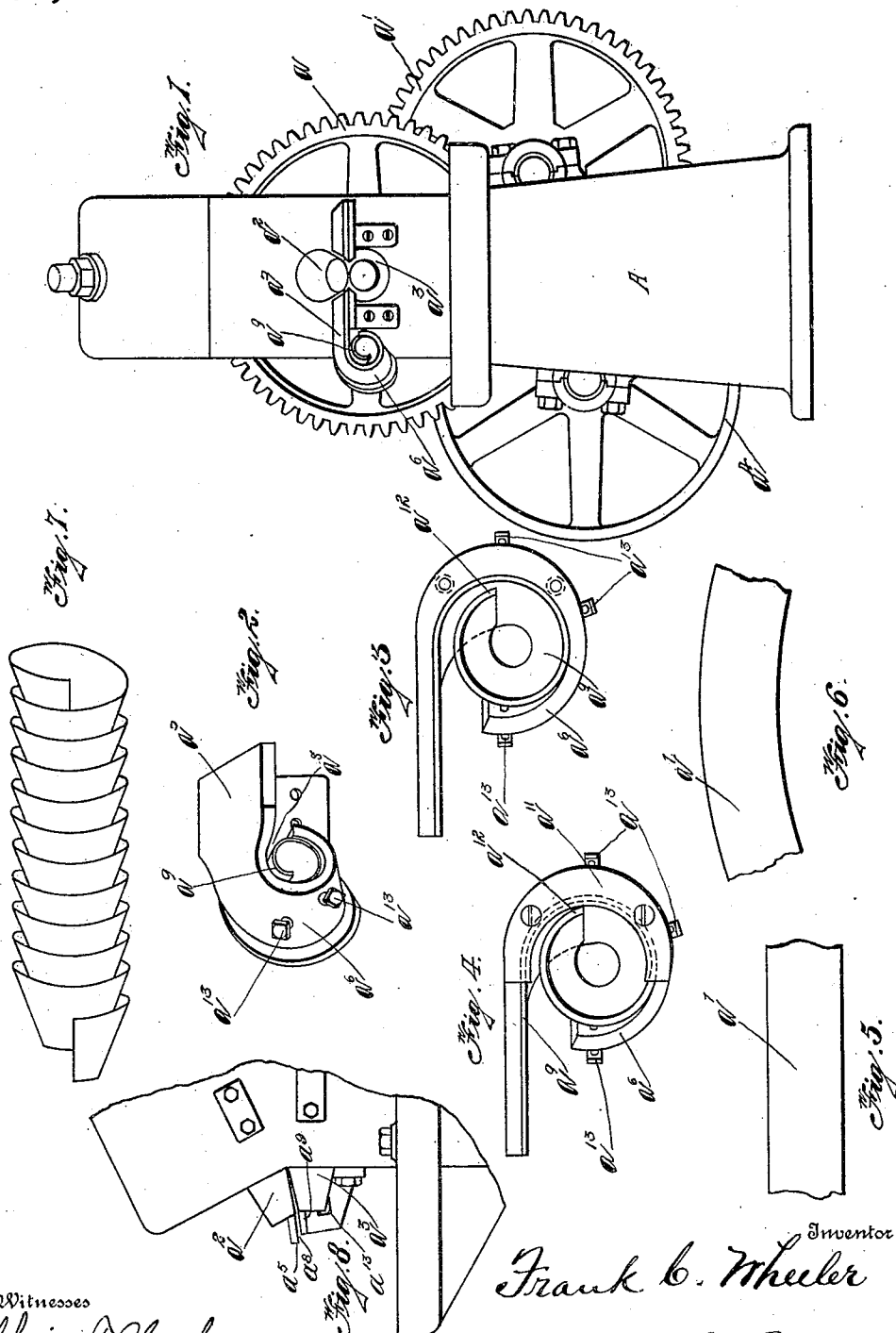


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MACHINE FOR MAKING SHEET METAL TUBES.
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977,150.

Patented Nov. 29, 1910.



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UNITED STATES PATENT OFFICE.

FRANK C. WHEELER, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE AMERICAN SEEDING MACHINE COMPANY, OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

MACHINE FOR MAKING SHEET-METAL TUBES.

977,150.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed April 5, 1909. Serial No. 437,912.

To all whom it may concern:

Be it known that I, FRANK C. WHEELER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Machines for Making Sheet-Metal Tubes, of which the following is a specification.

This invention relates to a machine for coiling sheet metal tubes that are especially adapted for use in connection with grain drills wherein a tube is required to carry the seed from the hopper or feed box to the furrow opener.

