March 11, 1924. 1,486,259

G. NELSON

IDLER FOR BELT CONVEYERS

Filed March 23, 1923 2 Sheets-Sheet 1

Fig. 1.

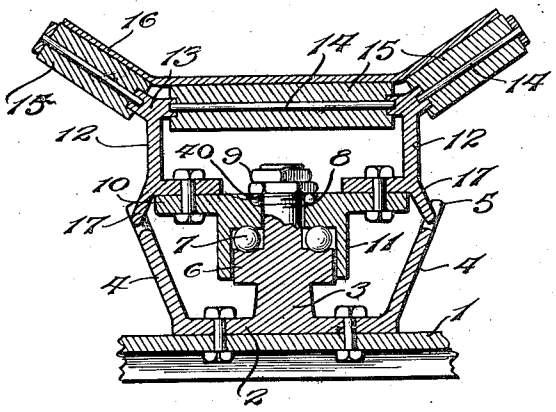


Fig. 2.

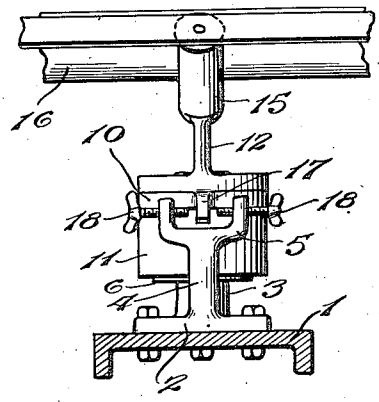
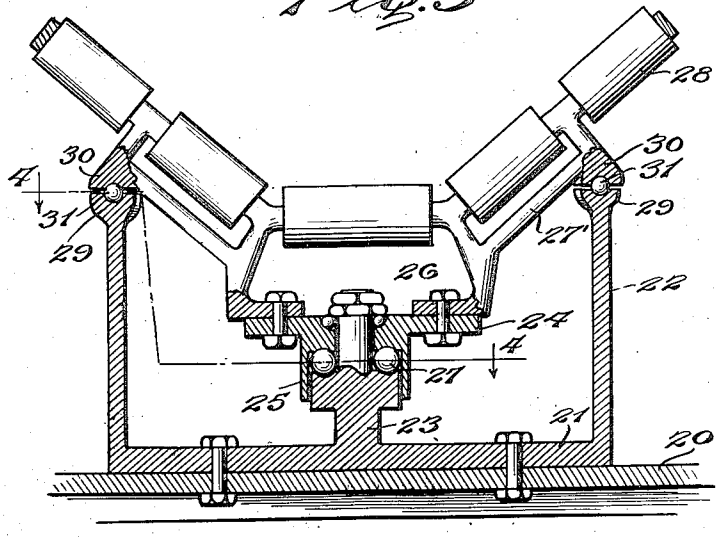


Fig. 3



Inventor

Gus Nelson

By

Lacey & Lacey, Attorneys

March 11, 1924. 1,486,259

G. NELSON

IDLER FOR BELT CONVEYERS

Filed March 23, 1923 2 Sheets-Sheet 2

Fig. 3.

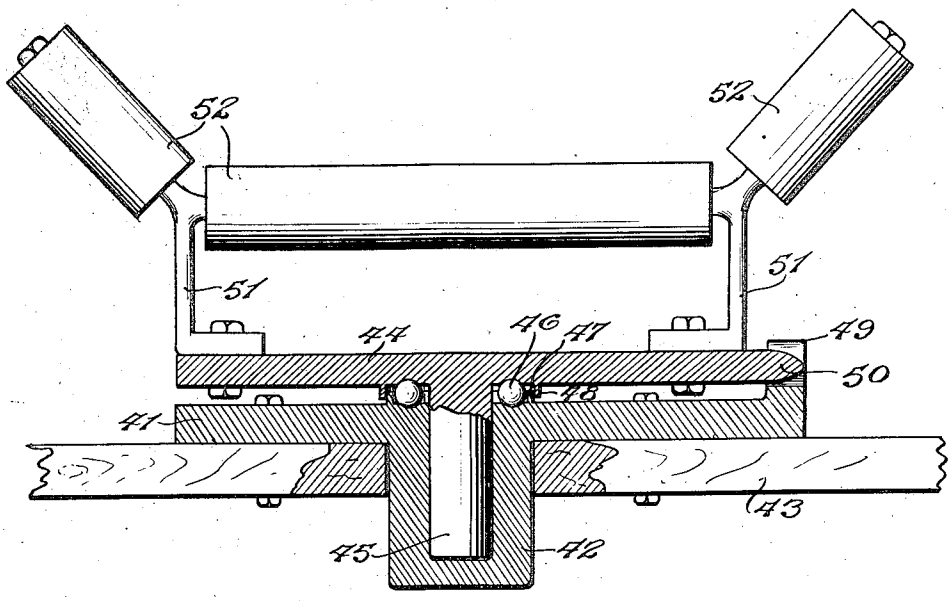
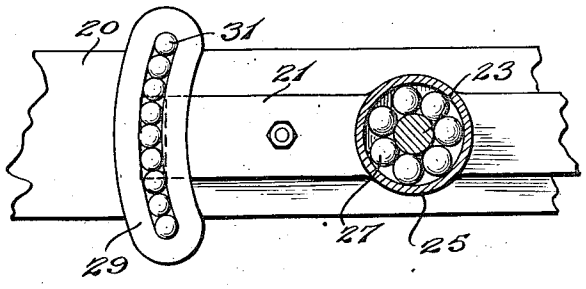


