Aug. 16, 1938. W. KNOWLES 2,127,410

ROVING MACHINE

Filed Nov. 19, 1937 4 Sheets-Sheet 1

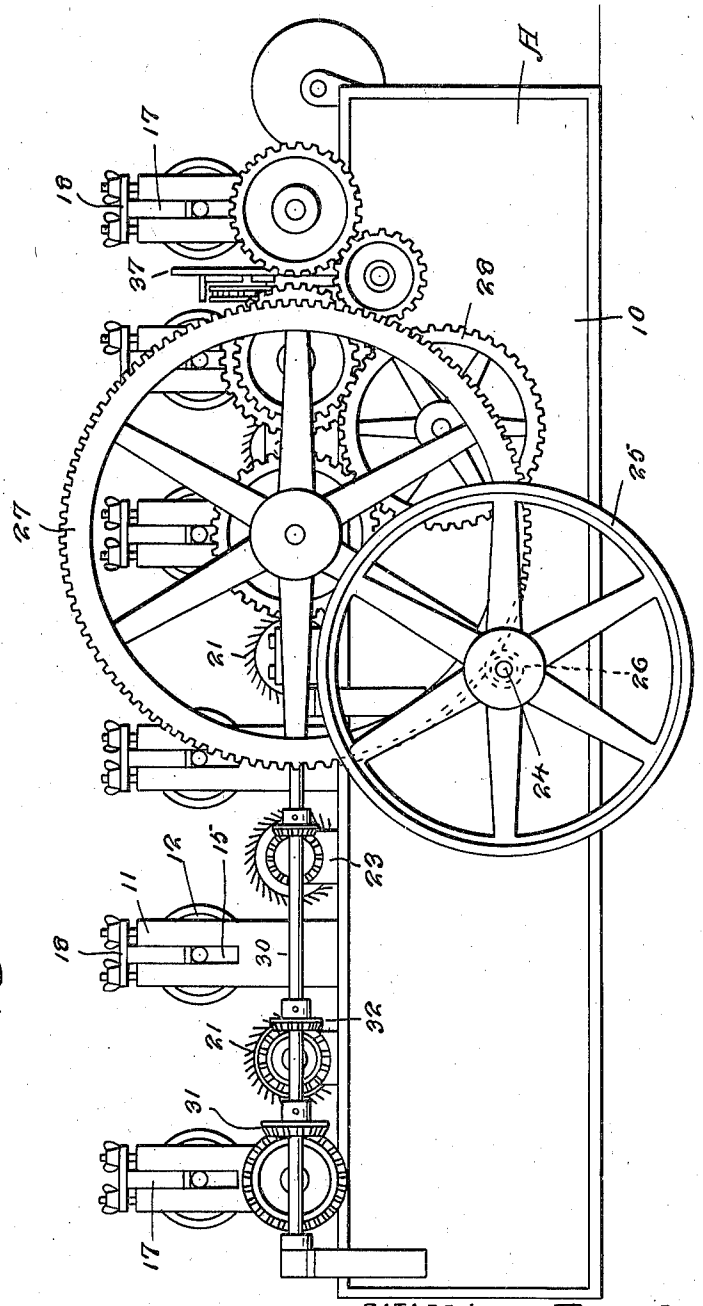


Fig. 1.

William Knowles INVENTOR

BY Victor J. Evans & Co.

