(No Model.) 2 Sheets—Sheet 1.

O. CALDWELL.

MANUFACTURE OF CONVEYER FLIGHTS.

No. 368,569. Patented Aug. 23, 1887.

Fig. 1.

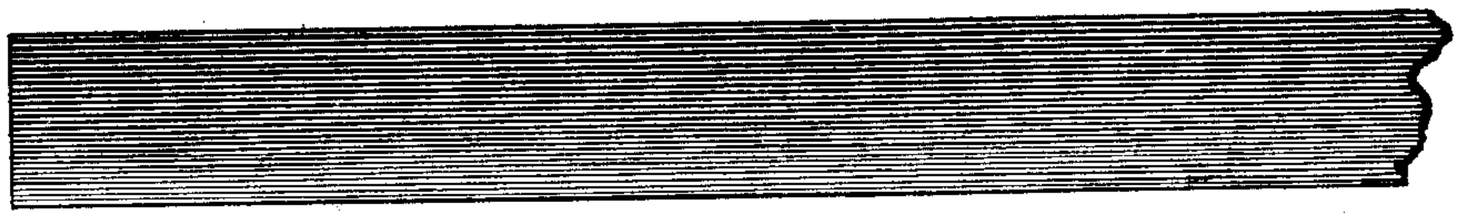


Fig. 2.

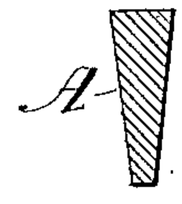


Fig. 3.

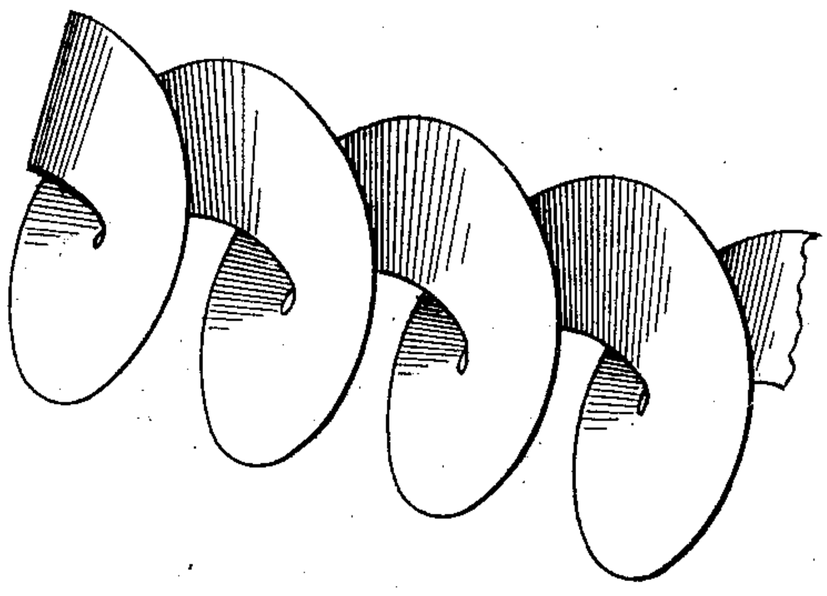
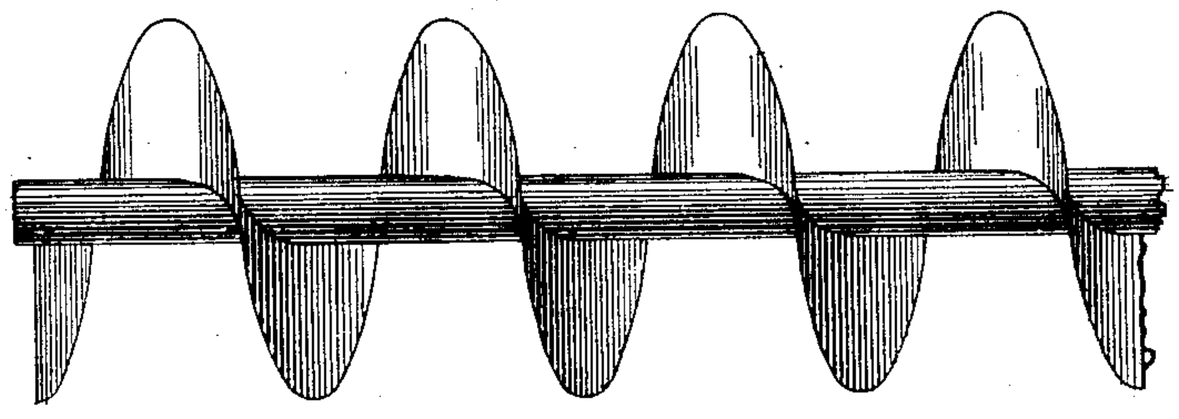


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

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MANUFACTURE OF CONVEYER FLIGHTS.