Fig. 4.



Inventor

Gus Nelson

By Lacey & Lacey. Attorneys

Patented Mar. 11, 1924. 1,486,259

UNITED STATES PATENT OFFICE.

GUS NELSON, OF DOUGLAS, ARIZONA.

IDLER FOR BELT CONVEYERS.

Application filed March 23, 1923. Serial No. 627,110.

To all whom it may concern:

Be it known that I, GUS NELSON, a citizen of the United States, residing at Douglas, in the county of Cochise and State of Arizona, have invented certain new and useful Improvements in Idlers for Belt Conveyers, of which the following is a specification.

This invention relates to conveyers of that type in which a belt is supported by and runs upon a series of rollers disposed transversely to the belt and supporting the side edges thereof in relatively elevated positions so that the belt has a trough-like cross sectional outline. The invention relates particularly to the support for the belt and has for its object the provision of means whereby the belt may automatically accommodate itself to the variations in the load as the load shifts from side to side of the belt so that the belt will be maintained in alinement. Another object of the invention is to provide a belt support which will move easily and in which the limit of lateral movement of the belt may be readily regulated. The invention is illustrated in the accompanying drawing and will be hereinafter fully set forth.

In the drawing:

Figure 1 is a transverse section of a belt conveyer showing one embodiment of the invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is a transverse section showing another embodiment of the invention;

Fig. 4 is a horizontal section on the line 4—4 of Fig. 3, and

Fig. 5 is a transverse section showing another embodiment of the invention.

The deck or supporting frame 1 may be of the usual or any preferred construction and has secured thereon at intervals a pedestal or base frame 2, from the center of which a post 3 rises and at the side edges of which are arms 4 having forked upper extremities 5. The post 3 is provided intermediate its ends with an annular flange or shoulder 6 in the upper side of which is formed a raceway to receive anti-friction balls 7, as clearly shown, and the upper extremity of the post is threaded, as shown at 8, to receive lock nuts 9. Pivotally mounted upon the upper portion of the post is a turntable 10 provided centrally with a depending collar or circular rim 11 adapted to enclose the shoulder 6 on the post and constructed with a raceway to engage the balls 7, as clearly shown in Fig. 1. At diametrically opposite points of the turntable, standards 12 are secured thereto, and these standards are equipped with heads 13 at their upper ends which carry the axles or spindles 14 upon which the rollers 15 are mounted, the belt 16 resting upon and traveling over the said rollers. The standards 12 are provided at their lower ends with depending stop lugs 17 which play within the forked upper ends 5 of the arms 4 and in the branches of the forks are mounted set screws 18 which are adapted to be engaged by the said lugs 17 so that the play or movement of the standards may be limited. Anti-friction devices 40 are interposed between the nuts 9 and the upper surface of the turntable 10.

The conveyer belt is operated in the usual manner and, under normal conditions, the stop lugs 17 will be disposed midway the branches of the respective forks 5 and out of contact with the set screws 18. In actual practice, it happens at times that the load upon the belt will not be distributed equally transversely of the same so that the belt tends to run to one side. The pull upon the side toward which the belt tends to run will, therefore, be increased and, as a result, the belt will partake of a reverse movement so that it tends to right itself and remain in alinement.—If the rollers supporting the belt be mounted in a rigid support, the belt will not automatically right itself, but the wear upon the belt becomes uneven and frequent repairs or readjustment of the belt becomes necessary. With my improved support, the belt may shift pivotally about the post 3 so as to conform to inequalities or variations in the load and will right itself, as stated. The set screws 18 may be easily adjusted so as to permit any desired extent of movement or may be so adjusted as to lock the belt against all lateral movement and it sometimes happens that the belt may be rigidly held inasmuch as the load is light or other conditions maintain an even distribution of the pull upon the belt.

