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REEL FOR COILING FLATS AND OTHER SHAPES.

APPLICATION FILED MAY 28, 1909.

1,117,003.

Patented Nov. 10, 1914.

4 SHEETS—SHEET 1.

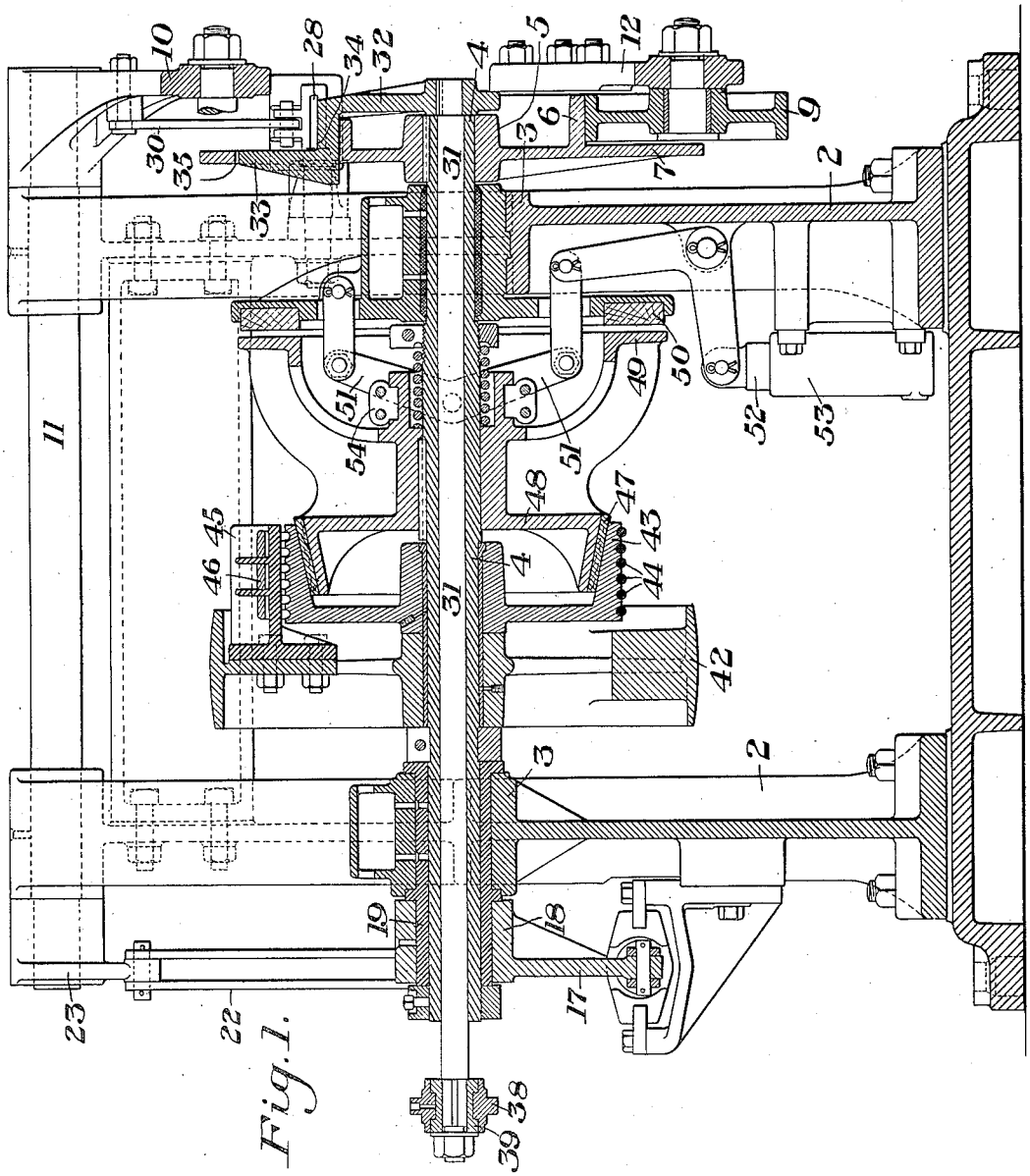


Fig. 1.

