

Sept. 28, 1926.

1,601,415

A. RUSBATCH

POWER DISCHARGING ROD REEL

Filed Oct. 29, 1924

3 Sheets-Sheet 1

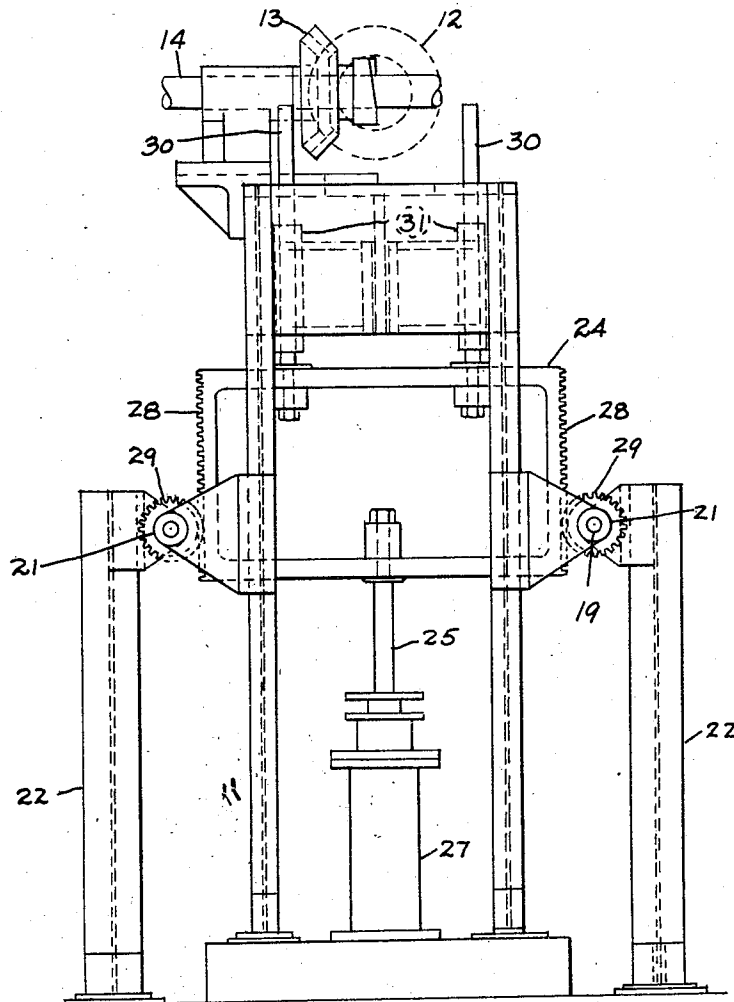


Fig. 1

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3 Sheets-Sheet 2

