

(No Model.)

W. GARRETT.

CONDUCTOR FOR WIRE ROD MILLS.

No. 318,613.

Patented May 26, 1885.

Fig. 1.

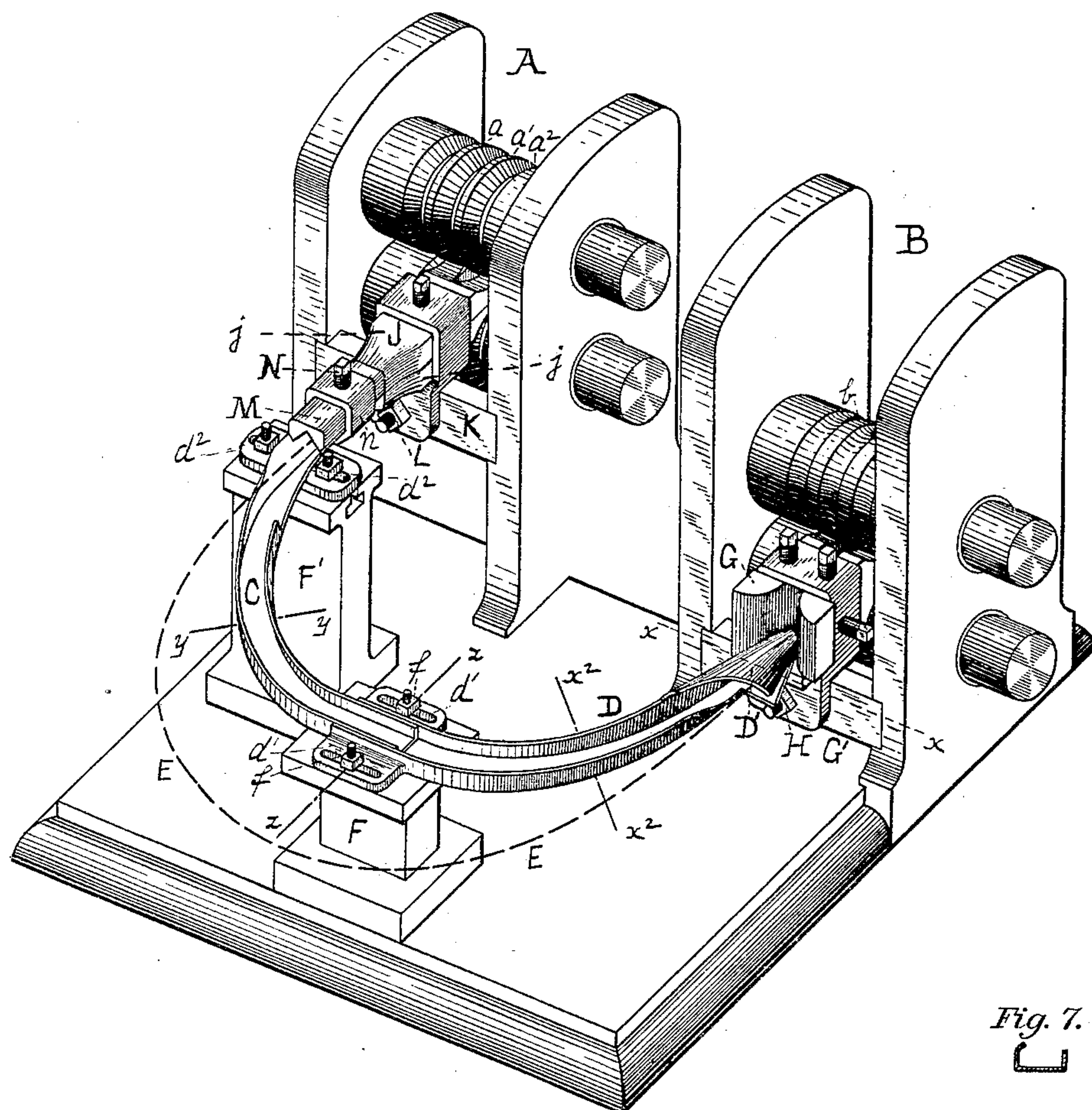
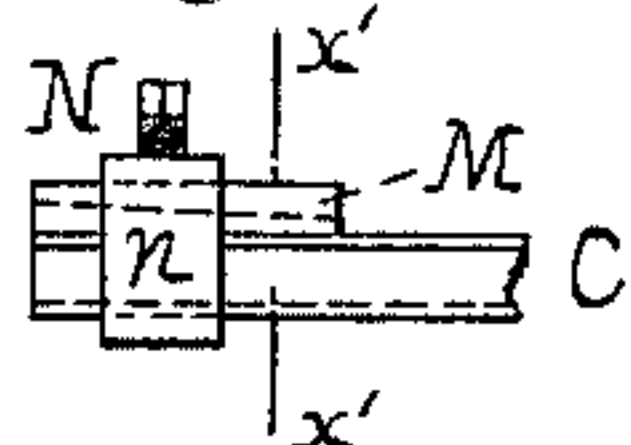


