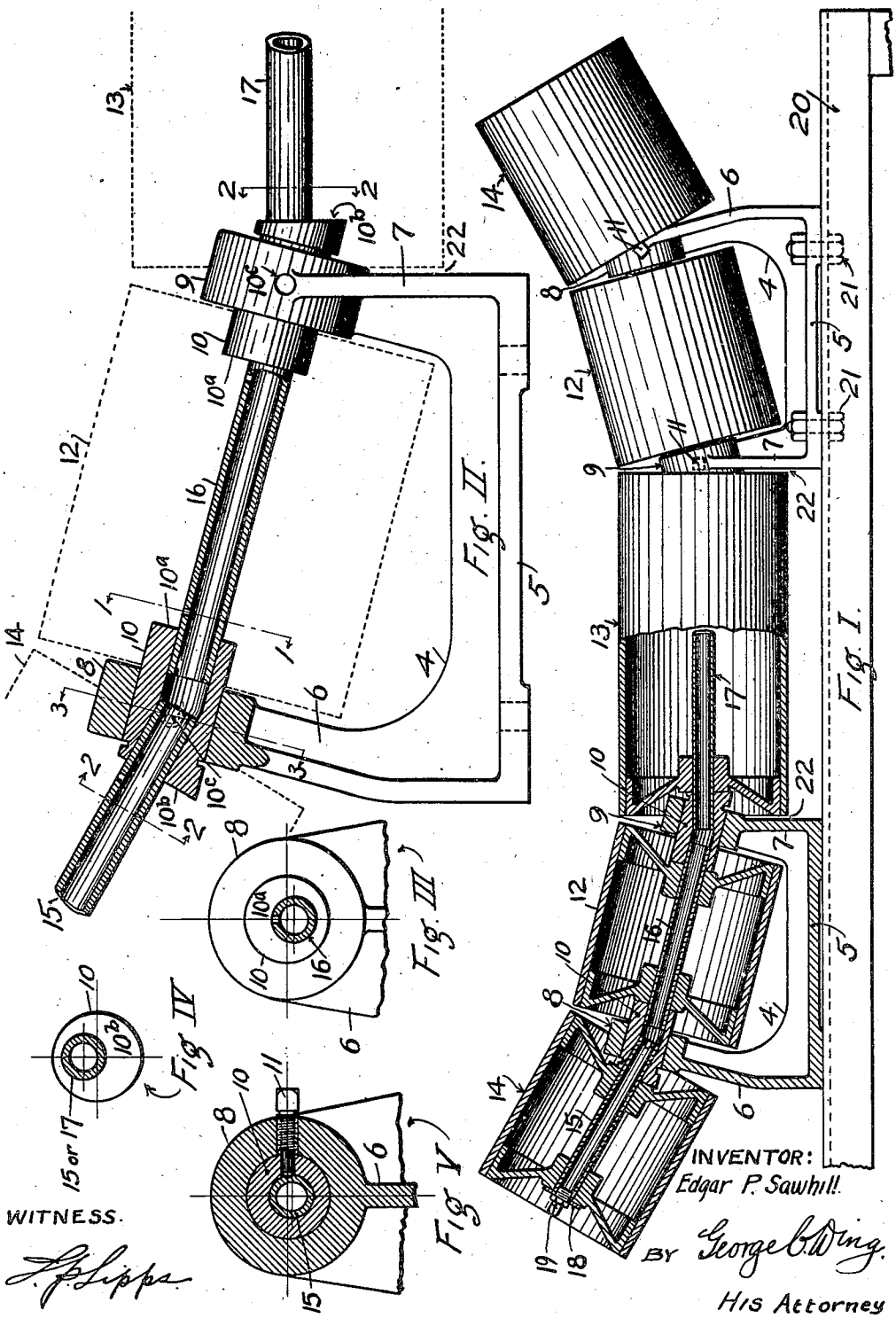
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SUPPORT FOR CONVEYER BELTS

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SUPPORT FOR CONVEYER BELTS.

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To all whom it may concern:

Be it known that I, EDGAR P. SAWHILL, a citizen of the United States, residing in the city of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Supports for Conveyer Belts, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, which form part of the specification, and wherein the same parts are designated by like numerals in each case.

My invention will have its wider application to troughing-units for conveyer belts and is concerned particularly with the improvement of the idler supporting-brackets. Accordingly, a principal object of the invention is to overcome the objectionable features of the troughing-units as heretofore constructed and to provide a rigid support for the pulleys of a belt conveyer which can be more accurately and inexpensively made and be readily assembled and taken apart by unskilled labor when occasions require.

