

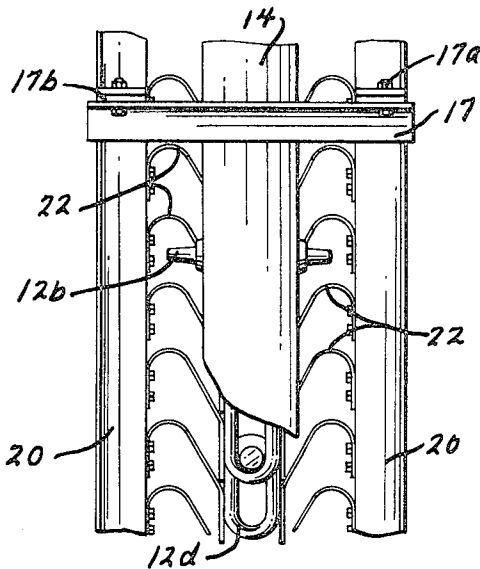
[54]	ELECTROCOATING EQUIPMENT	1,354,234	9/1920	Blaetz.....	204/297
[72]	Inventors: Charles C. Boost , Oakland City; William S. Mitchell ; David M. Horton , both of Evansville, all of Ind.	1,950,096	3/1934	Yeager.....	204/297 X
		1,963,363	6/1934	Hale.....	204/297 X
		2,887,447	5/1959	Lancy.....	204/297 X
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[22]	Filed: Oct. 6, 1969	<i>Assistant Examiner</i> —A. C. Prescott			
[21]	Appl. No.: 864,066	<i>Attorney</i> —Warren D. Flackbert			
[52]	U.S. Cl.	204/297	204/300		
[51]	Int. Cl.	C23b 13/00	B01k 5/02		
[58]	Field of Search	204/297	300	299	181
[56]	References Cited				
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[57] **ABSTRACT**

A hanger assembly for electrocoating equipment characterized by the use of a series of resilient metal bus springs or wipers, at ground electrical potential, in various wiping arrangements for achieving less system resistance, and, therefore, improved operating results.