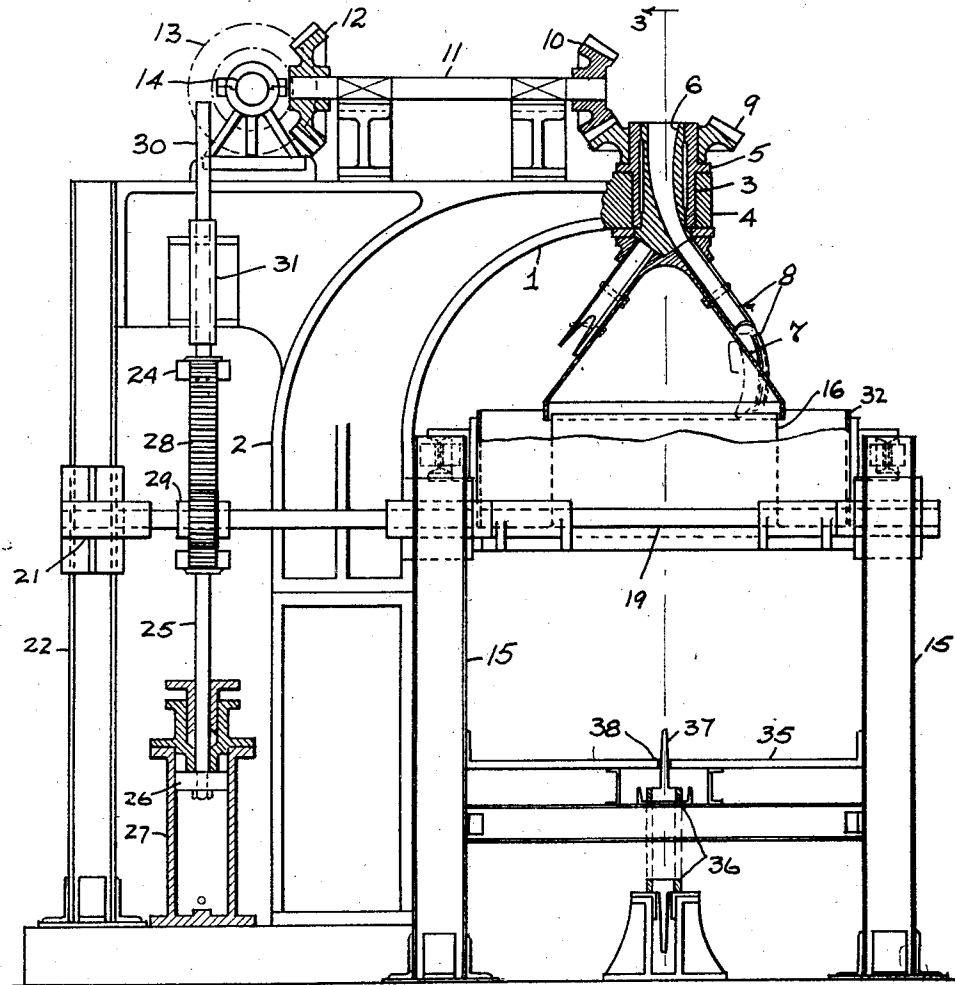


Fig. 2

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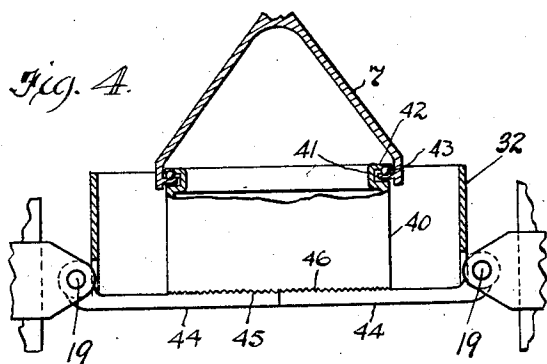
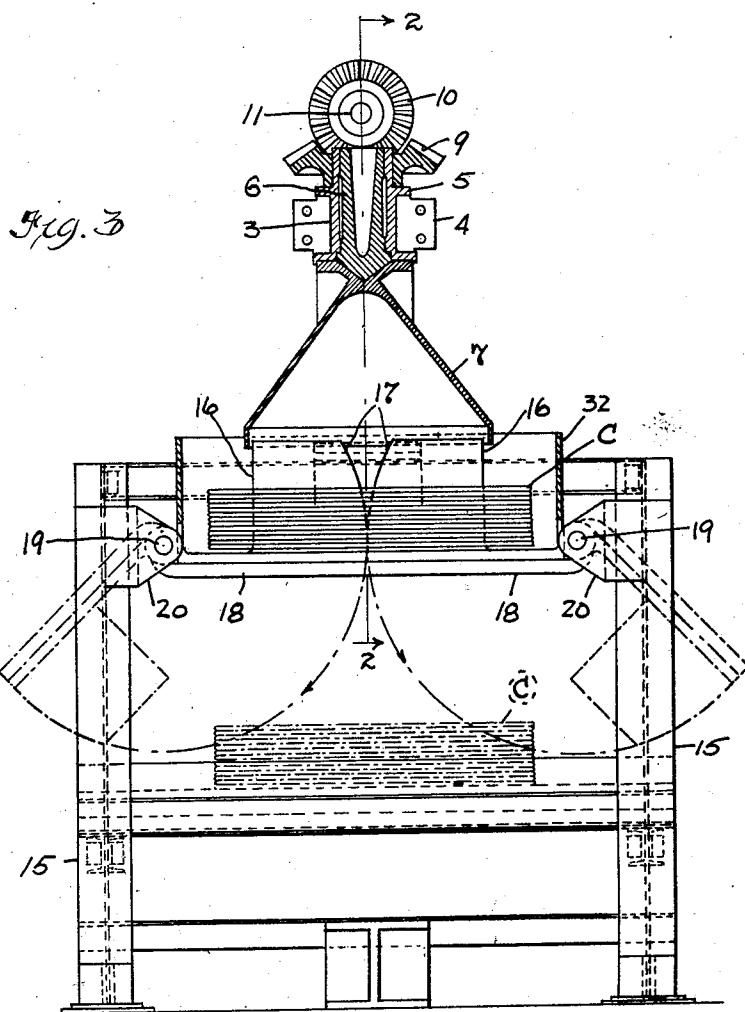
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

