

(No Model.)

J. N. WHITMAN.

APPARATUS FOR REELING METALLIC BANDS.

No. 386,908.

Patented July 31, 1888.

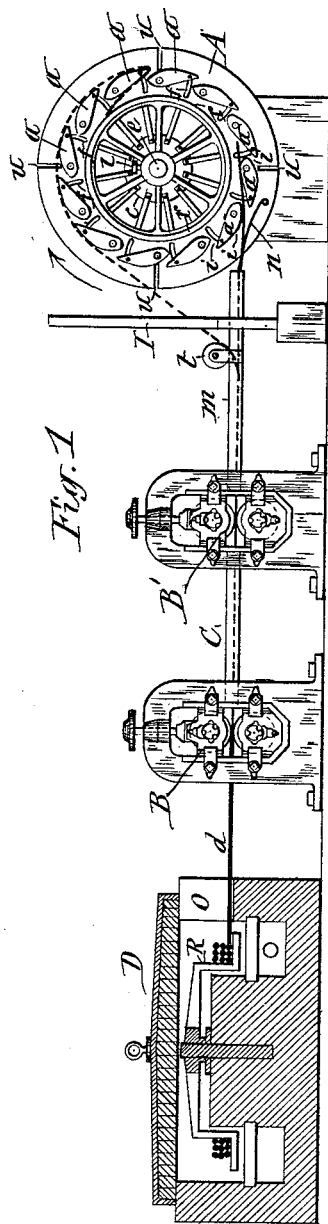


Fig. 1

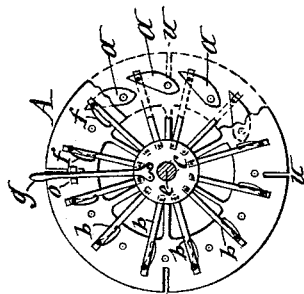


Fig. 3

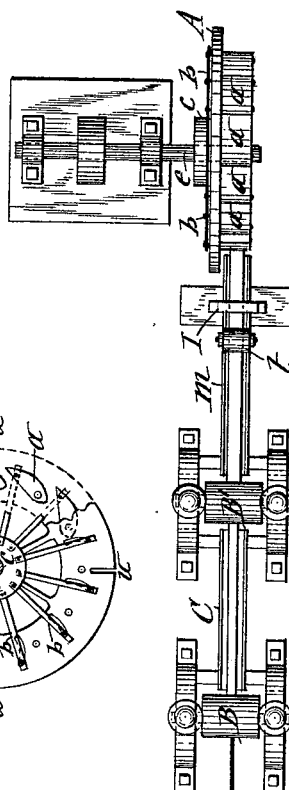


Fig. 2

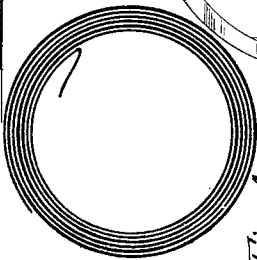
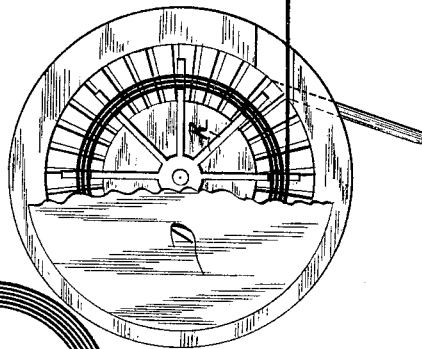


Fig. 5

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JAMES N. WHITMAN, OF FULTON, NEW YORK.

## APPARATUS FOR REELING METALLIC BANDS.

SPECIFICATION forming part of Letters Patent No. 386,908, dated July 31, 1888.