The arrangement illustrated in Figs. 1 and 2 is designed for comparatively light belts, the normal load upon which is not very heavy. In Figs. 3 and 4, I have shown a further development of the invention which is especially applicable for belts carrying heavier loads and which are given a greater dish so that they present trans-

versely a deeper trough. In this embodiment of the invention, the deck or main frame 20 may be of the same construction as the deck 1, previously described, and upon the said deck at intervals are secured supporting frames 21 having side standards 22 and a central post 23. The said post 23 corresponds in all respects to the post 3 previously described, and the table 24 is constructed with a depending collar 25 to encircle the post and is held thereon by lock nuts 26, anti-friction balls 27 being interposed between the turntable and the annular shoulder on the base, as shown and as will be readily understood. Secured upon the turntable at diametrically opposite points and extending upwardly and outwardly therefrom are supporting yokes 27′ carrying the belt- supporting rollers 28. The standards 22 are equipped at their upper ends with arcuate raceways 29 and upon the under sides of the yokes 27′ at the upper outer ends thereof are mating raceways 30, anti-friction balls or rollers 31 being fitted between and retained in the mating raceways, as will be readily understood. The operation of this embodiment of the invention is the same as the operation of the first described embodiment, but the set screws of the first described form are omitted inasmuch as with the deeper trough the load is concentrated more nearly at the center or bottom of the belt and there is, therefore, less tendency of the belt to pull to one side. The load, however, obviously may be heavier than the load carried by the first described belt and the supporting structure is, therefore, stronger than the supporting structure in the first described form. The greater extent of the anti-friction members provides a greater supporting area and, therefore, furnishes the desired firm stable base for the moving elements and inasmuch as there are a greater number of anti-friction devices, the belt will respond quickly to any slight tendency to side movement and will just as quickly return to its normal position. In all forms of the invention, the parts are compactly arranged and the bearing balls or rollers are completely housed so that they are not apt to be broken by chance blows and the device will remain operative under all conditions. My invention eliminates the side idlers which are now employed and which destroy the edges of the belts.

In the form of the invention shown in Fig. 5, the base plate 41 is constructed with a central depending cup or well 42 which extends through the deck 43. The turntable 44 is provided centrally with a depending pin 45 which fits rotatably within the cup or well 42, as shown, and anti-friction devices 46 are interposed between the base plate and the turntable around the upper end of the pin. Annular ribs 47 and 48 are formed on the base plate and the turntable respectively to house the anti-friction devices and to cooperate with the pin 45 and the well 42 to prevent vertical rocking of the turntable. At the edge of the base plate are spaced stops 49 to be engaged by a projection 50 on the turntable to limit the turning movement of the latter. Standards 51 are secured on the turntable to carry the belt-supporting rollers 52. While the belt is usually supported by rollers under its center and under both edge portions, the center roller may be omitted if desired

Having thus described the invention, what is claimed as new is:

1. In a conveyer of the type described, the combination of a main support, a turntable, a pivot mounting the turntable on the support, a collar depending from the turntable and encircling the pivot, anti-friction devices arranged about the pivot between the turntable and the support and housed by the collar, and means on the turntable for supporting a conveyer belt.

2. In a belt conveyer of the type described, the combination of a main support, a turntable mounted thereon, centering devices on the support and the turntable, anti-friction devices arranged between the turntable and the support and housed by the centering devices, fixed stops on the support at one side of the turntable, a projection on the turntable playing between said stops to limit the pivotal movement of the turntable, and belt-supporting members carried by the turntable.

3. In a belt conveyer of the type described, the combination of a main supporting structure, a post rising therefrom, arms rising from the structure at opposite sides of the post and having forked upper ends, a turntable pivotally fitted about the post, anti-friction devices arranged between the post and the turntable, standards carried by and rising from the turntable and provided with depending stop lugs fitting within the forked upper ends of the said arms, adjustable stop devices mounted in the forked extremities of the arms and adapted to be engaged by the said stop lugs, and means on the said standards for supporting a conveyer belt.

In testimony whereof I affix my signature.

GUS NELSON. [L. S.]