

Jan. 26, 1960

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2,922,296

THREAD PROCESSING APPARATUS

Filed April 29, 1959

2 Sheets-Sheet 1

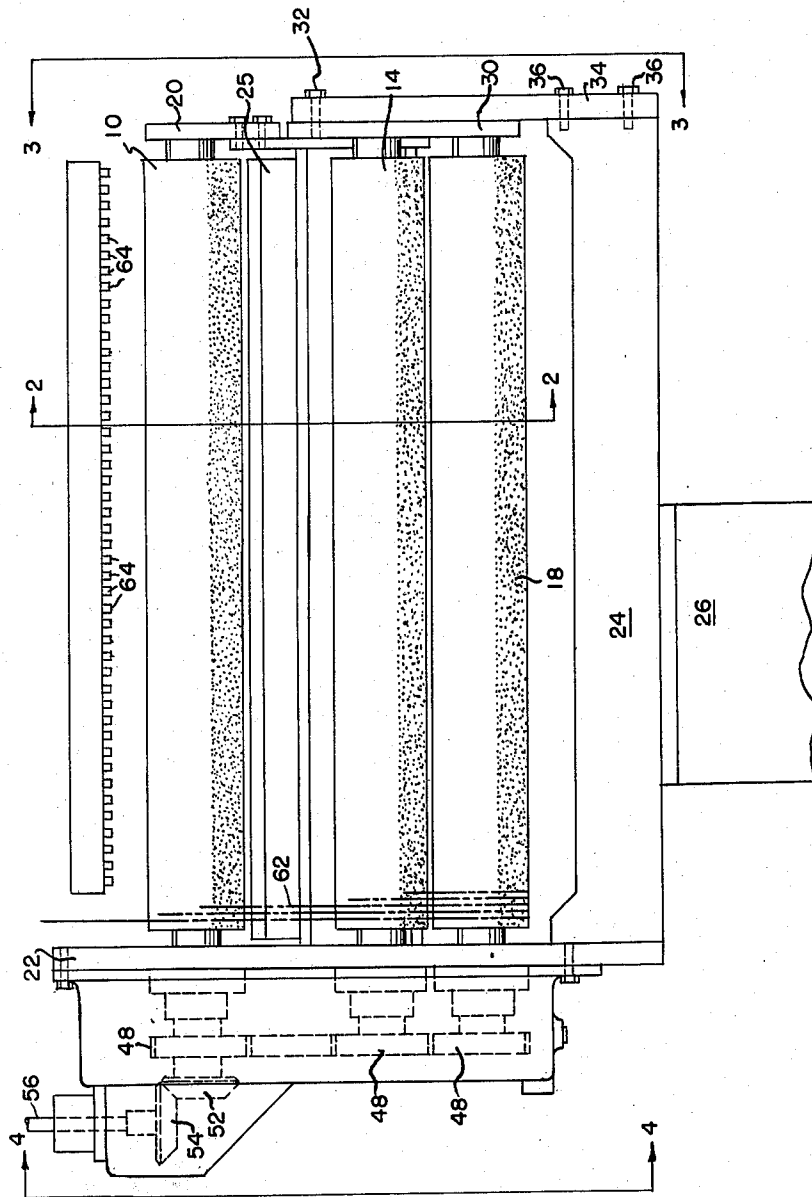


FIG. 1

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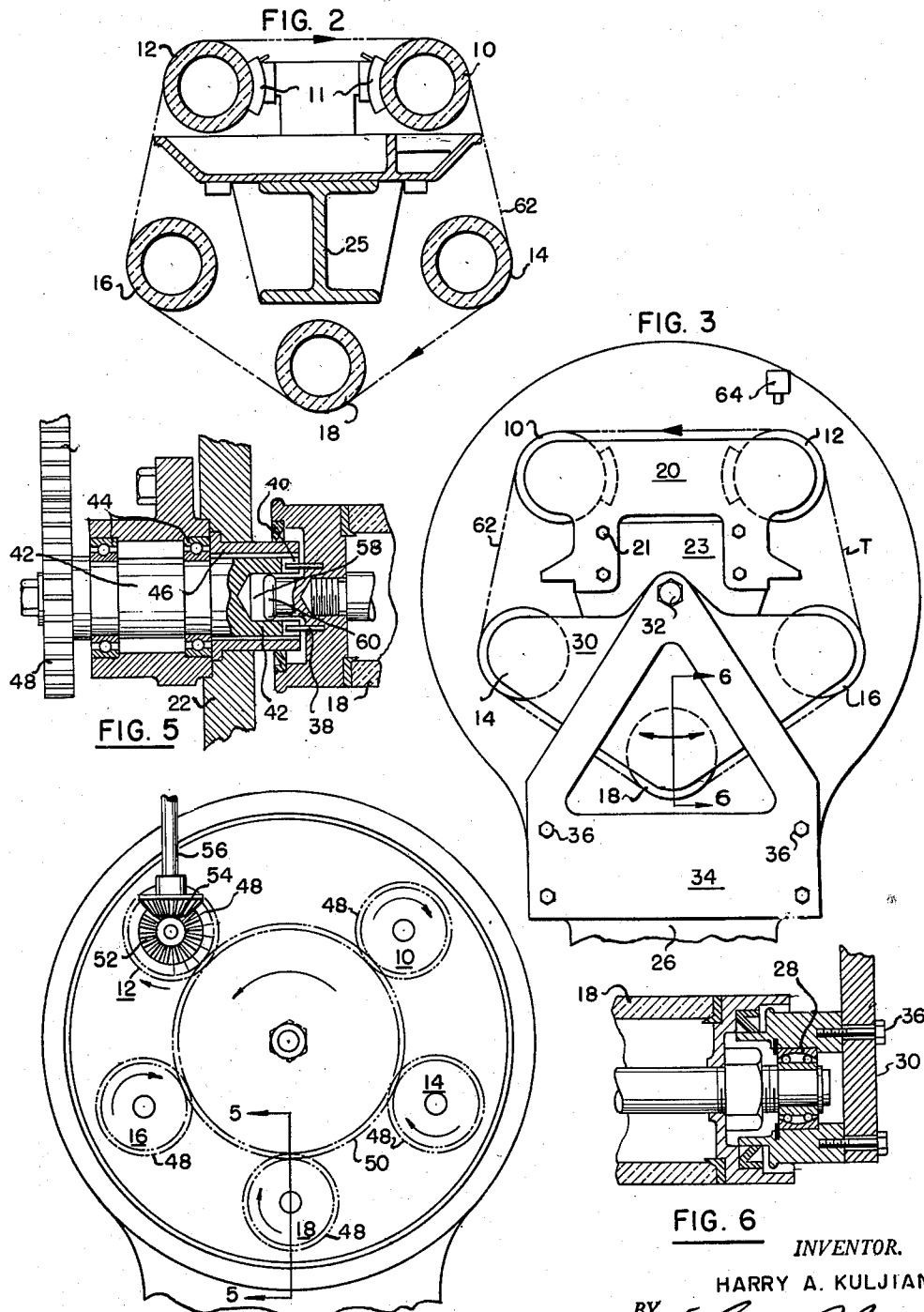
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## THREAD PROCESSING APPARATUS

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Application April 29, 1959, Serial No. 809,701

2 Claims. (Cl. 68—205)

My invention relates to a thread manufacturing apparatus of the general type disclosed in my Patent No. 2,616,155 of November 4, 1953, and in my Patent No. 2,694,308 of November 16, 1954, this application being a continuation, in part, of my application Serial No. 527,776 of August 11, 1955, entitled Thread Manufacturing Apparatus, and now abandoned.

The apparatus disclosed in said patents includes a thread storing and advancing reel formed of a number of elongated, cylindrical rolls arranged in a circle around a horizontal central axis, means for skewing the axes of the rolls with reference to said central axis, and means for rotating said rolls about their respective axes, so that, a thread wound about the reel will advance, in the form of a helix encompassing all of the rolls, from one end of the reel to the other. The apparatus referred to also includes means for applying treating liquids to the thread as it moves over one of the two uppermost rolls and includes wipers for removing excess liquids from the surfaces of at least the uppermost two of said rolls.

The reel disclosed in my patents aforesaid, is formed of eight rolls and the axes of all of the rolls are skewed relative to the axis of the reel. While the apparatus of either of said patents is successful and wholly operative, I have, nevertheless, discovered that the skewing of rolls to which wipers are applied is not wholly desirable because it interferes with the wiping action and shortens the life of the wipers and of the rolls. I have now found that the reel will advance the thread satisfactorily even though not all of the rolls are skewed and that a wholly operative reel can be made with a number of rolls less than eight.

