

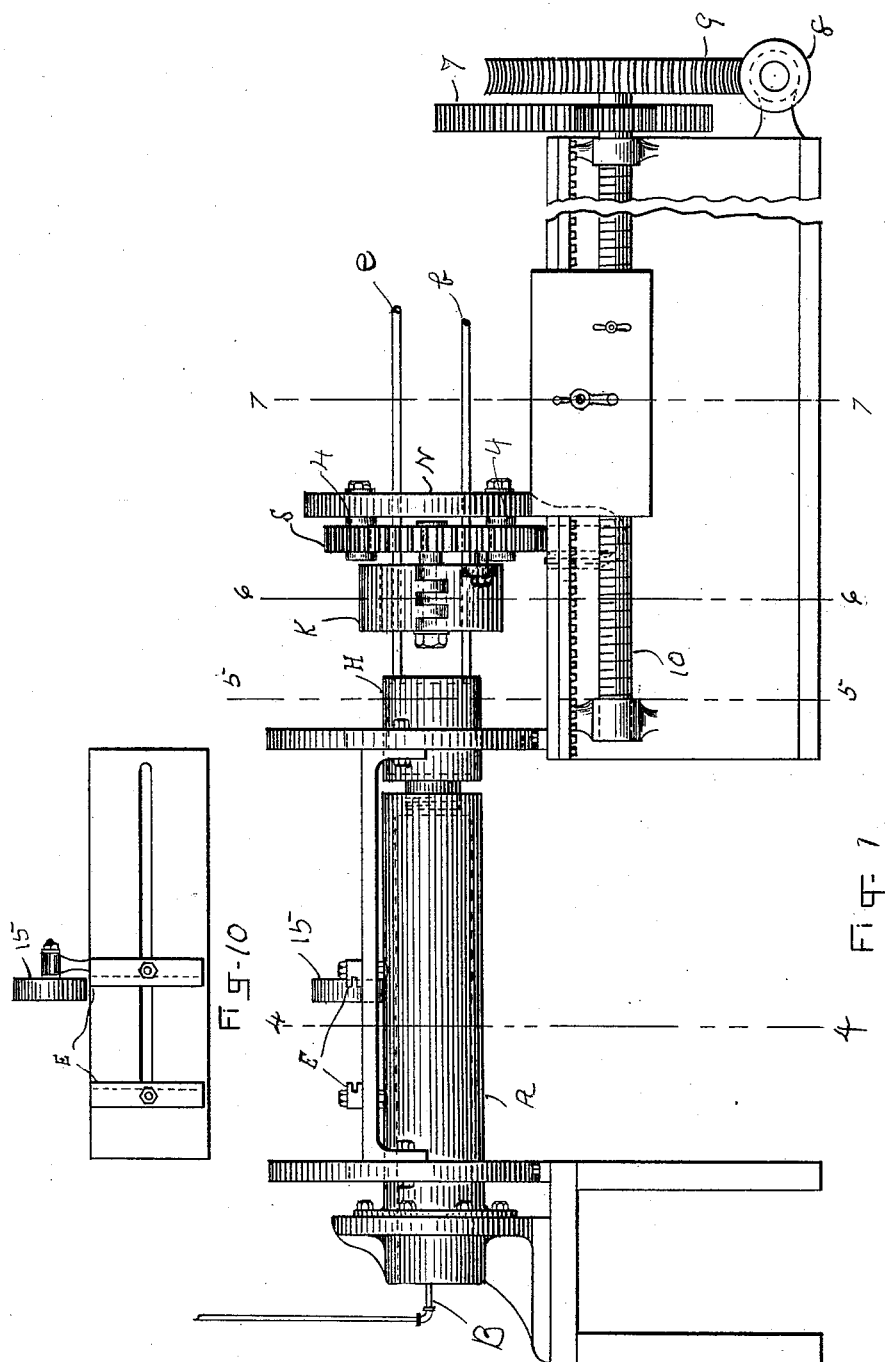
(No Model.)

5 Sheets—Sheet 1.

E. K. COAS.  
MACHINE FOR MAKING METAL CYLINDERS.

No. 422,293.

Patented Feb. 25, 1890.



WITNESSES:

*A. J. Musher*  
*E. E. Hamell*

INVENTOR:

*Edward K. Coas*

*By C. B. Tuttle*  
*A 220*

(No Model.)