ALFRED RUSBATCH, OF EAST CLEVELAND, OHIO.

POWER-DISCHARGING ROD REEL.

Application filed October 29, 1924. Serial No. 746,709.

As indicated, the present improvements relate to mechanism for coiling rod, wire, or like drawn product, as it is received from the mill. One object of the invention is to provide a machine for this purpose in which the coil being formed remains stationary during the coiling thereof, the product being wound upon a suitable mandrel that constitutes in effect a stationary reel by being carried thereto through a rotating head. A further object is to provide easily operated means for discharging the finished coil to a conveyor or the like whereby it may be removed from the machine.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Fig. 1 is an end elevation of a rod coiling machine embodying my present improvements, such machine including power means for discharging the finished coil; Fig. 2 is a front elevation of such parts with certain operative parts shown in section; Fig. 3 is in part a vertical transverse section and in part an end elevation of the machine, the plane of such section being indicated by the line 3—3, Fig. 2, and such end elevation being taken as viewed from the right in said Fig. 2, and Fig. 4 is a view similar to Fig. 3 but showing a modification.

The coiling mechanism proper is mounted in the upper overhanging portion 1 of a substantial frame 2 and includes as one principal element a rotating head 3, suitably journaled in a vertical bearing 4 in such overhanging portion. Such head is of general cylindrical form and is provided with a laterally projecting flange 5 that rests on the bearing and serves to hold the head in proper endwise position. Fixedly secured within the head is a hollow guide member 6, the bore of which is of tapering form, as shown in Fig. 2, and attached to the lower end of said guide member so as to be carried along therewith is a deflector 7 of general conical form on the outer surface of which are attached supplemental guide members 8. For the purpose of rotating

head 3 and along therewith the guide member 6 and attached deflector 7, any suitable drive means may be employed, the means shown comprising a bevel gear 9 mounted on the upper end of said member 3 that meshes with a bevel pinion 10 on one end of a transverse shaft 11, the latter being provided with a second bevel pinion 12 on its opposite end that meshes with a corresponding pinion 13 on a drive shaft 14.

It will be understood that the rod, wire or like drawn product is received from the mill in the bore of guide member 6 and is thence carried down the flaring side of deflector 7 by means of the guides 8 on the latter to the reel, which will now be described.

