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J. H. DIEL.
CONVEYER.

No. 474,002.

Patented May 3, 1892.

Fig. 1.

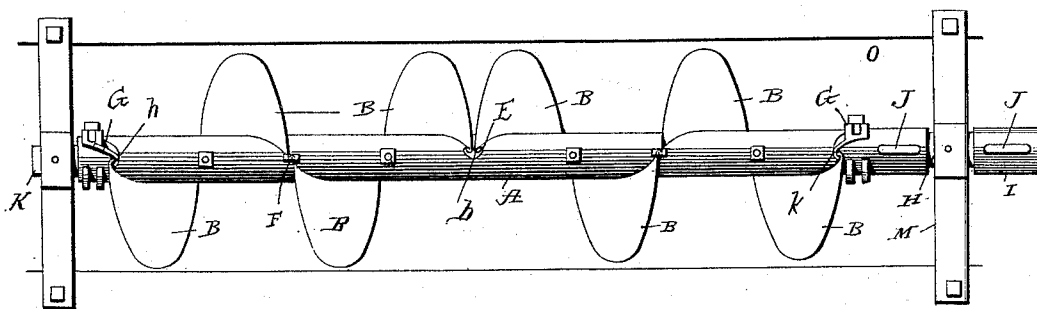


Fig. 2.

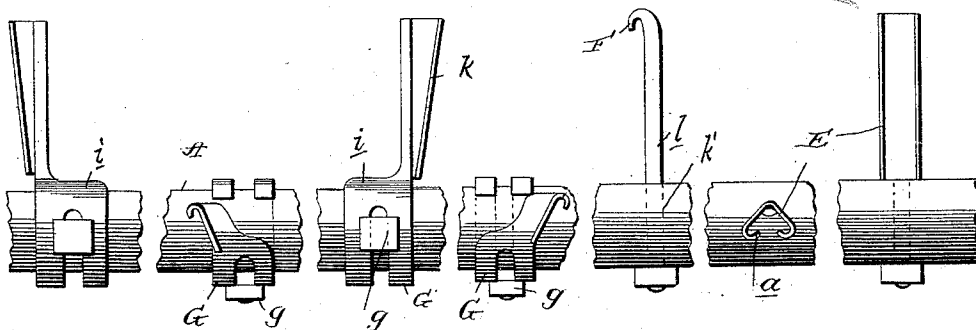


Fig. 3.

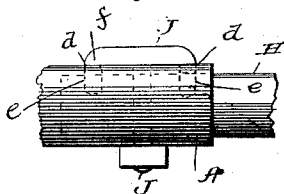


Fig. 5.

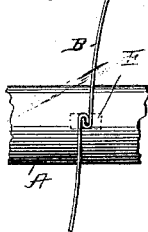
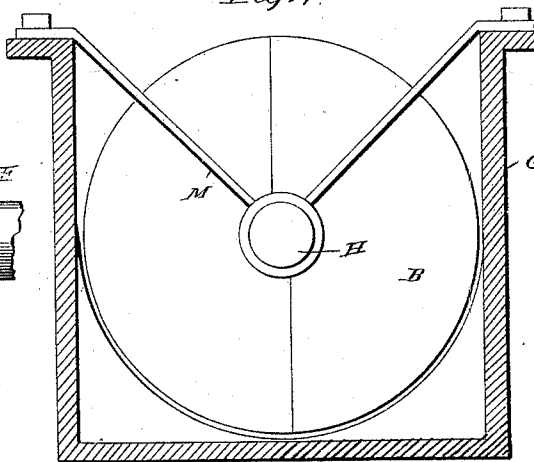


Fig. 4.



Witnesses:
(H. Raeder)
H. F. Matthews.

Joseph H. Diel Inventor
Joshua B. Webster atty
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UNITED STATES PATENT OFFICE.

JOSEPH H. DIEL, OF STOCKTON, CALIFORNIA.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 474,002, dated May 3, 1892.

