No. 779,666. PATENTED JAN. 10, 1905.

T. ROBINS, JR.

BELT CONVEYER APPARATUS.

APPLICATION FILED JUNE 25, 1901.

Fig. 1.

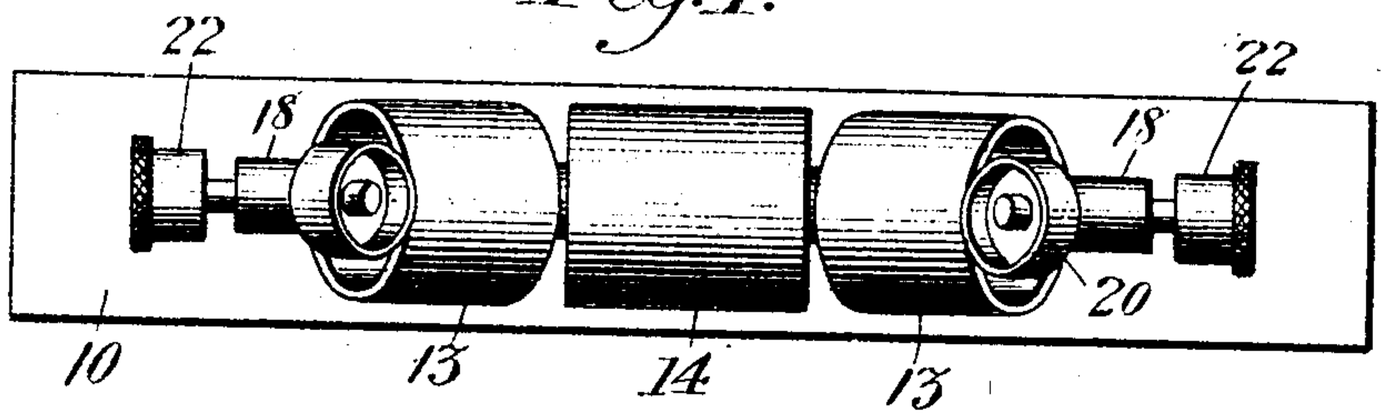


Fig. 2.

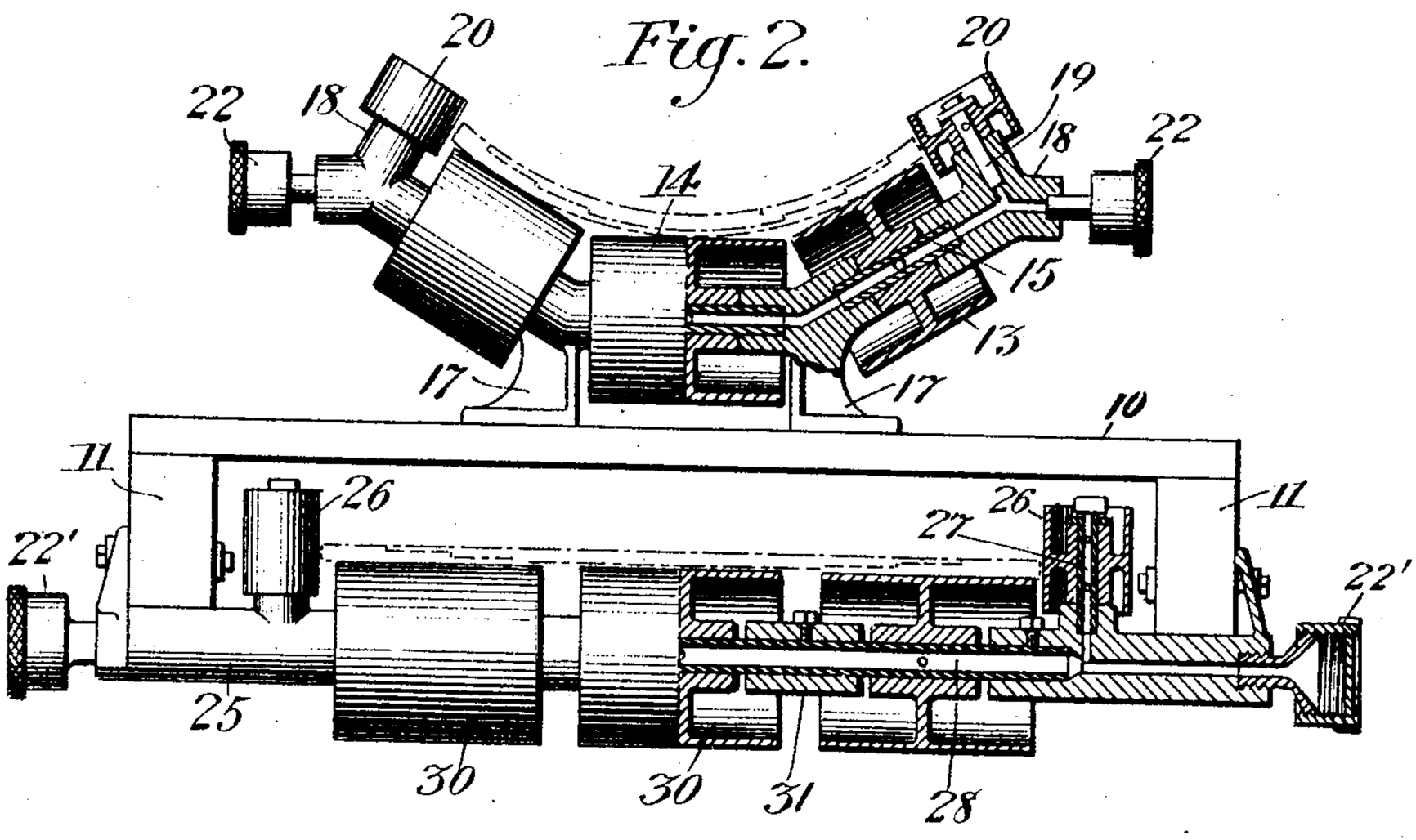
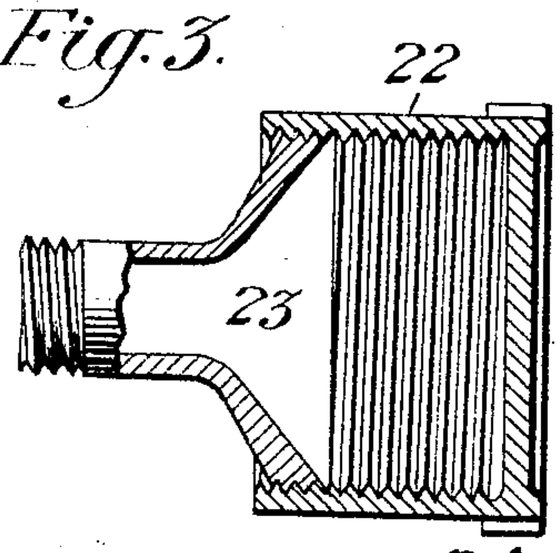