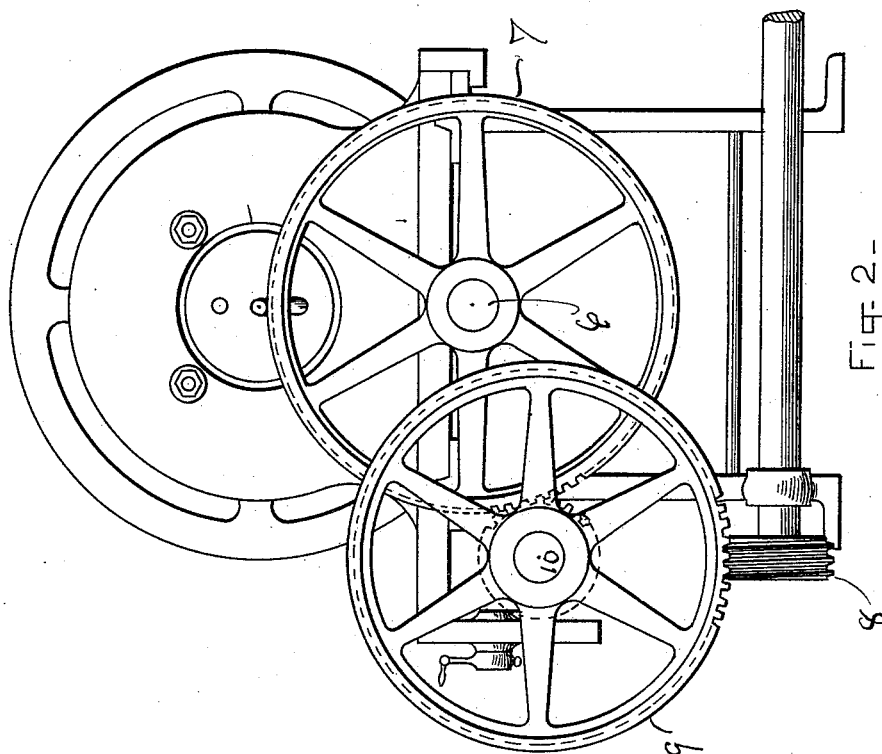
5 Sheets—Sheet 2.

E. K. COAS.

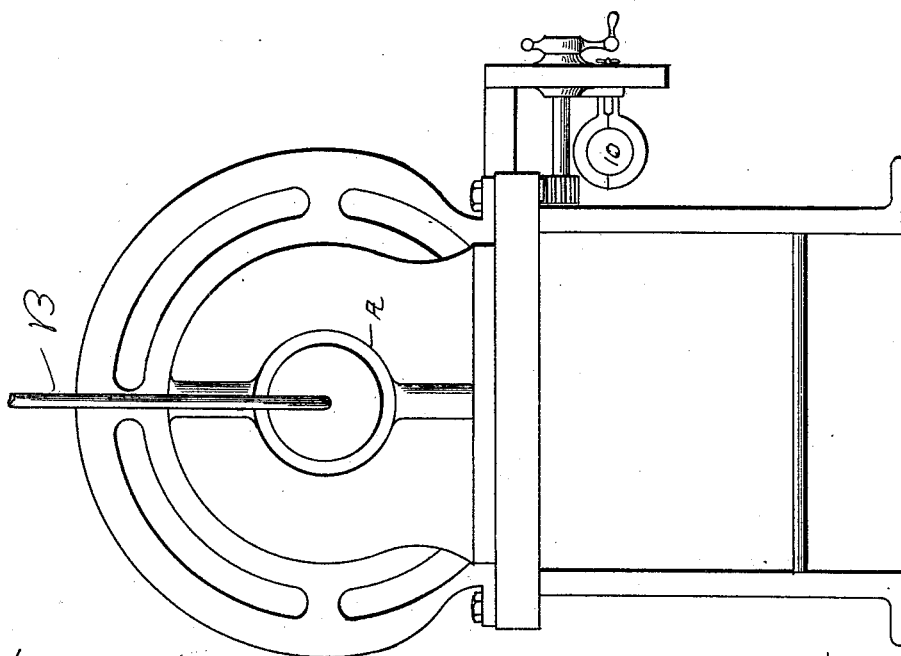
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WITNESSES:

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A. J. Musher  
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INVENTOR:

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(No Model.)