11 Claims, 7 Drawing Figures



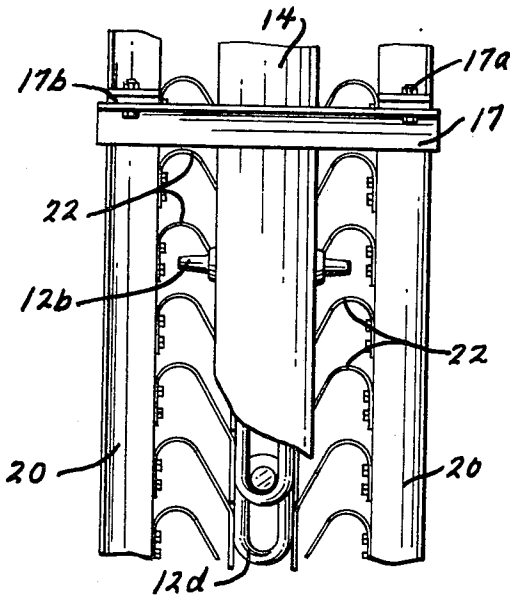


FIG. 1

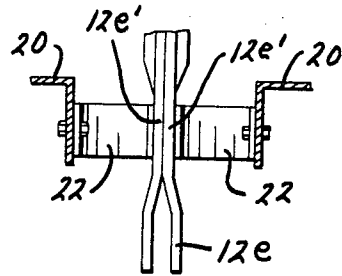


FIG. 3

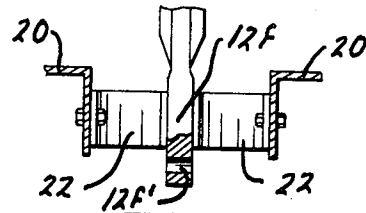


FIG. 4

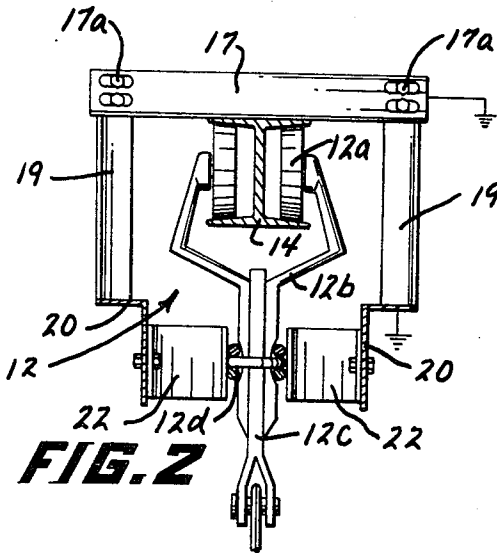


FIG. 2

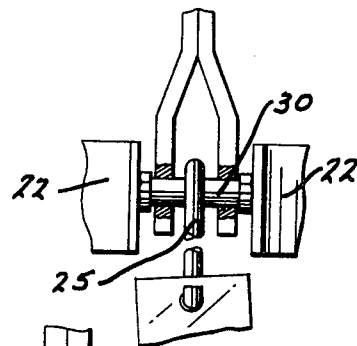


FIG. 6

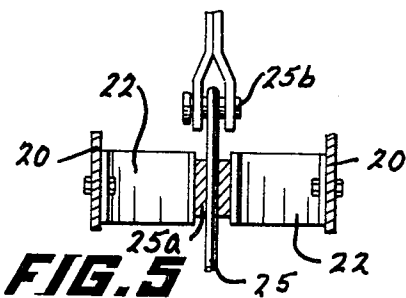


FIG. 5

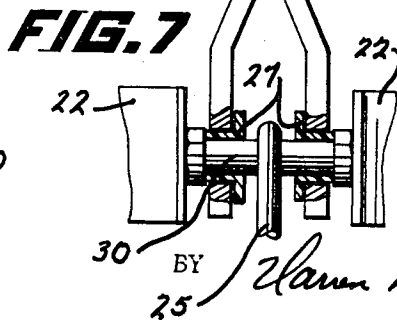


FIG. 7

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ELECTROCOATING EQUIPMENT

The hanger assembly defining the invention has particular application to the type of electrocoating equipment described and claimed in the pending Koch et al., U.S. Pat. application Ser. No. 440,410, entitled ELECTROCOATING, and represents an improvement to the hanger assembly described and claimed in the pending Koch et al. U.S. Pat. application Ser. No. 742,246, now U.S. Pat. No. 3,607,711 entitled ELECTROCOATING EQUIPMENT. In the arrangement of the aforesaid former pending patent application, the article being coated, the hanger for the article being coated, and the tank are at the same electrical polarity, i.e., at ground potential, where electrodes disposed within the tank and mounted in planes substantially parallel to the side walls of the tank are at an opposite electrical polarity.

In the arrangement of the aforesaid latter pending patent application, the use of a series of bus springs is taught in operative engagement with a moving conveyor which passes therebetween. Although such general arrangement has proven satisfactory, the invention herein serves as an improvement to the results already available. In this connection, various arrangements are provided to secure the desired wiping action, and, additionally, electrical insulators have been included, with the overall result of lower system resistance.

A better understanding of the invention will become more apparent from the following description, taken in conjunction with the accompanying drawing, wherein

FIG. 1 is a top plan view, partly fragmentary, showing the invention in combination with a conveyor installation;

FIG. 2 is a view in end elevation, partly in vertical section, showing further details of the invention embodiment of FIG. 1;

FIG. 3 is of a fragmentary view in end elevation, showing the invention in combination with an extended "H" hanger attachment;

FIG. 4 is a fragmentary view in end elevation showing the invention in combination with a "C" hanger attachment;

FIG. 5 is a fragmentary view showing the invention in combination with a sleeve on a hanger;

FIG. 6 is a fragmentary view of the invention showing wiping action on a brass nut and bolt mounted on an "H" hanger attachment; and,

FIG. 7 is a fragmentary view in end elevation showing the invention in combination with an "H" hanger attachment and employing insulations means.

For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiments illustrated in the drawing and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alternations and further modifications in the illustrated devices, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

Referring now to FIGS. 1 and 2, the invention is shown in combination with a hanger assembly 12 for a typical conveyor installation. In this regard, a supporting member 14, such as an I-beam, for example, serves as a support for wheels 12a forming part of the hanger assembly 12.

The hanger assembly 12 includes arms 12b between the free ends of which is positioned a hanger attachment 12c. The part to be coated is hung onto a hanger depending from the hanger attachment 12c, where, it should be understood, such hanger attachment 12c may be either an "H" type, an extended "H" type, or a "C" type. The hanger assembly 12 is moved along its desired path of travel through a drive chain 12d, the latter having a series of interconnected links.

Support bars 17, typically steel angles grounded to earth potential, are mounted onto the top of the supporting member 14 of the conveyor, as by welding, for example. Support members 19 extend downwardly from each support bar 17, where the support bars 17 are slotted so that the support members 19 may be moved laterally for optimum operative results. In the

present invention, nut and bolt combinations 17a are provided which are preferably made from nylon or other di-electric material, where insulating material 17b is disposed between each support bar 17 and the support members 19, all having purposes of electrical isolation.

Bus bars 20, aluminum angles also grounded to earth potential, are secured to the bottom of each support member 19. The bus bars 20 each support a series of resilient bus springs or wipers 22, the latter being, in FIGS. 1 and 2, in operative arrangement with the conveyor drive chain 12d. As the bus bars 20 are at ground electrical potential, wipers 22 are also at ground electrical potential. The aforesaid wipers 22 are preferably made from beryllium copper, where a conductive compound, such as zinc particles suspended in high temperature grease, for example, is provided between each wiper 22 and the bus bars 20 to minimize electrolysis.

