(No Model.)

H. BIRKHOLZ.

SPIRAL CONVEYER.

No. 368,182. Patented Aug. 16, 1887.

Fig. 1.

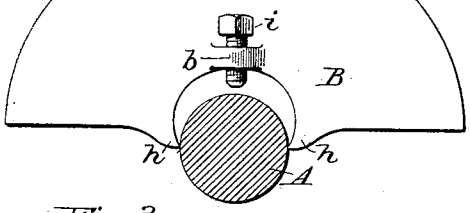


Fig. 2.

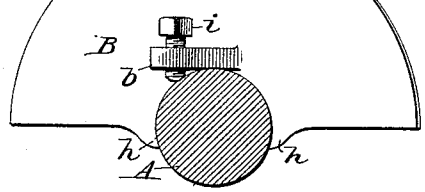


Fig. 3.

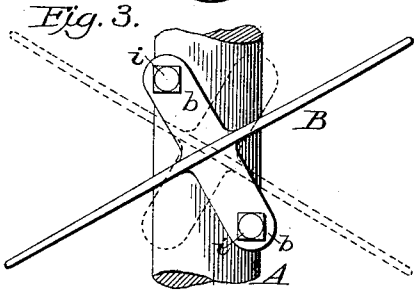


Fig. 4.

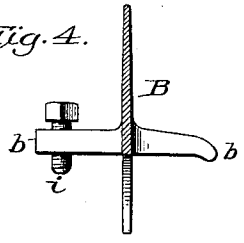


Fig. 5.

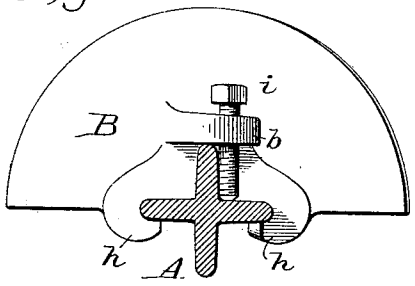


Fig. 7.

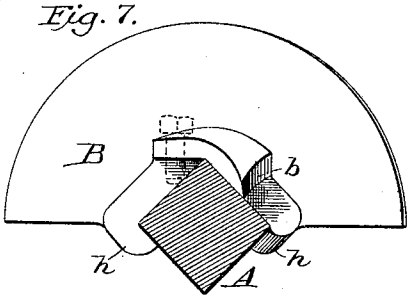


Fig. 6.

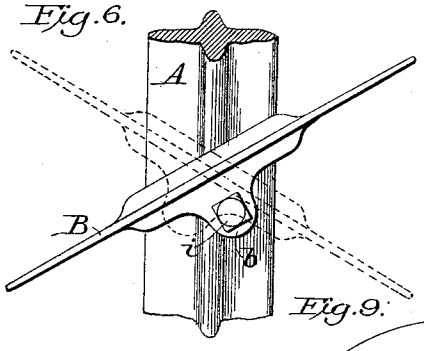


Fig. 8.

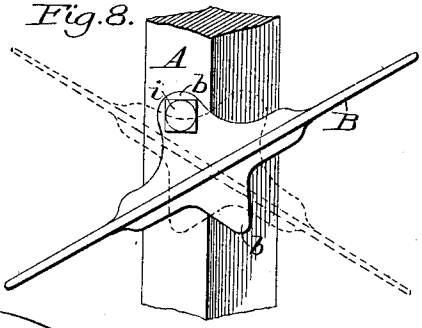
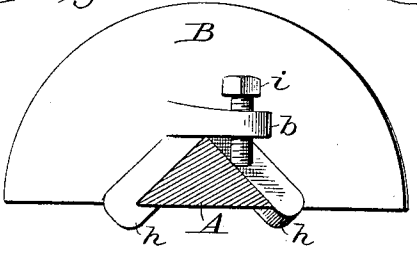


Fig. 9.



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Walter S. Dodge.

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by Dodger Son,
his Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

HANS BIRKHOLZ, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO EDWARD P. ALLIS, OF SAME PLACE.

SPIRAL CONVEYER.

SPECIFICATION forming part of Letters Patent No. 368,182, dated August 16, 1887.

Original application filed October 4, 1886, Serial No. 215,312. Divided and this application filed March 11, 1887. Serial No. 230,513. (No model.)

To all whom it may concern:

Be it known that I, HANS BIRKHOLZ, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Spiral Conveyers, of which the following is a specification.

My invention relates to spiral conveyers; and it consists in a novel means for securing the flight upon its shaft, as hereinafter fully set forth and claimed, whereby the conveyer may be made partly "right" or partly "left," or wholly right or left, at will.

In the drawings, Figure 1 is a face view of my improved flight, showing the manner of applying it to a shaft. Fig. 2 is a view showing the flight in place; Fig. 3, a top plan view. Fig. 4 is a vertical central sectional view of the flight; and Figs. 5 to 9, inclusive, views illustrating the application of the flight to shafts of various forms.