Application filed September 2, 1891. Serial No. 404,566. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. DIEL, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Conveyers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in spirals for conveying grain, chaff, flour, bran, and other materials horizontally in machines, grinding-mills, and other places; and the novelty will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a plan view of my improved conveyer arranged in a trough. Fig. 2 is an enlarged view in detail of the shaft and its connecting parts. Fig. 3 is a view of the bearing parts of the shaft. Fig. 4 is a vertical sectional view of the box or trough, showing the hanger for receiving the shaft of the conveyer; and Fig. 5 is a detail view of the shaft, showing two wings or blades connected.

Referring by letter to said drawings, A indicates a shaft, which is preferably formed of gas-pipe having transverse holes at proper intervals for the purpose of receiving one end of bolts or keys, which secure the wings or flanges thereto, as will be presently described.

B indicates the wings or flanges of the conveyer. These wings or flanges are of a form as shown, and have their opposite edges bent, as better shown in Fig. 5, into hook shape, so that they may engage each other in forming a spiral or a number of spirals around the shaft.

O indicates a trough or box within which the conveyer is arranged, and this box is provided at opposite ends with hangers M, in the ends of which the shaft is journaled, as will be presently described.

In one end of the hollow shaft A is inserted a short solid shaft H, and on opposite sides of the hangers M, I provide this solid shaft with bands or sleeves I. These bands have

a transverse hole, as better shown in Fig. 3, which coincides or registers with a hole in the shaft A to receive a bolt J. These bands are furthermore provided at opposite sides of the bolt-hole with holes *d*, and the solid shaft is provided at corresponding points with indentations *e* to receive the inwardly-directed ends *f* of the T-head of the bolts J. The opposite ends of these bolts are suitably threaded to receive a securing-nut and prevent undue longitudinal movement of said shaft in its bearings.

As better shown in Fig. 1 of the drawings, the outer end of the outer blades or wings B are bent into hook shape, as shown at *h*, and these hooked ends are secured upon the shaft A by means of one of the arms G. These arms G are formed with a slotted band *i* at one end to receive the shaft A, and are adjustably secured thereto by means of set-screws *g*, and formed integral with the slotted bands are arms, which are provided with a curved or hooked portion *k*, designed to engage the hooked edge *h* of the outer wings or flanges.

It will be observed that each wing or flange B is formed from a separate piece and that they are connected together by having their ends bent in hook shape, and a bolt *l*, having its outer end hooked, as shown at F, is designed to embrace the hooked edges of each section or blade in the spiral. These bolts *l* have their inner ends terminating in threaded portions and passed through a hole *k'* in the shaft K, where they are secured by a nut or other suitable device. As it is desirable to have the spirals running in a reverse direction at opposite points, so as to convey in opposite directions, I provide a key, such as E, for connecting the blades or flanges at this point. By special reference to Fig. 1 of the drawings it will be seen that when the shaft or flanges reverse instead of having the meeting ends hooked to engage one another I provide them with hooks *b*, both directed outwardly, and employ the key E, which is approximately V shape in cross-section, having the inwardly-bent edges *a* to receive said edges or hooks *b*. The lower ends of these keys E are reduced and threaded and are passed through holes in the shaft A, and are secured by means of a nut or the like. By the construction de-

scribed it will be seen that should any one or more of the blades or flanges become impaired or injured they may be removed by simply taking out the hooked bolts *l* and readily replaced by others.

When it is desirable to form a continuous spiral from end to end of the shaft, the keys *E* are not employed, but the ends or edges united and secured in position by the bolts *l* throughout the shaft.

Having described my invention, what I claim is—

1. In a spiral conveyer, the combination, with a shaft having transverse holes, of a spiral blade having each wing provided at opposite edges with hooks to engage each other

and a hooked bolt embracing said engaging edges and secured at its opposite end to the shaft, substantially as specified.

2. The combination, with a shaft, of a reversed spiral conveyer secured thereto and having the adjacent inner ends of the reversed spirals provided with hooks and the keys *E* for securing said meeting ends or edges, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH H. DIEL.

Witnesses:

JOSHUA B. WEBSTER,
JAMES T. SUMMERVILLE.