

(No Model.)

A. G. MATHER.
SPIRAL CONVEYER.

No. 533,479.

Patented Feb. 5, 1895.

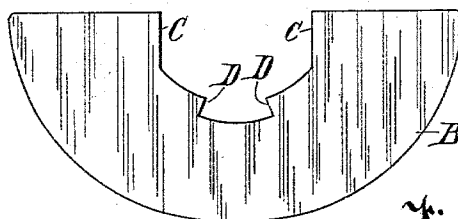
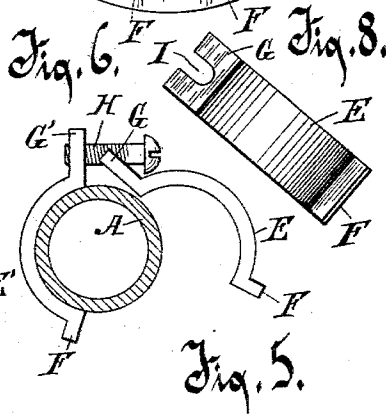
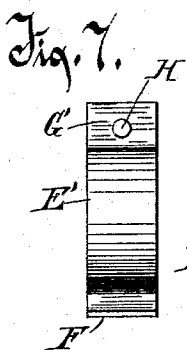
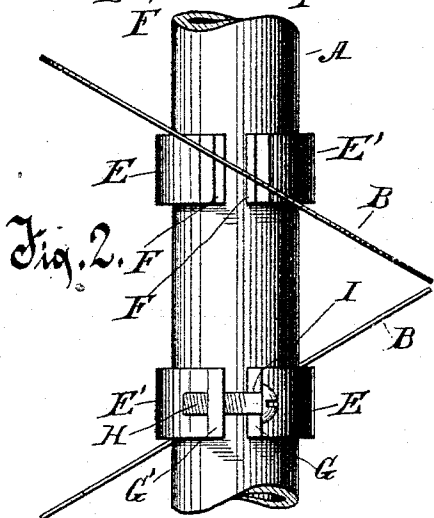
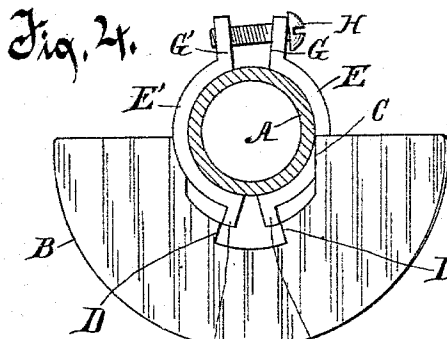
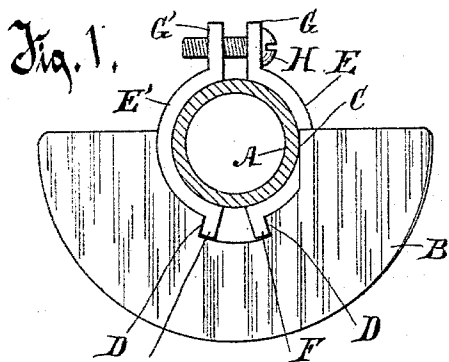
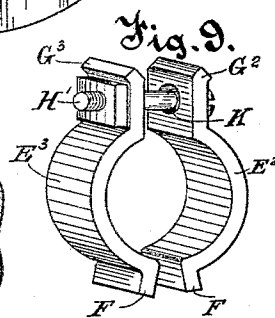
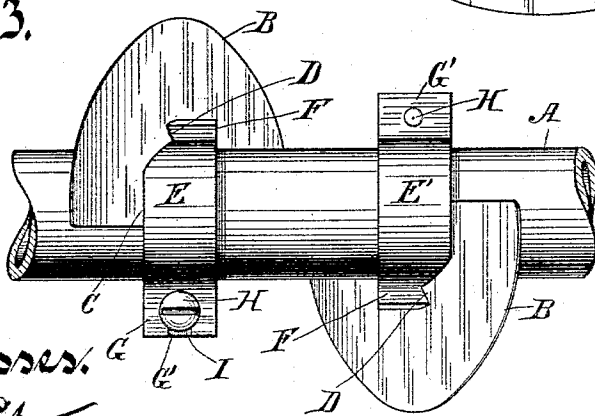


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALLAN G. MATHER, OF MILWAUKEE, WISCONSIN.

SPIRAL CONVEYER.

SPECIFICATION forming part of Letters Patent No. 533,479, dated February 5, 1895.

Application filed July 30, 1894. Serial No. 518,934. (No model.)

To all whom it may concern:

Be it known that I, ALLAN G. MATHER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Spiral Conveyers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to that class of spiral conveyers adapted, by means of a shaft having flights thereon revolving in a tube or case, for moving grain, flour, bran or other comminuted or plastic material.

The invention is embodied in the novel construction of the flights and the means for securing them detachably or reversibly to the shaft, and their several parts or their equivalents.

