Jan. 7, 1958 E. C. VICE 2,818,954

SIDE GUIDE FOR CONVEYORS

Filed April 23, 1954

2 Sheets-Sheet 1

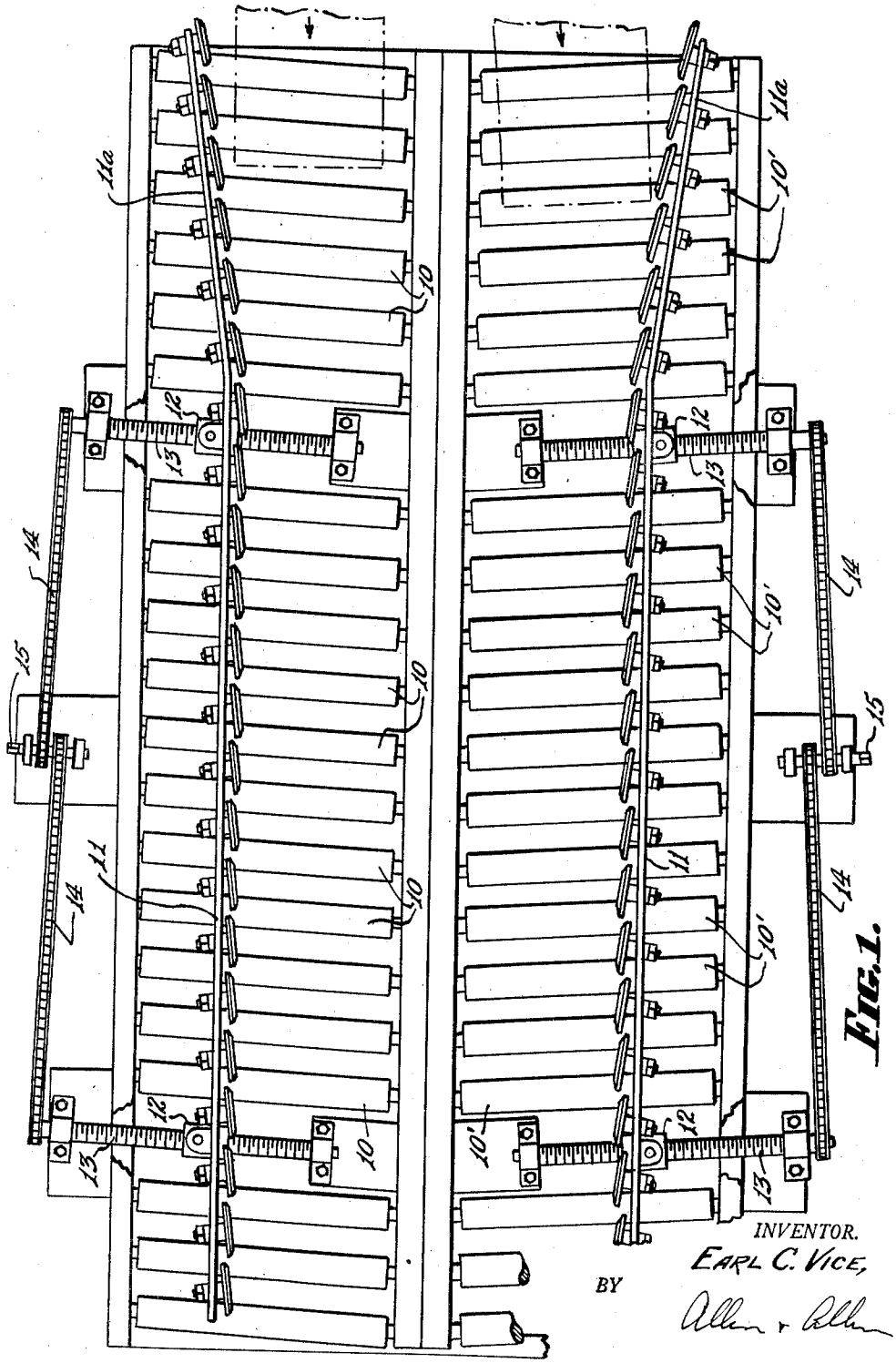

FIG. 1.