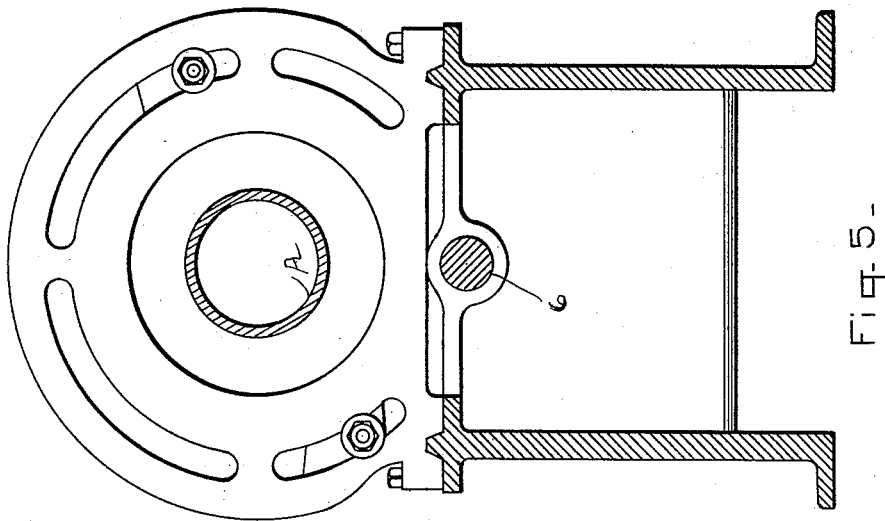
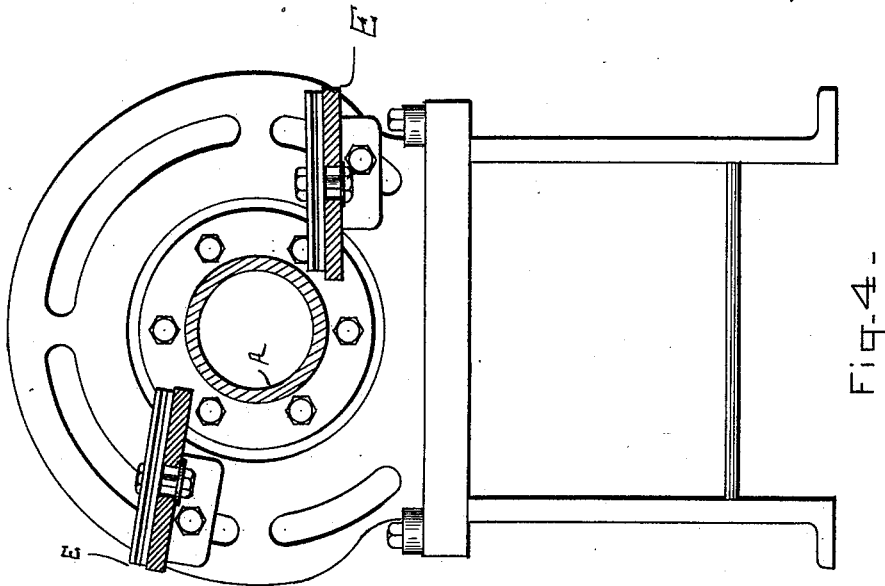
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WITNESSES:

*A. J. Mooker*  
*E. E. Hamill*

INVENTOR:

*Edward K. Coas*  
By *C. B. Fitts*  
R 224

(No Model.)