In conveyer belt troughing-units, a perfect and firm alinement of the pulleys is considered the ideal condition. To realize this condition the axes of the idler pulleys must be disposed and maintained, at all times, in a vertical plane, and this plane should always be at right angles with the direction of travel of the conveyer belt. Many inventors have striven to attain this ideal, but so far as is known, none have entirely succeeded in their endeavors to this end.

The standards that directly uphold the idler members of a given series in these devices are necessarily numerous and each must be held in place by its own fastenings without reinforcement by other parts. The points where, under the vibratory force of the belt, such fastenings are liable to work loose and cause a disalinement of the series are correspondingly numerous, and on such account constitute an undesirable feature of weakness in constructions of the kind.

By reason of the design and organization of my device, however, all separately placed standards are done away with and the requisite pulley supports reduced in number to the members of an integral pair at each side of the center member of the pulley series. It follows that such supports are firmly held in position against vibration or displacement by their common integral fastener, may be more truly machined as a part of a single piece and, as such part, may be more accurately set and alined in their operative places.

In the drawing Fig. I illustrates a five-pulley troughing-idler, partly in elevation and partly in vertical cross-section, when made up according to my invention.

Fig. II is an enlarged side view of the device, the left hand standard and bearing of which are shown in section, taken on a plane that passes vertically through the axes of the bores in the standards.

Fig. III is an end view of the left hand standard, taken on the line 1—1 of Fig. II.

Fig. IV is an end view of a bearing, taken on the line 2—2 of Fig. II, and,

Fig. V is a section of the standard and its bearing taken on the line 3—3 of Fig. II.

Two of my improved devices, or pulley supporting brackets, 4, 4 are incorporated in the construction of the five-pulley troughing-idler unit shown in Fig. I. The bracket 4 is made up of a rectangular base 5 and two standards 6 and 7. These standards project upwardly at different degrees of height from the ends of the base 4, and terminate in parallely inclined hub-like members 8 and 9, respectively.

The hub-like members 8 and 9 are bored at right angles to their inclination to receive removable bearing members 10, 10, and are drilled and tapped to receive set-screw-dowels 11, 11. The bearing-member 10 is cylindrical in form with one of its ends, 10^a, faced off at right-angles to its axis and the other end, 10^b, faced off at an angle therewith. It is provided with two bores whose axes are at right-angles with the faces 10^a and 10^b, respectively, and in a plane that bisects the said faces. As viewed in Fig. II the bore that extends from the face 10^a is located below the center thereof and the bore that extends from the face 10^b is conveniently located above the center thereof. The bores extend into the bearing to depths that equal about half the length of the bearing, or until a junction of the bores is made. A hole, indicated at 10^c, is drilled in the bearing about midway of its length to re-

ceive the dowel of the set-screw 11. The angular relation between the bores is governed by the particular contour the conveyer belt is to have when troughed. If this relation is the same for the horizontal pulley and the first adjacent inclined pulley as the relation between the two inclined pulleys, the bearing 10 can be used in both hub-like members, but in reversed positions. If the angular relations between the pulleys are unlike then the bearings 10 are not interchangeable.

Other component elements of the troughing-idler unit are the pulleys 12, 12, 13, 14, 14, of any adaptable form desired. Their heads or webs should be dished or retracted within their cylinders, in order to allow of a closer proximity of the rims when the pulleys are in the designed series, and a freer handling of the parts during their assemblage.

The shafts are indicated in the drawings by 15, 16, and 17, and, other parts whose offices are self-evident, are the bolt 19, washer 18, bracket-support, or base-plate 20, and the bolts 21, whereby the brackets are secured to such foundation.