It is, therefore, the object of the invention to produce an improved reel which is formed of a number of rolls less than eight and in which the upper rolls, which initially receive the regenerating and treating liquids and which are provided with wipers, are not skewed.

The full nature of the invention will be understood from the following specification and the accompanying drawings in which:

Fig. 1 is a diagrammatic side elevational view of a thread storing and advancing reel embodying the invention.

Fig. 2 is a sectional view looking in the direction of line 2—2 on Fig. 1, certain parts being omitted.

Fig. 3 is an end elevational view looking in the direction of line 3—3 on Fig. 1.

Fig. 4 is a diagrammatic end elevational view looking in the direction of line 4—4 on Fig. 1.

Fig. 5 is a fragmentary view, partly in section and partly in elevation, looking in the direction of line 5—5

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on Fig. 4 and showing one way in which the rolls may be driven.

Fig. 6 is a fragmentary view, partly in section and partly in elevation, looking in the direction of line 6—6 on Fig. 3 and showing one way in which the front ends of the lower rolls are mounted.

The reel illustrated includes rolls 10, 12, 14, 16 and 18 which are arranged in a circle about an imaginary central axis, as shown in Fig. 2, to form a thread storing and advancing reel similar to that shown in my patent aforesaid.

Rolls 10 and 12 are provided with wipers 11 and their outer, or right hand, ends are journaled in conventional fixed bearings, not shown, which are carried by end plate 20 which is secured, at 21, to plate 23 which is carried by the front end of beam 25 which is suitably secured to bed plate 24. The opposite ends of rolls 10 and 12 are journaled in similar, conventional, fixed bearings, which are not shown, and which are carried by end plate 22 which is also suitably secured to bed plate 24. Bed plate 24 is suitably mounted on pedestal 26. Except for being rotated about their respective axes in the manner hereinafter set forth, rolls 10 and 12 may be said to be "fixed" in the sense that their axes are not skewable relative to the central axis of the reel.

The outer ends of rolls 14, 16 and 18 are journaled in self-aligning bearings 28, which are carried by plate 30 which is secured, by bolt 32, to plate 23 and to bracket 34 which is fixedly secured at 36 to bed plate 24. The opposite ends of rolls 14, 16 and 18 are provided with pins 38 which loosely engage recesses 40 in the ends of corresponding stub shafts 42 which are journaled in bearings 44 and which freely rotate in sleeves 46. The shafts of all of the rolls carry gears 48 which mesh with a sun gear 50, and the shaft of one of the upper rolls, such as roll 12, is provided with a bevel gear 52 which is driven by bevel 54 at the end of motor shaft 56 to rotate sun gear 50 and through it, to rotate the remaining rolls.

The ends of the shafts 42 of rolls 14, 16 and 18 are provided with sockets 58 which movably engage rounded members 60 to provide a ball and socket joint between rolls 14, 16 and 18 and their respective shafts 42. By this arrangement, rolls 14, 16 and 18 may be skewed relative to rolls 10 and 12 and relative to the central axis of the reel, to cause a thread 62 wound about the reel to move, in the form of a helix, from the left end to the right end, of the reel as viewed in Fig. 1. The thread is supplied with treating liquids through nozzles 64.

It will be noted that rolls 10 and 12 which are provided with wipers 11 are not skewed. This improves the wiping action and prolongs the life of the rolls and of the wipers. Also, by using one of fixed rolls 10 or 12 to drive the other rolls, the back lash which will be present if one of the skewed rolls is used to drive the assembly, is reduced or eliminated.

What I claim is:

1. A thread storing and advancing reel including a bed plate, a first fixed vertical end wall carried by said support, a second fixed wall carried by said bed plate and horizontally spaced from said first end wall, at least one upper horizontal roll having its opposite ends journaled for rotation in fixed bearings carried by said first and second end walls, a fixed wiper abutting the surface of said upper roll, a third end wall adjacent said second end

wall, at least two lower horizontal rolls each having one end thereof journaled in a self aligning bearing carried by said third wall and having its opposite end journaled in said first end wall and movable relative thereto, means mounting said third wall for rotation about an axis parallel to the axis of said upper roll and located substantially centrally of the axes of all of the rolls, and actuating means for rotating at least two of said rolls.

2. The structure recited in claim 1 in which said upper roll is operatively connected to said lower rolls and in which said actuating means is operatively connected to said upper roll.

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