The particular object is to so construct and arrange the machine that a flat tape or metal ribbon may be fed from a reel into and through the machine in such manner that the ribbon will be coiled in the form of a spiral shaped tube.

Referring to the drawings, Figure 1 is a front elevation of the machine. Figs. 2, 3 and 4 are detail views of the forming device. Figs. 5 and 6 are detail views of the ribbon from which the tube is formed. Fig. 7 is the tube after it has been formed in the manner heretofore referred to. Fig. 8 is a side elevation of a portion of the device showing the rolls.

Like characters of reference indicate like parts in the several views.

Referring to Fig. 1, A indicates the frame of the machine. a^1 indicate the driving wheels and $a^2 a^3$ indicate the rolls. The said driving wheels, a^1 , are driven from any suitable source of power, there being the usual connections between said wheels for transmitting power from the wheel, a^4 , to the rolls, $a^2 a^3$, but as the invention involved herein does not concern itself in any way with the driving connections, it is not deemed necessary to describe in detail said connections excepting to say that any ordinary or usual connections may be employed.

The rolls, $a^2 a^3$, have a dual function, to-wit: that of feeding the tape to the forming device, to be hereinafter described, and also to press the tape into shape, indicated in Fig. 6, wherein one edge is of a convex or swelling shape and the opposite edge is of a concave or hollow shape. This last function is assisted by the arrangement of the rolls and attention is called to the fact that the edges of the rolls, $a^2 a^3$, are farther apart at their outer edge (the edge farthest from

the wheels, a^1) than their inner edge, (see Fig. 8) so that greater pressure is exercised upon the tape at its inner edge than at its outer edge and the operation of the rolls is such as to expand the inner edge of metal more than the outside edge, so as to give to the inner edge a rising or swelling shape, while the outer edge is given a hollow or concave shape. This renders the tape especially adapted to cooperate with the forming device so as to coil the tape in the manner indicated in Fig. 7.

Referring again to Fig. 1, the forming device lies in close proximity to the rolls, $a^2 a^3$, and is a formed plate of suitable material, a^5 , which is secured at one end to the frame, A, and at its free end the formation assumes the shape of a frustum of a cone. This cone-shaped former is indicated at a^6 (Figs. 2 and 3).

The tape, a^7 , is fed into the machine from the right side thereof (looking at Fig. 1) to the passage between the rolls, $a^2 a^3$, and is formed as indicated in Fig. 6 and the free end of the tape then enters a passageway, a^8 (see Fig. 2) and is guided around the spiral formed in the forming device, a^6 , by means of a plate, a^9 , of resilient material (clearly illustrated in Fig. 3), which plate lies within the frustum of the cone. The plate, a^9 , and forming device, a^6 , together appear to be the frustum of a scalene cone, such that the tape will be caused to move spirally. Set screws, a^{10} , are adapted to adjust the plate, a^9 , for tapes of varying density or thickness.

Referring to Figs. 3 and 4, the whirls of said spiral tube, after being formed, will be fed out of said forming device from the end illustrated in Figs. 3 and 4 or, in other words, from the end opposite to that indicated at Fig. 2. To assist in the proper formation of the tube there is employed a plate, a^{11} , which is secured to the discharge end of the forming device and is so formed and arranged that it cooperates with the forming device to insure the proper feeding and forming of said spiral shaped tube. It is apparent from Fig. 4 that one edge of the respective whirls of the tube will bear against the inner side of said plate, a^{11} , until said whirl has been duly formed and has passed to a point beyond the forward edge, a^{12} , of said plate and can then pass out of the open end. Moreover, this plate, a^{11} , represses the spiral layers or whirls and thereby prevents

the tube from being elongated and causes the whirls to overlap each other, thereby forming a spiral, collapsible or telescopic tube.

Having thus described my invention, I claim:

1. In a machine for forming a spiral tube from a flat band, means for feeding said band and expanding one edge thereof, a cone-shaped former adapted to form whirls in said band after same has been operated on by said first-mentioned means, substantially as specified.

2. In a machine of the character mentioned, the combination of a stationary former adapted to form whirls in said band, means for feeding said band to said former, and for operating on both edges of said band to form one edge of concave form and the

other edge of convex form, substantially as specified.

3. In a machine for forming a spiral tube from a metal band, means for feeding said band, a former adapted to form a spiral tube from said band, and a curved plate for preventing the whirls of said spiral tube from being elongated during the process of forming same to an extent preventing the overlapping of said whirls, substantially as specified.

In testimony whereof, I have hereunto set my hand this 3rd day of April 1909.

FRANK C. WHEELER.

Witnesses:

THAYER K. MORROW,
CHAS. I. WELCH.