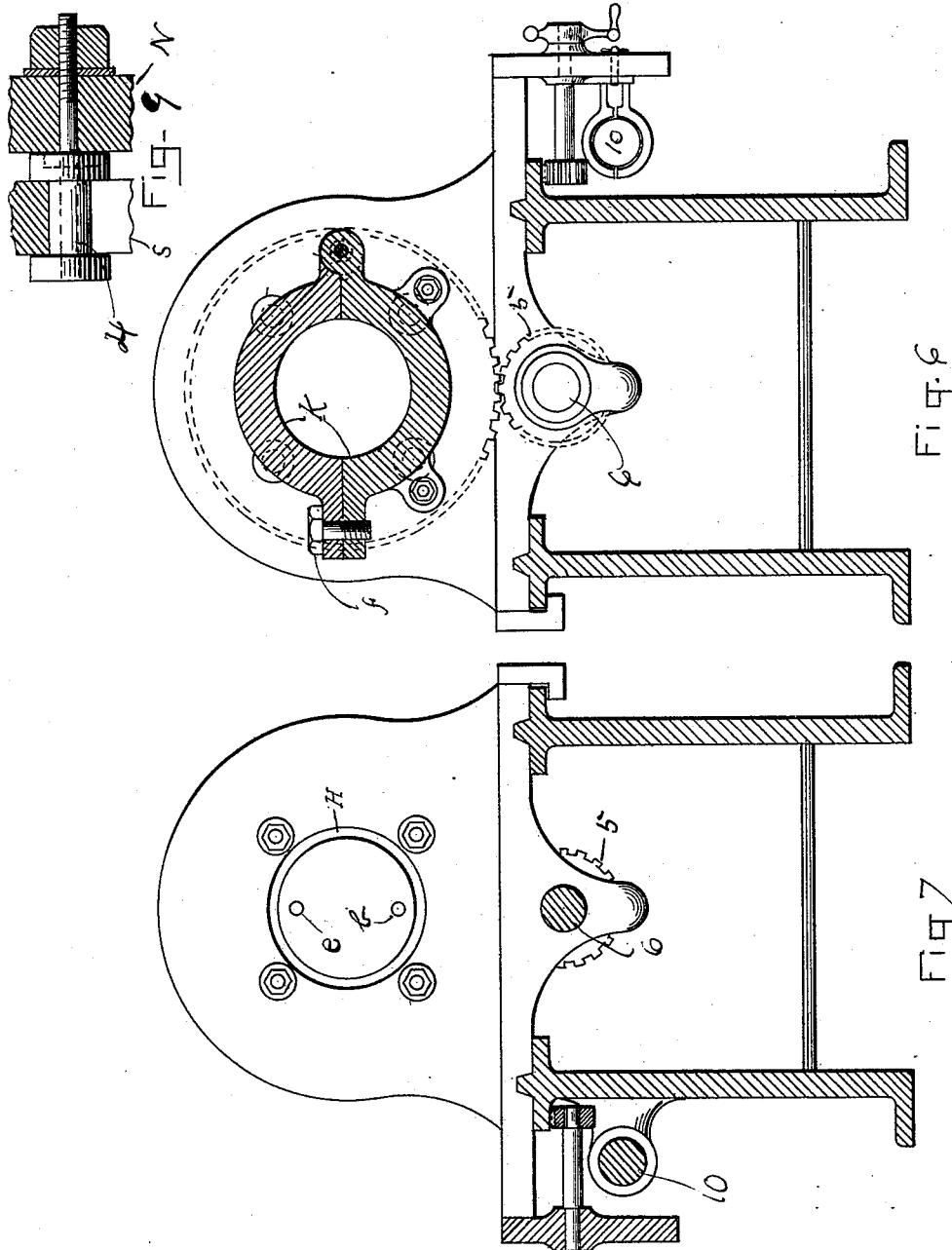
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E. K. COAS.

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WITNESSES:

*A. J. Musher*  
*E. E. Hamill*

INVENTOR:

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*R. & A.*

(No Model.)