WITNESSES

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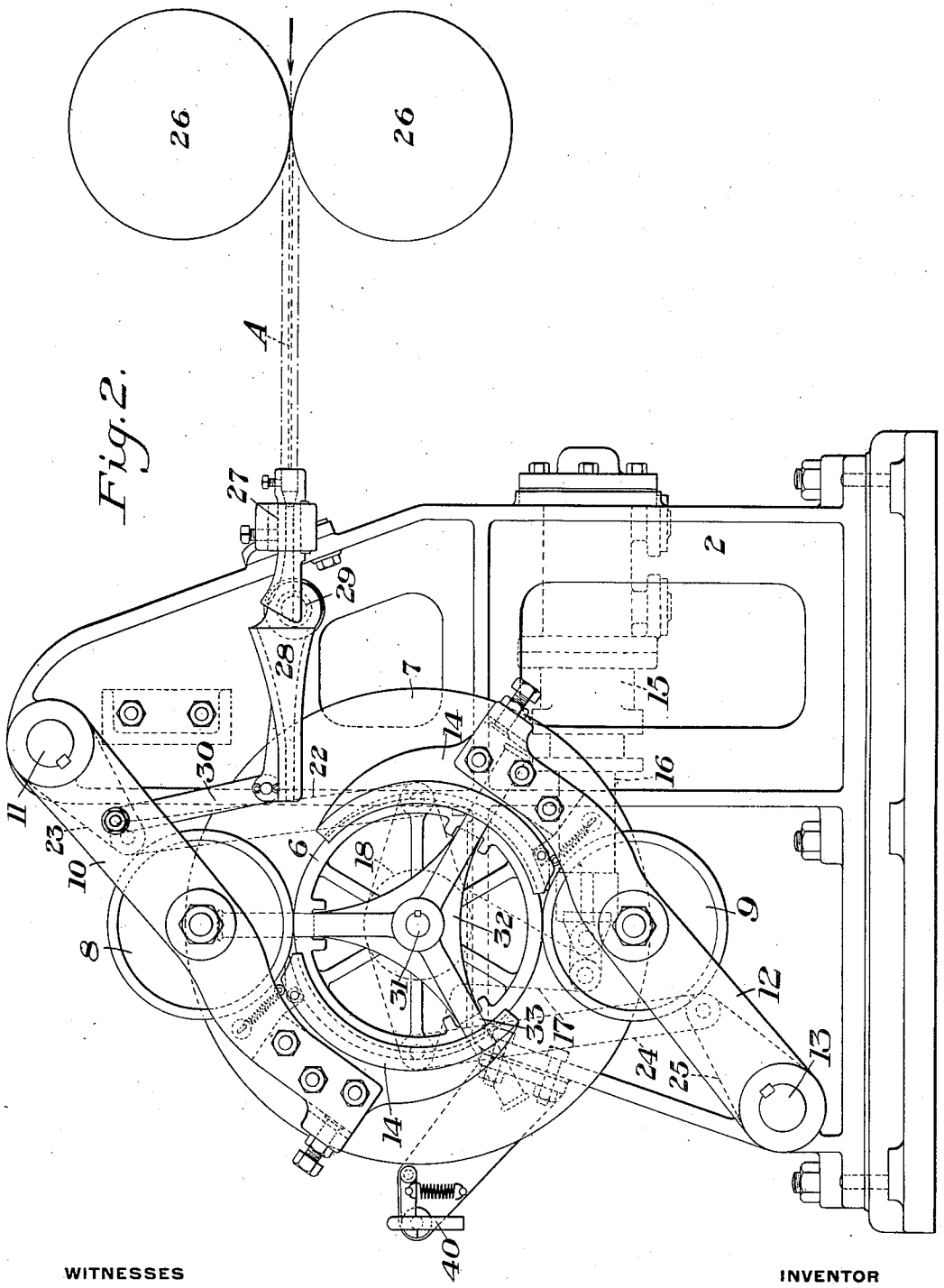
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4 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