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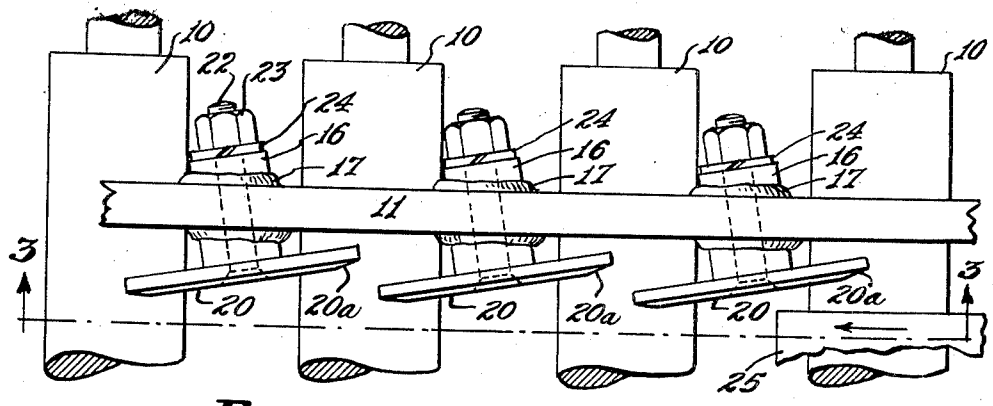

FIG. 2.

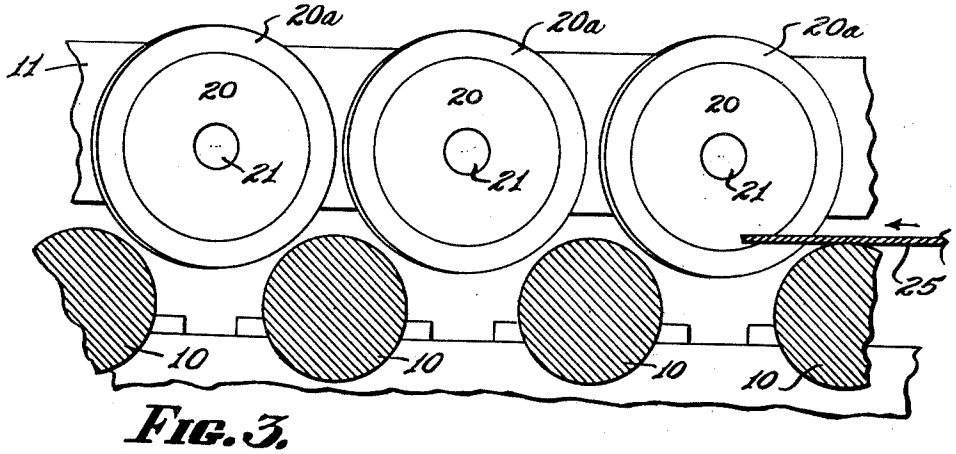

FIG. 3.

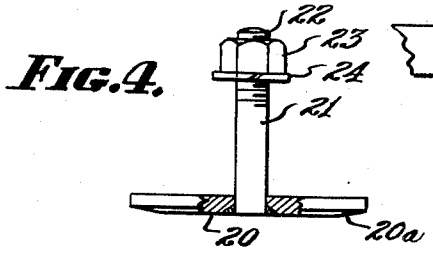

FIG. 4.

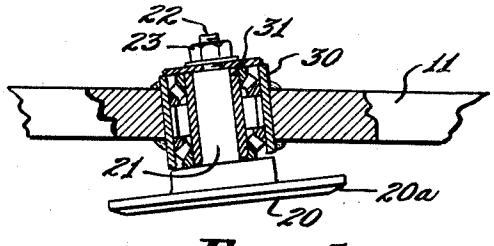

FIG. 5.

