rolls. This is particularly advantageous at the brackets 20 due to the difficulty of gaining access to screws, bolts or the like placed at that point. In actual practice I have found that both the clips 28 and 36 are extremely satisfactory, and economical of production. While in the preferred form the clips are constructed and arranged for the edges thereof to contact the adjacent faces of the legs of the bracket 20, it will be seen that a clip 28 of a width only sufficient to prevent relative vertical movement of the axle ends is an effective hold down device. My invention therefore contemplates the provision of such a clip although as stated I prefer to utilize the wedging effect described herein.

While I have shown my 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 changes and modifications, without departing from the spirit thereof, and I desire therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a troughing idler roll assembly of the type having centrally disposed roll axles and converging brackets having upwardly opening slots in which the ends of the axles are placed to extend past the brackets, a unitary U-shaped clip straddling the extending ends of the axles and having an upper leg narrower than the lower leg, a tapering base section connecting the legs, said legs and base section being of a width for the edges of the clip to engage the adjacent faces of said brackets, and a removable member joining the legs on the side of said axles opposite the base of the clip.

2. For use in holding the ends of the axles of troughing idler rolls seated in the bottoms of upwardly opening slots provided in adjacent upwardly converging brackets and wherein the ends of said axles project through said slots, a clip straddling the projecting ends of said axles comprising a U-shaped strip of metal having an upper narrow leg and a lower leg wider than the upper leg, and a base section tapering widthwise and joining said legs.

3. For use in holding the ends of idler roll axles seated in the bottoms of upwardly opening slots provided in adjacent upwardly converging brackets and wherein the ends of said axles project through said slots, a U-shaped metal clip disposed to straddle the projecting ends of said axles, the upper and lower legs of the clip being of a width for the edges thereof to simultaneously engage the faces of said brackets, the base portion of the clip being tapered in width whereby its edges simultaneously engage the faces of the brackets, and a removable member connecting the legs of the clip on the side of the axles opposite the base.

4. For use in holding the ends of idler roll axles seated in the bottoms of upwardly opening slots provided in adjacent upwardly converging supporting brackets and wherein the ends of said axles project through said slots, a U-shaped metal clip of a size to straddle the ends of said axles and having legs longer than the diameter

of said axles, one of said legs being narrower than the other and the base of the clip being tapered in width and connecting said legs, the respective width of the legs and base being such that the edges of the same simultaneously contact the adjacent faces of the supporting brackets when the clip is in place about the ends of said axles, and a removable member passing through the legs of said clip and holding the same against movement laterally of the axles.

5. The combination with an idler roll having an axle supported at each end in upwardly opening slots provided in supporting brackets one of which comprises a pair of inwardly converging legs and wherein the ends of said axles project through the brackets, of a U-shaped clip surrounding the projecting ends of said axles between the inwardly converging legs of said bracket, said clip being constructed and arranged when in place to wedge against the adjacent faces of said legs thereby to restrain the associated end of the axle against upward movement, a removable member cross connecting the legs of said

clips on the side of the axles opposite the base of the clip, a second clip surrounding the opposite projecting end of the axle, and means to removably fasten the second clip to its associated bracket.

6. Apparatus as defined in claim 5 in which said second clip embodies a ring portion and an extension portion, and in which the means to fasten the same comprises a screw passing through the extension portion and tapped into the bracket.

SAMUEL J. SPURGEON.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,574,511	Philips	Feb. 23, 1926
2,127,643	Glossmann	Aug. 23, 1938
2,312,610	Weiss et al.	Mar. 2, 1943