Below the overhanging portion 1 of main frame 2 is an open rectangular frame 15 which serves to support the stationary reel around which the rod or similar drawn product received in the manner just described from the rotating head 3 is designed to be coiled. This reel is in the form of a hollow drum made up of two similar semi-cylindrical sections 16, the juxtaposed edges of such sections being cut away or rounded, as best shown in Fig. 3. Each such drum section is carried by a pair of oscillatory arms 18 fixed on a corresponding horizontally disposed shaft 19 that is journaled in suitable bearings 20 in said frame 15. The shafts 19 project to the left, as viewed in Fig. 2, beyond main frame 2, the corresponding end of each shaft being journaled in a supplemental bearing 21 provided on an upright frame member 22. Intermediately of main frame 2 and such uprights 22 there is provided an open rectangular rack member 24 that is adapted to be vertically reciprocated by means of a piston rod 25 and piston 26, the latter being contained in a vertically disposed cylinder 27 to which a suitable pressure fluid may be supplied when desired. Each side of rack member 24 is formed with teeth 28 constituting the rack proper, each such rack meshing with a pinion 29 fixed on the adjacent shaft 19. In order properly to guide the rack in its up and down movement, rods 30 are attached to its upper transverse portion, such rods being slidably held in bearings 31 on the main frame of the machine.

Surrounding the drum or reel composed of the two semi-cylindrical parts 16 is a circular guard 32, such guard being removed a sufficient distance from the drum to per-

mit a coil of desired size to be wound in the annular space thus provided. The arms 18, it will be noted, when in normal horizontal position corresponding with the assembled condition of the drum parts, form a floor or closure for the major portion of this annular space and the coil as it is formed will rest on this floor.

Located in the open space in frame 15 below the drum, when thus assembled in operative position beneath the coiling head, is a second floor 35 that forms part of a conveyor trough, and a conveyor chain 36 that carries fingers 37 is disposed so as to travel beneath such trough with said fingers projecting through a slot 38 therein.

Having thus described the construction and operation of the several component parts of my improved machine, the operation of the same as a whole may now be briefly set forth. As already indicated, the drum parts 16 are normally supported in their raised or closed position, as shown in full lines in Fig. 3, this being accomplished by supplying pressure fluid to cylinder 27 so as to force piston 26 and thus the rack frame 24 into their uppermost positions. In this situation the coil C is formed in the annular space between the drum 16 and the circular guard 32 by guiding the rod or wire through the rotating head into such space, as will be readily understood. When the coil has been completed, the rack frame 24 is allowed to drop and as a result the arms 18 with attached drum parts 16 will swing into the positions shown in dotted outline in Fig. 3, such arms and drum parts now lying entirely without the space defined by the circular guard 32. As an incident to this movement of the drum parts, the coil will drop under gravity onto the supplemental floor 32 where it will be picked up by one of the conveyor fingers 37 and carried away.

In the modified form of the machine illustrated in Fig. 4, the construction is the same as that hereinbefore described except for the drum. Said drum 40 instead of being of sectional construction as in the case of drum 16 with the respective parts supported on the arm 18 that constitute the floor of the annular space in which the coil is formed, is in one piece and is supported from the deflector 7. Since the drum requires to be stationarily held during the coiling operation, the connection between the same and the deflector is such as to permit the free rotary movement of the deflector and the head which carries the latter with respect to said drum. To this end, the deflector is formed with an inturned flange 41 and the drum with an overlapping outwardly directed flange 42 and an annular ball bearing 43 is interposed between the two flanges. The arms 44 correspond exactly with the arms 18 and are operated in identically the same

manner, the only difference in their construction being that they do not carry sectional drum parts. They are however formed with serrations 45 or equivalent elements that are adapted to interlock with complementary elements 46 on the lower edge of the drum 40, when said arms are raised into their horizontal positions. When thus raised, the arms, it will accordingly be seen, serve in effect to support the drum and in any event hold the same against rotative movement without in any way interfering with the free rotation of the head and deflector. When the coil is complete, the arms are dropped away just as before so as to clear the annular space between the drum and the circular guard 32 and thus allow the coil to drop onto the conveyor table below.

As shown in Fig. 2, the deflector 7, it will be noted, is provided with a guide member 8^a diametrically opposite the guide 8 hereinbefore referred to. This second guide may be brought into operative relation with the bore in the hollow guide member 6 by rotating the deflector through a half circle and in any event serves as a counterbalance to the guide 8 so as to insure the smooth operation of the head.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In mechanism of the character described, the combination of a rotatable head for forming a coil, and a receiving drum comprising mating sections, the mating edges being rounded away to permit rocking the drum sections apart for discharge of a coil therefrom.

