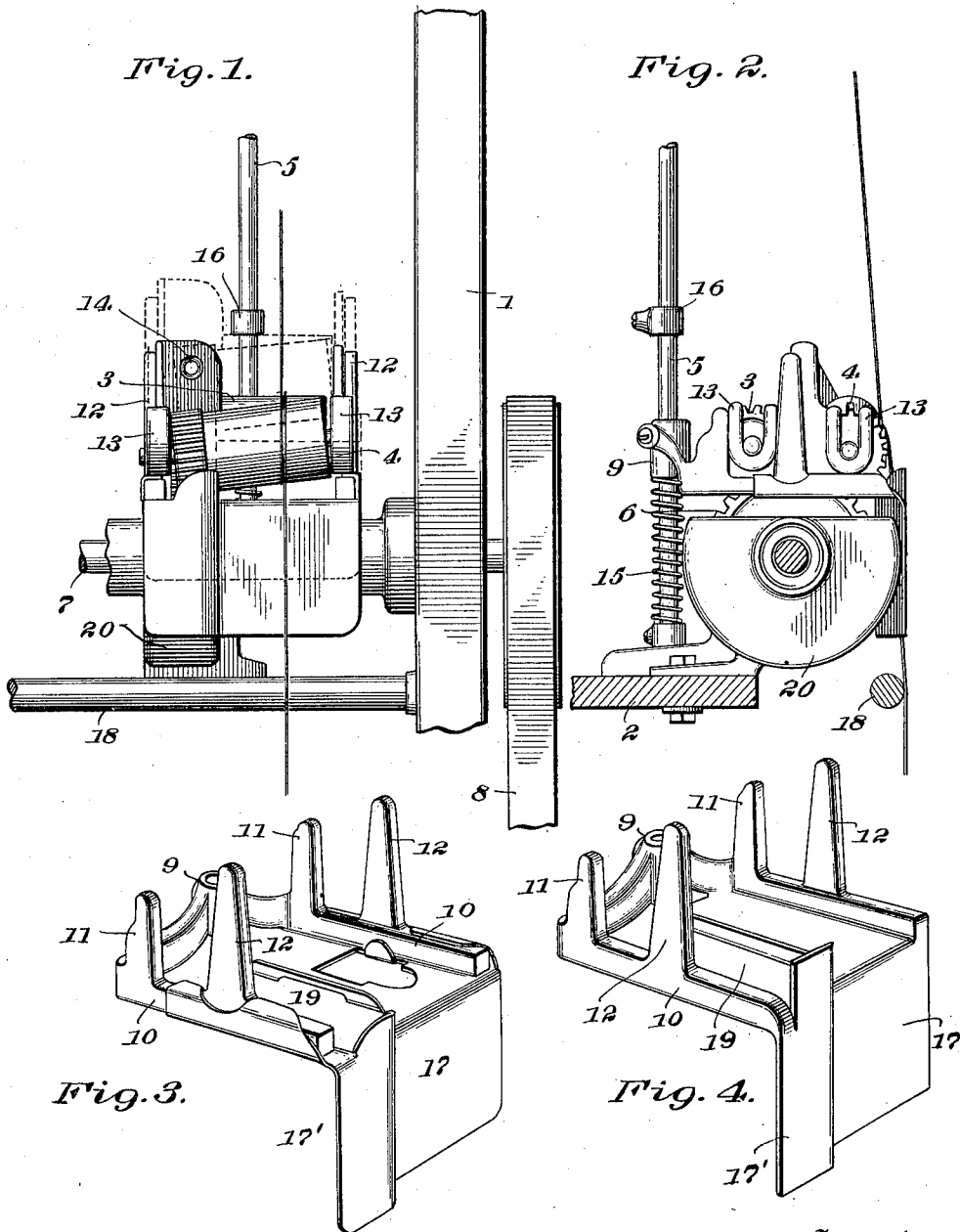


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ATTACHMENT FOR THREAD DOUBLING AND TWISTING MACHINES.
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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR THREAD DOUBLING AND TWISTING MACHINES.

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Specification of Letters Patent.

Patented June 11, 1912.

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To all whom it may concern:

Be it known that I, GEORGE F. MACFARLANE, a citizen of the United States, and resident of Wilkes-Barre, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Attachments for Thread Doubling and Twisting Machines, of which the following is a specification.

10 The present invention relates to improvements in attachments for thread doubling and twisting machines, being particularly adapted for use with machines for twisting silk.

15 In such machines the threads or strands from a plurality of supply bobbins or spools are conducted through suitable guides to form a single thread and then wound upon a single bobbin or spindle. Such composite

20 thread is passed about suitable feed rolls which are geared to a driving shaft that is adapted to drive a large number of feed rolls and which is rotated continuously while the machine is in operation. As such

25 threads frequently break during their formation and while being wound upon the receiving bobbins means are commonly provided for disengaging any set of feed rolls from the driving shaft when the thread

30 engaged by said rolls breaks and this is generally effected by moving the feed rolls bodily from said shaft. The loose broken ends of the thread are frequently caught by the driving shaft, or the gearing thereon for

35 actuating the feed rolls, even though the latter are moved some distance from the shaft and by being wound thereon act to clog the mechanism as well as cause a considerable loss of material. To avoid this and

40 provide means whereby it will be impossible for the thread to become engaged with the driving shaft even if it is broken is the object of the present invention.

