May 17, 1932. A. PERRETT 1,859,159

COILER FOR HOT ROD MILLS

Filed June 16, 1931 3 Sheets-Sheet 1

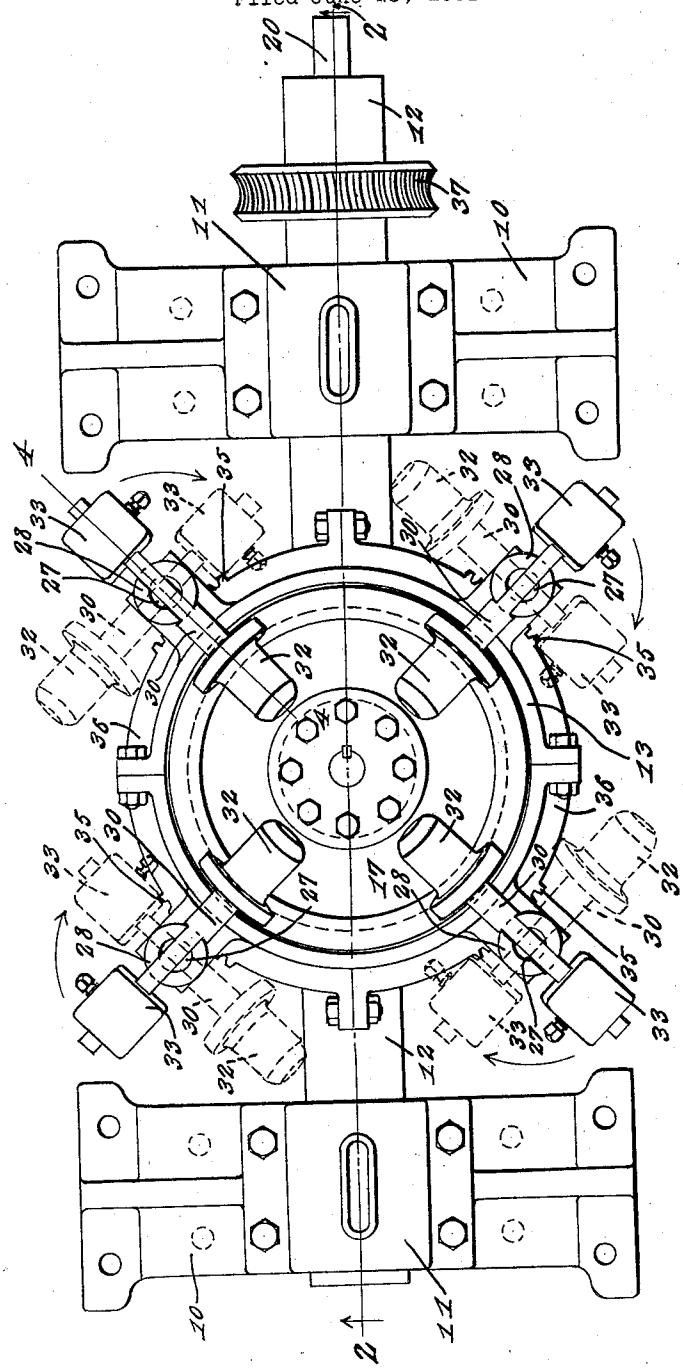


Fig. 1.

Albert Perrett, INVENTOR

BY Victor J. Evans and Co.