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SIDE GUIDE FOR CONVEYORS

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Application April 23, 1954, Serial No. 425,080

7 Claims. (Cl. 193—35)

This invention relates to a side guide for conveyors and more particularly to a side guide for roller conveyors such as are used in steel mills. Various types of side guides are currently in use and these side guides are of course subject to considerable wear and have to be replaced periodically. Furthermore, difficulty has been encountered particularly when handling thin sheets and irregular sheets in that corners of such sheets will get under the guides and cause a jam. This is particularly true where the sheet approaches the guide at an angle, as is often the case.

It is an object of the present invention to provide a novel side guide construction which will avoid the possibility of sheet corners jamming under the side guide. It is another object of the invention to provide a side guide having a plurality of wearing surfaces which may be changed periodically so as to increase the life of the side guide. In a modification of the invention, it is an object to provide a side guide having anti-friction properties.

Generally spearking, it is an object of the invention to provide an improved side guide which may be installed on existing roller conveyors without difficulty and which will perform the side guiding function in a superior manner.

These and other objects of the invention, which I shall describe in more detail hereinafter or which will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe certain exemplary embodiments.

Reference is made to the drawings forming a part hereof and in which:

Figure 1 is a plan view of a roller conveyor having side guides according to the invention.

Figure 2 is a fragmentary plan view similar to Figure 1 on a greatly enlarged scale.

Figure 3 is a fragmentary cross sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a detailed view of one of the guide elements, and

Figure 5 is a detailed view partly in cross section showing a modification of the invention.

Briefly, in the practice of the invention I provide a supporting member or plate which is mounted parallel to the axis of the conveyor adjacent the rollers thereof, and this plate may of course be adjustably mounted so that the position of the side guide may be adjusted as is well known. On the guide plate I mount a plurality of guide elements in the form of discs, the discs being disposed in a series of vertical planes which are at angles of about 10° to the axis of the conveyor. The disc-like guide elements are spaced substantially the same as the rollers of the conveyor but are staggered so that their lower peripheries extend between the rollers of the conveyor and below the pass line thereof. By the phrase "pass line" I mean the approximate plane traversed by a sheet moving over the conveyor.

According to one embodiment of the invention, the disc-like elements are secured to spindles provided with locking nuts so that they may be non-rotatively secured in position. Periodically the locking nuts may be loosened and the disc-like elements rotated slightly and reclamped to provide fresh wearing surfaces.

According to a modification of the invention, the disc-like elements may be mounted in non-friction bearings so that they are free to rotate and to provide for an anti-friction effect which is particularly useful with heavy sheets or plates.

Referring now in greater detail to the drawings, I have shown a conveyor having two flights of rollers which are oppositely skewed. These rollers are mounted in a conventional manner on a conventional framework which need not be described since it is well known. In Figure 1 the series of rollers **10** are skewed in such manner as to cause a sheet passing thereover to be urged toward the top of the drawing while the rollers **10'** are skewed in the opposite direction. This particular conveyor is one which may handle two separate groups of sheets and which will keep the two groups of sheets separated in their passage.

In Figure 1 a side guide is provided for each of the flights of rollers but since the side guides are simply mirror images of each other, it will suffice to describe only one. Basically, there is provided a supporting member or plate **11** and the plate **11** at its entrance end may be flared outward slightly as indicated at **11***a*. The plate **11** is secured in conventional manner to nuts **12** coacting with the screws **13** mounted below the table and connected together by the sprocket chains **14** so that the guide may be adjusted laterally of the conveyor by turning the shaft **15** by means of a wrench or crank. The adjustment of conveyor side guides as described above is conventional.

Referring now to Figures 2 to 4 inclusive, the plate **11** is perforated and sleeves **16** are mounted in the perforations. The sleeves **16** are welded in place as indicated at **17** and it will be noted that they are positioned at an angle to the perpendicular. Since it is desirable that the planes of the disc-like guide elements **20** be at about 10° to the axis of the conveyor, the angle between the axis of the sleeves **16** and the plane of the member **11** will be about 80°.

The guide elements themselves are in the form of disc-like elements **20** which may, if desired, be chamfered on their working faces at **20***a*. The elements **20** are secured to spindles **21** which are threaded at their free ends as at **22** to accept a locking nut **23**.

