March 23, 1937. H. S. ORR 2,074,968

REEL

Filed Dec. 13, 1935 2 Sheets-Sheet 1

Fig. 1.

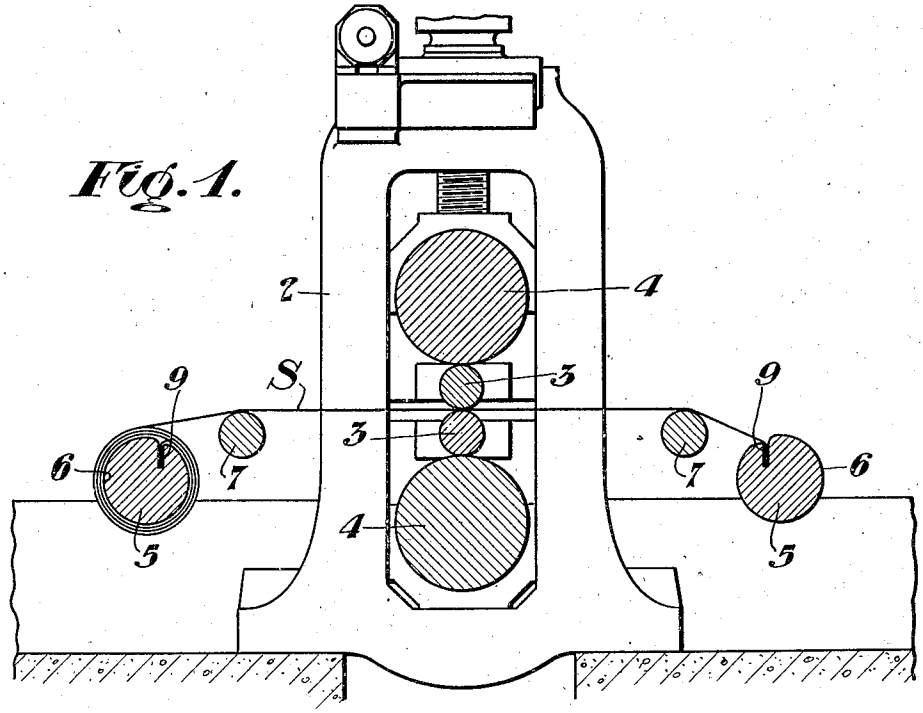
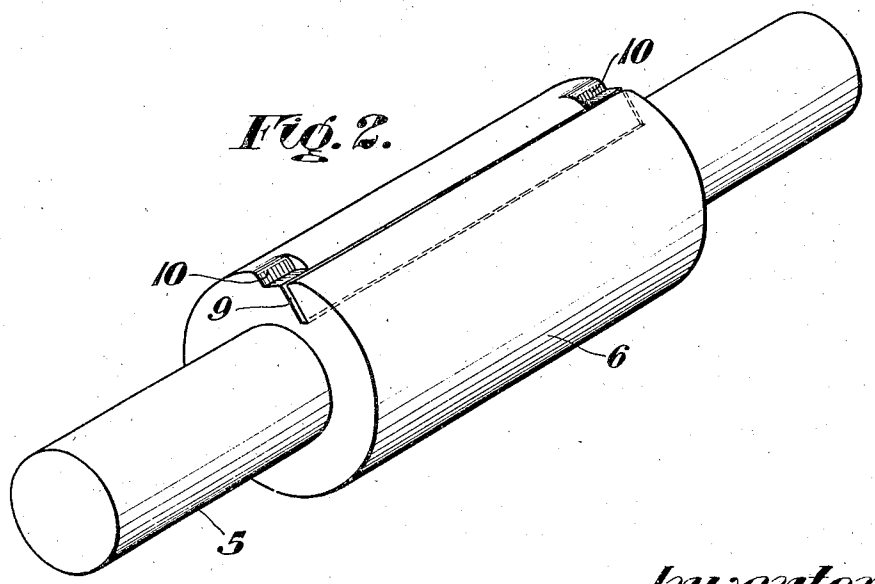


Fig. 2.



