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I. RUND ET AL

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CLEANING APPARATUS FOR BELT CONVEYERS

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Fig. 1.

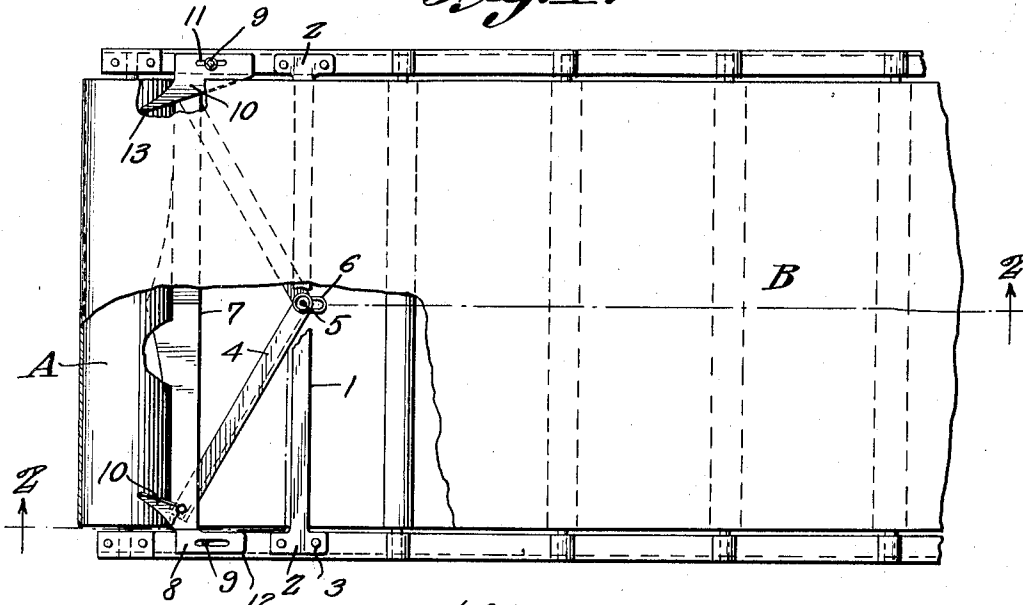


Fig. 2.

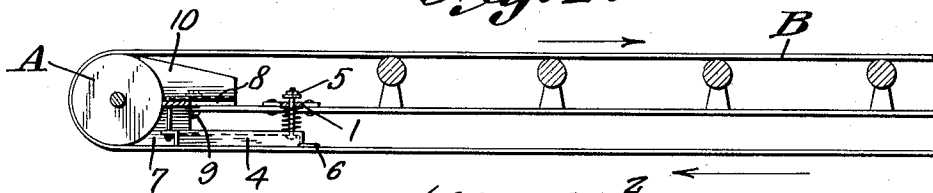


Fig. 4.

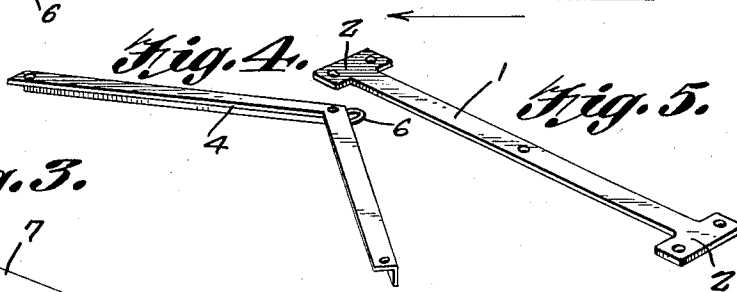


Fig. 5.

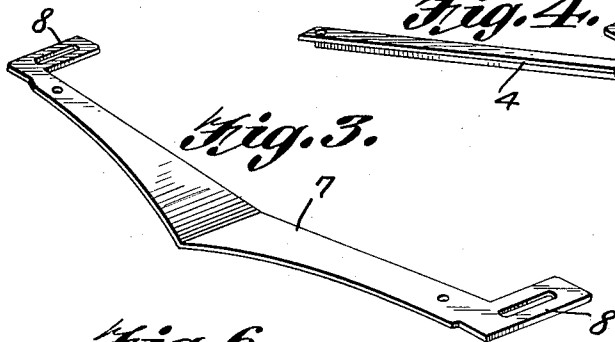
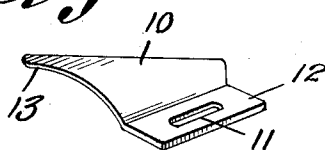


Fig. 3.