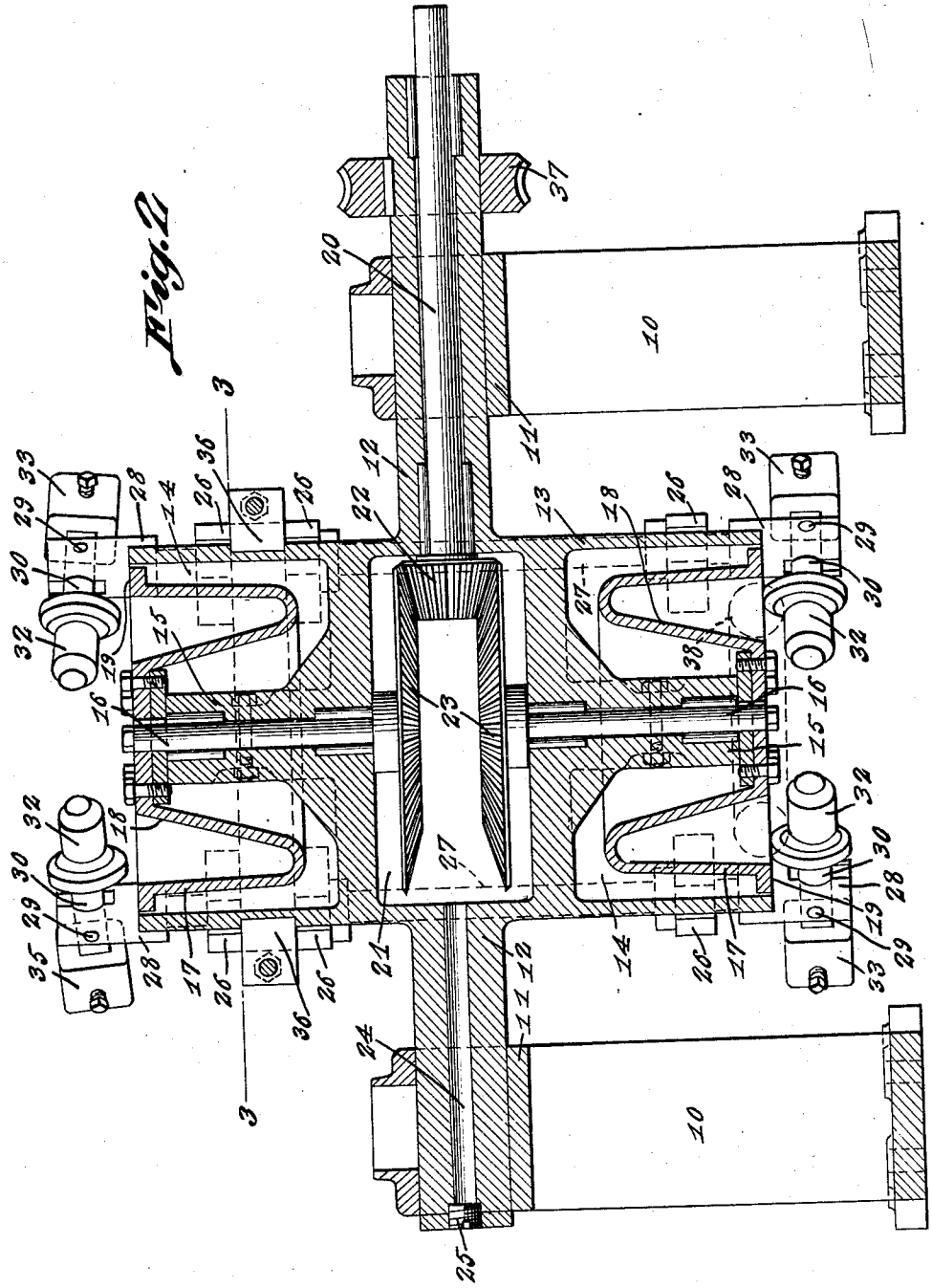
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Fig. 2



Albert Perrett, INVENTOR

BY Victor J. Evans and Co.

ATTORNEY

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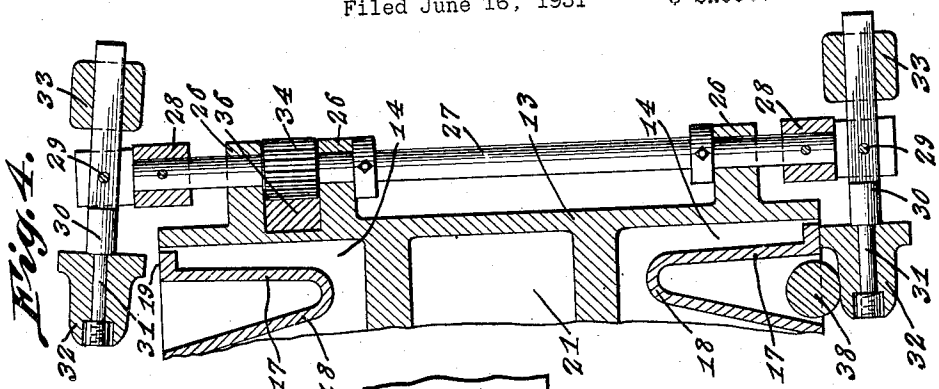


Fig. 4.

