Oct. 7, 1930. H. S. BILDERBACK ET AL 1,777,389

SCREW CONVEYER HANGER

Filed Sept. 17, 1927

Fig. 1.

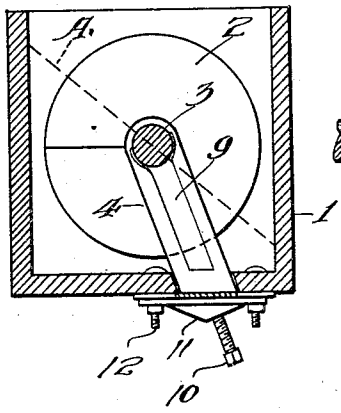


Fig. 2.

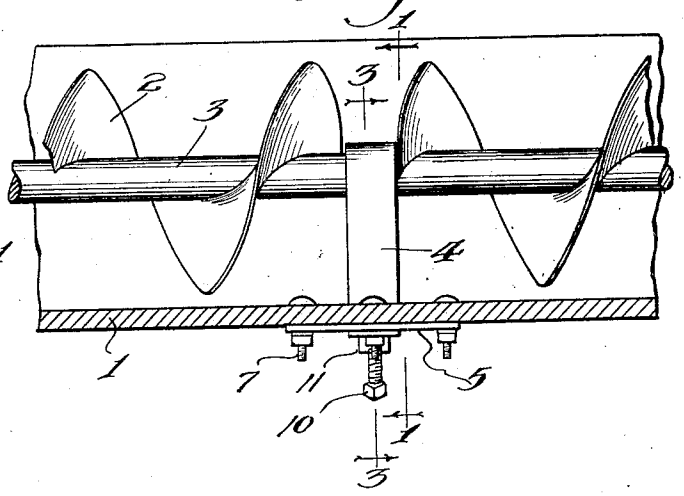


Fig. 3.

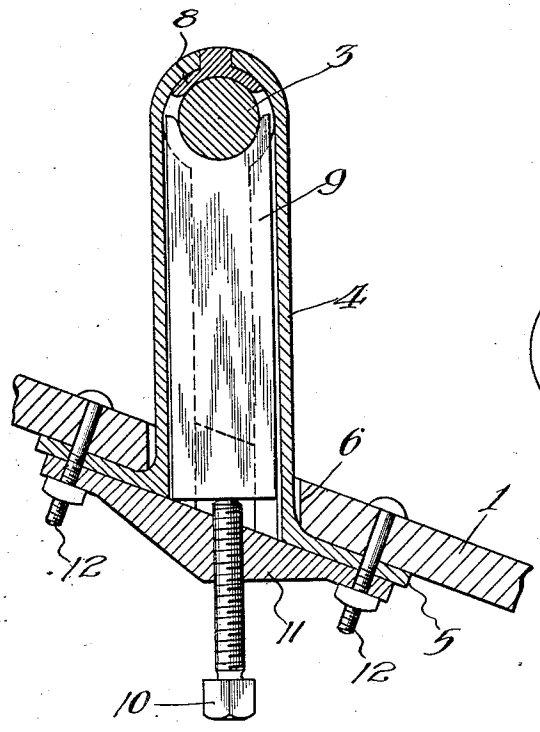
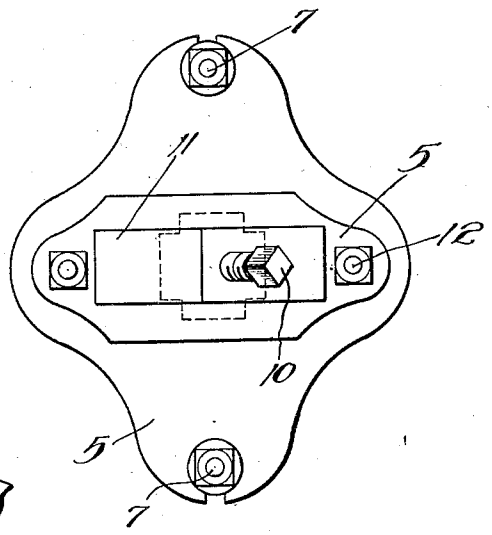


Fig. 4.



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UNITED STATES PATENT OFFICE

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SCREW-CONVEYER HANGER

Application filed September 17, 1927. Serial No. 220,280.

The screw elements of long screw conveyers must be supported at intervals. The common practice is to provide hangers suspended from cross pieces extending across the top of the conveyer casing. The spiral flight or flights must, of course, be interrupted at the points where the hangers occur and therefore the bearings should be made as short as possible. In handling comparatively light materials as, for example, cotton seed and hulls, the conveyer box or casing is often filled until the material banks up against the cross pieces from which the hangers are suspended; and the capacity is determined by the quantity of material that can be forced past the hangers and cross members. The wear on a screw conveyer bearing is very great because there is generally dirt and grit contained in the material that is being conveyed. When bearings of this kind are oiled, the oil simply constitutes a medium to catch and hold the grit and dirt. Furthermore, while the wear on the bearings is almost directly downward in an empty or very lightly loaded conveyer, the wear comes more toward one side when the load is considerable; this being due to the fact that when the casing or box is nearly filled the material banks up on one side so that the top face of material sometimes assumes an angle as great as forty-five degrees.