No. 368,569. Patented Aug. 23, 1887.

Fig. 5.

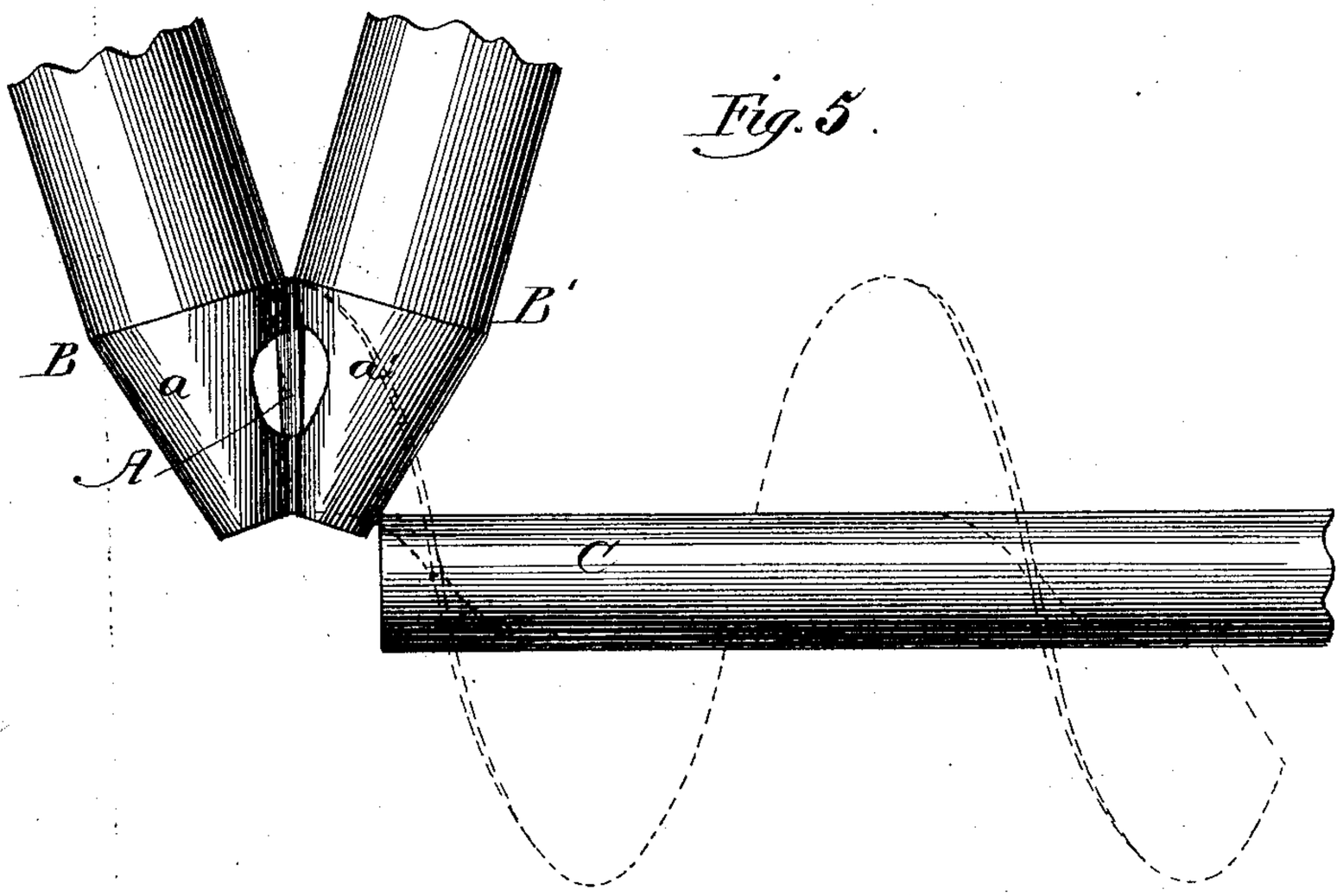
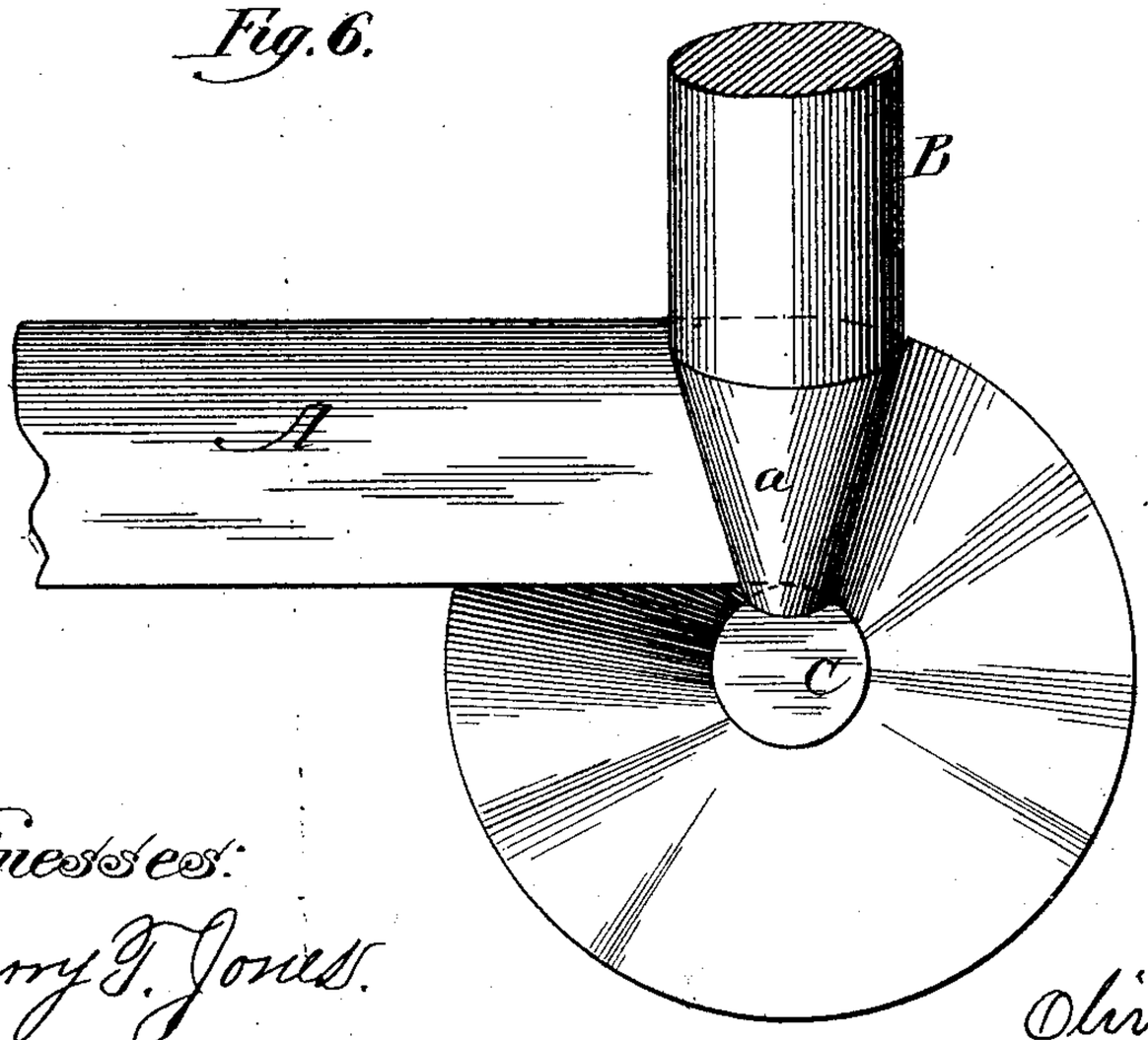


Fig. 6.



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UNITED STATES PATENT OFFICE.

OLIVER CALDWELL, OF CHICAGO, ILLINOIS.

MANUFACTURE OF CONVEYER-FLIGHTS.

SPECIFICATION forming part of Letters Patent No. 368,569, dated August 23, 1887.

Application filed January 3, 1887. Serial No. 223,273. (No model.)