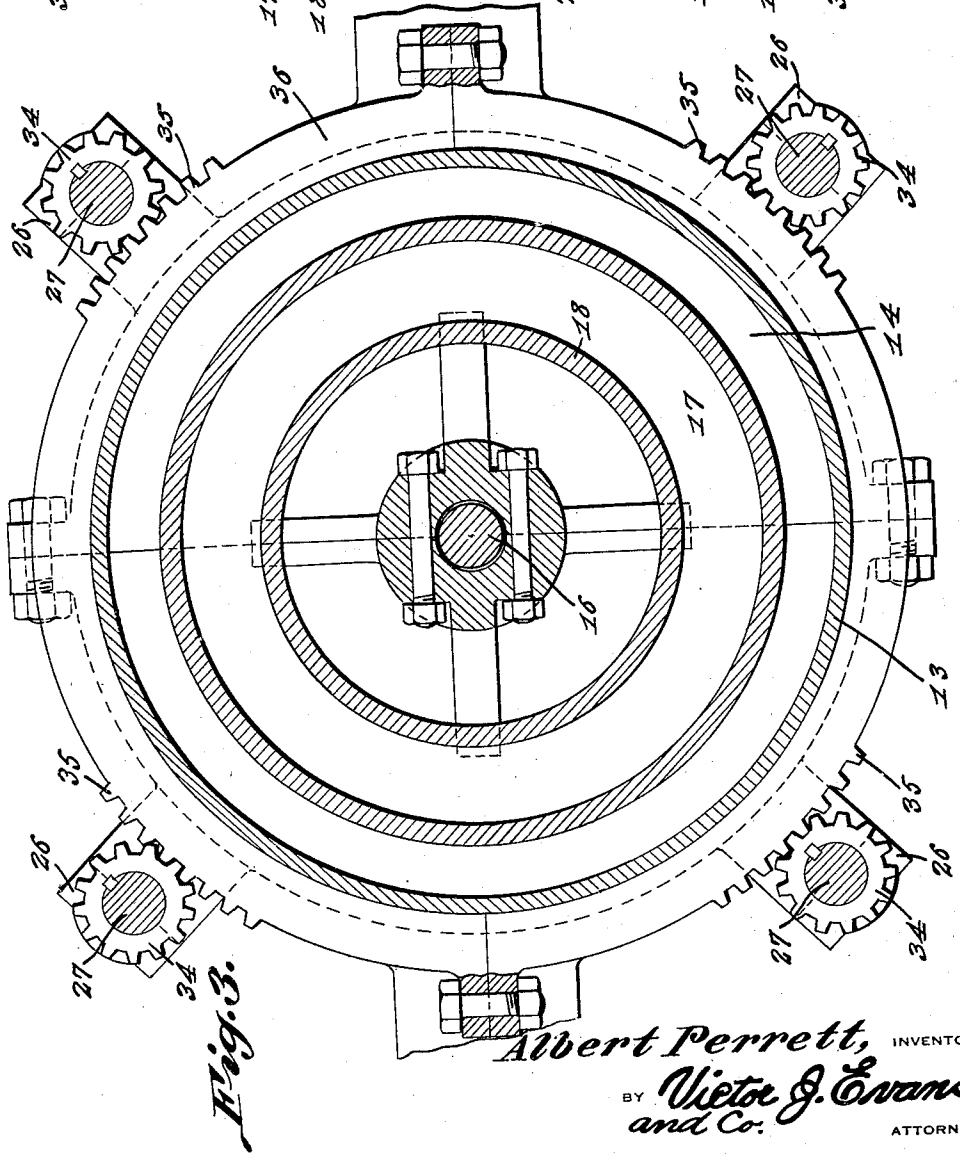


Fig. 3.

Albert Perrett, INVENTOR

BY Victor J. Evans and Co. ATTORNEY

Patented May 17, 1932

1,859,159

UNITED STATES PATENT OFFICE

ALBERT PERRETT, OF PITTSBURGH, PENNSYLVANIA

COILER FOR HOT ROD MILLS

Application filed June 16, 1931. Serial No. 544,897.

The invention relates to a coiler for hot rod mills and more especially to coiler mechanism for hot rod mills and merchant mills, or other similar purposes.

The primary object of the invention is the provision of mechanism of this character for use in connection with wire rod rolling mills and for similar purposes, wherein reeling or coiling means is operative so that the coil receptacles are disposed with relation to each other whereby one of the same will be in a receiving position and the other in a discharging position and in this manner the coils will be produced and discharged on the reversing of said means during the continued operation thereof and the coils discharged can be delivered onto a table or conveyor directly from the mechanism.

Another object of the invention is the provision of mechanism of this character wherein several reels or coil receptacles are arranged movable or revoluble about a center or axis and adapted to be alternately brought into position for respectively receiving a coil of rod and then tilted or inverted for effecting the discharge automatically of the coil therefrom and this operation being continuous during the working of the mechanism.

A further object of the invention is the provision of mechanism of this character wherein the reels or coiling receptacles, each is adapted to be inverted from receiving position and when in this position will act upon the coil to reduce the spread thereof and finally discharge the said coil onto a depositor such as a table or conveyor, the mechanism being of novel construction and is automatic in operation for the continuous receiving and discharging purposes for the coiling of wire rods successively and the delivery thereof as a product.