ATTORNEYS

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ROVING MACHINE

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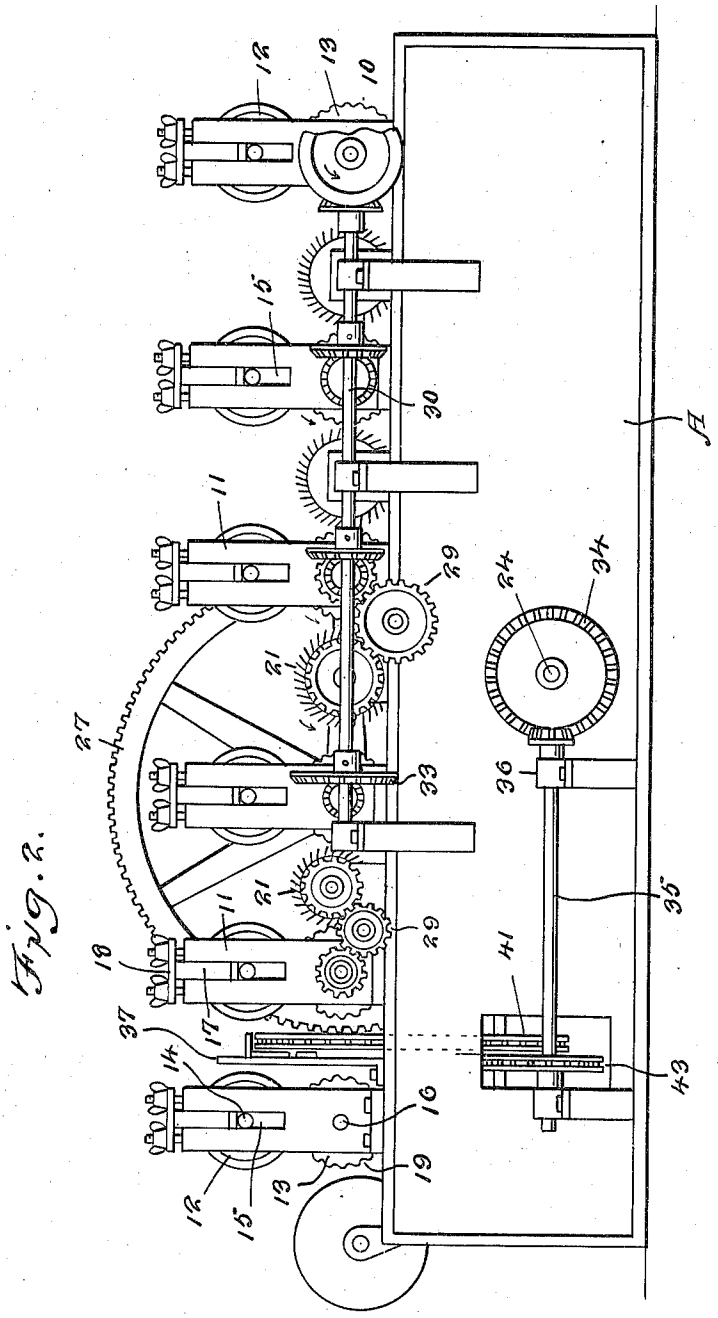


Fig. 2.