5 Sheets—Sheet 5.

E. K. COAS.  
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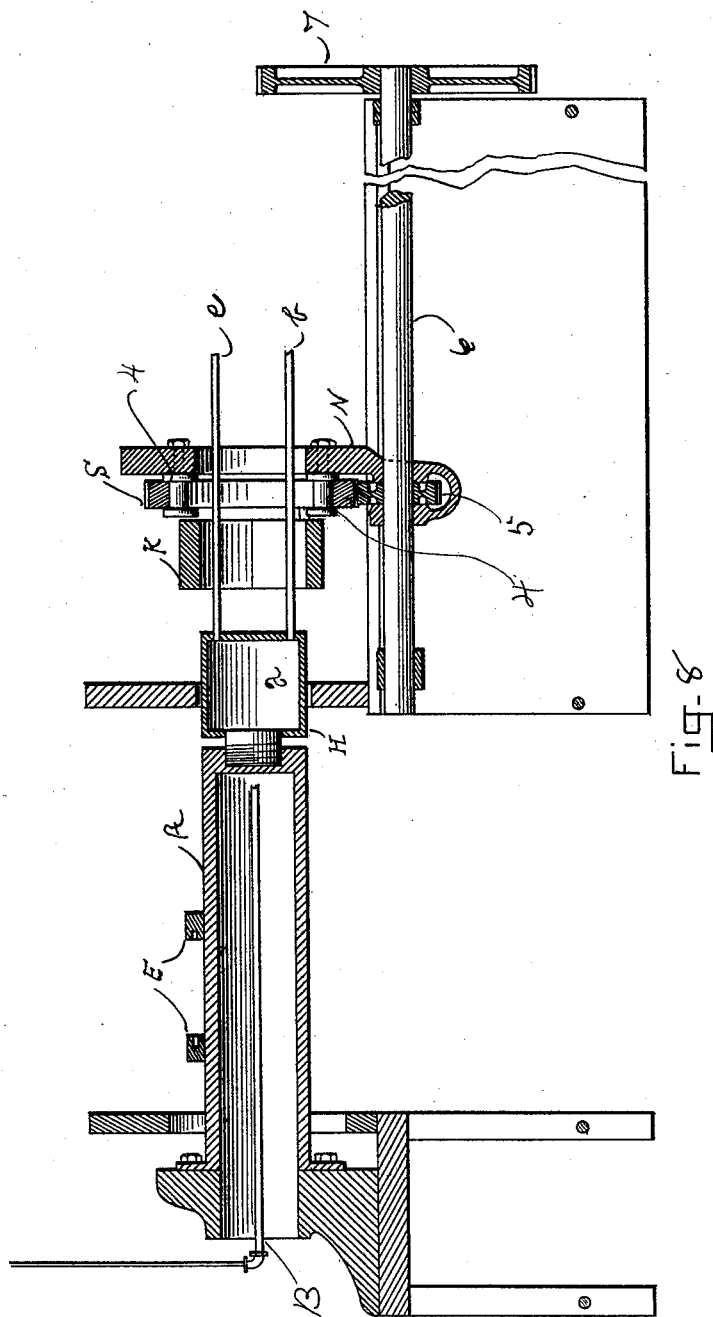


Fig-8

WITNESSES:

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*Azzz*

# UNITED STATES PATENT OFFICE.

EDWARD K. COAS, OF GLOUCESTER, MASSACHUSETTS.

## MACHINE FOR MAKING METAL CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 422,293, dated February 25, 1890.

Application filed January 21, 1889. Serial No. 297,014. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD K. COAS, of Gloucester, county of Essex, and Commonwealth of Massachusetts, have invented a Machine for Making Metal Cylinders, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for making cylinders out of sheet metal strips or ribbons by coiling said ribbons about each other and uniting them with solder.

Referring to the drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is an end view thereof, looking toward the left. Fig. 3 is an end view thereof, looking toward the right. Fig. 4 is an elevation of a section on line 4 4 of Fig. 1, looking toward the left. Fig. 5 is an elevation of a section on line 5 5 of Fig. 1, looking toward the right. Fig. 6 is an elevation of a section on line 6 6 of Fig. 1, looking toward the right. Fig. 7 is an elevation of a section on line 7 7 of Fig. 1, looking toward the left. Fig. 8 is a longitudinal vertical section of the machine, and Figs. 9 and 10 are details to be referred to and described hereinafter.

In forming cylinders by coiling ribbons of sheet metal about each other and uniting them together with solder I have found it desirable to coat the ribbons with a surface-coating of soldering material before they are wound, and subsequently to being thus prepared the ribbons are wound and united simultaneously. It is a mechanism designed for winding and uniting the ribbons that comprises this my present invention. To that end I provide a hollow mandrel A, which is fixed upon a suitable supporting-frame, (see Figs. 1 and 8,) and this mandrel is heated from the inside by gas-flame issuing at the various points from a suitable conducting-pipe, as B. The ribbons of sheet metal are conducted through guides E E and are wound about the mandrel A. The cylinder is composed of two or more ribbons, which to that end are wound about the mandrel A, with their joints alternating with each other—i. e., with the joints formed by one ribbon overlapping the metal of the other adjacent ribbon. The mandrel A is heated to a degree so that when the metallic ribbons bear upon the surface of the mandrel a sufficient heat

is imparted thereto to cause the surface-coating of solder on the metallic strips to become softened and melted, so that when the ribbons bear upon each other they become united. To this end a suitable soldering-flux, as rosin or acid, may be applied.