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS ROBINS, JR., OF NEW YORK, N. Y., ASSIGNOR TO THE ROBINS CONVEYING BELT CO., OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

BELT-CONVEYER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 779,666, dated January 10, 1905.

Application filed June 25, 1901. Serial No. 65,932.

To all whom it may concern:

Be it known that I, THOMAS ROBINS, Jr., of the borough of Manhattan and the city and State of New York, have invented certain new and useful Improvements in Belt-Conveyer Apparatus, of which the following is a specification, illustrated by drawings showing one form of the invention.

The invention relates to the class of belt conveyers in which an endless traveling belt is supported at intervals upon pulleys. I have already invented and patented (November 17, 1896, No. 571,604) improved supporting-pulleys for conveyer-belts; but under the invention there patented no way was disclosed of supporting the side guide-pulleys which laterally guide the edges of the belt in the same vertical plane with the supporting-pulleys. Under the present improvement the side guide-pulleys may be carried in the same vertical plane with the supporting-pulleys, and at the same time the construction of the apparatus is simplified by the omission of parts and elements, while maintaining and improving their functions.

The present invention will be readily understood from the accompanying drawings, wherein—

Figure 1 is a plan, and Fig. 2 a side, view, partly in section, of complete sets of idler-pulleys for both the upper and lower portions of an endless belt. Fig. 3 is a detail view in section of an improved grease-cup or oil-cup which coöperates with the belt-supporting pulleys.

In practicing the invention each set of upper pulleys has been generally carried upon a wooden cross-brace 10, secured to heavier beams or stringers 11; but these details are not, of course, material to the invention. The supporting-pulleys for the upper belt are preferably arranged to support the belt in trough shape, three pulleys 13 14 13 being employed, supported, respectively, on a horizontal and two turn-up shafts 16 and 15, which in turn are carried by castings or brackets 17. Preferably the shafts 15 and 16 are hollow and communicate with each other through the hollows in the castings 17, so that grease may be forced through the entire system of shafts. The shafts are fixed to the bracket in any suitable manner and perforated at the points where the pulleys revolve upon the shafts, so that the grease may pass through the perforations to the pulleys. Manifestly in the broader aspect of the invention it is immaterial whether the shafts are fixed relatively to the pulleys or to the castings which support them. Upon the end of each turn-up shaft 15 is secured a hollow casting 18, the hollows within it being in communication with the hollow shaft 15. Hollow shafts 19 for the laterally-guiding pulleys 20, which bear against and guide the edges of the belt, are secured in the castings 18 and communicate interiorly with the hollows in the castings. The pulleys 20 are carried in the same common plane, transverse to the belt, with the pulleys 13 14 13. Grease is supplied to the interior of the casting 18 by a special oil-cup or grease-cup 22, the cup portion of which screws down upon a piston-like member 23, through the central opening of which the grease is forced to pass into the hollow casting 18 by screwing down the cap or cup 22. By means of this grease-cup, therefore, grease is forced under pressure through the entire system of hollow shafts and through the perforations therein in order to lubricate each of the several pulleys.

It will be seen that the invention therefore provides in the preferred form shown in Fig. 2 for the lubrication of the hollow journal by means of a hollow nut or block mounted on the end of the journal and having rigid with it an outwardly-turned screw-threaded portion 23, with a cap 22 inclosing the outer end of the nut or block and screwing on the screw-threaded portion of the same, the cap serving to contain a lubricant and to force it into the journals.