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ROVING MACHINE

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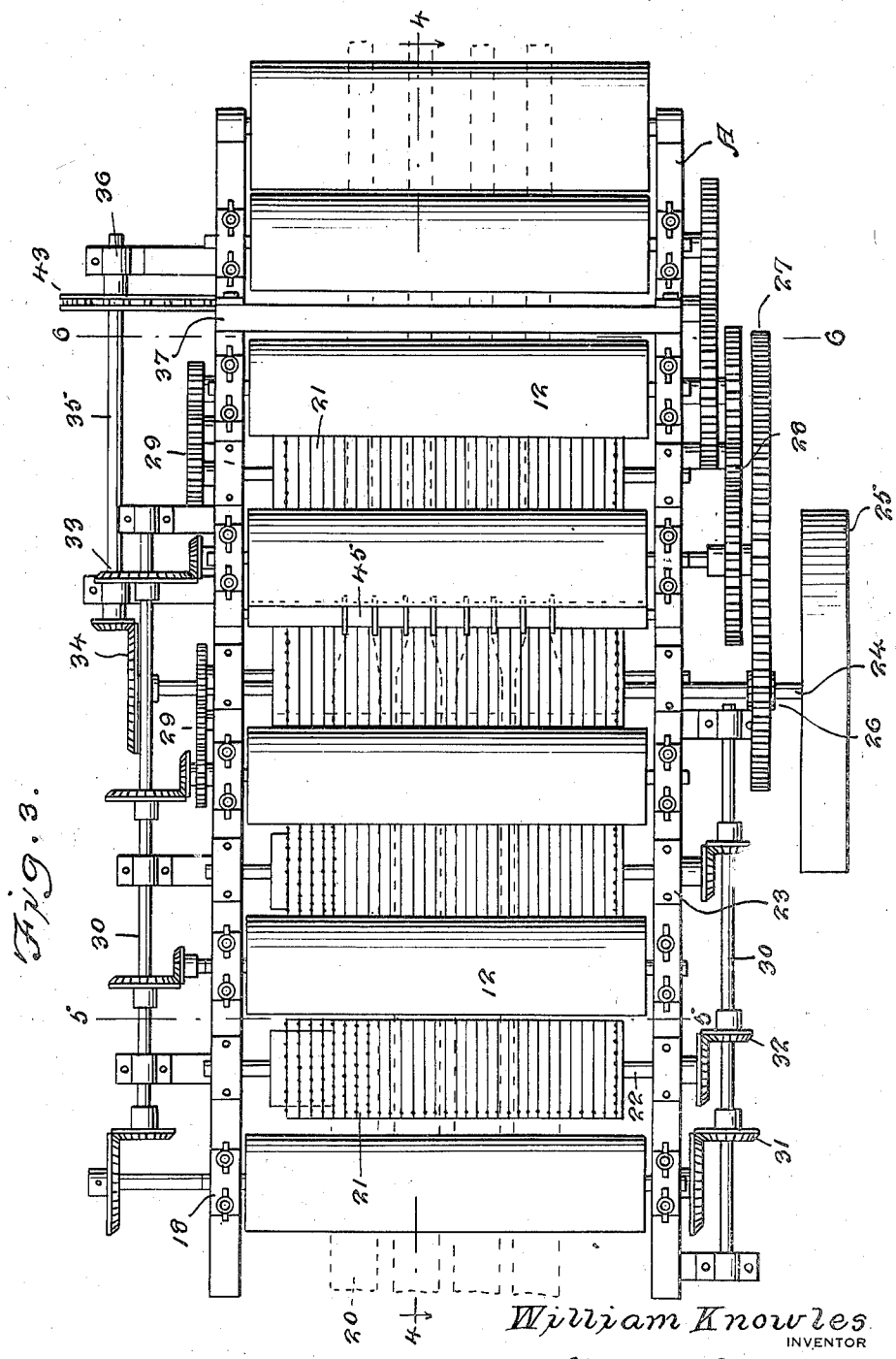


Fig. 3.

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Aug. 16, 1938. W. KNOWLES 2,127,410