In starting the formation of a cylinder the ribbons are coiled about the mandrel by the hands of the workman and a short section cylinder is thus formed. This section is sufficiently long to extend over the mandrel and also over a cooling-drum H to a clamping device K, whereby the end of said cylinder is clamped. Said clamping device is mounted upon a carriage N, which in turn is mounted upon suitable ways and provided with the mechanism whereby a longitudinal movement of said carriage N is effected. During this longitudinal movement of the carriage N the clamping device is given a rotary movement, to the end that the cylinder shall be turned about the mandrel A for winding the ribbons and also drawn longitudinally as fast as formed. The cooling-drum H comprises an outer jacket having an inner chamber a, leading from which are pipes e b. Said chamber a is constantly supplied with cold liquid, as water, which is conducted thereto through the pipe e and exhausted through the pipe b. In this manner the shell or jacket of the drum is kept cool, and the outer surface of said jacket is arranged to be in sliding contact with the ribbons of the cylinder while passing over the same. By this arrangement the soldering between the ribbons is set. The conducting-pipes e b are extended throughout the length of the ways traveled by carriage N, and to this end central openings are made through the carriage N and its supported mechanism to accommodate said pipes. The clamp K is composed of two parts hinged at the rear, (see Fig. 6,) adapted to be drawn together by suitable clamping-screw f.

In operation the end of the cylinder is clamped tightly within said clamps. The lower members of the said clamps are secured to a gear S, and said gear is mounted on the carriage N through intermediate supporting-rolls 4 4, which rolls are arranged on studs extending from the carriage N and bear upon the inner face of the gear-wheel S, as more specifically shown in Figs. 1, 6, and 8. Fig.

9 is a detail of one of said rolls and its supporting-stud. The rotary movement of the gear S and the clamp K to wind the metal is effected by a gear 5, mounted to slide on a rod 5 6 and communicating with the driving mechanism through an intermediate gear 7, as represented.

The longitudinal movement of carriage N is effected by a mechanism consisting of gear 10 8 on the driving-shaft and intermediate gear 9, screw-shaft 10, and engaging prongs supported on the carriage and meshing with the screw on shaft 10.

In operating the machine the cylinder is 15 clamped by clamp device K, and the carriage N set in motion simultaneously with this movement, the clamp is made to revolve, thereby turning the cylinder and feeding it forward progressively. The mandrel A is 20 but a short section, which, being constantly heated, allows the cylinder to turn in sliding contact therewith. The metallic ribbons are thus drawn through their respective guides and wound spirally about each other. A wheel 25 15 is arranged to travel on the seam formed by the outer ribbon in coiling, so as to keep it well down and in contact with the inner ribbon, which constitutes a sort of core for the outer ribbon to wind about.

30 Having thus described my invention, I claim—

1. In a machine for making cylinders, the combination of a mandrel, as A, and means for continuously heating the same, a cooling-

drum, as H, and means for continuously cool- 35 ing the same, and a longitudinally-movable revolving clamp mechanism for clamping and drawing the cylinder, substantially as described.

2. In a machine for making cylinders, in 40 combination with the mandrel A, the guides E E and presser-wheel 15, substantially as described.

3. In combination with the mandrel A and means for continuously heating the same, the 45 clamp K, means for supporting said clamp, and means for giving the same a rotary and longitudinal movement, substantially as set forth.

4. In a machine for making cylinders, the 50 combination, with a heated mandrel and means for winding metallic strips or ribbons into a cylinder around the mandrel, of a cooling drum, whereby the cylinder when formed is progressively cooled, substantially as and 55 for the purposes described.

5. In a machine for making cylinders, the combination, with a mandrel, as A, and guides E E, of a clamp device, as K, and means for giving said clamp device a revolving and a 60 longitudinal movement, substantially as set forth.

Signed at Boston, Massachusetts, this 31st day of December, A. D. 1888.

EDWARD K. COAS.

Witnesses:

E. E. HAMILL,

C. B. TUTTLE.