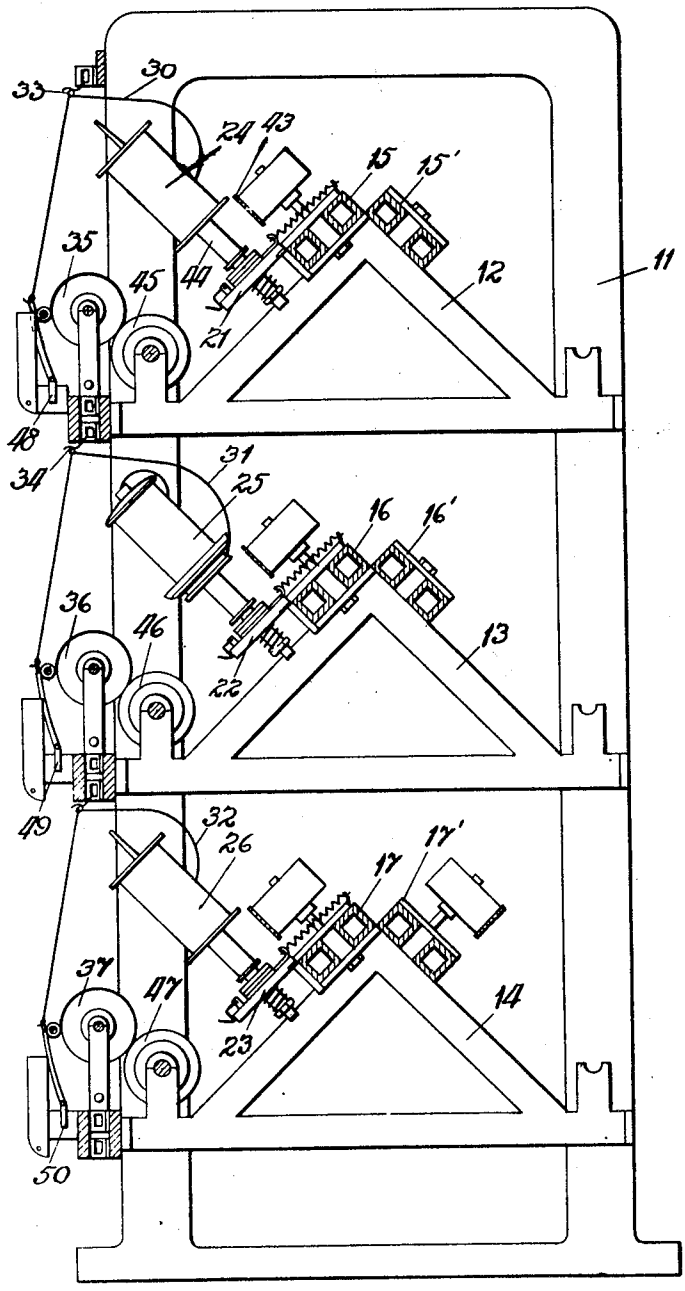
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APPARATUS FOR SPINNING AND TWISTING TEXTILE YARNS

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APPARATUS FOR SPINNING AND TWISTING TEXTILE YARNS

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This invention relates to apparatus for spinning and twisting textile yarns and particularly to frame and support apparatus for textile yarn spindles and take-up reels.

Space is at a premium in the textile industry Frames and apparatus are designed and located to utilize to the best advantage the space available in a plant. To this end, yarn spinning and twisting machines have incorporated double vertical banks of spindle and take-up reel pairs so as to utilize more effectively the vertical space available. More than two vertical rows have not been practical with conventional arrangements since stepladders would be required by the operators to reach the top row and excessive stooping to reach the bottom row, in attending the apparatus, doffing the reels, repairing yarn breaks, etc.

The textile industry has also had problems when vertical banks of spinning and twisting spindles and reels were used in that a break, occurring in the upper spindle mechanism would allow the yarn to fall into the take-up reel of the lower spindle, thus fouling and interfering with the normal operation of the lower spindle and causing two spindles to go out of order at the same time.

Therefore, it is an object of this invention to provide apparatus for spinning and twisting textile yarns which will permit three or more vertical banks of yarn spinning and twisting spindles and reels which will be located within convenient operating height so that an operator of average height can readily reach each of three vertical banks of apparatus, without requiring the use of ladders or other stepping arrangements, and without excessive stooping.

It is another object to provide apparatus of the nature described in which the spindle and take-up reels will be located in such a way that broken yarn, from the higher of two banks of apparatus mounted vertically, will not fall into and interfere with the operation of the lower bank.

Other objects will be apparent after a study of the following description, claims and drawings in which the only figure is an elevational view in partial cross-section through a frame for supporting yarn spindles and take-up reels and the drive mechanisms therefor for spinning and twisting textile yarns.

In accordance with this invention the take-up reel, which in the past has been located above the spinning or twisting spindle, is positioned or located below the spindle. The yarn passes upwardly from the spindle through an eyelet thence downwardly to the take-up reel.