One of the objects of the present invention is to produce a supporting bearing element for the rotary member in a screw conveyer that will require no supporting cross piece at the top and will offer a minimum resistance to the movement of material past the same.

A further object of the present invention is to produce a supporting bearing for the screw element of a screw conveyer in which the hanger member will be so disposed as most effectively to resist the average thrust radially of the axis of rotation.

A further object of the present invention is to produce a simple and novel hanger for the movable element of a screw conveyer in which the bearing may be quickly and easily adjusted and the bearing element that takes the thrust of the conveyer shaft or gudgeon be removed and replaced without stopping the conveyer.

The various features of novelty whereby our invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of our invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a transverse section through a screw conveyer on a plane beside one of our improved hangers, the section being approximately on line 1—1 of Fig. 2; Fig. 2 is a central longitudinal section through the conveyer; Fig. 3 is a section, taken on a larger scale, on line 3—3 of Fig. 2 and Fig. 4 is a bottom plan view of a hanger.

Referring to the drawing, 1 represents the box or casing and 2 the spiral flights of a screw conveyer of any usual or suitable construction. The flights are shown as mounted on a shaft 3, but the screw element may take any form that will provide shaft or gudgeon elements adapted to extend through bearings in supporting hangers.

When the casing is about half filled or more than half filled, assuming that the screw element rotates in the clockwise direction as viewed in Fig. 1, the top surface of the material will be inclined somewhat as indicated by the dotted line A in Fig. 1. The thrust on the bearings will therefore not be vertical but more or less diagonal. We therefore provide supporting hangers in the form of pedestals rising from the bottom of the casing at an angle to the vertical plane containing the axis of rotation. These pedestals are conveniently made in the form of hollow post-like castings 4 closed at the top and open at the bottom, each pedestal having at the lower end a wide flange 5 that will rest against the underside of the bottom of the casing when the pedestal is inserted in the casing through a hole 6 in the bottom of the latter. The pedestal may be fastened to the casing by means of bolts 7 passing through the bottom of the casing and the flange on the pedestal. There is a transverse

opening through the upper end of the pedestal, somewhat larger in diameter than the shaft. Within the upper part of this opening there may be a bearing element 8 of anti-friction material to rest on top of the shaft. The lower bearing element is in the form of a block of wood 9 or other suitable material fitting slidably within the pedestal and movable into and out of the open lower end of the latter. The block is held up against the shaft by means of a set screw 10 that is screwed into a plate 11 lying against the flange on the pedestal and extending across the opening in the latter; the plate 11 being bolted to the flange by bolts 12 that preferably extend also through the bottom of the casing.

It will be seen that the main bearing element, the wooden block 9, may be quickly and easily adjusted by simply turning the set screw, or it may be completely removed and replaced by another block, by simply unscrewing the nuts from the bolts 12 and removing the cover plate 11. Since it takes only a few moments to remove a block and replace it by another, the conveyer need not be stopped if it be running at the time replacement is desired.

It will be seen that the space above the shaft of the screw element is entirely free from obstruction, so that the material being moved encounters only the resistance of a comparatively narrow pedestal instead of the added resistance of a supporting piece at the top of the casing. In actual practice we have found that as much material will pass one of the pedestals in eleven revolutions of the conveyer as can be moved in fourteen revolutions where the old type of hangers are employed. Furthermore, by placing the pedestal or pedestals in line with the average downward thrust of the conveyer shaft, the latter is much more firmly supported than when it is simply suspended from a vertical overhead hanger.

While we have illustrated and described with particularity only a single preferred form of our invention, we do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of our invention constituting the appended claims.

We claim:

1. A bearing pedestal comprising a hollow post closed at the top and open at the bottom, there being an opening extending transversely through the upper end of the post to receive a shaft, a flange on the lower end of the post, a bearing block within and slidable lengthwise of the post, a cover plate for the lower end of the post lying against and detachably secured to said flange, and a set screw extending through said cover plate and engaged with said block.

2. A bearing pedestal comprising a hollow post closed at the top and open at the bottom, there being an opening extending transversely through the upper end of the post to receive a shaft, a flange on the lower end of the post, lying at an acute angle to the long axis of the post, a bearing block within and slidable lengthwise of the post, a cover plate for the lower end of the post lying against and detachably secured to said flange, and a set screw extending through said cover plate and engaged with said block.

3. In combination, a horizontal conveyer casing, a screw conveyer extending longitudinally through the casing, a hollow pedestal rising from the bottom of the casing into the vicinity of the conveyer and having in the upper end a bearing for the conveyer, a long block slidable lengthwise in the pedestal below the conveyer, the upper end of the block constituting the lower half of the bearing, and means for adjusting said block lengthwise.

4. The combination with the shaft of a horizontal screw conveyer, of a bearing comprising a single radial pedestal located below the same, said pedestal being inclined away from the vertical plane containing the axis of rotation of the shaft in the direction opposite that in which the conveyer rotates.

5. In combination, a horizontal conveyer casing, a screw conveyer extending longitudinally through the casing, a hollow pedestal rising from a point below the horizontal plane containing the axis of rotation of the conveyer and having in its upper end the upper member of a bearing for the conveyer, a block slidable lengthwise in the pedestal below the conveyer, the upper end of the block constituting the lower member of the conveyer bearing, and means for adjusting said block lengthwise of the pedestal.

In testimony whereof, we sign this specification.

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