In the drawings, Figure 1, is an elevation of a flight secured by my improved devices to a shaft, the shaft being shown in cross section. Fig. 2, is an elevation of a fragment of the shaft, showing also two of my improved flights secured thereto by my improved devices therefor. Fig. 3, is an elevation of the same structure shown in Fig. 2, the view being at a right angle revolvably of the shaft, to the view in Fig. 2. Fig. 4, is an elevation of my improved devices, the view being substantially the same as that seen in Fig. 1, except that the position of the parts, is such as to illustrate the method of putting the flight on to the shaft or removing it therefrom. Figs. 5, 6, 7 and 8 show the several parts of my improved structure, in detail, and disassembled. Fig. 9, is a modified form of the clamp.

In the drawings, A is the shaft, which is commonly, with reference to convenience and inexpensiveness, of gas pipe, though a solid rod or other form of shaft might be used if desired. The flight B is preferably made of sheet steel, being readily swaged therefrom in the substantially semi-elliptical form shown in Fig. 5. This form is such that when the flight is secured to the shaft at an oblique angle thereto, the curved perimeter of the flight, describes a true circle when the shaft revolves. Two of these flights secured to the shaft adjacent to each other and on opposite sides of the shaft in the manner shown in Figs. 2 and 3 form a spiral or screw adapted,

when inclosed in a tubular case, and by the rotation of the shaft, to move or convey grain or other material forward in the tube or conveyer.

For placing the flights on the shaft, and securing them thereto by my improved devices a recess is cut in the flight, centrally of its straight edge in such form as to provide edges or shoulders C C at such distance apart, as when the flight is in position obliquely on the shaft, to fit against the opposite sides of the shaft and to be preferably substantially tangential thereto. The recess is also of sufficient depth to admit the shaft therein, to an extent slightly greater than the half of its diameter. Also at the bottom the recess is extended farther into the flight so as to provide two other shoulders or bearings D D, which preferably diverge outwardly radially. This extended or auxiliary recess is dove-tailed in form, the shoulders or bearing edges D D which are the side walls of the recess, being substantially in radial lines from the center of the shaft when the flight is in position on the shaft as shown in the drawings, the undercut formed by the divergence of these walls being sufficient to be securely engaged by the correspondingly diverging lugs or outwardly turned ends of the clamps used therefor.

To secure the flight to the shaft a clamp is used, which consists of two semi-circular bands E E', the bands being provided at one extremity with the outwardly projecting radially diverging lugs F F' and at the other extremity with the outwardly projecting lugs G G'. A binding screw H passing loosely through the lug G turns by its thread into the lug G' being thus adapted for drawing the parts of the clamp toward each other. For conveniently applying or removing the band E its lug G is provided with a recess I to receive the screw H, rather than with an aperture for the passage of the screw there-through.

The substantially semi-circular bands E and E', do not completely encircle the shaft A, but when placed opposite each other on opposite sides of the shaft leave slight spaces between them at each end, thus providing for a small amount of peripheral movement to the two bands about the shaft. To secure

the flight to the shaft at the proper oblique angle thereto, the bands E E' are placed about the shaft substantially in the positions shown in Fig. 4 and the flight B is then put on in such manner that the bearings D D will be opposite to and will receive the bearing laterally of the lugs F F and the shoulders C C will bear one against the front and the other against the rear edge of the clamp or bands E E'. The screw H is then turned into the lug G' so as to draw those ends of the bands toward each other and to force the lugs F F outwardly against the bearings D D, thus by reason of their radial divergence and dove-tailed form locking the flight to the shaft. At the same time the flight is secured in the proper oblique position to the shaft by reason of one of the shoulders C bearing against the front edge of the clamp at one side of the shaft while the other shoulder C bears against the rear edge of the clamp at the other side of the shaft. The clamp is made of the proper length (longitudinally of the shaft) to adapt it for the purpose of obtaining the proper obliquity of the flight, by this method of attachment. The method of drawing the lugs G and G' toward each other and securing them in place, by means of the screw H is considered a simple and desirable device for this purpose, but any other well known and commonly used device for a similar purpose would be deemed an equivalent thereof.

In the modified form of clamp shown in Fig. 9, the stove-bolt and nut H' is substituted for the bolt H in the other form of device; also the apertures K through the lugs G² and G³ are elongated to provide for the

requisite relative movements of the parts. The bands E² and E³ are otherwise substantially the same as the bands E and E'.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A semi-elliptical conveyer flight formed in a single flat sheet or plane, having a central recess to receive a shaft therein, the edges of which recess at the sides are adapted to bear against the shaft, and having an auxiliary recess at the bottom of the shaft recess, the lateral edges of which auxiliary recess are divergent or under-cut, substantially as described.

2. The combination with a shaft, of a flight having shoulders C C and bearings D D, and a clamp consisting of two substantially semi-circular bands provided at one extremity with lugs adapted to engage the bearings D D, and at the other extremity with projections, and means adapted to draw the latter toward each other and to force the lugs against the bearings D D, substantially as described.

3. As a means for securing a flight to a shaft, two substantially semi-circular bands having radially projecting or diverging unconnected lugs at one extremity, and outwardly projecting lugs and a clamping screw at the other extremity, substantially as described.

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

ALLAN G. MATHER.

Witnesses:

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