A still further object of the invention is the provision of mechanism of this character wherein coilers are operative for coiling hot bars or rods rolled on a merchant mill or rod mill and the coiling being automatically effected and a deposit of the coil after being made for the delivery thereof, the coiling and the delivery being automatic and the operation of the coilers or receptacles being had from a single drive.

A still further object of the invention is the provision of mechanism of this character, which is comparatively simple in construction, thoroughly reliable and efficient in operation, compact in the agroupment of its parts, readily and easily operated, and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described in detail, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention, and pointed out in the claims hereunto appended.

In the accompanying drawings:—

Figure 1 is a top plan view of mechanism constructed in accordance with the invention, the discharging rollers being shown in position by full lines with respect to the receiving coiler receptacle and by dotted lines in shifted position with respect to the discharge side of said mechanism or the inverted coiler receptacle.

Figure 2 is a sectional view on the line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is an enlarged sectional view on the line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is a fragmentary sectional view on the line 4—4 of Figure 1.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, there is shown a pair of spaced vertical bearing stands 10, the upper ends of which are formed with bearings 11 in which are journalled trunnions 12 formed on a turning body 13 at opposite sides thereof and this body is preferably of cylindrical formation in cross section to provide a housing having circular recesses or pockets 14 in opposite ends and opening therethrough, while centrally of these recesses or pockets 14 are aligned columns 15 which constitute bearings for a pair of opposed rotatable stud shafts 16. These

shafts 16 have splined or otherwise fixed to their outer ends coiler receptacles 17, each being formed with an annular outer wall and a truncated conical center 18, while the outer wall of each of said receptacles is formed with a circular flange or rim 19 constituting an annular track for a purpose presently described.

Mounted centrally in one trunnion 12 is a rotatable drive shaft 20 which extends into an open center 21 in the housing or body 13 and fixed to the inner end of said shaft 20 is a beveled pinion 22, the latter meshing with crown gears 23, these respectively being secured to the inner ends of the stud shafts 16 so that the receptacles 17 will be driven in unison.

The other trunnion is provided with an oil duct 24 which is closed at its outer end by a removable plug 25 and this duct permits the introduction of oil to the gears and pinions within the hollow center 21 of the housing or body 13 for lubricating purposes.

Arranged diametrically opposite on the housing or body 13 in suitable bearings 26 thereon and externally of the same are turning shafts 27, these being equidistanced apart and extend slightly beyond the ends of the housing or body 13. Upon opposite ends of each shaft 27 are furcated heads 28 in which are pivoted at 29 tilting members 30 each being formed with an axle 31 carrying a roller 32 designed to overhang the receptacle 17 adjacent thereto and contact at certain times with the rim 19 thereof, while the other end of the member 30 carries an adjustable weight 33 which overbalances the roller 32 for a purpose presently described.

The shafts 27 carry pinions 34 which mesh with toothed sectors 35 on a sectional shiftable ring or wheel 36 loosely embracing the housing or body 13 and supported for shifting movement thereon.

The shifting of the ring or roller 36 through the medium of the sectors 35 meshing with the pinions 34 will cause the swinging of the members 30 from the position shown by full lines in Figure 1 of the drawings to the position shown by dotted lines in said Figure 1 or to swing ninety degrees for a purpose presently described.

The shaft 20 which is the power shaft for the coiler receptacle may be driven either from a suitable motor or coupled direct with a wire rod rolling mill, while the trunnion 12 receiving said shaft 20 is equipped with a worm gear 37 which latter may be driven from a suitable motor or other power medium for a turning of the body or housing 13 to continuously reverse the positions of the coiler receptacle 17 therein contained from receiving to discharging position.

In the operation of the coiling mechanism a hot wire rod is introduced into the receptacle 17 uppermost in the body or housing 13 and in this manner under the rotation of said receptacle the coil will be formed, whence the said body or housing 13 will have traveled by turning movement to invert the aforesaid receptacle to a discharging position or lowermost of said body or receptacle 13 and in this position the coil 38 previously formed will have gravitated onto the rollers 32 confronting this lowermost receptacle 17, these rollers 32 being counterbalanced by the weights 33 with the coil thereon and due to the shape of such rollers and the contacting position thereof with the rim 19 on the rotating receptacle 17 the spread of said coil 38 will be regulated or the coil thinned.

