No. 701,636. Patented June 3, 1902.

R. G. SMITH & J. H. MATHIS.

HANGER COUPLING BEARING FOR SCREW CONVEYERS.

(Application filed Mar. 28, 1902.)

(No Model.)

Fig. 1.

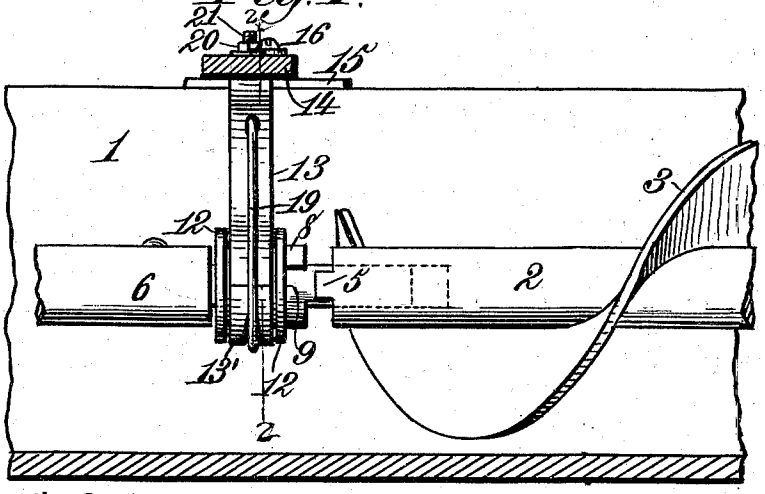


Fig. 2.

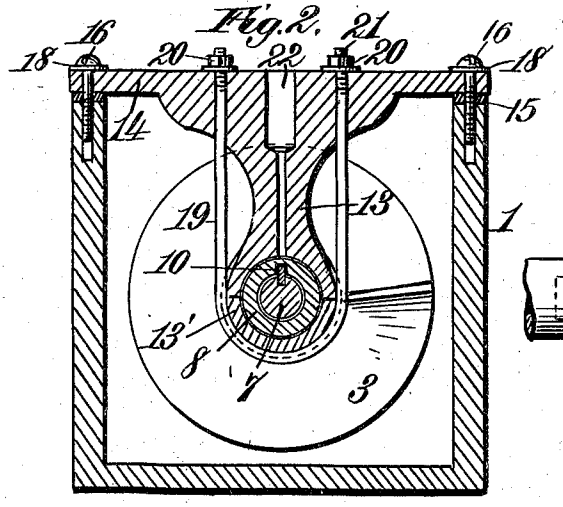


Fig. 3.

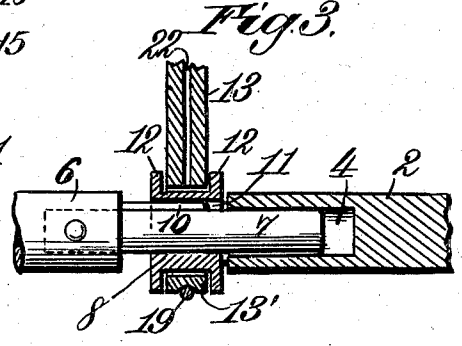


Fig. 4.

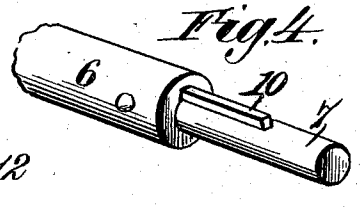


Fig. 5.

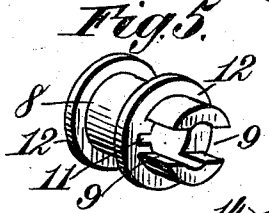


Fig. 6.

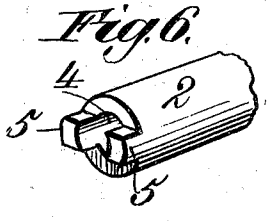
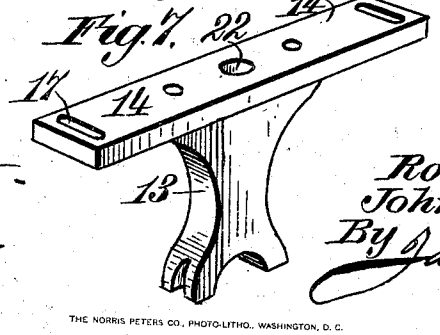


Fig. 7.



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UNITED STATES PATENT OFFICE.

ROBERT G. SMITH AND JOHN H. MATHIS, OF FORREST CITY, ARKANSAS.

HANGER COUPLING-BEARING FOR SCREW CONVEYERS.

SPECIFICATION forming part of Letters Patent No. 701,636, dated June 3, 1902.

Application filed March 28, 1902. Serial No. 100,468. (No model.)

To all whom it may concern:

Be it known that we, ROBERT G. SMITH and JOHN H. MATHIS, citizens of the United States, residing at Forrest City, in the county of St. Francis and State of Arkansas, have invented new and useful Improvements in Hanger Coupling-Bearings for Screw Conveyers, of which the following is a specification.