A indicates a shaft, which may be of wood or metal, solid or hollow, and cylindrical, fluted, triangular, or any other form in cross-section; and B, the flight secured thereto.

The flight is preferably semi-elliptical, and is formed with a seat for the reception of the shaft, which seat will of course vary in form according to the form in cross-section of the shaft employed. Upon reference to Fig. 1 it will be noticed that the opening or mouth of the seat is formed by arms *h h*, of about the greatest width or diameter of the shaft at the point of application to the latter; hence when the flight is to be applied to the shaft it will be necessary to apply it at right angles to the latter. After the flight is thus seated upon the shaft it is turned at an angle to the latter, as indicated by dotted lines in Figs. 3, 6, and 8, the points or arms *h* riding under or engaging with the shaft at a point below its greatest width or diameter, as shown in Figs. 2, 5, 7, and 9, thereby preventing the flight from dropping off so long as held in such inclined position.

In order to hold the flight in the desired position I employ a set-screw, *i*, (one or more,) which passes through an arm, *b*, of the flight and bears upon the shaft.

If desired, two arms, *b*, may be employed, as shown in Fig. 3, and each provided with a set-screw arranged to bear upon the shaft on opposite sides of the center of the latter; or, instead of providing each arm *b* with a set-screw, only one screw need be employed, as shown in Figs. 4, 7, and 8; but in such case the under face of the arm *b*, which is not provided with the set-screw, should be curved or bent to conform as far as possible to the contour of the shaft, and thus serve the same purpose as the screw.

In some constructions—such, for instance, as that shown in Figs. 5 and 6—only one arm and set-screw need be employed; but I wish it understood that I do not limit myself to any particular form, construction, or number of arms and set-screws.

It will be observed that as the screws *i* are screwed down upon the shaft, they draw the arms *h* up against the under side of the shaft, and not only prevent the flight from moving longitudinally thereon, but also prevent it from becoming accidentally reversed.

From the foregoing construction it will be seen that by means of a single set-screw, *i*, the flight may be firmly and adjustably secured to the shaft, and by simply loosening said screw the flight may be reversed in position without removing it from the shaft.

The flight may be made of cast or sheet metal, and the arm *b* riveted or otherwise secured thereto.

I am aware that it is not new to provide a conveyer flight with a seat to receive the shaft and with an attaching stem or bolt to pass through the latter.

By my construction I am enabled to avoid the perforation or drilling of the shaft. This is a feature of importance, because, aside from the additional expense of drilling, I am enabled to use much smaller, but equally as strong, shafting.

I do not claim herein anything shown or described in my application filed October 4, 1886, Serial No. 215,312, of which this case is a division.

Having thus described my invention, what I claim is—

1. In combination with a shaft, a series of independent flights, each provided with a seat to permit the lateral application of the flight

to the shaft, and with a set-screw to bear upon the shaft and retain the flight in position, substantially as shown and described.

2. In combination with a shaft, a series of separate independent flights, each provided with a seat to receive the shaft, and with a fastening device, the mouth of the seat being formed by arms, as *h*, to engage the shaft at a point below and upon the side opposite to the flight, whereby the inclination of the separate flights may be changed as desired.

3. In combination with a shaft, a series of independent flights, each provided with a laterally-opening seat of such width as to permit its application to the shaft only at right angles to the latter, and of a depth greater than half the diameter of the shaft, and a fastening device for the flight, all arranged substantially as shown, whereby when the flight is applied to the shaft and turned or inclined the arms at the mouth of the seat will engage under the shaft and assist in holding the flight in position.

4. In combination with a shaft, a flight provided with a seat to receive and engage the shaft, an arm projecting from said flight, and a screw passing through the arm and bearing upon the shaft.

5. In combination with a shaft, a flight provided with a seat to receive and engage the shaft, arms projecting from opposite sides of the flight, one of said arms being adapted to bear upon the shaft, and the other provided with a set-screw, substantially as shown.

6. In combination with a shaft, a flight provided with a seat to receive and engage the shaft, arms projecting from opposite sides of the flight, one of said arms being provided with a set-screw and the other curved on its under face to bear upon the shaft.

7. In combination with a shaft, a flight provided with a seat to receive, and with arms *h h* to engage, the shaft on the side opposite the flight, a set-screw, *i*, for drawing the arms *h h* upward against the under side of the shaft, substantially as described and shown.

8. In combination with a shaft, a flight provided with a seat to receive and engage the shaft when in position upon the latter, and a set-screw carried by the flight to bear upon the shaft at a point to one side of its center, substantially as shown.

HANS BIRKHOLZ.

Witnesses:
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E. BAXTER.