To assemble a complete idler unit, the successive steps are as follows: First, introduce bearings 10, 10 into the bores of the hub-like members 8 and 9, respectively, with their bevel faces 10^b, 10^b away from the outer faces of the bracket 4 and with the plane of the bores in line with a plane passing vertically through the axes of the hub-like members, until the faces 10^a, 10^a are flush with the inner faces of the hubs 8 and 9; second, place the shaft 16 in the hubs of the pulley 12 with the ends of the same flush with the edges of the rim. The length (face) of the pulley must be shorter than the distance between the inner faces of the hub-like members 8 and 9 to allow the pulley to slip into its place; third, register the shaft 16 and its pulley with the parallel bores in the bearings 10, 10; fourth, now force the bearings 10, 10 inwardly until their dowel holes register with the set-screw holes at 10^c, when the said holes have been registered the beveled face 10^b of the bearing 10 in the hub 9 will be in a transverse vertical plane and the beveled face 10^b of the bearing 10 in the hub 8 will be in a plane off the vertical; now insert the set-screws, 11, 11, into the tapped holes of the hub-like members 8 and 9 and screw them in until they engage the holes in the bearings 10, 10; fifth, assemble a second sub-unit consisting of the bracket 4, the pulley 12 and other constituent parts as just described above; sixth, place the hollow shaft 17 in the bore of pulley 13 with its ends projecting at equal distances beyond the pulley's rim. The lengths of the pulley 13 and the shaft 16 are only limited after the distance between the brackets 4, 4 is established. Because of the dish-shaped or retracted feature of the hub supporting-web the rim of the pulley can overhang the hub-like members 9, 9, but, only to a degree that will insure clearances at 22, 22. After the length of the pulley 13 has been decided, the length of the shaft 16 can be determined; its length must be equal to the distance between the inner faces 10^b, 10^b of the bearing-members 10, 10 plus the lengths of the inclined bores in those members; seventh, place one of the sub-units upon the bracket-support 20 with the standard 7 toward the center thereof and bolt the bracket 4 to the support with the bolts 21. It is understood by those familiar with troughing-idler construction that the bracket-support 20 has been provided with the requisite number of holes to accommodate the bolts that are to hold the sub-units in place and in proper alinement, one with the other; eighth, insert one end of the hollow shaft 17, which carries the pulley 13, into the angular bore of the bearing 10 that is fastened in the hub-like member 9 of the secured sub-unit, then place the second sub-unit upon the bracket support 20 with its hub-like member 9 opposite and in alinement with the member 9 that is on the other side of the center of the bracket-support 20, now hold the free end of the hollow shaft 17 in line with the angular bores of the bearings 10, 10 and move the second sub-unit toward the shaft until a junction is made, then force the sub-unit further on until the end of the shaft 17 has reached the depth of the angular bore in the bearing 10. The second sub-unit is now bolted to the bracket-support 20; ninth, insert the shafts 15, 15 into the angular bores of the bearings 10, 10 that are in the hub-like members 8, 8 to the depth of these bores. The shaft 15 is threaded on the internal surface of its unsupported end to receive the bolt 19; it must be of such length that its projecting end will extend just beyond the outer hub of the pulley 14 when the latter is in its place on the shaft, so that when the washer 18 is bolted on with the bolt 19, there will be a clearance over the hubs of the pulley 14; tenth, place the pulleys 14, 14 on the extending shafts 15, 15, then, after the washers 18, 18 have been placed on the bolts 19, 19 insert and screw the bolts into the threaded ends of the shafts 15, 15. The troughing-idler unit is now completely assembled and a further screwing down of the set-screws 11, 11, will bring them up against the shafts 15 and 17, respectively, and hold the latter securely in place.

As will be obvious the end pulleys or sub-units 14, 14, exhibited in Fig. I, are not essential to the invention as intended to be claimed herein, inasmuch as they are but additional to a completed unitary support when

made up with the central pulley 13, and the auxiliary pulleys 12, 12, as shown in said figure.

What I claim and wish to secure by Letters Patent, is:

1. In a support for conveyer belts, the combination with a series of idler pulleys, of one-piece pulley supports therefor provided with a plurality of shaft supports, or standards, having hub-like members at their upper ends, slidable bearings therein with recesses in the same for the reception of the pulley shafts, shafts in the pulleys that project a suitable distance from the pulley hubs to enter said recesses when the pulleys are between a given pair of standards, and suitable means for securing said bearings and shafts together when said shafts are in position in said recesses, and for securing said parts in their said designed relations, substantially as shown and described.

2. As a support for belt conveyers, the combination of the series of idler pulleys comprising a central horizontal pulley-member and auxiliary pulley-members at each side thereof, the axes of said members being in the same vertical plane, and the axes of the auxiliary members being inclined at a predetermined angle to the axis of the central member, bracket-supports for the series at each end of the central member characterized by a base or pedestal portion and upright standards integral therewith, said standards being provided with apertures therethrough at predetermined heights above said base to receive and accommodate bearing members for the shafts of said pulley-members, bearing-members for said shafts mounted in said apertures at a sliding fit and being at their one ends square-faced and beveled at their other ends at an angle corresponding with the angle of inclination of the next adjacent member of said series, and having recesses at their ends corresponding in dimensions with the shafts and in directions with the designed directions of the shafts, said shafts extending outwardly from the hubs of their pulleys to and within said recesses, together with suitable means for fastening said members and parts in their said designed places and relations in said series, substantially as shown and described.

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Witnesses:
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J. E. Chinnock.