Sept. 1, 1953 D. E. McCRAY ET AL 2,650,509

WIRE AND TUBING ROLLING MACHINE

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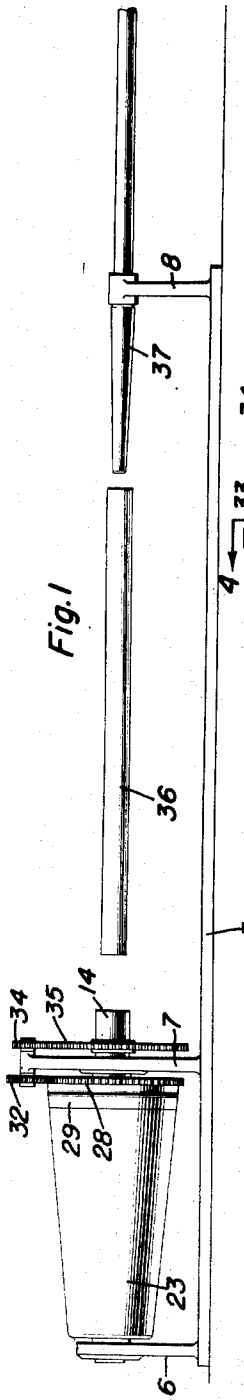


Fig. 1

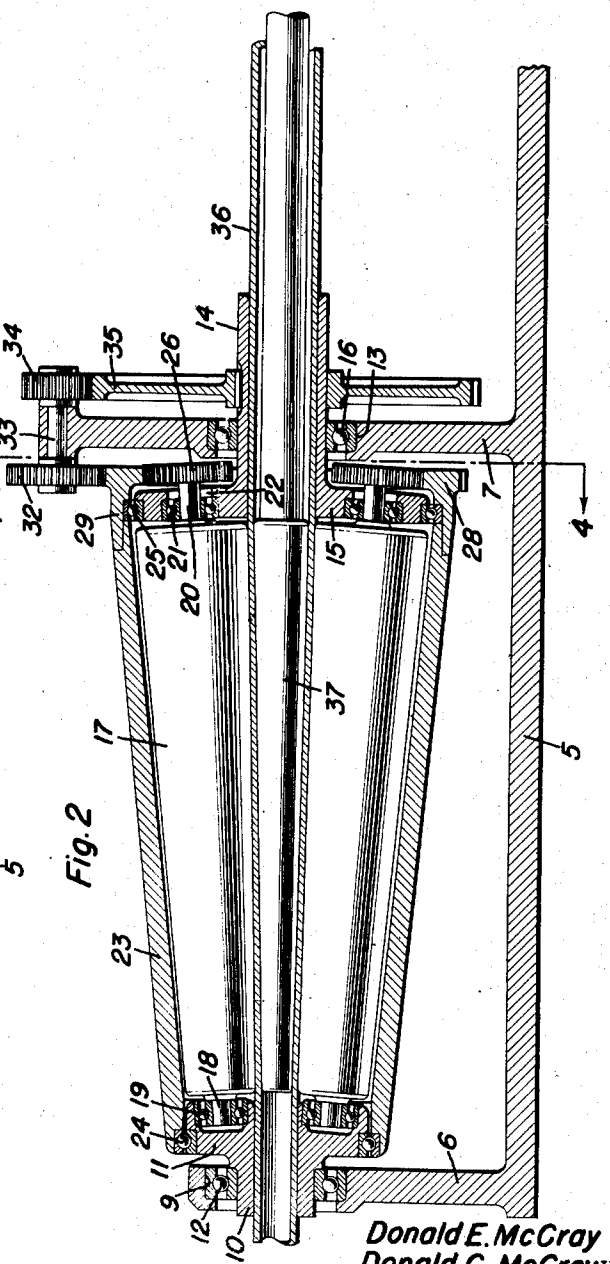


Fig. 2

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Fig. 3

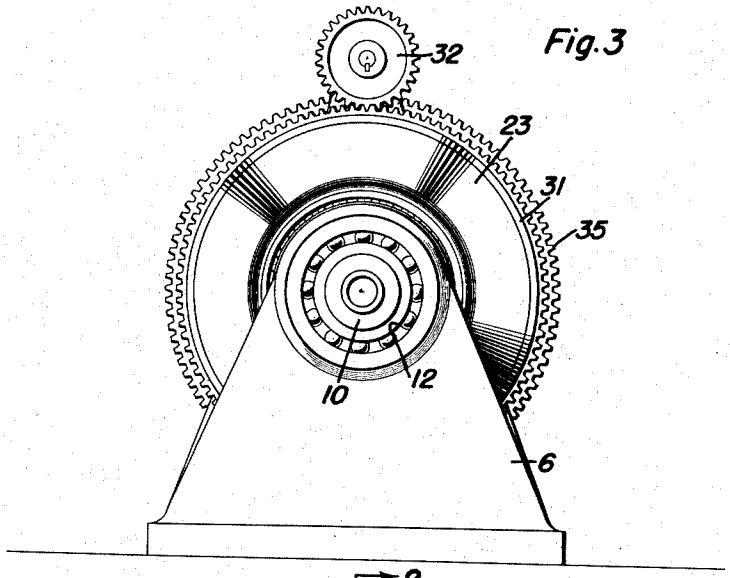
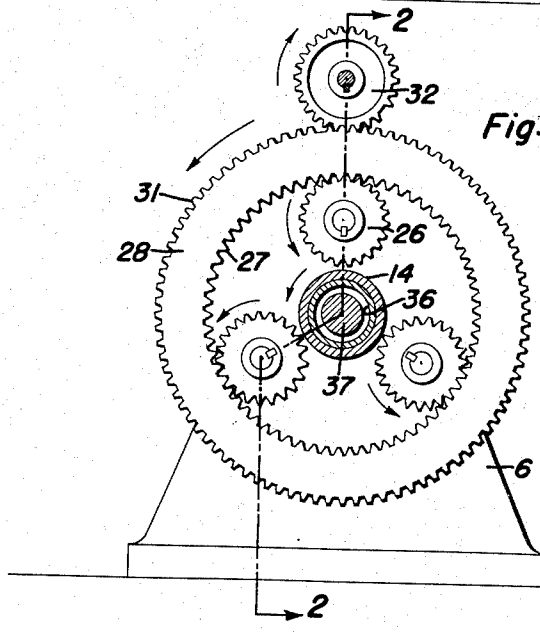