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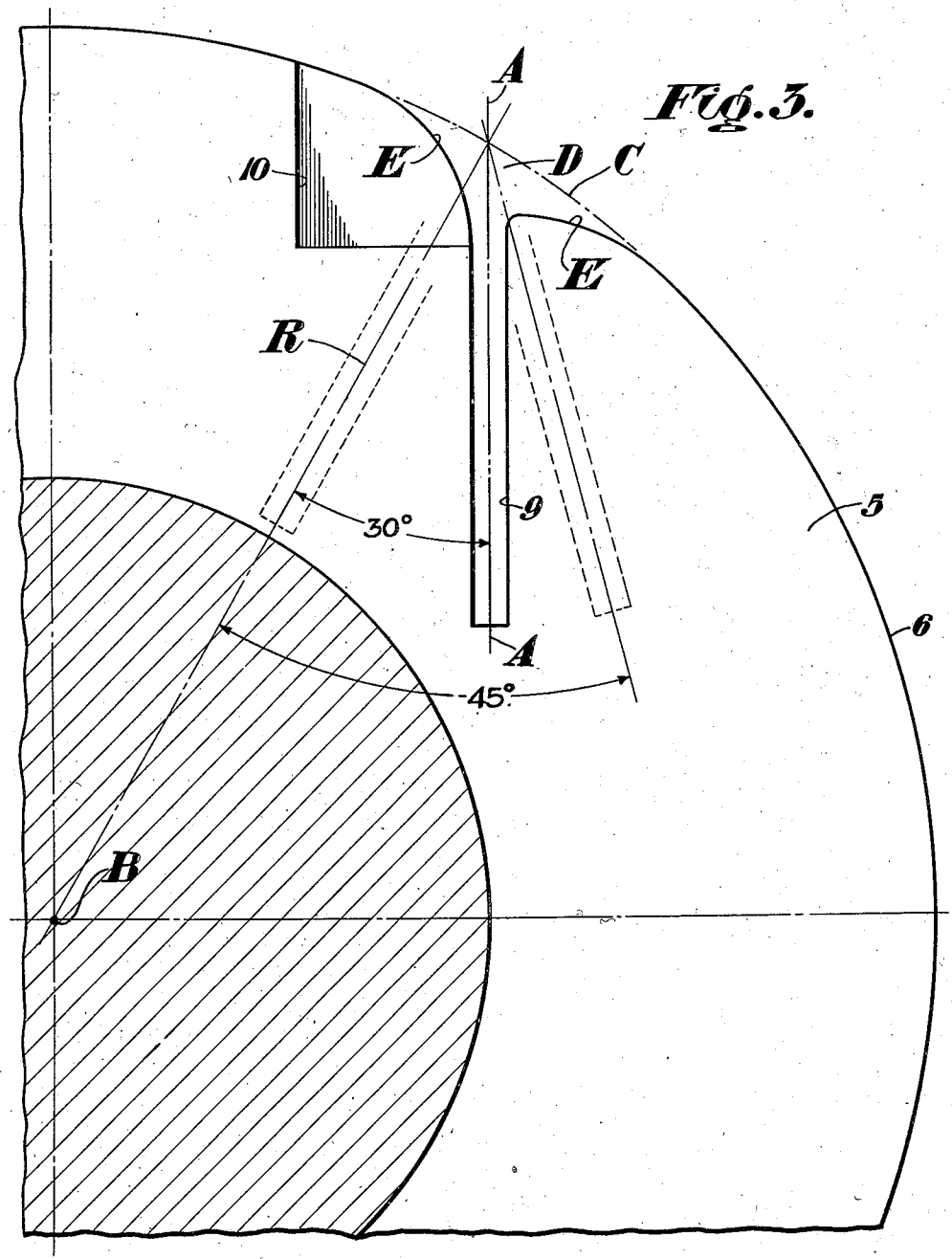


Fig. 3.

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UNITED STATES PATENT OFFICE

2,074,968

REEL

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Application December 13, 1935, Serial No. 54,335

2 Claims. (Cl. 242—74)

This invention relates to reels and more particularly those which are adapted for the reeling or winding of heavy and relatively wide strip metals as they exit from hot or cold rolling mills, although not limited thereto.

In the production of heavy and relatively wide strip metals of extreme lengths, it is well known that production costs are greatly influenced by the rapidity with which the reeling or winding can be accomplished. In the conventional operation of rolling mills the time necessarily utilized to secure the forward end of a long length of strip metal onto a winding reel is objectionable and the loss of time thus incurred materially affects production costs.

In the majority of strip metal mills the work-piece is tensioned. This tension ranges from a "full" tension necessary to actually pull the strip through idle metal-working rolls to a "low" tension only sufficient to maintain it taut and flat as it leaves a mill employing driven metal-working rolls.