This invention relates to certain new and useful improvements in hanger coupling-bearings for screw conveyers.

In oil-mills there is invariably used rows of spiral conveyers, generally of great length, for unloading seed or other material from cars, seed-houses, and other storage-points and for transferring the said material to the mill. The conveyers are generally operated simultaneously and from one power source. It will be evident that when it is only required to operate a portion of the conveyers, which often happens, the operating of the other conveyers is a useless procedure, and consequently this useless operation of the conveyers not only causes considerable expense, owing to the wear and tear thereof upon the conveyers, but also the needless expenditure of labor and power.

To overcome the foregoing objections in connection with screw conveyers employed in the manner as above set forth is the essential feature of our invention; and to this end it consists of providing a hanger coupling-bearing for supporting the power and conveyer shafts, for connecting the power-shaft to the conveyer-shaft for operating the latter when desired, and for discontinuing the operation of the conveyer-shaft when not employed in transferring material from one point to another.

The invention further aims to provide a hanger coupling-bearing for the purpose set forth which shall be extremely simple in its construction, strong, durable, efficient in its operation, and comparatively inexpensive to set up; and to this end it consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawings, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, and in which—

Figure 1 is a sectional elevation of a conveyer-casing broken away at each end, showing the arrangement of the power and conveyer shafts therein, which are suspended by means of the hanger coupling-bearing. Fig. 2 is a transverse section on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal detail section taken through the clutching mechanism. Fig. 4 is a detail view of the journal-stud. Fig. 5 is a detail view of the clutching-sleeve. Fig. 6 is a detail view of the inner end of the conveyer-shaft, and Fig. 7 is a detail view of the cross-bar for suspending the hanger.

Referring to the drawings by reference-numerals, 1 denotes a conveyer casing or box broken away at each end, and within the same is arranged the conveyer-shaft 2, provided with the spirals 3. The inner end of the shaft 2 is formed with a recess 4 and the clutching-studs 5. These latter are arranged diametrically opposite each other, and the function of the recess 4 and studs 5 will be hereinafter referred to.

The reference-numeral 6 denotes a power-shaft which extends into the conveyer-casing 1 and has secured to its inner end, so as to rotate therewith, a journal-stud 7 of less diameter. This journal-stud 7 is adapted to extend into the recess 4 of the conveyer-shaft 2, and it is of such diameter in relation to the walls of the recess as to easily rotate within the recess without imparting movement to the conveyer-shaft 2.

Mounted upon the journal-stud 7 is a clutching-sleeve 8, having one end formed with a pair of recesses 9, arranged diametrically to each other, and which are adapted to receive the clutching-studs 5 for connecting the conveyer-shaft 2 to the power-shaft 6 through the medium of the journal-stud 7. The latter carries a spline or feather 10, adapted to engage in a corresponding groove 11, formed in the inner face of the clutching-sleeve 8. The spline or feather 10 engages in the sleeve and in such a manner as to cause the latter to rotate simultaneously with the journal-stud 7 and also to permit of a longitudinal movement to the sleeve 8 while the latter is rotating.

Mounted on the sleeve 8 is a pair of collars 12. These collars are so arranged that they will engage the vertically-extending hanger 13, so that when the hanger is moved a longitudinal movement in either direction will be imparted to the clutching-sleeve 8 upon the journal-stud 7, so that the clutching-studs 5 will engage in and be released from the recesses 9 for connecting and disconnecting the conveyer-shaft 2 to and from the power-shaft 6 through the medium of the journal-stud 7 and its feather or spline.

The lower end of the vertically-extending hanger 13 is formed as a half-bearing and has connected thereto a bearing-cap 13', the lower end of the hanger and cap forming a bearing in which is adapted to be mounted the sleeve 8 in such a manner that one of the collars 12 engages opposite sides of the hanger, so that a longitudinal movement in either direction can be imparted to the sleeve 8 in the manner and for the purpose as hereinbefore set forth. The hanger 13 is or may be integral with and suspended by means of a cross-bar 14. The latter is adapted to slide in opposite directions upon the bearing-plates 15, one of which is secured opposite to the other upon the top of the casing or box 1 by means of the headed bolts 16. Each of the latter extends upwardly through a rectangular slot 17, formed near the ends of the cross-bar 14, and have interposed between the heads thereof and the bar 14 the washers 18. The bolts 16 connect the cross-bar to the top of the casing in such a manner as to permit the bar to move longitudinally in either direction. The slots 18 are of such length as to permit this longitudinal movement in either direction of the cross-bar 14 as well as a like movement to be imparted to the hanger 13 to cause the operation of the clutching-sleeve 8 in the manner as hereinbefore referred to.

The reference-numeral 19 denotes a yoke, which has its lower portion surrounding and engaging as well as supporting the cap 13'. The upper end of the yoke extends through the top of the hanger and cross-bar 14 for connecting or securing the cap 13' to the hanger 13. The yoke is secured to the cross-bar 14 by means of the fastening-nuts 20, mounted upon the screw-threaded ends 21 of the yoke. The hanger 13 is provided with a passage or port 22, which registers with an opening in the cross-bar to receive a lubricant for suitably lubricating the clutching-sleeve when the hanger is operated.