Fig. 7.

Fig. 2.



Witnesses.

W. B. Corwin  
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Fig. 3.

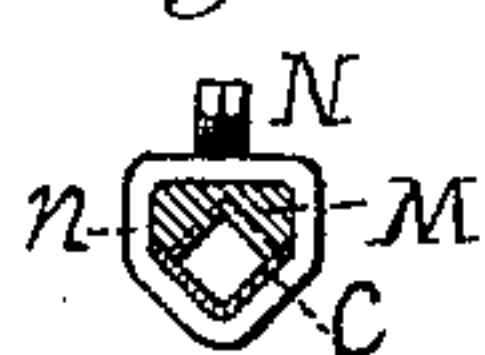


Fig. 4.

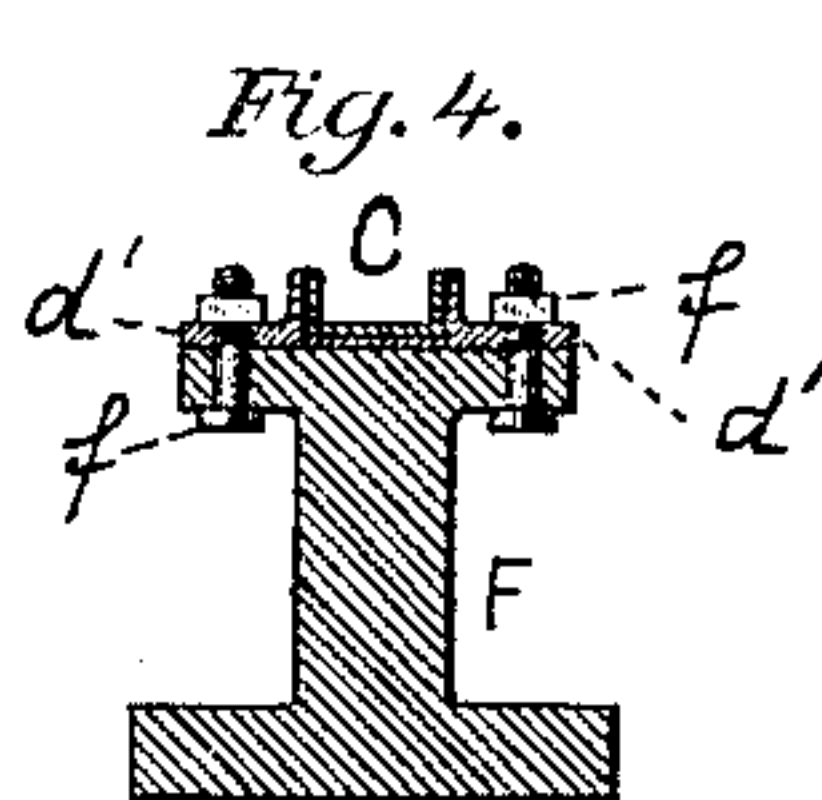


Fig. 5.



Fig. 6.



Inventor.

William Garrett  
by Baskwell & Kerr  
his Attorneys.



# UNITED STATES PATENT OFFICE.

WILLIAM GARRETT, OF PITTSBURG, PENNSYLVANIA.

## CONDUCTOR FOR WIRE-ROD MILLS.

SPECIFICATION forming part of Letters Patent No. 318,613, dated May 26, 1885.