For the discharge of the coil 38 from the lowermost receptacle 17 the ring or wheel 36 will have been moved to shift the rollers 32 by reason of the engagement of the sectors 35 with the pinions 36 and the shifting of the said rollers will be outwardly out of the path of said receptacle 17 and thus release the coil 38 for the discharge of the same onto a table or conveyor at the option of the user of the mechanism. This operation is continuous and the receptacles 17 both in receiving and discharging positions are driven from a single power shaft 20 through the pinion 22 and gears 23 meshing with each other.

When the receptacle 17 has been moved from lowermost to uppermost position, which latter is the receiving position the rollers 32 by the action of the weights 33 will rock on the pivots 29 to have the arms disposed at a lateral outwardly directed angle and thus not interfere with or impede the introduction of the wire rod into the coiler receptacle 17 for the coiling thereof at the introductory period, the rollers 32 being thrown to working or operative position by the ring or wheel 36 through the sectors 35 meshing with the pinion 34 on the shaft 27, the ring or wheel 36 being automatically tripped or shifted in any desirable manner.

The rollers 32 when engaging the rim 19 of a receptacle 17 will be positively driven for reducing the spread of the coil operated upon by the rollers 32 and the thinning of such coil immediately prior to the discharge of the coil from the mechanism.

It is of course to be understood that changes, variations and modifications may be made in the mechanism without departing from the spirit of the invention or sacrificing any of its advantages and as fall within the scope of the appended claims.

From the foregoing it is believed that the construction and manner of operation of the mechanism will be clearly understood and therefore a more extended explanation has been omitted.

What is claimed is:—

1. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said

housing, means for driving the receptacles for rotation in unison, rollers arranged about the housing and movable into confronting relation to the receptacles, and means for moving said rollers into and out of confronting relation to the receptacles.

2. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said housing, means for driving the receptacles for rotation in unison, rollers arranged about the housing and movable into confronting relation to the receptacles, means for moving said rollers into and out of confronting relation to the receptacles, and means associated with the rollers to effect a driving contact between the receptacles and said rollers when the latter are in confronting relation thereto.

3. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said housing, means for driving the receptacles, rollers arranged about the housing and movable into confronting relation to the receptacle, means for moving said rollers into and out of confronting relation to the receptacles, means associated with the rollers to effect a driving contact between the receptacles and said rollers when the latter are in confronting relation thereto, and means for turning the housing.

4. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said housing, means for driving the receptacles, rollers arranged about the housing and movable into confronting relation to the receptacles, means for moving said rollers into and out of confronting relation to the receptacles, means associated with the rollers to effect a driving contact between the receptacles and said rollers when the latter are in confronting relation thereto, means for turning the housing, and supports for the receptacles in said housing.

5. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said housing, means for driving the receptacles, rollers arranged about the housing and movable into confronting relation to the receptacles, means for moving said rollers into and out of confronting relation to the receptacles, means associated with the rollers to effect a driving contact between the receptacles and said rollers when the latter are in confronting relation thereto, means for turning the housing, supports for the receptacles in said housing, each of said receptacles having a cone center and a straight outer wall.

6. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said housing, means for driving the receptacles, rollers arranged about the housing and movable into confronting relation to the receptacles, means for moving said rollers into and out of confronting relation to the receptacles, means associated with the rollers to effect a driving contact between the receptacles and said rollers when the latter are in confronting relation thereto, means for turning the housing, supports for the receptacles in said housing, each of said receptacles having a cone center and a straight outer wall, and means for introducing lubricant to the driving connections between said receptacles through the housing at its axis of movement and accessible at one end of the latter.

7. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said housing, means for driving the receptacles, rollers arranged about the housing and movable into confronting relation to the receptacles, means for moving said rollers into and out of confronting relation to the receptacles, means associated with the rollers to effect a driving contact between the receptacles and said rollers when the latter are in confronting relation thereto, means for turning the housing, supports for the receptacles in said housing, each of said receptacles having a cone center and a straight outer wall, means for introducing lubricant to the driving connections between said receptacles through the housing at its axis of movement and accessible at one end of the latter, and a stand for swingingly supporting said housing.

8. In mechanism of the character described, a turning housing, rotatable coiler receptacles arranged in opposite ends of said housing, means for driving the receptacles, rollers arranged about the housing and movable into confronting relation to the receptacles, means for moving said rollers into and out of confronting relation to the receptacles, means associated with the rollers to effect a positive drive between the receptacles and said rollers when the latter are in confronting relation thereto, means for turning the housing, supports for the receptacles in said housing, each of said receptacles having a cone center and a straight outer wall, means for introducing lubricant to the driving connections between said receptacles through the housing at its axis of movement and accessible at one end of the latter, and a stand for swingingly supporting said housing, the housing being provided with opposed trunnions journaled in said stand.

In testimony whereof I affix my signature.

ALBERT PERRETT.