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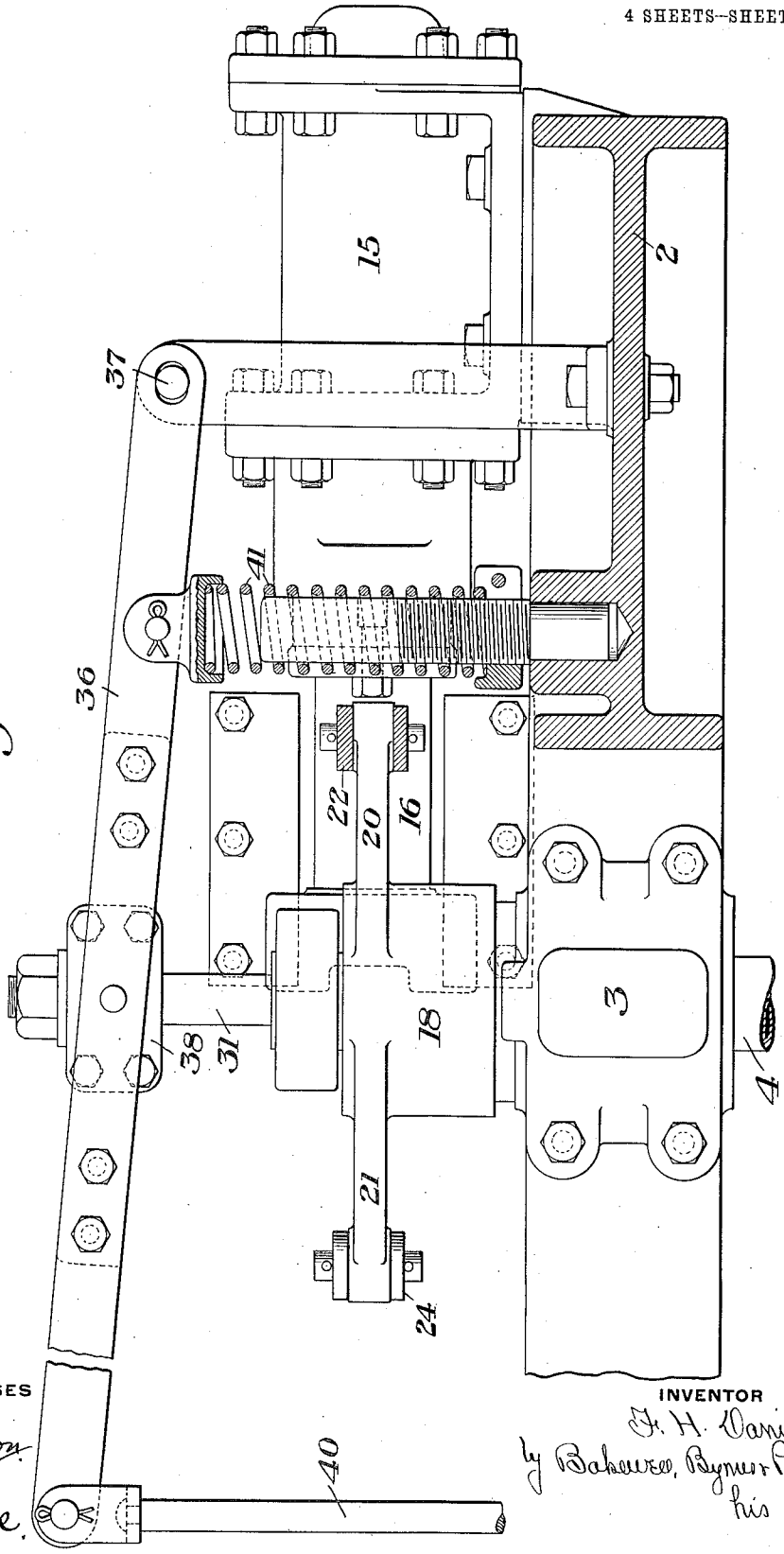
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4 SHEETS--SHEET 3.