Application filed January 15, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GARRETT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Conductors for Wire-Rod Mills; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of a set of rolls provided with my improved guide. Fig. 2 is a side elevation of a part of the guide shown in Fig. 1. Fig. 3 is a cross-section on the line  $x'x'$  of Fig. 2. Fig. 4 is a cross-section on the line  $zz$  of Fig. 1. Fig. 5 is a section on the line  $yy$ ; Fig. 6, a section on the line  $xx$ ; and Fig. 7, a section on the line  $x^2x^2$  of the same figure.

Like letters of reference indicate like parts.

My invention relates to an improvement in that class of guides for wire-rod rolls which is illustrated in Letters Patent of the United States No. 196,371, granted on the 23d day of October, 1877.

It consists in providing such a guide with improved means of adjustment for delivering the rods to different grooves or passes of the rolls, and in several details of construction, which will hereinafter be indicated.

An objection to the guides now in common use is that while they may work well when delivering rods from a groove in one set of rolls to the corresponding groove in the adjacent set, their action is imperfect when one end of the guide is moved to deliver to a different groove. This will be intelligible by reference to the drawings, in which A B indicate two adjacent sets of rolls of the usual construction, each pair being provided with several pairs of grooves,  $a a'$  and  $b b'$ . The rod in the process of rolling is passed into one of the grooves between the rolls A, and in its exit therefrom enters a conductor, C D, which consists of a semicircular grooved or guttered guide, the preferable shape of which is shown in Figs. 1, 4, 7, and 5. The guide C D extends from a point opposite to a groove of the rolls A to a groove on the other rolls, B, and causes the rod, as it is fed from the former, to follow the

groove of the conductor into the latter rolls without the necessity for further guiding. The initial direction of the rod is of great importance, for as soon as the end of the rod has entered the rolls B, the fact that it is fed from the rolls A more rapidly than it can be taken up by the rolls B causes the rod to rise over the rear side of the guide and to form an enlarged loop outside of it, as shown by dotted lines E in Fig. 1. The size of this loop increases until the end of the rod emerges from the rolls A. The function of the conductor C D is therefore to start the rod in the right direction, and not to guide it continually during the rolling operation. It is usual to make the grooves of the pairs of rollers A B of different shapes. For example, to make the grooves in B oval, and those in A square or polygonal in cross-section. The polygonal grooves, however, will wear better and last longer than those of a regular curvature, so that when one groove is too much worn to be useful the corresponding end of the guide C D must be shifted so as to guide or receive the rod into or from a different groove. Heretofore this has been done by providing the exit of the guide with a pivoted tube, which is turned so as to point to one pass or the other as need be. The other end of the guide has been made movable by mounting it upon a slide on the cross-bar of the roll-frame. When, however, the pivoted guide-piece is turned so as to make the course of the conductor of irregular curvature, the rod cannot be fed regularly through it, but is apt to buckle or bend at the pivotal point, and to leave the guide prematurely before entering the second pair of rolls. When the pivoted guide is turned from its normal position toward a new groove, it will not point directly to the groove, but at an angle to it. This necessitates the enlarging of the opening of the guide-box usually at the end of the conductor, and causes the rod to enter the collar of the groove, thereby producing a fin upon the rod. On entering the next pass of the rolls this fin will produce what is commonly known as a "bad end" upon the rod, and this bad end will prevent the rod entering the third pass at all.

