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WIRE COILING MACHINE



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3,023,977 WIRE COILING MACHINE Donald P. Whitacre, Alhambra, Calif. (5649 Alhambra Ave., Los Angeles, Calif.) Filed Dec. 8, 1958, Ser. No. 778,773 3 Claims. (Cl. 242-82)

My invention comprises a wire coiling machine and more specifically a device for coiling wire from a galvanizing or wire drawing machine.

My invention comprises, in general, a rotatable flyer having mounted thereon a planetary capstan and tension rolls to pull the wire through the machine from a galvanizing or wire drawing machine. As the wire leaves my machine, the wire is stationary laterally in space. 15 This is achieved by having the capstan retreat from the wire as it pulls the wire to itself.

An object of this invention is, thus, to provide a coiled wire falling from the machine over a mandrel or simply onto the floor which is not in lateral motion at the time 20 it leaves the machine. There is no coiling movement of the wire after it goes over the mandrel or on to the floor.

Another advantage of my invention is that the capstan and the other elements mounted thereon act as a draw-10 ing power to pull the wire through a galvanizing machine and no external powered capstan is needed such as the art heretofore has found necessary.

Other objects and advantages of my invention will be readily apparent from the following detailed description 30 of the preferred embodiment thereof.

In the drawings:

FIGURE 1 is a side elevation.

FIGURE 2 is an enlarged section taken on line 2-2 of FIGURE 1.

FIGURE 3 is a section taken on line 3-3 of FIG-URE 4.

FIGURE 4 is a section taken on line 4-4 of FIG-URE 2.

A wire coiling machine constructed in accordance with 40 my invention is mounted on the frame 1. A journal 2 for a driven shaft 3 is carried by the frame 1 and has at its lower end a rotating flyer 4. The shaft 3 is driven by an appropriate train of gears generally indicated at 5 by a power source such as an electric motor generally indicated at 6. 45

A gear housing 7 surrounds the gears 5, the top of the journal 2, and shaft 3, and has a bracket 8 mounted on the top thereof to carry a direction changing pulley 9 which is journaled at 10 to rotate on the bracket 8. The shaft 3 is hollow, and a hole 11 in the housing 7 and the base plate of the bracket 8 permits a wire 15 from a galvanizing or wire drawing machine to pass over the direction changing pulley 9, down through the hollow shaft 3, and out its lower end where it passes over a direction changing pulley 12. The direction changing pulley 12 is attached to a bracket 13 on the flyer 4 and is free to rotate on the shaft 14 journaled on the bracket 13.

The wire 15, after passing around the direction changing pulley 12 passes around a planetary capstan 16 carried by a shaft 16A mounted in the bearings 16B on the flyer 4. The wire 15 is given two or three turns around the planetary capstan 16 and then passes through a pair of tension rolls 17 and 18. The roll 17 is mounted upon a shaft 19, carried by the bearings 20 on the flyer 4. The roll 18 is carried by a shaft 21 which is journaled by rotation at 22 on a swinging arm 23. The swinging arm 23 is journaled for rotation by a bearing bracket 24 carried by the flyer 4. A spring 25 yieldably forces the roll 18 against the roll 17. In a preferred form of my invention, the roll 17 has a groove 26 around its periphery 70 2

into which the roll 18 enters. The wire 15, after passing around the planetary capstan 16, passes between the tension rolls 17 and 18 and then drops down over the mandrel 30. The rolls 17 and 18 also act as casting rolls to provide the necessary cast that causes the wire 15 to form a coil as it drops from said rolls 17 and 18 over the mandrel 30.

Suspended from the frame 1 by the bolts 31 is a fixed wheel 32. The fixed wheel 32 is concentric to the shaft 10 3. This fixed wheel 32 actually comprises two wheels 33 and 34 for the reception of belt drives. A roller 35 is attached to the shaft 16A and a belt 36 connects the drive wheel 33 to the roll 35. A similar roll 37 is mounted on the shaft 19 and connected to the drive roll 15 34 by a belt 38. By this construction, the wire 15 coming from a galvanizing machine or wire drawing machine passes through the machine by passing around the various parts as heretofore described.

When the shaft 3 is rotated, the flyer 4 rotates therewith in a counterclockwise motion as shown by the arrow 50 in FIGURE 2. As the fixed wheel 33 has the belt 36 connecting it to the roller 35 on the shaft 16A for the planetary capstan 16, the planetary capstan 16 will be driven in a clockwise direction pulling the wire down through the machine, and as the capstan 16 rotates, it passes the wire 15 to the tension rolls 17 and 18. The tension roll 17 being driven by the belt 38 provides a constant tension and take up for the capstan 16. The wire 15 also is given a helical cast by the rolls 17 and 18 and dropped over the mandrel 30. The wire 15, after it leaves the rolls 17 and 18, remains stationary laterally in space and the entire flyer 4 retreats from the wire. I claim:

 In a wire coiling machine, a flyer, a hollow rotating shaft supporting said flyer, a capstan rotatably mounted on said flyer, drive means from said shaft for rotating said capstan in an opposite direction to the rotation of said flyer when said flyer is rotated, tension and casting rolls rotatably mounted on said flyer and spaced from 40 said capstan, means for rotating said rolls in the opposite direction to said flyer, and means for guiding a wire through said hollow shaft and around said capstan to said tension rolls.

A wire coiling machine comprising a frame, a hollow shaft rotatably mounted on said frame, means to drive said shaft, a flyer carried at the lower end of said shaft, a capstan rotatably mounted on said flyer, a fixed wheel concentric to said shaft carried by said frame, separate means connecting said wheel and said capstan and one of said tension rolls to rotate said capstan and said rolls in opposite direction to the rotation of said flyer.

3. A wire coiling machine comprising a frame, a hollow shaft rotatably mounted on said frame, means to drive said shaft, a flyer carried at the lower end of said shaft, a capstan rotatably mounted on said flyer, tension rolls rotatably mounted on said flyer, a fixed wheel concentric to said shaft carried by said frame, separate means connecting said wheel and said capstan and one of said tension rolls to rotate said capstan and said rolls in opposite direction to the rotation of said flyer and means to guide a wire through said shaft, around said capstan and between said tension rolls.

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