ROVING MACHINE

Filed Nov. 19, 1937 4 Sheets-Sheet 4

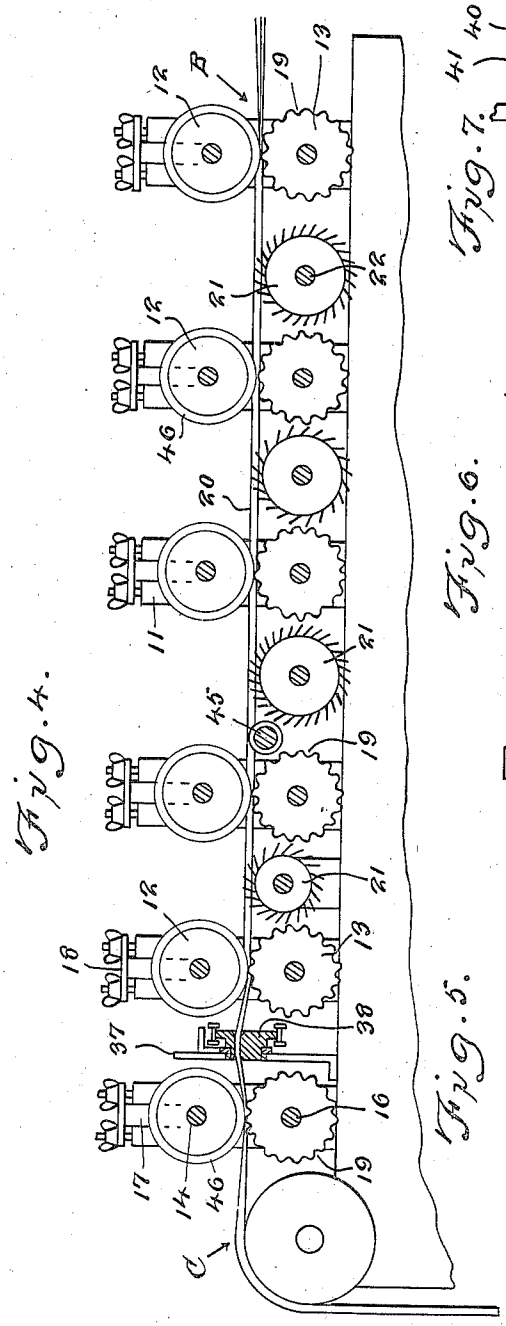


Fig. 4.

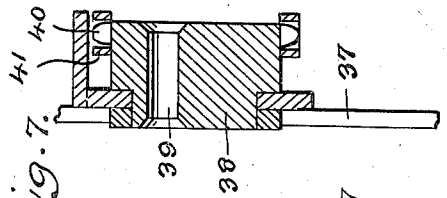


Fig. 7.

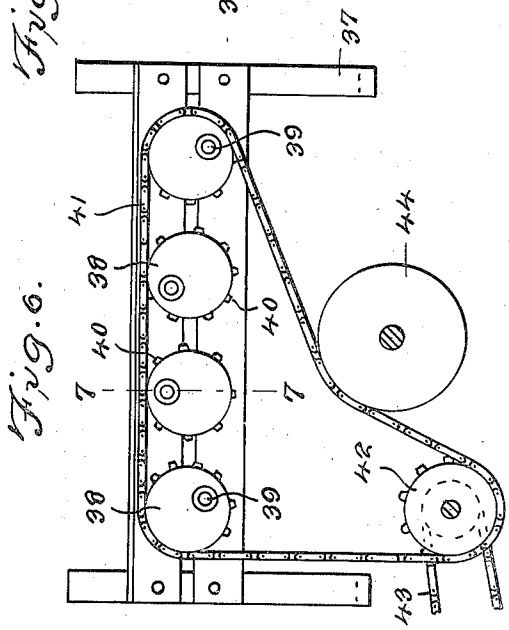


Fig. 6.

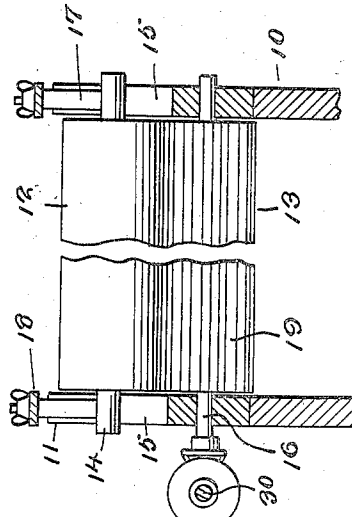


Fig. 5.

William Knowles
INVENTOR

BY Victor J. Evans & Co.
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Patented Aug. 16, 1938

2,127,410

UNITED STATES PATENT OFFICE

2,127,410

ROVING MACHINE

William Knowles, North Andover, Mass.

Application November 19, 1937, Serial No. 175,529

5 Claims. (Cl. 19—130)

The invention relates to a roving machine and more especially to a wool evener and drawing machine for the making of worsted yarn.

The primary object of the invention is the provision of a machine of this character, wherein slivers of wool material will be drawn for the condensing of the same and twisted in a single operation so as to have the slivers condensed to the desired degree for the making of the yarn or roving, the machine in its construction and assembly being novel.

Another object of the invention is the provision of a machine of this character, wherein the drawing for the condensing of slivers of wool of different qualities and sizes can be had and at the same time the slivers twisted so that the same can be passed to bobbins for the winding of the yarn thereon, the drawing action of the machine being increased from one end to the other, that is, from the receiving to the delivering ends, and in this manner effecting the proper condensing of the slivers which at intervals will be operated upon by combs for the straightening of the fibers or material making up the slivers while at the same time cohesion of the fibers of the wool will be assured.