The problem of tensioning the work-piece as it is wound onto the delivery reel necessitates delay for its end to be securely attached to the latter. Such securing of the end of the coil to the winding reel is well known to those skilled in the art through the use of a slot cut in the face of the reel and parallel to the axis thereof. The end of the strip is sometimes inserted into a slot in the reel and thereafter so alined with respect to the mill that the tension pull in either direction is uniform across the entire width of the strip, whereby its tearing is prevented.

Following the alining of the strip, it is then securely locked in the slot by various expedients; such as manually operated wedges, grips and other locking devices. These expedients are satisfactory only in proportion to the construction of their mechanism, and frequently give trouble.

In lieu of these expedients the strip is frequently wound or wrapped several times about the reel and tension applied to effect the binding of its end to the reel. Such a procedure involves wastage of product and any waviness or buckling encountered affects the smooth wrapping of succeeding convolutions.

It is among the objects of the present invention to provide a novel reel to which the end of a strip may be very efficiently secured.

Another object is the provision of a reel which enables the firm attachment of the end of a strip without resorting to any of the troublesome expedients previously discussed.

Still another object is to provide a reel of the type described, which not only effects the firm attachment of the end of a strip but one which also enables its self-shifting or equalization so that the tension is uniform across its entire width.

These and other objects will become apparent after referring to the drawings, in which:

Figure 1 is a sectional elevation of a single-stand reversing type four-high cold reduction mill utilizing pay-off and take-up reels embodying the teaching of my invention.

Figure 2 is a perspective of one of the reels of Figure 1.

Figure 3 is a fragmentary detail of the reel.

Referring more particularly to the drawings, the numeral **2** designates generally the single-stand reversing type four-high cold reduction mill of Figure 1. This mill **2** is composed of a pair of metal-working rolls **3**, each of which is backed-up by a substantially larger backing-up roll **4**. The metal-working rolls **3** may or may not be driven, depending upon the method of reduction employed.

A driven reel **5** is supported on either side of the metal-working rolls **3** for paying-off or taking-up the strip S which is being reduced and which is guided thereto and therefrom by a pair of intermediately disposed guide rolls **7**. Each reel **5** is made up of a cylindrical body portion **6** which is provided with a rectangular shaped slot **9** whose plane is parallel to a similar plane through its axis. This slot **9** is so formed that its plane A is at an angle of not less than 25°, or more than 60° to a radius line R drawn between the center B of the reel and the intersection of the plane A with its peripheral line C.

In order that the teaching of the invention may be fully understood, a specific embodiment of the reel is as follows: For handling 10 to 16 gage (.138 inch to .062 inch) strip S the reel **5** may be 30 inches in diameter and provided with a slot which is one-half inch in width and 8 inches deep. This slot **9** extends throughout the length of the body portion **6** of the reel.

The contact face presented by the body portion of the reel is its entire circumference with the exception of that area D whose width is determined by the length of the exposed portion of the line C. This area D gradually tapers toward the opening of the slot **9**, as shown at E. This tapering E prevents the formation of humps or welts in the bent strip to contact succeeding convolutions which would make impressions therein.

In order to facilitate the insertion of the end of the strip S in the slot **9**, recesses **10** are formed

in the body portion 6 of the reel 5 which open on the ends of the slot. These recesses provide space for grasping the edges of the strip S, whereupon it may be more readily forced. This is especially effective when the end of strip is bent or wavy.

The end of the strip S is more easily inserted in the slot 9 when the reel is rotating; and after the plane of the slot 9 passes the vertical center line of the reel the strip will be very securely held.

While I have shown and described one specific embodiment of my invention it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined by the following claims.

I claim:

1. A reel comprising a cylindrical body portion having a longitudinal slot therein, one of the side walls of said slot having recesses at both of its ends, each of said recesses extending away from said side wall and outwardly to the periphery of said cylindrical body portion, whereby the manual insertion of the material to be reeled into said slot may be facilitated.

2. A reel comprising a cylindrical body portion having a longitudinal slot therein, the center line of said slot being at an angle not less than 25 degrees from the radial line extending from the axis of said reel to the point of intersection of said center line with the periphery of said cylindrical body portion, one of the side walls of said slot having recesses at both of its ends, each of said recesses extending away from said side wall and outwardly to the periphery of said cylindrical body portion, whereby the manual insertion of the material to be reeled into said slot may be facilitated.

HOWARD S. ORR.