Fig. 6.



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CLEANING APPARATUS FOR BELT CONVEYERS

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This invention relates to belt conveyers, and its general object is to provide a cleaning apparatus for elevating conveyers, that is arranged at the lower end thereof and not only includes means to prevent dirt and foreign matter from getting in between the runs of the belt, but also means to scrape the inner side of the lower run of the belt in advance of the lower roller as well as to scrape the roller, therefore it is practically impossible for any great amount of dirt to come in contact with the roller, with the result the apparatus will prevent the conveyer from being clogged and allows it to perform its intended function in an efficient manner.

Another object of the invention is to provide a cleaning apparatus of the character set forth, that is simple in construction, easy to apply to practically all types of elevating conveyers, is inexpensive to manufacture and extremely efficient in operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing our invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a fragmentary top plan view of a conveyer showing the application of our apparatus thereto.

Figure 2 is a sectional view taken approximately on line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a perspective view of the roller scraper.

Figure 4 is a similar view of the belt scraper.

Figure 5 is a similar view of the cross bar which forms a part of the invention.

Figure 6 is a perspective view illustrating one of the scrapers or dirt guards for the upper run of the belt.

Referring to the drawing in detail, the letter A indicates the lower roller of a conveyer of the type generally employed with elevating graders, and while we have illustrated our apparatus associated with that type of conveyer, we want it understood that it can be used on conveyers of all types that employ belts and rollers. The roller A has trained about the same, the usual belt B, and while the belt is of a width to extend practically to the sides of the conveyer frame, there is a space between the side edges of the belt and the sides of the frame as will be noted upon inspection of Figure 1. Considerable dirt will pass through the spaces between the sides of the frame and the side edges of the belt, and the

purpose of the present invention is to have a tendency to prevent the passage of dirt, through the said spaces at the lower end of the conveyer, and to prevent such dirt that may pass from coming in contact with the roller A, as well as to scrape from said roller such dirt that may come in contact therewith and adhere thereto.

Our apparatus includes a cross bar 1 that is provided with an opening midway its ends, and has formed with its ends apertured ears 2 which are secured to and supported upon the side bars of the conveyer frame as at 3 and as best shown in Figure 2, there being rivets or the like passing through the apertures of the ears 2 and the side bars.

The scraper for the lower run of the belt B is indicated by the reference numeral 4 and is substantially V-shape in configuration as best shown in Figure 4. The scraper 4 is formed from angle iron and is provided with an opening at its apex through which passes a bolt of a bolt and nut connection 5, which also passes through the opening in the center of the cross bar 1 and surrounding the bolt is a coil spring that urges the scraper 4 downwardly and in a manner whereby the vertical portion thereof is disposed in contacting engagement with the inner surface of the lower run of the belt as clearly shown in Figure 2. In order to prevent the pointed end at the apex of the scraper from damaging the belt, we employ what we would term a shoe 6 that is secured on the lower surface of the vertical portion of the scraper 4 at the apex thereof, and this shoe extends rearwardly from the apex and is arranged in engagement with the belt. By providing a substantially V-shaped scraper arranged as shown, it will be apparent that dirt that adheres to the inner surface of the lower run of the belt will be scraped therefrom and directed toward the outer edges of the belt and be caused to fall therefrom, with the result a minimum amount of dirt will be carried to the roller A.

Notwithstanding the use of the scraper 4, considerable dirt does come in contact and adheres to the roller A, and we employ a scraper to remove the dirt therefrom. This scraper includes a scraping blade 7 that is bent midway its ends to provide upwardly inclined portions and the scraping edge of the scraping blade 7 is rounded toward the center of the blade as best shown in Figure 3 so that the intermediate portion of the blade 7 underlies the roller A and the entire scraping edge is arranged in contacting engagement therewith, with the result when the roller A is rotating, dirt or the like will be scraped therefrom and be directed toward the rear of the blade 7, therefore the roller will be kept in a clean condition as will be apparent.

The ends of the scraping blade 7 have formed therewith arms 8 which are slotted for the pas-

sage of the bolts of bolt and nut connections 9 which secure the scraping blade 7 to the side members of the frame as best shown in Figure 1, in a manner whereby the scraping blade is adjustable with respect to the roller, so that it can be kept in contacting engagement therewith at all times.

The scraping blade 7 is provided with openings adjacent the ends thereof and the ends of the scraper 4 are secured to the scraping blade 7 through the medium of suitable fastening means passed through the openings of the scraper 4 and scraping blade 7.