A further object of the invention is the provision of a machine of this character, wherein adjustment may be had for enabling it to handle different lengths of stock and in the arrangement of the drawing mediums and combing devices an even sliver will be assured in the operation of said machine.

A still further object of the invention is the provision of a machine of this character, which is comparatively simple in its construction, thoroughly reliable and efficient in operation, assuring the grouping of varying steps in the handling of the stock for making rovings for spinning frames in a single operation for the production of worsted yarns, automatic in the working of the same and comparatively inexpensive to manufacture.

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, 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 side elevation of the machine constructed in accordance with the invention.

Figure 2 is a view similar to Figure 1 looking toward the opposite side of the machine.

Figure 3 is a top plan view partly in section.

Figure 4 is a sectional view on the line 4—4 of Figure 3 looking in the direction of the arrows.

Figure 5 is a sectional view taken transversely of the machine on the line 5—5 of Figure 3.

Figure 6 is a sectional view on the line 6—6 of Figure 3.

Figure 7 is an enlarged fragmentary sectional view on the line 7—7 of Figure 6.

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

Referring to the drawings in detail, A designates generally a frame of suitable construction and proportions for supporting the several parts of the machine as herein described. The frame A has arranged at the top edges of opposite sides 10 thereof upstanding horizontally spaced bearing uprights or columns 11 in which are journaled upper and lower drawing rollers 12 and 13, respectively, the axle 14 for each upper roller being accommodated in bifurcations 15 vertically opening through the upper ends of opposed columns or uprights 11 while the axle 16 of each lower roller 13 is fixedly journaled in the said uprights or columns. Thus it does appear in Figures 1, 2, 4 and 5 of the drawings that the axles 14 of these upper rollers 12 are susceptible of vertical displacement and coacting therewith are resilient blocks 17 fitting the bifurcations 15 above the said axles and adjustably clamped at 18 within the bifurcations so in this manner the upper rollers 12 are yieldably or resiliently journaled. The lower rollers 13 at their outer work engaging peripheral surfaces are fluted or corrugated longitudinally at 19 to assume grip upon the stock 20 operating between the upper and lower rollers 12 and 13 in the working of the machine. The stock 20 is wool slivers received by the machine at the entrance end denoted at B and delivered from the said machine at the delivery end C, respectively.

Located between the uprights or columns 11 supporting the rollers 12 and 13 are timed porcupine or comb rollers 21, having their axles 22 suitably journaled in bearings 23 built onto the sides 10 of the frame A, these rollers 21 being disposed for rotation in the same plane of rotation of the lower rollers 13 and are for combing action on the stock 20 for the straightening and the cohesion of the slivers making up the said stock in the roving operation of the machine.

Disposed transversely of the frame A and suitably journaled therein is a rotary power shaft

24, in this instance having fixed thereto a belt power wheel or pulley 25 for the driving of the said shaft while the latter at one side of the frame A is provided with a pinion 26 meshing with a large gear 27 constituting the master gear of a group or train of driven speed gears 28, certain of these being common to the axles 16 of several of the lower drawing rollers 13, which latter through gear connections 29 operate the companion rollers 21 next thereto, these gear connections 29 rotate the rollers 21 at a uniform rate of speed while the group or train of gears 28 drive the rollers 13 common thereto at increased speed with respect to each other.

Arranged at opposite sides of the frame A are driven shafts 30, these being suitably journaled parallel with each other and longitudinally of the frame and have gear connections 31 and 32 with the remaining lower rollers 13 and 21, respectively, the gearing connections between the said shafts 30 and the said rollers 13 being such as to increase the speed of rotation thereof with respect to each other so that the drawing action set up by the rollers 12 and 13 throughout the length of the machine will be gradually increased from the end B to the end C of the frame A. One of the shafts 30 through the gearing 33 is driven directly from the train of gearing 28.