It will be clear that when the spindles **21** are passed through the bores of the sleeves **16**, in which they may be manually turned, and when the locking nuts **23** and washers **24** are applied, the members **20** may be clamped securely in position. In Figure 3, the advance end of a sheet is indicated at **25** and it will be clear that wear will take place on the members **20** substantially along partial chords at the pass line. When the discs **20** begin to show wear, the nuts **23** may be loosened and each of the discs **20** may be rotated slightly and reclamped in position, thus presenting a fresh wearing surface to the sheets.

For some installations it will be desirable that the discs **20** be capable of rotating anti-frictionally to reduce the frictional drag when heavier sheets or plates are traversing the conveyor. This modification is shown in Figure 5 where the plate **11** is drilled at the angle specified above and the outer race **30** of a cone-type roller bearing is pressed into position. The spindle **21** is then simply pressed into the inside of the inner race **31**. In this manner, the plates **20** are provided with an anti-friction mounting so that they may rotate when a sheet or plate abuts

them. This construction also tends to minimize wear because fresh surfaces are continually being presented and the wear is thus evenly distributed over the discs.

From a consideration of Figure 2, it will be observed that the members **20** are spaced apart a distance equal to the spacing between the rolls **10**, and from a consideration of Figure 3 it will be observed that the discs **20** are so positioned that their lower peripheries extend between the rollers **10** and below the pass line indicated by the position of the sheet **25**. From Figure 3, it is apparent that a corner of a sheet cannot become wedged under the side guide and from a consideration of Figure 2, it will be clear that the discs **20** are in somewhat of an overlapping relation. While there is not an actual overlapping, it will be clear from Figure 2 that a sheet cannot become wedged behind the leading edges of any of the discs **20**.

It will be clear that while a specific construction has been shown in some detail, numerous modifications may be made without departing from the spirit of the invention and no limitations are intended unless specifically set forth in the claims.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A side guide for a conveyor having rollers defining a pass line comprising a supporting member mounted adjacent the rollers of said conveyor longitudinally and parallel to the plane thereof, and a plurality of disc-like guide elements mounted on said member, said guide elements being mounted in substantially parallel vertical planes at an angle to the axis of said conveyor with the upper portions thereof extending above said pass line.

2. A side guide according to claim 1, wherein the spacing between the axes of said guide elements is substantially the same as that between the axes of said rollers, but said guide elements are staggered with respect to said rollers, and the lower peripheries of said guide elements extend between adjacent rollers and below the pass line.

3. A side guide according to claim 1, wherein the mountings of said guide elements comprise spindles provided with locking nuts whereby they may be clamped non-rotatively, and whereby, upon loosening of said locking nuts, they may be manually rotated and reclamped to present fresh wearing surfaces.

4. A side guide according to claim 1, wherein the mountings of said guide elements comprise spindles and said spindles are rotatively mounted in said supporting plate by means of anti-friction bearings.

5. A side guide for a conveyor having rollers defining a pass line comprising a supporting member mounted adjacent the rollers of said conveyor longitudinally and parallel to the plane thereof, and a plurality of disc-like guide elements mounted on said member, said guide elements being disposed in substantially parallel vertical planes at an angle to the axis of said conveyor with the upper portions thereof extending above said pass line, with their lower peripheries extending between adjacent rollers and below the pass line.

6. A side guide according to claim 5, wherein the mountings of said guide elements comprise spindles provided with locking nuts whereby they may be clamped non-rotatively, and whereby, upon loosening of said locking nuts, they may be manually rotated and reclamped to present fresh wearing surfaces.

7. A side guide according to claim 5, wherein the mountings of said guide elements comprise spindles and said spindles are rotatively mounted in said supporting plate by means of anti-friction bearings.

References Cited in the file of this patent

UNITED STATES PATENTS

1,038,514	Anderson	Sept. 17, 1912
2,309,723	Wilson	Feb. 2, 1943
2,627,959	Seward	Feb. 10, 1953

FOREIGN PATENTS

1,279	Great Britain	Oct. 31, 1912