Fig. 3.



WITNESSES

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4 SHEETS—SHEET 4.

Fig. 4.

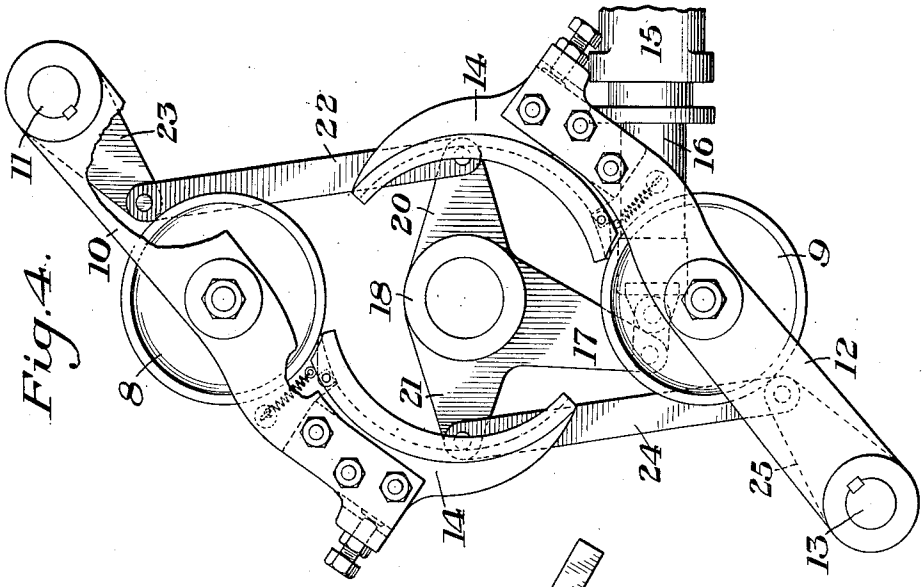


Fig. 5.

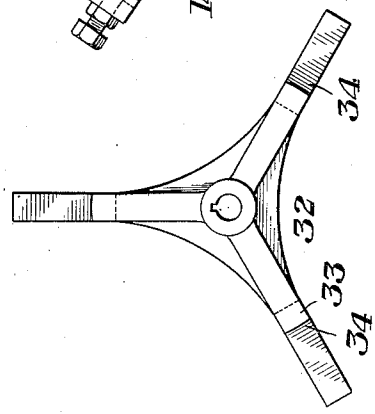
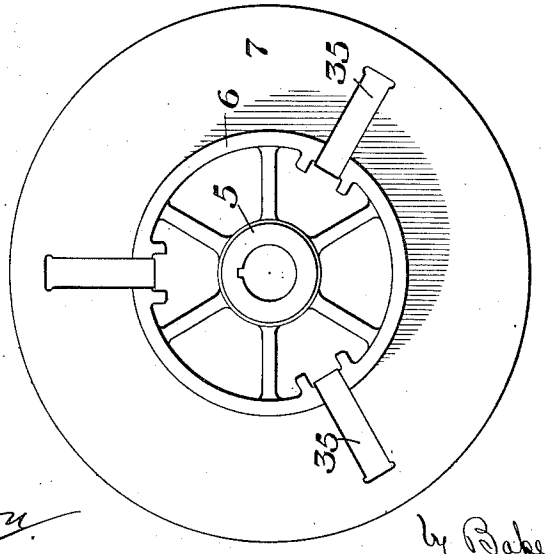


Fig. 6.



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UNITED STATES PATENT OFFICE.

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REEL FOR COILING FLATS AND OTHER SHAPES.

1,117,003. Specification of Letters Patent. Patented Nov. 10, 1914.

Application filed May 28, 1909. Serial No. 498,968.

To all whom it may concern:

Be it known that I, FRED H. DANIELS, of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Reel for Coiling Flats and other Shapes, of which the following is a specification.

My invention has relation to a machine for coiling or reeling flat bars or rods, or other shapes, as they come from a rolling mill, and is designed to provide a machine of this character which will receive the rods or other shapes directly from the mill without the necessity of their being caught by an attendant and without looping out. This permits the reel to be placed close to the finishing rolls of the mill, with the simple form of guide between the rolls and the reel.

A further object of the invention is to provide a coiling or reeling apparatus which is simple in its construction and efficient in its operation, and by which the rolled product may be coiled into a neat and compact bundle with a minimum amount of manual labor.

The nature of the invention will be understood by reference to the accompanying drawings, in which I have shown the preferred embodiment thereof, and which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement of the parts without departing from the spirit and scope of my invention as defined in the appended claims.

Referring to the accompanying drawings forming part of this specification, Figure 1 is a longitudinal vertical section of a machine embodying my invention; Fig. 2 is an end elevation of the same; Fig. 3 is a detail sectional plan on an enlarged scale of the rear end portion of the machine; and Figs. 4, 5 and 6 show details of my improved reel hereinafter more fully described.