The gearing 34 connects the shaft 24 with an auxiliary shaft 35 which is journaled at 36. Built in the frame A adjacent to the delivery end C is a vertical rack 37 being disposed crosswise of the said frame and this rack carries a series of rotatable twisters 38, each having concentrically therein a twister eye 39. The twisters are of gear construction having peripheral sprocket teeth 40 engaged by an endless sprocket chain 41 driven through chain and sprocket wheel connections 42 and 43, respectively, by the shaft 35. Coacting with the chain 41 is an idle sprocket wheel 44 and by chain 41 the twisters 38 are operated in unison with each other while the eyes 39 receive the stock 20 for the false twisting thereof prior to delivery of such roving from the machine. The axes of rotation of the twisters 38 are at right angles to the axes of rotation of the drawing rollers 13, the upper rollers 12 coacting with the latter being presser rollers for the stock to assure drawing activity of the lower rollers 13 in the working of the machine.

Correlated with companion lower and upper rollers 12 and 13 is a stripping and condensing roller 45, which is disposed transversely of the frame A and is adjacent to one of the porcupine or combing rollers 21, the upper presser rollers 12 being provided with resilient or rubber peripheral coverings 46.

What is claimed is:

1. A machine of the character described comprising a frame having spaced upstanding bearing columns, upper and lower drawing rollers arranged in said columns, comb rollers journaled in said frame between certain of the lower drawing rollers, means for driving the lower drawing rollers at varying speeds with respect to each other increasing in sequence from one end of the frame to the other, a vertical rack built in the frame at a point between adjacent lower drawing rollers located next to one end of the frame and arranged crosswise of the latter, and a series of twisters operatively fitted in said rack.

2. A machine of the character described comprising a frame having spaced upstanding bearing columns, upper and lower drawing rollers arranged in said columns, comb rollers journaled in said frame between certain of the lower drawing rollers, means for driving the lower drawing rollers at varying speeds with respect to each other increasing in sequence from one end of the frame to the other, a vertical rack built in the frame at a point between adjacent lower drawing rollers located next to one end of the frame and arranged crosswise of the latter, a series of twisters operatively fitted in said rack, and means for operating the twisters simultaneously with the operation of the drawing rollers.

3. A machine of the character described comprising a frame having spaced upstanding bearing columns, upper and lower drawing rollers arranged in said columns, comb rollers journaled in said frame between certain of the lower drawing rollers, means for driving the lower drawing rollers at varying speeds with respect to each other increasing in sequence from one end of the frame to the other, a vertical rack built in the frame at a point between adjacent lower drawing rollers located next to one end of the frame and arranged crosswise of the latter, a series of twisters operatively fitted in said rack, and means for operating the twisters simultaneously with the operation of the drawing rollers, each of said twisters being in the form of a gear and having a twister eye eccentrically disposed to the axis of movement of said gear.

4. A machine of the character described comprising a frame having spaced upstanding bearing columns, upper and lower drawing rollers arranged in said columns, comb rollers journaled in said frame between certain of the lower drawing rollers, means for driving the lower drawing rollers at varying speeds with respect to each other increasing in sequence from one end of the frame to the other, a vertical rack built in the frame at a point between adjacent lower drawing rollers located next to one end of the frame and arranged crosswise of the latter, a series of twisters operatively fitted in said rack, means for operating the twisters simultaneously with the operation of the drawing rollers, each of said twisters being in the form of a gear and having a twister eye eccentrically disposed to the axis of movement of said gear, and a stripping and condensing roller corelated with companion lower and upper drawing rollers.

5. A machine of the character described comprising a frame having spaced upstanding bearing columns, upper and lower drawing rollers arranged in said columns, comb rollers journaled in said frame between certain of the lower drawing rollers, means for driving the lower drawing rollers at varying speeds with respect to each other increasing in sequence from one end of the frame to the other, a vertical rack built in the frame at a point between adjacent lower drawing rollers located next to one end of the frame and arranged crosswise of the latter, a series of twisters operatively fitted in said rack, means for operating the twisters simultaneously with the operation of the drawing rollers, each of said twisters being in the form of a gear and having a twister eye eccentrically disposed to the axis of movement of said gear, a stripping and condensing roller corelated with companion lower and upper drawing rollers, and resilient facings on the upper drawing rollers.

WILLIAM KNOWLES.