To all whom it may concern:

Be it known that I, OLIVER CALDWELL, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Conveyer-Flights, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a strip of metal from which I make my flight. Fig. 2 is a vertical section of the same. Fig. 3 is a perspective showing one of my flights before it is secured to its shaft. Fig. 4 is a side elevation showing one of my flights upon its shaft. Fig. 5 is a vertical front elevation of rollers or mechanism for making the flights, partly broken away to show the strip or bar of metal as it is about to pass. Fig. 6 is a side elevation of the same.

It is common to make conveyer-flights of sheet metal, a completed flight being made of a number of sections riveted or otherwise secured together.

The object of my invention is to provide a continuous and seamless conveyer-flight, which I accomplish by making the flight from a long strip of metal, as illustrated in the drawings, and hereinafter fully described.

My invention consists in the hereinafter described method by which such continuous and seamless flights are made.

In the drawings, A represents a strip of metal, the width of which is about equal to the width of flight to be made, and its length is sufficient to form a continuous flight of the desired length. This strip of metal is in cross-section somewhat V-shaped in form—that is, it is much wider at the upper edge than at the lower edge, as shown in Fig. 2—which shape can be given to it by means of suitable rolls in a rolling-mill. To make a flight from this strip of metal, I pass the same, preferably while hot, between two rolls, B B′, each being the frustum of a cone, the faces *a a′* of the rolls being parallel to each other where they act on the metal strip and both being of the same size, the thick edge of the strip of metal being toward the large ends of the rolls, and this thick edge will be stretched and flattened while the strip is passing through the rolls, so that the whole strip will become of uniform thickness; but it will be carried through the rolls at the thick edge faster than at the thin edge, and the thick edge, of course, will become much longer than the thin edge. The strip as it comes from the rolls will have a tendency to assume the form which a conveyer-flight has, and it can be made somewhat less in diameter than the diameter of the shaft of the completed conveyer. The desired pitch will be given to the flight by the passage of the metal between the rolls. It will be understood that the various rolls specified are supported in suitable bearings and that they are driven by suitable gearing.

It will be readily seen that there must be a greater quantity of metal at the outer portion of the flight than at the central portion. This I provide for by using strips of metal having in cross-section the form shown in Fig. 2, the surplus metal being flattened and spread out by the action of the rolls.

The width of the strip of metal depends upon the width of the flight to be made and its length upon the length and pitch of the flight. I can without difficulty make flights continuous and seamless for a shaft of any reasonable desired length. The relative thickness of the strip of metal at its inner and outer edges depends on the diameter of the cylinder, or the center upon which the flight is to be placed, and upon its width and pitch.

The two rolls B B′ revolve in opposite directions, and may be driven by gear-wheels (not shown) in any well-known manner. There are no feeding devices. The rolls will draw the strip of metal into and force it through between them, as usual, operating just as other rolls for rolling metal operate. The end of the strip of metal can be flattened, if necessary, to facilitate its entry between the rolls. By passing through the rolls the thick edge of the strip will be flattened and of course will be lengthened, and the rolls being larger in diameter at one end than at the other the thick edge of the strip will be forced through between the rolls more rapidly than the thin edge, and as the strip comes from the rolls, having been brought to a uniform thickness, it will necessarily assume a curved and spiral form, whether a mandrel be used or not; but a mandrel or shaft is desirable, because the metal should

be rolled hot and the mandrel will support the flight and keep it from bending and getting out of shape. The mandrel or shaft may remain stationary. It will not revolve. It may be moved longitudinally at a speed about the same as that at which the completed flight is formed; but this movement of the mandrel is not essential.

The flight may be passed around the shaft which is to be a part of the completed conveyer; or it may be passed around a separate core, shaft, or cylinder, and then removed therefrom and placed upon the permanent shaft of the conveyer.

In Fig. 3 I have shown a portion of a seamless continuous conveyer-flight made as above described, and in Fig. 4 I have shown the same flight upon its shaft ready for use, if properly secured thereto, which is to be done in any suitable known manner.

What I claim as new, and desire to secure by Letters Patent, is—

The method herein described of making continuous and seamless conveyer-flights, which consists in forming a flight from a strip of metal thicker at its outer edge than at its inner edge by passing the same between rolls adapted and arranged to act upon such strip of metal and bring it to a substantially uniform thickness and spiral form, substantially as and for the purpose specified.

OLIVER CALDWELL.

Witnesses:
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