In use, a series of bus springs or wipers 22 are spaced in a close relationship, as shown in FIG. 1, on opposite sides of the conveyor for a length equal to, at least, the size of the coating tank and in the direction of movement of the work. While the desired ground electrical potential is automatic and positively achieved, as in the aforementioned pending Koch et al., patent application entitled ELECTROCOATING EQUIPMENT, the invention herein represents an improvement in operation because of lower system resistance.

FIG. 3 shows another area for the desired wiping action. In this connection, the hanger assembly 12 employs an extended "H" hanger attachment 12e, where the wipers 22 engage opposite surfaces 12e' thereof. FIG. 4 shows wiping action on the part of wipers 22 on opposite side portions of a "C" hanger attachment 12f. As should be evident, the "C" hanger attachment 12f includes an opening 12f' for receiving the hanger for the part under process. FIG. 5 shows still a further embodiment of the invention where, in this instance, wiping action is achieved from wipers 22 in engagement with a sleeve 25a disposed on a hanger 25 for the part, such hanger 25 being mounted on a cross bolt 25b positioned either on an "H" hanger attachment or an extended "H" hanger attachment. In still a further invention embodiment, the sleeve 25a may be omitted, with wiping action being directly on the hanger 25.

FIG. 6 shows wiping action on a brass or steel nut and bolt combination 30 which extend through an "H" or an extended "H" attachment. As evident, the nut and bolt combination 30 mounts hanger 25 onto which the part under process is carried. FIG. 7 shows a structure similar to the structure of FIG. 6, but, in this instance, the nut and bolt combination 30 is isolated from the "H" or extended "H" attachment through members 27, the latter being made from teflon or di-electric material which takes heat and also serves such purposes of isolation. In the preceding invention embodiments, the same reference numeral has been applied, where appropriate, for clarity of presentation.

Accordingly, the invention herein, through various improvements, serves to make for more efficient system operation and, obviously, provides versatility as to hanger attachments and the like. Moreover, galling of the metal wheels of the hanger assembly has been minimized. The invention may, of course, be further refined to combine certain of the embodiments described above and shown in the drawing. Thus, the latitude of use is an important advantage.

We claim:

1. A hanger assembly for a conveyor having a supporting member, structure mounting a drive chain from said supporting member, and support bars comprising support members depending from said support bars and electrically isolated therefrom, grounded bus bars mounted on said support members, and resilient wipers secured to said bus bars in selective engaging relationship with said drive chain.

2. The hanger assembly of claim 1 where said grounded bus bars are made from aluminum.

3. The hanger assembly of claim 1 where said resilient wipers are made from beryllium copper.

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4. The hanger assembly of claim 1 where an electrically conductive compound is included between said resilient wipers and said bus bars.

5. The hanger assembly of claim 1 where said supporting member is grounded.

6. A hanger assembly for a conveyor having a supporting member, structure mounting a drive chain from said supporting member, said mounting structure having a "H" hanger attachment depending therefrom, and support bars comprising support members depending from said support bars and electrically isolated therefrom, grounded bus bars mounted on said support members, and resilient wipers secured to said bus bars in selective engaging relationship with portions of said "H" hanger attachment.

7. A hanger assembly for a conveyor having a supporting member, structure mounting a drive chain from said supporting member, said mounting structure having a "C" hanger attachment depending therefrom, and support bars comprising support members depending from said support bars and electrically isolated therefrom, grounded bus bars mounted on said support members, and resilient wipers secured to said bus bars in selective engaging relationship with portions of said "C" hanger attachment.

8. A hanger assembly for a conveyor having a supporting member, structure mounting a drive chain from said supporting member, said mounting structure having a "H" hanger attachment depending therefrom, said "H" hanger attachment

receiving an electrically conductive nut and bolt combination onto which a hanger is mounted, and support bars comprising support members depending from said support bars and electrically isolated therefrom, grounded bus bars mounted on said support members, and resilient wipers secured to said bus bars in selective engaging relationship with said nut and bolt combination.

9. The hanger assembly of claim 8 where electrically non-conductive elements isolate said nut and bolt combination from said "H" hanger attachment.

10. A hanger assembly for a conveyor having a supporting member, structure mounting a drive chain from said supporting member, said mounting structure supporting a hanger having a sleeve thereon, and support bars comprising support members depending from said support bars and electrically isolated therefrom, grounded bus bars mounted on said support members, and resilient wipers secured to said bus bars in selective engaging relationship with said sleeve.

11. A hanger assembly for a conveyor having a supporting member, structure mounting a drive chain from said supporting member, said mounting structure supporting a hanger, and support bars comprising support members depending from said support bars and electrically isolated therefrom, grounded bus bars mounted on said support members, and resilient wipers secured to said bus bars in selective engaging relationship with said hanger.

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