Fig. 4



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WIRE AND TUBING ROLLING MACHINE

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Application October 16, 1950, Serial No. 190,414

2 Claims. (Cl. 80—13)

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The present invention relates to new and useful improvements in wire and tubing rolling machines.

An important object of the invention is to eliminate the usual practice of drawing wire and tubing through dies and to provide a machine whereby greater reductions may be made in base stock in a single operation.

Another object is to provide a machine of this character which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view showing the tubing and mandrel in position for entering the machine;

Figure 2 is an enlarged longitudinal sectional view;

Figure 3 is a rear elevational view; and

Figure 4 is a transverse sectional view taken on a line 4—4 of Figure 2.

Referring now to the drawings in detail, wherein for the purpose of illustration we have disclosed a preferred embodiment of our invention, the numeral 5 designates a supporting base or stand having a pair of upstanding supports 6 and 7 adjacent one end and a single upstanding support 8 at the other end of the base.

Support 6 comprises a rear support and is formed with an opening 9 in which a hub 10 of a rear end plate 11 is journaled in a bearing assembly 12 and support 7 comprises a front support also formed with an opening 13 in which a hub 14 of a front end plate 15 is journaled in a bearing assembly 16.

A plurality of tapered rollers 17 have trunnions 18 at their smaller ends journaled in bearing assemblies 19 recessed in rear end plate 11 and have trunnions 20 at their larger ends journaled in bearing assemblies 21 mounted in openings 22 in front end plate 15. The rollers are enclosed in a tapered shell 23 closed at its ends by the end plates 11 and 15 and with a bearing assembly 24 between the rear end of the casing and rear end plate 11 and a bearing assembly 25 between the front end of the shell and front end plate 15.

Front trunnions 20 are provided with gears 26 engaging internal teeth 27 on a ring gear 28 and

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which is formed with a rearwardly extending annular flange 29 suitably secured in overlapping relation to the front end of shell 23 and also journaled on bearing assembly 25. Ring gear 28 is also formed with external teeth 31, driven by a pinion 32 at the rear end of a shaft 33 journaled in the upper portion of front support 7.

A front pinion 34 is secured to the front end of shaft 33 and is driven by a gear 35 keyed to front hub 14. Gear 35 is driven by a motor (not shown) or other power source.

The work, such as a tubing, wire or the like 36 is inserted in front hub 14 and when tubing is to be extruded a tapered mandrel 37 is slidable in support 8 and is inserted in the tubing and holds the tubing closely between the rollers 17.

Front hub 14 and front end plate 15 are driven direct from gear 35 to thus bodily rotate rollers 17 and the rear end plate 11 and rear hub 10 rotate with the rollers. Gear 35 and ring gear 28 rotate in the same direction through gears 32 and 34 and ring gear 28 also rotates the rollers about their axes in the same direction through pinion 26. The frictional engagement of rollers 17 with the tubing 36 travelling about the tubing will tend to turn the tubing in a direction opposite to the turning tendency of the tube by hub 14 and the opposing turning forces will hold the tubing from turning while passing between the rollers and over the mandrel toward the reduced rear end of the machine to thus extrude the tubing.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A tube rolling machine comprising an elongated rotatable casing including front and rear end walls having hollow hubs adapted for the passage of tubing therethrough and with which at least the front hub is frictionally engaged, a plurality of tapered pressure rollers journaled eccentrically at each end in the opposite end walls of the casing and with the smaller ends of the

rollers converging rearwardly and adapted to reduce tubing inserted in the front hub and fed rearwardly between the rollers, a tapered mandrel movable longitudinally into and out of the hub of the front end wall into a position between the rollers and adapted for supporting the tubing on the mandrel and in frictional engagement with the rollers, drive means connected to the hub of the front end wall for rotating said front hub and bodily rotating the rollers about the work in one direction, and means connecting the rollers to the drive means for rotation of the rollers about their axes in a direction opposite to the direction of rotation of said hub, the opposite turning movement of the rollers and hub counteracting each other to hold the work non-rotatable while passing through the hubs and between the rollers.

2. A tube rolling machine comprising a base, a pair of supports rising from the base, an elongated casing, front and rear end walls journaled in the ends of the casing for rotation independently thereof, hollow hubs integral with the end walls journaled in the supports, tapered rollers extending between and having their ends journaled in the end walls and having their smaller ends converging to reduce work passing through

the hubs between the rollers, a mandrel supporting the work between the rollers, drive means for the front hub, pinions secured to the front ends of the rollers, a ring gear having internal and external teeth, said internal teeth being in driving engagement with the pinions, and other pinions providing a driving engagement between said external teeth and the drive means to bodily rotate the rollers and also to rotate each roller about its axis, said rollers and said hubs having frictional engagement with the work each tending to rotate the work in an opposite direction from the other and thereby counteracting turning movement of the work by the other to hold the work non-rotatable while passing through the hubs and between the rollers.

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