Application filed October 20, 1887. Serial No. 252,875. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES N. WHITMAN, of Fulton, in the county of Oswego, in the State of New York, have invented new and useful  
5 Improvements in Apparatus for Reeling Metallic Bands, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The object of this invention is to manufacture hoop or band metal of superior quality,  
10 wound into merchantable coils, at a minimum expenditure of time and labor; and to that end my invention consists in the novel combination of reducing-rolls and finishing-rolls communicating with each other by guides conveying  
15 the material in one direction from one set of rolls to another, a furnace for heating the billet or bar preparatory to introducing the same between the first set of reducing-rolls, a reel in range with the finishing pass, and a guide  
20 extended from the finishing-rolls tangentially to the said reel.

The invention furthermore consists in a novel construction of an automatic reel specially  
25 adapted for my improved process of producing coiled hoop or band metal; and the invention also consists in the employment of certain auxiliary devices in connection with the aforesaid rolls and reel, all as hereinafter more fully described, and specifically set forth in the  
30 claims.

In the annexed drawings, Figure 1 is a side elevation of a rolling-mill embodying my invention, the furnace being shown in vertical  
35 transverse section to better illustrate the construction and operation of the same. Fig. 2 is a top plan view of said rolling-mill. Fig. 3 is a detached rear elevation of the reel, and Fig. 4 presents plan and edge views of a coil  
40 of hoop or band metal produced by my improved method and means.

Similar letters of reference indicate corresponding parts.

B represents the first set of reducing-rolls of  
45 a rolling-mill, and B' the finishing-rolls. Additional sets of reducing-rolls may be arranged between the aforesaid two sets of rolls in case the hoop or band is to be rolled from a large  
50 arranged one in front of the other and in range therewith, so as to permit of transferring the material operated on from rolls to rolls in one direction. Guides C C, secured between the different sets of rolls and in range with the

same, serve to automatically transfer the material as aforesaid. 55

D denotes the furnace in which to heat the bar or billet preparatory to introducing the same between the first reducing-rolls, B. The  
60 peculiar construction of said furnace I reserve for the subject of another application for Letters Patent. It is sufficient here to merely state that a reel, R, is pivoted in the furnace D, and the rod from which the hoop or band is  
65 to be rolled is wound upon said reel and is drawn endwise out through an opening, O, in the side of the furnace and introduced between the first reducing-rolls, as shown at *d* in Figs. 1 and 2 of the drawings. I do not, however,  
70 limit myself to any particular form of furnace or material.

A represents an automatic gripping-reel, which is mounted on a rotary horizontal shaft,  
75 *e*, and rotates in a vertical plane. Said reel is in range with the finishing pass of the rolling-mill, and has an annular series of grippers, *a a*, of the form of elongated blocks, pivoted at one end to the face of a disk or spider, A, so  
80 as to swing in a plane parallel with that of said disk or spider and sustained adjustably in their respective positions by means of a collar, *c*, pivoted on the shaft *e* and connected with the respective grippers by rods *b b*, pivoted at one end on the said collar and connected at  
85 their opposite ends to the respective grippers by pins passing through slots *f f* in the disk A, and secured to the aforesaid rods and to the free ends of the grippers. A lever, *g*, is rigidly  
90 secured to the collar *c* for the purpose of turning the same when required. The turning of said collar throws the free ends of the grippers in and out or toward and from the axis of the reel. A catch, *o*, is secured to the  
95 back of the reel and adapted to retain the lever *g* in its desired position. The described grippers are arranged so as to form between them tangential entrances *i i* for the end of the  
100 hoop or band to be wound upon the reel. The reel I mount adjustably on its shaft, so as to permit of properly setting it in range with the finishing pass of the rolling-mill. The reel is  
105 secured in its adjusted position by a set-screw, *l*, passing through the hub of the reel and engaging the shaft. From the pass of the finishing-rolls B' toward the base of the reel A and tangential to the latter is extended a guide, *m*, for conducting the finished hoop or band to the reel. Said guide terminates with an elas-