In these drawings, the numeral 2 designates the frame of the machine, which is provided with suitable bearings 3 for a hollow shaft 4 supported horizontally in said bearings. Secured to the forward projecting end of the shaft 4 is a collar, which consists of a plate or disk having a central circular portion 5 surrounded by a forwardly projecting flange 6, with a wide marginal portion 7 surrounding said flange. Pressing against substantially diametrically opposite sides of the flange 6, are two pressure rollers 8 and 9. The roller 8 is journaled to an arm or lever 10, which is rigidly secured to a longitudinally extending rock shaft 11 mounted in suitable bearings at the upper portion of the machine; and the roller 9 is journaled to a similar arm or lever 12 rigidly secured to a longitudinally extending rock shaft 13 supported in bearings at the lower portion of the machine. To the extremity of each arm or lever 10 and 12 is secured a curved guide or shoe 14, which is arranged to surround a portion of the flange 6, the two shoes or guides being opposite to each other.

15 is a power cylinder whose plunger 16 is connected to a rocker arm 17 of a rocker sleeve 18, which is loosely mounted around the shaft 4 on a sleeve or bushing 19 at the rear end of the machine. This sleeve is also provided with the oppositely extending rocker arms 20 and 21, the rocker arm 20 being connected by the link 22 with a rocker arm 23, secured to the shaft 11, and the arm 21 is connected by the link 24 with a similar rocker 25 on the shaft 13. These parts and connections are clearly shown in detail in Fig. 4.

26 (Fig. 2) designates the finishing rolls of a rolling mill, from which the flat or other shape to be coiled, shown at A in dotted lines in Fig. 2, passes directly to the reeling mechanism or coiler through the fixed guide 27, and thence into a movable or swinging guide 28. This guide 28 is pivoted at 29, and its free end portion is connected by the link 30 with the arm or lever 10.

31 is an endwise movable rod, which passes loosely through the hollow shaft 4 and has secured to its forward end a piece 32, shown in detail in Fig. 5, having a plurality of radial arms 33, which are provided at their free end portions with the backward offsets 34. The piece 32 lies in front of the coiling head or plate, with the backwardly offset portion 34 fitting into the radial slots 35 of said head or plate. The rod 31 is moved endwise by any suitable means, such

as the lever 36 (shown in detail in Fig. 3), said lever being pivoted to the frame of the machine at 37, and secured to a collar 38 rotatably engaged with the bearing collar 39 on the rearwardly projecting end of said rod, with an operating rod or bar 40 connected to the free end of the lever. A spring 41 normally acts upon the lever 36 to hold the rod 31, and the arms 33, in their normal position shown in Fig. 1.

The shaft 4 is shown as arranged to be driven by a belt wheel 42 loosely mounted thereon. 43 is a drum also loosely mounted on said shaft and having its periphery grooved to receive a series of ropes or cables 44, one for each groove. The ends of these ropes or cables are attached to opposite sides of a bracket 45 secured to and projecting from the belt wheel 42, suitable means such as the adjustable clamps 46 being provided for adjusting the tension of the ropes or cables. The drum 43 is provided with a coned interior friction surface, which is adapted to be engaged by a corresponding friction surface 47 of a driving member 48 which is keyed to the shaft 4 and is arranged to slide endwise thereon. The driving member 48 at its opposite end has a brake ring or flange 49 adapted to be brought into braking engagement with the stationary friction ring 50.

51 designates a link and lever connection connected to the hub of the member 48 and to a movable element 52 of a dash pot 53. The driving member 48 is shifted endwise on the shaft 4 by any suitable means engaging its hub, as indicated at 54, into and out of driving engagement with the drum 43.