It is the object of my invention to overcome



these difficulties and to provide a conductor which will deliver and receive the rod to and from the rolls in a normal line to any groove to which it may be adjusted. The conductor C D is divided in the middle, as at  $d'$ , and one of the sections, C, thus formed is made of less width than the section D, so that the former may be slid or telescoped within the latter. There is a stand or support, F, upon which the lower guide-section, D, rests at or near its outer end. The section D is there provided with lateral flanges  $d'$ , which rest upon the stand F, and are provided with longitudinal slots, through which bolts  $f$  pass and are secured to the stand F. The section D is thus movable upon the stand, and may be secured in any desired position by means of nuts mounted upon the bolts  $f$ . Moving the section on the stand will cause its mouth to shift from one groove of the rolls B to another, as desired. The end of the other section, C, is movable within the lower section, D, so as to bring the mouth of the former in opposition to any groove on its rolls A. The end of the section D next the rolls B is preferably arched over in a trumpet or flaring form, as at  $D'$ ; but the arch so made is not completely joined, as in a tube, but is open on the outside, (see Fig. 6,) so as to leave a small space for getting at the rod in case it should become kinked or buckled. The guide mouth-piece  $D'$  leads either directly into the groove of the rolls B or, as shown in the drawings, into a flaring guide-box, G, which is mounted upon a slide,  $G'$ , on the frame of the rolls, so as to be movable from side to side thereon. The guide-box G is adjustably secured to the slide  $G'$  by means of a bolt and nut, H, or other suitable clamp. The inner end of the other section, C, which is the mouth of the conductor, rests upon a suitable stand or support,  $F'$ , and abuts against a guide-box, J, which is adjustably mounted upon a cross bar, K, on the frame of the rolls A in a manner similar to the arrangement of the guide-box G. This box J may be formed of two grooved or hollow sections,  $j j$ , which are held together by a suitable band or socket, as is clearly shown in the drawings, the ends of the sections being tapered and leading to the grooves in the rollers. The function of the guide-box J is to receive the rod from the rolls A and to deliver it to the conductor C D. The end of the section C which abuts against the guide-box J is provided with a cap or cover, M, which converts this end into a tubular or box form, and is preferably made detachable from the conductor, as shown in the drawings. In the latter case it consists of a simple plate, and it is secured to the section C by means of a band,  $n$ , which surrounds the section and the plate and is tightened by a set-screw, N.

Other suitable means for fastening the cap M may be employed; or they may be dispensed with altogether, and the cap kept in place by its own gravity. The function of

the cap M is of importance, for the reason that it serves as a guide to prevent the end of the rod from bending upward out of the conductor C D, and thus losing the necessary initial direction to guide it to the rolls B. This has been found to be a serious difficulty in the employment of guides of this class, and has necessitated the continual attention of the workmen to this point. The mouth of the section C is preferably provided with integral lateral flanges adapted to rest upon the stand  $F'$ . These flanges are slotted and adjustably secured to the stand by bolts  $d''$  in the manner and for the same purpose as the arrangement of the flanges  $f$  and bolts  $d'$  of the section D. If, now, it be desired to shift the conductor so as to receive or deliver the rod from or to a different groove—say to move the mouth of the section C to an outer groove,  $a$ , on the rolls A—the bolt L is loosened and the guide-box J moved to a proper position on the slide K to center the guide properly with the groove. The bolts  $d''$  are then loosened, and the outer end of the section C is then moved correspondingly within the section D, so as to lengthen the diameter of the conductor.

The sections C and D are preferably straightened somewhat near their ends of union, so that they may be telescoped or slid apart without changing their angles of incidence with the rolls. The same result may be had by making the inner end of the section D of considerably greater width than that of the upper section, C.

When the mouth of the section D is to be moved from one groove to another, the guide-box G is moved, as before described, the bolts  $f$  are loosened, and the section is moved upon the stand F and again bolted at the desired position.

The bolts  $f$  and the slotted flanges  $d'$  may be omitted; but they are of convenience in steadying the conductor.

I do not desire to claim, broadly, a guide formed in two or more telescopic sections, as I am aware that guides have been so constructed for the purpose of increasing or decreasing the length of the same longitudinally.

Having thus described my improvement, so that others skilled in the art may manufacture and use it, what I claim as my invention, and desire to secure by Letters Patent, is—

1. A guide for wire-rod rolls, consisting of a curved conductor formed of two or more sections having their meeting ends so shaped and telescopically united on a line at a sufficient angle with the line of the feed of the rolls as to enable the distance on a straight line between the adit and exit extremities of the conductor to be increased or decreased by moving the sections telescopically one within the other, substantially as and for the purpose specified.

2. The combination, in a conductor for wire-  
rod rolls, of the two curved sections C and  
D, the section C being capable of being tele-  
scoped or moved within the other section,  
5 substantially as specified, said section D be-  
ing supported by a stand or support and ad-  
justably attachable thereto, as and for the pur-  
poses described.

In testimony whereof I have hereunto set  
my hand this 12th day of January, A. D. 1885.

WILLIAM GARRETT.

Witnesses:

W. B. CORWIN,

THOMAS W. BAKEWELL.