tic guide, *n*, which conducts the advancing end of the hoop or band into the entrance *i* between two of the grippers *a a*, which latter are set with their free ends into their extreme outer position, as illustrated in Fig. 1 of the drawings. The reel being in motion in the direction indicated by an arrow, causes the end of the hoop or band to be drawn around and gripped between one of the grippers *a* and a flange or rim, *r*, on the disk *A*, as indicated by dotted lines in Fig. 1 of the drawings, and the hoop or band thus held is wound in a coil upon the exterior of the series of grippers. In order to maintain the coiled hoop or band with its edges in a uniform plane, I erect from the guide *C* a stationary vertically-slotted guide, *I*, arranged parallel with the plane of the reel; and to insure compact winding of the hoop or band I pivot across one of the guides, preferably the guide *C*, a roller, *t*, underneath which the hoop or band passes. The guide *n*, being elastic, allows the same to conform to the enlargement of the coil of the hoop or band in process of being wound upon the reel. The completed hoop or band is thus wound into merchantable coils, as illustrated in Fig. 4 of the drawings.

In order to permit of tying the coil while on the reel, I provide said reel with slots *u u*, extending from the periphery thereof inward past the exterior of the grippers *a a*. Said slots allow wires to be passed transversely around different parts of the coiled hoop or band and tied thereon. Then by turning the lever *g* the free ends of the grippers can be drawn toward the center of the reel, and thus caused to release the coiled hoop or band, which is then readily removed from the reel.

The described rolling-mill, with its appurtenances, requires only two attendants—viz., one to pass the material from the furnace *D* to the first set of reducing-rolls, *B*, and the other attendant to stop the reel and remove therefrom the coiled up finished hoop or band and restart the reel.

The heated bar or billet, after it is introduced into the first reducing-rolls, is conducted automatically through the succeeding rolls and into the automatic gripping-reel *A*, and the only manipulations required are at the furnace which heats the material preparatory to the rolling thereof and at the completion of the coiled hoop or band.

The described method of manufacturing hoop or band metal wound into merchantable coils constitutes the subject-matter of another application for Letters Patents filed by me December 29, 1887, and known as "Serial No. 259,324."

What I seek to protect by Letters Patent in this present application is—

1. In combination with a rolling-mill, an automatic gripping-reel having an annular series of grippers with tangential entrances for the hoop or rod between the grippers, as set forth.

2. The improved reel herein described, consisting of a pivoted disk or spider, and an annular series of grippers pivoted on the face of said disk or spider to swing in a plane parallel with the same and sustained adjustably in their positions, as set forth and shown.

3. In combination with a rolling-mill, an automatic gripping-reel having an annular series of grippers with tangential entrances for the hoop or rod between the grippers and a guide arranged tangentially to the reel and in range with the aforesaid entrances, as set forth and shown.

4. In combination with a rolling-mill, an automatic gripping-reel having an annular series of grippers with tangential entrances for the hoop or rod between the grippers, and an elastic guide arranged tangentially to the reel and in range with the aforesaid entrances and adapted to yield to the enlargement of the coil wound upon the reel, substantially as set forth.

5. In combination with a rolling-mill, a reel provided with an annular series of grippers with tangential entrances between them, and a guide arranged tangentially outside of the reel and in a uniform plane parallel with that of the reel, as described and shown.

6. In combination with a rolling-mill, a reel provided with an annular series of grippers and with tangential entrances between said grippers, a guide in range with said entrances, and a guide arranged tangentially outside of the reel and in a uniform plane parallel with that of the reel, substantially as described and shown.

7. In combination with a rolling-mill, a reel revolving in a vertical plane and provided with an annular series of grippers and with tangential entrances between the grippers, a guide in range with said entrances at the base of the reel, a guide arranged vertically tangentially outside of the reel and in a uniform plane parallel with that of the reel, and a guide-roller on one of said guides, substantially as described and shown.

8. The improved automatic gripping-reel consisting of the disk *A*, the elongated gripping-blocks *a a*, each pivoted at one end on the face of said disk, the collar *c*, pivoted concentric with the disk or spider, and the rods *b b*, connecting said collar with the free ends of the gripping-blocks, substantially as described and shown.

9. The reel *A*, provided with grippers *a a*, and slots *u* between said grippers, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 18th day of October, 1887.

JAMES N. WHITMAN. [L. s.]

Witnesses:

H. P. DENISON,  
C. L. BENDIXON.