The piece or shape to be coiled or reeled, comes directly from the rolls 26, without twisting, and passes through the guides 27 and 28, its entering end being gripped between the pressure roller 8 and the flange 6 of the coiling head. The guides 14 direct the end portion into contact with the flange 6 around which the piece is coiled, one coil after another. As the coil or bundle increases in thickness, the pressure rollers and the guides are swung outwardly, the movable feed guide 28 also being swung by the movement of the arm or lever 10 so as to properly guide and direct the entering piece. When the coil or bundle is completed, pressure is admitted to the cylinder 15, thereby actuating the arms or levers 10 and 12 and the rollers 8 and 9 to move them out away from the coil. The coil now rests freely on the flange 6. In order to remove it, the rod or spindle 31 is moved forwardly away from the coiling head, bringing the coil away from said head and permitting it to be readily removed in any suitable manner. In this manner the coil is thus formed automatically without necessitating the entering end being gripped by an attendant and fastened, as is ordinarily the case. By adjusting the tension of the driving ropes or cables, the speed of rotation of the coiling head, and consequently the pull or tension on the material being coiled may be regulated, as may be desired.

Changes in the construction and arrangement of the parts may be made without departing from my invention as defined in the claims.

I claim:—

1. In a reel a rotary coiling head, pressure rollers arranged each to co-act with the head, pivoted carriers for said rollers, guides attached to said carriers to move in unison with the rollers, and independent means for actuating said carriers to move the rollers and guides away from said head.

2. In a reel, a coiling drum, means for rotating said drum, a pair of pivoted arms having pressure rollers arranged at opposite sides of the drum and arranged to press upon the coil as it is wound thereon, means for permitting said rollers to move away from the drum under the action of the coil as it is formed, guide devices intermediate of said rollers and connected thereto to move away from the drum therewith, and independent means for moving said rollers and guides away from the drum.

3. In a reel, a coiling drum having a flange portion projecting beyond its coiling surface and at an angle thereto, said flange portion having slotted openings therethrough, and a coil-removing device comprising a plurality of arms having offset portions adapted to project through said openings and push the formed coil from the drum.

4. In a reel, a hollow horizontal shaft, a coiling drum secured to said shaft, means for rotating the shaft, means for holding the coil on the drum as it is formed, and a coil-removing device comprising a plurality of arms having portions lying adjacent to the periphery of the drum, together with means for actuating said arms extending through said hollow shaft.

5. In a reel, a coiling drum arranged to rotate about a horizontal axis, a pair of arms or levers secured on rock shafts pivotally mounted on the machine frame on opposite sides of said horizontal axis, a pressure roller and guide upon each of said arms or levers, the pressure rollers and guides on the two levers being located adjacent to opposite sides of the coiling drum and arranged to co-act therewith during formation of the coils, and arm actuating means connected to the rock shafts.

6. In a reel, a coiling drum, a pair of pivoted levers arranged at opposite sides of said drum, means carried by said levers arranged to co-act with the drum during the coil forming operation, and a movable en-

tering guide for the material to be reeled connected to one of said levers whereby the movement of the lever will impart a movement to the guide.

7. In a reel, a coiling drum, means co-acting therewith for forming a coil thereon, a coil-removing device comprising a series of members having portions adjacent to and co-acting with the periphery of the drum during the coil forming operations, and other portions mounted on the rotary drum and adapted to engage the rear edge of the coil, together with means for moving said members in the direction of the axis of the drum.

8. In a reel, a coiling head, means for driving the coiling head, means partially surrounding said drum to coöperate therewith in forming the coil, a coil-removing device comprising a series of arms adjacent to the periphery of the drum forming the coiling head, means for moving said arms in the direction of the axis of the drum, and means for varying the speed or rotation of the drum to thereby prevent the coil being wound under tension.

9. In a reel, a rotary coiling head having a coiling flange, and a slotted extension beyond the flange, a coil-removing device arranged to rotate with the head and having offset portions adapted to enter the slots in said extension, and means for moving said device to strip the formed coil from said flanges.

10. In a reel, a rotary coiling head upon which the metal being coiled is wound, pressure rollers co-acting with the coiling head in forming the coil and pivoted carriers for the pressure rollers having a guide secured thereto, said rollers moving outwardly away from the coiling head by contact with the coils of material wound upon the coiling head.

11. In a reel, a rotary coiling head upon which the metal being coiled is wound, a pressure roller co-acting with the coiling head in forming the coil and a pivoted carrier for the roller having a guide secured thereto, said roll and guide moving outwardly by contact with the coils of material wrapped upon the coiling head.

In testimony whereof, I have hereunto set my hand.

FRED H. DANIELS.

Witnesses:
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Geo. Sieurin.