

(No Model.)

J. S. WILSON.
SCREW CONVEYER.

No. 372,950.

Patented Nov. 8, 1887.

Fig. 1.

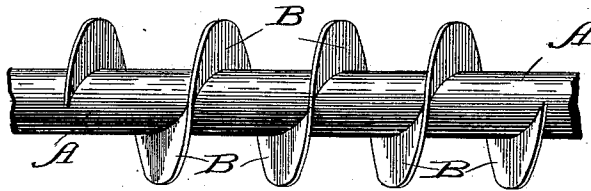


Fig. 2.

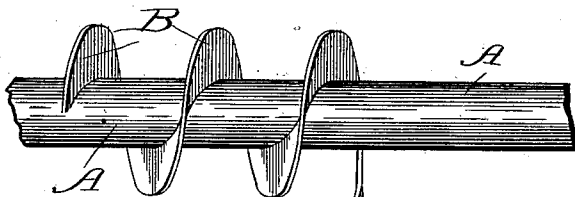


Fig. 4.

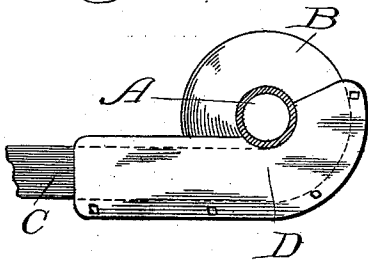
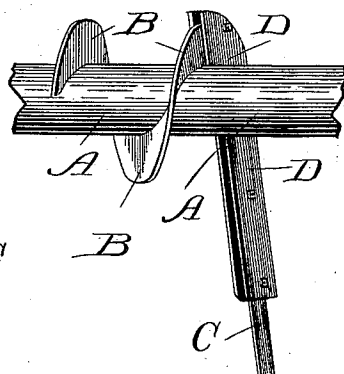


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN S. WILSON, OF CHICAGO, ILLINOIS.

SCREW CONVEYER.

SPECIFICATION forming part of Letters Patent No. 372,950, dated November 8, 1887.

Application filed August 17, 1886. Serial No. 211,160. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. WILSON, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Screw Conveyers, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in a spiral or endless screw conveyer; and it consists of certain novel features in the method or manner of constructing the same, as will be hereinafter set forth in detail, and pointed out in the claims.

Figures 1 is a side elevation of a screw-conveyer embodying my improved features; Fig. 2, a similar view showing the spiral flanges or wings in process of formation. Fig. 3 shows the manner of holding and guiding the strip of metal forming the spiral flight on the axial conveyer shaft or core; Fig. 4, an end view of the same.

In the drawings, A represents the conveyer-shaft, and B the conveyer-flanges arranged spirally thereon. The conveyer shaft or core A may be either a solid body or a tube, which, in the process of constructing the conveyer, is usually mounted and rotated in a suitable machine-lathe. In this position the shaft or core is ready to receive the spiral flight or flanges. The flanges B are formed from a single or continuous strip, C, of sheet metal, thus making a continuous spiral flight all of one piece.

The process of forming and mounting the spiral flight on its axial shaft or core, after the latter has been first centered in a lathe, is very simple, the method pursued being as follows: One end of the strip of metal designed to form the spiral flight is first inserted in a suitable holding or guiding tool, as D, the end of the strip of metal projecting far enough through the upper end of the same to be rigidly secured to the face-plate of the lathe or to a collar removably mounted on one end of the intended shaft or core. The strip of metal forming the conveyer-flight is applied to the axial shaft or core edgewise, and must be so held when being drawn or fed through the peculiarly-constructed guide-tool D. The lower end of the guide-tool is adjustably se-

cured in the usual tool-holding stock common to machine-lathes. The lathe being put in motion, rotates the conveyer-shaft. The strip of metal is fed or drawn through the guide-tool and spirally mounted upon its shaft or core, thus forming the spiral flight from a single continuous piece of metal and imparting a uniform pitch to the continuous flange. Any desired pitch may be given to the spiral flight by means of the usual endless-screw feed and the means for regulating the speed of the same, the guide-tool traveling on said screw-feed as the formation of the conveyer progresses. The guide or holding tool D is in this case composed of the two members or jaws, which are bolted together at the back and provided on the inner edge with the continuous longitudinal slot or opening *a* (see Fig. 3) for the insertion of the strip of metal forming the spiral flange. This guide-tool is curved or cut out on the inner edge, as shown in Fig. 4, in order to adapt the same to conform to the contour of the shaft or core and facilitate the work.

In the construction of this conveyer only the very best quality of steel can be used, as no other metal will resist the strain to which the same is subjected in assuming the spiral form on the core. When a narrow strip of metal is used in forming a conveyer with a shallow flange, it can ordinarily be wound or mounted upon its permanent core, no matter how small the diameter of the same may be, without any preliminary steps. In constructing a conveyer with a small core and a wide or deep flange it is necessary to first coil or mount the flange spirally on a core or shaft with a diameter proportionate to the width of the strip of metal forming the flight and then remove the spiral formation from the temporary core by slipping it endwise from the latter and subject the same to an annealing process and again recoil upon a core or shaft of a less diameter than that of the first. Then again remove and anneal, and so continue on step by step until the spiral coil has been gradually reduced and mounted upon its permanent core or axial shaft. A wide strip of metal will not readily withstand the strain and change of form of being at once coiled or mounted on a permanent core of a small diameter, as the strain is not equal—that is, it is

much greater on one edge of the strip than on the other, and thus destroys the life of the metal; but the work can be successfully and gradually accomplished by the above method, as the annealing and cooling processes restore the original qualities of the metal after each progressive step. It will be readily observed that by this method a spiral or screw conveyer of any desired length or diameter may be easily and quickly made, and the spirality of a uniform pitch, thus greatly lessening the friction over that of a similar structure wherein the continuous flight is made up in sections and bolted together.

I am aware that cannon have been made of strips of metal wound upon a core, and that burr-wheels have been made by winding a strip having teeth spirally upon a drum. My device differs from these methods in that the flight is wound edgewise, spirally, and torsionally upon a core to give it the form of a conveyer-flight, which is not the case in the before-mentioned methods. Therefore;

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

1. The method of making screw or spiral conveyers, consisting in securing one end of a strip or ribbon of metal to a core, revolving said core, guiding said strip spirally, torsionally, and edgewise upon said core, and securing the strip in place when so wound.

2. The method of making screw or spiral conveyers, consisting in rotating a shaft to lay

the flight thereon, laying said flight formed of a single strip of metal edgewise, spirally, and torsionally upon the core, and then securing said core and flight together.

3. In constructing a screw conveyer, the method herein described, which consists in first winding the continuous flange spirally upon a temporary shaft or core proportionate to the width or depth of said flange, then removing said flange or flight endwise from the core, annealing the same, and rewinding it upon a second shaft of a less diameter, and so continuing on step by step until the spiral coil has been gradually reduced and mounted upon its permanent axial shaft or core, substantially as and for the purpose set forth.

4. In a screw conveyer, the combination of a core and a conveyer-flight formed of a single strip of metal mounted edgewise and torsionally upon the core and secured thereto, substantially as described.

5. In a screw conveyer, the combination of a core and a conveyer-flight formed of a single strip of metal mounted edgewise and torsionally upon the core, and secured by its ends to the core, substantially as described.

6. In making spiral conveyers, a guide, D, having the slot *a*, and the angle recess for embracing the core, substantially as described.

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