We also employ upper scraping means for the roller, and that means is in the form of dirt guards which consists of a pair of plates that are indicated by the reference numeral 10. These plates are identical in construction and each are provided with slots 11 disposed longitudinally in flanges 12 thereof for the purpose of receiving the bolts of the bolt and nut connections 9 which secure the plates to the upper surface of the sides of the frame in a manner whereby the inner or body portions of the plates underlie the upper run of the belt as best shown in Figure 1. The inner portions of the plates are curved upwardly and inwardly, and are provided with relatively wide rear ends 13 as best shown in Figure 1, and these ends are curved rearwardly in a manner to follow the curvature of the roller to engage the same adjacent to the ends thereof as shown in Figure 1. The plates are secured in alignment with respect to each other and not only act to scrape the roller at the opposite end portions thereof in a manner to direct the dirt outwardly of the ends but also prevent the dirt from falling on the lower run of the belt adjacent to the roller B, consequently very little dirt will fall through the space between the side edges of the belt and the sides of the frame, with the result the inner run of the belt can be kept reasonably free from dirt, but any dirt that does come in contact therewith will be prevented from reaching the roller A due to the scraper 4. By employing the slots in the flanges 12, it will be obvious that the plates are mounted for adjustment and therefore can be kept in contacting engagement with the roller A as will be apparent.

From the above description and disclosure of the drawing, it will be obvious that we have provided a cleaning apparatus that will have a tendency to prevent the accumulation of dirt and the like about the lower roller of the conveyer, with the result our apparatus will prevent the conveyer from becoming clogged and therefore allow for efficient operation thereof for a prolonged period of time.

It is thought from the foregoing description that the advantages and novel features of our invention will be readily apparent.

We desire it to be understood that we may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What we claim is:

1. A cleaning apparatus for a belt conveyer, comprising scraping means engageable with the roller of the conveyer the entire length thereof, scraping means engageable with the roller at the end portions thereof and disposed above the first mentioned scraper means, and scraping means for the lower run of the belt and disposed adjacent to the roller.

2. A cleaning apparatus for a belt conveyer,

comprising a scraper for the lower roller thereof and being disposed in contacting engagement with the roller and arranged with a portion thereof on the underside of said roller, means for adjustably securing the scraper with respect to the roller, a scraper for the lower run of the belt and having connection with the scraper first mentioned for disposal adjacent to the roller and scraping means in the form of dirt guards and engageable with the end portions of the roller.

3. A cleaning apparatus for the lower end of an inclined belt conveyer comprising a scraper for the lower roller thereof and including a scraping blade bent midway its ends to provide upwardly inclined portions having curved edges engageable with the roller the entire length of the latter, a scraping blade for the lower run of the belt and scraping means engageable with the roller adjacent to the ends thereof and arranged to act as dirt guards.

4. A cleaning apparatus for the lower end of an inclined belt conveyer comprising a scraper for the lower roller of the conveyer, a scraping blade included in the scraper and being bent midway its ends to provide upwardly inclined portions and having a scraping edge curved toward the center of the blade, means for adjustably securing the scraper with the blade in contacting engagement with the roller for the entire length of the latter, a spring pressed scraper for the lower run of the belt and being connected to the scraper first mentioned, and scraping means in the form of dirt guards for engagement with the roller above the first mentioned scraper.

5. A cleaning apparatus for the lower end of an inclined belt conveyer comprising a scraper for the lower roller of said conveyer, means for adjustably securing the scraper for contacting engagement with the roller the entire length of the latter, a scraper for the lower run of the belt and being substantially V-shape in configuration to provide converging arms having their ends connected to the first mentioned scraper, spring means for urging the second mentioned scraper in contacting engagement with the belt and scraping means in the form of dirt guards disposed above the first mentioned scraper and being engageable with the roller at the ends thereof.

6. A cleaning apparatus for the lower end of an inclined belt conveyer, comprising a scraper for the lower roller, a scraper for the lower run of the belt and being secured to the scraper first mentioned, scraping means consisting of plates adjustably secured to the conveyer frame for engagement with the roller adjacent to the ends thereof.

7. A cleaning apparatus for the lower end of an inclined belt conveyer comprising a scraper for engagement with the roller its entire length, a scraper for the lower run of the belt and disposed in contacting engagement with the inner surface thereof, scraping means for engagement with the roller adjacent to the ends thereof and disposed above the first mentioned scraper, said scraping means consisting of a pair of plates secured to the sides of the conveyer frame for adjustment and in alignment with each other, and said plates having inwardly directed portions provided with rear ends curved to follow the curvature of the roller.

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