2. In mechanism of the character described, the combination of a rotatable head for forming a coil, and a receiving drum comprising two generally semicylindrical mating sections, the mating edges being rounded away upwardly to permit rocking the drum sections apart for discharge of a coil therefrom.

3. In mechanism of the character described, the combination of a head rotatable about a vertical axis for forming a coil, a receiving drum comprising two generally semicylindrical mating sections, the mating edges being rounded away upwardly to permit relative rocking movement for discharge of a coil therefrom.

4. In mechanism of the character described, the combination of a head rotatable about a vertical axis for forming a coil, a receiving drum comprising two generally semicylindrical mating sections, the mating

edges being rounded away upwardly to permit relative rocking movement, and means for rocking said drum sections apart to permit discharge of the coil therefrom.

5 5. In mechanism of the character described, the combination of a head rotatable about a vertical axis for forming a coil, a receiving drum comprising two generally semicylindrical mating sections, the mating
10 edges being rounded away upwardly to permit relative rocking movement, and oscillable shafts for rocking said drum sections apart to permit discharge of the coil therefrom.

15 6. In mechanism of the character described, the combination of a head rotatable about a vertical axis for forming a coil, a receiving drum comprising two generally semicylindrical mating sections, the mating
20 edges being rounded away upwardly to permit relative rocking movement, two parallel oscillable shafts horizontally disposed one on each side, and means extending from said shafts for carrying said drum sections.

25 7. In mechanism of the character described, the combination of a head rotatable about a vertical axis for forming a coil, a receiving drum comprising two generally semicylindrical mating sections, the mating
30 edges being rounded away upwardly to permit relative rocking movement, two parallel oscillable shafts horizontally disposed, one at each side, floor members extending from said shafts and carrying said drum sections, and means for oscillating said shafts.

35 8. In mechanism of the character described, the combination of a head rotatable about a vertical axis for forming a coil, a receiving drum comprising two generally
40 semicylindrical mating sections, the mating edges being rounded away upwardly to permit relative rocking movement, a circular guard about said drum, two parallel oscillable shafts horizontally disposed, one at
45 each side of said guard, floor means extending from said shafts and carrying said drum sections, and means for oscillating said shafts.

9. In mechanism of the character described, the combination of a head rotatable
50 about a vertical axis for forming a coil, a receiving drum comprising two generally semicylindrical mating sections, the mating edges being rounded away upwardly to permit relative rocking movement, a circular
55 guard about said drum, two parallel oscillable shafts horizontally disposed, one at each side of said guard, floor members extending from said shafts and carrying said drum sections, and rack and pinion means
60 for oscillating said shafts.

10. In mechanism of the character described, the combination of a head rotatable about a vertical axis for forming a coil, a receiving drum comprising two generally
65 semicylindrical mating sections, the mating edges being rounded away upwardly to permit relative rocking movement, a circular guard about said drum, two parallel oscillable shafts horizontally disposed, one at
70 each side of said guard, floor members extending from said shafts, and carrying said drum sections, a pinion on each said shaft, a reciprocable frame positioned between said shafts and having rack teeth for engaging
75 said pinions, and means for reciprocating said rack frame.

11. In mechanism of the character described, the combination of a head rotatable
80 about a vertical axis for forming a coil, a receiving drum comprising two generally semicylindrical mating sections, the mating edges being rounded away upwardly to permit relative rocking movement, a circular
85 guard about said drum, two parallel oscillable shafts horizontally disposed, one at each side of said guard, floor members extending from said shafts and carrying said drum sections, a pinion on each said shaft, a reciprocable frame positioned between said
90 shafts and having rack teeth for engaging said pinion, and fluid-operated means for reciprocating said rack frame.

Signed by me this 25 day of October, 1924.

ALFRED RUSBATCH.