Referring now more particularly to the drawing, a frame 11 is illustrated having supporting arms 12, 13 and 14 located in a vertical plane. These supporting arms carry the spindle supporting rails 15, 16 and 17 respectively. As may be seen, the arms 12, 13 and 14 may be V-shaped so that spindle supporting rails may be located on both sides thereof, thus doubling the number of spindles supported by the frame. Such additional supporting rails are identified as 15', 16', and 17' in the drawing.

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A yarn spinning and twisting spindle support 21 is securely attached to the supporting rail 15. Similar spindle supports 22 and 23 may be supported by the rails 16 and 17 respectively. In the drawing different types of spinning and twisting spindles are shown for illustrative purposes only, it being understood that any combination or banks of spindle types may be used. In accordance with this illustration a single twist spindle 24 is shown as the uppermost of the three spindle mountings in the drawing. Below the spindle 24 is a spindle 25 of the so-called double twist type. A third spindle 26 may be mounted on the lowermost of the three supports on the frame 11. Thus three vertical banks of spindles are provided.

In accordance with this invention the yarn 30 passes upwardly from the spindle 24 to the yarn guide eyelet 33. This yarn guide eyelet may be supported or mounted on the frame 11 in any well known or desired manner. After passing through the eyelet 33 the yarn passes downwardly to the take-up reel 35.

The take-up reel 35 is located below the spindle 24. Preferably this take-up reel is located approximately opposite the base of the spindle or the mounting 21, i. e. in a common horizontal plane therewith. This position is not critical however. It is desirable that the reel 35 be located sufficiently low to enable an operator to have access to the spindle 24 so that it may be readily removed from its mounting 21. Further it is desirable that the take-up reel 35 be located as high as possible with respect to the spindle 25 mounted below, i. e. in the lower bank. Such positioning of the take-up reel 35 permits greater utilization of the vertical space available on the frame 11.

A similar arrangement is provided for each of the other spindles. The yarn 31 from spindle 25 passes through a guide eyelet 34 thence downwardly to take-up reel 36 located below the spindle 25. The yarn 32 from the lowermost spindle 26 follows a similar path to a take-up reel 37 located therebelow.

The spindle may be rotated by driving belts such as belt 43 which rotates spindle 24 by frictional engagement with the spindle whorl 44. Similar belt mechanism may drive the spindles on the lower banks.

Each spindle mounting is on a slant as shown. This type mounting is more fully described and claimed in the copending application No. 1974,

now Patent No. 2,497,865, entitled Latch Mechanism for a Textile Spindle.

Any desired drive may be used for the take-up reels. The mechanism may take the form shown in which rotating drive units 45, 46 and 47 are rotating cork rolls driving, by frictional engagement, the take-up reels 35, 36 and 37, respectively.

Standard well known traverse bars may be used for feeding the yarn onto the take-up reels. Such traverse bars 48, 49 and 50 feed the yarn through suitable guides onto the take-up reels, 35, 36 and 37 respectively. Additional yarn guides may be located as desired.

With this novel arrangement in which the take-up reel is located below the spindle there is a great advantage in space saving and an additional advantage in isolating each unit from the one vertically adjacent thereto. If the yarn 30, for instance, should break for any reason, it will fall downwardly onto its own take-up reel 35 or driving roll 45. It is apparent, however, that it will not fall into the operating mechanism of the spindle 25 or take-up reel 36 located below. Therefore, in addition to the space saving advantages there is the time saving advantage in that if any one unit becomes fouled for any reason there will be no interference with any other unit which is operating nearby. Furthermore, in spite of prior considerations of those skilled in the art and industry, this apparatus has been found to operate most satisfactorily and is going into widespread use.

It will be apparent that modifications of the various elements illustrated and described herein are possible without departing from the scope of the invention.

What is claimed is:

1. Apparatus for spinning and twisting textile yarns comprising a frame having supporting elements for three vertical banks of textile yarn spindles and take-up reels, said spindles having their axes inclined, each take-up reel being located below its respective spindle each said take-up reel being in substantial horizontal alignment with the base, and substantial vertical alignment with the top of its respective spindle.

2. The combination according to claim 1, including a yarn guide on said frame located above each said spindle for guiding the yarn from the spindle downwardly to the take-up reel.

3. Apparatus for spinning and twisting textile yarns comprising a frame for supporting a yarn spindle and yarn take-up reel, said spindle having its axis inclined, the support for said take-up reel being located below said spindle said take-up reel being substantially in horizontal alignment with the base and vertical alignment with the top of said spindle.

4. Apparatus for spinning and twisting textile yarns comprising a frame having supports for three spinning and twisting spindles located in a common substantially vertical plane, a spindle mounted with its axis inclined on each support, and a yarn package on each said spindle, a yarn guide located above each said spindle through which the yarn from each said spindle passes, a yarn take-up reel supported by said frame below each said spinning spindle, the path for said yarn being through said guide downwardly to said take-up reel each said take-up reel being substantially in horizontal alignment with the base and vertical alignment with the top of its respective spindle.

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