The construction hereinbefore described not only provides a means for disconnecting and connecting the power to the conveyer shaft, but also forms a bearing for the shafts through the medium of the journal-stud 7, and, further, provides a means for supporting the said shafts within the conveyer casing or box. By the foregoing arrangement and construction of the various parts it is obvious that when it is desired to discontinue the operation of the conveyer-shaft by sliding the hanger toward the power-shaft the clutching-sleeve will disconnect from the conveyer-shaft, and consequently the latter will cease to revolve. It will be evident that from the construction hereinbefore described a bodily-movable hanger coupling-bearing is provided. The outer ends of the power and conveyer shafts may be supported in suitable journals, (not shown,) or the conveyer, as well as the power-shaft, may be provided with suitable bearings throughout their length; but as this does not form a portion of our invention it is thought unnecessary to show and describe a bearing means for the shafts. The outer ends of the power and conveyer shafts may, if desired, be journaled in the end walls of the casing; but as this forms no portion of our invention it is thought unnecessary to describe and show the same.

It is thought the many advantages of constructing a hanger coupling-bearing for screw conveyers in the manner as set forth can be readily understood from the foregoing description, taken in connection with the accompanying drawings, and it will also be noted that minor changes may be made in the details of construction without departing from the general spirit of our invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with a power and a conveyer shaft, of a journal-stud secured to the power-shaft and extending into the conveyer-shaft, a clutching-sleeve engaging with said journal-stud and with the conveyer-shaft for connecting the latter to the power-shaft, and a bodily-movable hanger for supporting the said shafts and for operating the said sleeve.

2. The combination with a power and a conveyer shaft, of a journal-stud secured to the power-shaft and extending into the conveyer-shaft, a clutching-sleeve engaging with said journal-stud and with the conveyer-shaft for connecting the latter to the power-shaft, a pair of collars mounted on said clutching-sleeve, and a bodily-movable hanger for supporting the said shafts and engaging with said collars for operating the said sleeve.

3. The combination with a power and a conveyer shaft, of a journal-stud secured to the power-shaft and extending into the conveyer-shaft, a clutching-sleeve mounted upon said journal-stud and with the conveyer-shaft for connecting the latter to the power-shaft, a pair of collars mounted on said clutching-sleeve, a spline for suitably connecting the clutching-sleeve to the journal-stud, and a bodily-movable hanger for supporting the said shafts and engaging with said collars for operating the said sleeve.

4. The combination with a conveyer-casing and a power and a conveyer shaft arranged therein, of a journal-stud carried by the power-shaft and adapted to extend into the conveyer-shaft, a clutching-sleeve mounted upon and engaging with the said journal-stud, a pair of

collars mounted upon said sleeve, a hanger for supporting said sleeve and arranged between the said collars, said hanger adapted to be moved for causing the engagement and the disengagement of the conveyer-shaft with the power-shaft, and means adapted to slide upon the casing and connected to said hanger for suspending and operating the same.

5. The combination with a conveyer-casing and a power and a conveyer shaft arranged therein, of a journal-stud carried by the power-shaft and adapted to extend into the conveyer-shaft, a clutching-sleeve mounted upon and engaging with the said journal-stud, a pair of collars mounted upon said sleeve, a hanger for supporting said sleeve and arranged between the said collars, said hanger adapted to be moved for causing the engagement and the disengagement of the conveyer-shaft with the power-shaft, means adapted to slide upon the casing and connected to said hanger for suspending and operating the same, and a yoke for connecting the hanger to said suspending means therefor.

6. A hanger coupling-bearing for a power and a conveyer shaft consisting of a journal-stud carried by the power-shaft and adapted to extend into the conveyer-shaft, a clutching-sleeve rotating with the journal-stud and capable of longitudinal movement while revolving, said clutching-sleeve adapted to engage with the conveyer-shaft for connecting the same to the power-shaft, a vertically-extending hanger for supporting and operating said clutching-sleeve, a collar mounted on the clutching-sleeve at each side of the said hanger and engaged by the said hanger for operating the clutching-sleeve, a cross-bar provided with slots to permit of a longitudinal movement, and a yoke engaging the hanger and extending through the cross-bar for connecting the hanger to the said bar.

7. In combination, a power and a conveyer shaft, clutching means for connecting said shafts together, a bodily-movable hanger for supporting said shafts and clutching means and adapted when moved to suitably operate said clutching means, and means for suspending said hanger.

8. In combination, a power and a conveyer shaft, clutching means for connecting said shafts together, a bodily-movable hanger for supporting said shafts and clutching means and adapted when moved to suitably operate said clutching means, means for suspending said hanger, a cross-bar provided with a slot in each end, and means for connecting said hanger to said cross-bar.

9. A hanger coupling-bearing for conveyer-shafts consisting of a clutching-sleeve, a bodily-movable hanger for operating and supporting said sleeve, and means for suspending and operating said hanger.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

ROBERT G. SMITH.
JOHN H. MATHIS.

Witnesses:
WILBUR S. ALLEY,
CHAS. E. GURLEY.