Each casting 18 in addition to the function already described may form an end-thrust bearing for the pulley 13 and for the pulley 20, as shown in the drawings.

When I use the term "casting," I do not

mean to necessarily imply that either the parts 17 or the parts 18 are distinct or separate castings, as the use of connecting-braces would merely be addition to and not a departure from the principles of the invention.

The set of pulleys for supporting the return length or lower length of the belt may be of somewhat simpler construction than the upper set of pulleys, because the belt may lie flat instead of in a trough-like form produced by pulleys 13 14 13. Hollow members 25, provided with oil-cups 22′, may be secured directly to the stringers 11, as shown. The side guide-pulleys 26 may each be carried on a vertical hollow shaft 27, perforated, like the shafts 19, to supply oil or grease to the pulleys and communicating interiorly with the hollow in the casting 25. A single hollow shaft 28 may be secured to and extend between the two castings 25 in communication with the hollows within them and perforated to supply grease to each of the pulleys 30. One two, three, or more such pulleys may be employed. Spacing-pieces 31 may be strung on the shaft 28 between neighboring pulleys 30. The entire set of pulleys may be lubricated by either of the grease-cups 22′, the grease being forced through all the hollow shafts, as will be understood. The upper end of each shaft 27 and also of shafts 19 may be capped or closed, as shown, to prevent the grease from being forced out of the ends of these shafts.

Of course the particular design or shape in which the improvement is embodied should vary under varying conditions and does not constitute a part of the improvement. Also it must be understood that although I have described my invention in its entirety as comprising several different features having several functions parts of the invention may be used without other parts.

I do not herein claim a hollow journal having an opening in its outer end and having an opening in the side, a hollow nut mounted on the end of the journal and having an outwardly-turned screw-threaded portion and a cap inclosing the outer end of the nut and screwing on the threaded portion of the same, the cap serving to contain a lubricant, for I understand that the above device is not proper subject-matter to be claimed in this application, but should be claimed in a separate divisional case. I therefore reserve the right to make a separate application for the above subject-matter in a division of this case.

I claim, and desire to secure by these Letters Patent, the following characteristic features:

1. In a conveyer-belt support, the combination of a set of supporting-pulleys and supporting-bearings therefor, said bearings carrying the said pulleys in a common plane transverse to the travel of the belt in position to support the belt, and pulleys for bearing against the edge of the belt to laterally guide it, said guide-pulleys being mounted in the same transverse plane with the supporting-pulleys, for substantially the purposes set forth.

2. In a conveyer-belt support, the combination of a unitary group of pulleys and supporting-bearings therefor carrying the said pulleys, some of the said pulleys supporting the belt in trough-like form, and others of the said pulleys guiding the edge of the belt laterally in the same transverse plane as the supporting-pulleys, for substantially the purposes set forth.

3. In combination with a set of supporting-pulleys for a conveyer-belt, a side guide-pulley and a supporting member for said side guide-pulley secured to and forming an end-thrust bearing upon the shaft of one of the said supporting-pulleys, substantially as set forth.

4. In combination with a supporting-pulley for a conveyer-belt and a hollow shaft therefor, a hollow member secured to the said shaft and communicating interiorly therewith, a side guide belt-pulley mounted upon the said member, and means for introducing a lubricating medium into the interior of the said hollow member, substantially as set forth.

5. In combination with a supporting-pulley for a conveyer-belt and a hollow shaft therefor, a hollow member secured to the said shaft and communicating interiorly therewith, a side guide belt-pulley mounted upon the said member, and means for pressing and forcing a lubricating medium into the interior of the said hollow member, substantially as set forth.

6. In combination in a set of supporting-pulleys for conveyer-belts, comprising one or more pulleys supporting the belt and one or more side guide-pulleys, means for mounting and supporting the said guide-pulleys in the same transverse plane with the said supporting-pulleys, for substantially the purposes set forth.

7. In a set of belt-supporting pulleys comprising one or more turn-up or inclined pulleys, the combination of the turn-up shaft, the pulley turning thereon, and an end-thrust bearing above the bearings of the said pulley and provided with lubricating-passages, for substantially the purposes set forth.

8. In an endless-belt-supporting mechanism, the combination with inclined rolls, of a base or support for the said rolls and relative to which the said rolls turn, said base being provided with lubricator-passages, and means for forcing grease or oil from the upper ends of said rolls axially through them to the points of friction between the parts, for substantially the purposes set forth.

9. In an endless-belt-supporting mechanism, the combination with inclined rolls, of a base or support for the said rolls and relative to which the said rolls turn, hollow journals each having an opening in its outer end

and having an opening in the side, a hollow nut mounted on the end of the journal and having an outwardly-turned screw-threaded portion, and a cap inclosing the outer end of the nut and screwing on the threaded portion of the same, for substantially the purposes set forth.

Signed this 17th day of June, 1901, at New York, N. Y.

THOMAS ROBINS, JR.

Witnesses:
HENRY S. MORTON.
E. VAN ZANDT.