In the accompanying drawing: Figure 1 is a face view of a portion of a doubling and twisting machine having the present invention applied thereto; Fig. 2 is an end view, showing the driving shaft and a portion of the machine frame in section; Figs. 3 and 4 are detail perspective views of two forms of support for the feed rolls.

Referring to the drawing, 1 designates a portion of the upright or end piece of the frame work of the machine and 2 a rail or

supporting bar for a series of sets of thread winding rolls. Each of the sets of rolls comprises two rolls 3, 4, mounted in bearings supported by an upright rod or standard 5 that is attached at its lower end to the rail or support 2. At one end each of the rolls 3, 4, is provided with a pinion which is adapted to mesh with a gear 6 on a driving shaft 7.

The driving shaft may extend throughout the length of the machine and is provided at regular intervals with gears 6, one for each set of thread feed rolls, all of said gears being splined or otherwise secured to the shaft so as to turn therewith.

In the drawing the driving shaft is shown as extending beyond the end 1 of the supporting frame and having secured to its projecting portion a drum or pulley with which engages a suitable belt 8.

The support for each set of feed rolls comprises a yoke-shaped member having a sleeve 9 loosely surrounding the standard 5 and two parallel arms 10 each provided with two upwardly projecting lugs 11, 12. The rolls 3, 4 are provided at their ends with journals which fit in recesses or open-top bearings 13 formed in a cast metal piece that is adapted to rest upon the arms 10 of said yoke. When in position, as shown in Fig. 2, the bearings for the roll 3 fit snugly in the spaces separating the lugs 11, 12 and said rolls and their bearings 13 are thus held against horizontal movement on the supporting yoke and as above stated the casting of which the bearings 13 form a part rests upon and is supported by the arms 10 of said yoke. The rolls 3, 4 are separated by a web or partition which at one end rises upwardly above them and has an opening 14 formed therein.

A spring 15 surrounding the upright or standard 5 tends constantly to raise the feed rolls support so that the pinions on said rolls will be out of mesh with the associated driving gear 6, such upward movement being limited by a stop collar 16.

The thread, as shown, passes about the feed rolls in the usual manner and then across the front face of a shield or guard plate 17 and across a guide roll or rod 18.

In the form of the invention illustrated in Figs. 2 and 3 the guard plate or shield is made of sheet metal bent to provide a hori-

zontal section which extends beneath the arms 10 of the yoke-shaped support for the feed rolls and has its side edges bent upwardly and over upon said arms to firmly connect it thereto. Such horizontal top section is cut away to provide a slot 19 through which the pinions on the feed rolls pass. The front vertical member 17 of said guard is of such height that when the bearing for the feed rolls is in its uppermost position it extends entirely across the space separating the support for the feed rolls and the driving shaft, as represented in dotted lines in Fig. 1.

So long as the thread is properly taut the feed rolls will be maintained in engagement with their driving gear 9 against the action of spring 15. If however the thread should break the spring will act to instantly lift the feed rolls to the position shown in dotted lines in Fig. 1, thus disengaging the rolls and driving shaft. While the parts are in this position the shield or guard plate 17 positively prevents the loose ends of the thread from being caught by the gear 6 or the driving shaft.

Referring to Fig. 3 it will be seen that the edge of the top section of the guard plate or shield adjacent the slot 19 is bent upward slightly so that even if a loose end of a thread enters the space separating the roll 4 from the shield or guard it will be prevented from moving into position to be engaged by the gear 6. In other words said shield or guard in effect covers or extends entirely across the space separating the feed rolls from the driving shaft and provides a smooth wall extending both horizontally and vertically across the shaft.

The driving shaft is surrounded by a suitable sectional casing having enlarged portions 20 to receive the gears 6, said enlarged portions being open at the top to permit the gears to project therefrom and be engaged by the pinions on the feed roll. Preferably the guard plate or shield is shaped to conform to this shaft casing, having a section 17' which is forward of the main body and is connected therewith by an intermediate section that extends parallel to and closely adjacent a side face of the casing for the gear 6.

Instead of forming the guard plate of sheet metal as hereinbefore described it may, as shown in Fig. 4, be cast integral with the yoke-shaped support for the feed rolls.

It will be seen that the shield or guard plate will effectually prevent the ends of the thread or cord from becoming entangled with the feed roll driving gear and its shaft, and that much waste of material will be thereby prevented. Furthermore it has been found that in machines of this class as now constructed the thread is frequently wound upon the feed roll driving shaft to

such an extent as to impede or stop the entire machine, which results in loss of valuable service of the machine. In machines provided with my improved guards there is no occasion for stopping to cut away accumulations of thread on the feed roll driving shaft or gears, and such waste of thread is prevented.

Having thus described the invention, what is claimed is:

1. In a thread doubling and twisting machine, the combination of a driving shaft, a thread feed roll about which the thread extends, gearing adapted to connect the shaft and thread roll, means for automatically disengaging said parts and separating the roll and shaft when the thread engaged by the roll is broken, and means for preventing the broken thread from entering the space separating the roll and shaft independent of any interference with free longitudinal movement of the thread.

2. In a thread doubling and twisting machine, the combination of a driving shaft, a thread feed roll adapted to be driven by the shaft, means for moving the feed roll from engagement with the shaft when the thread engaged thereby is broken, and a guard plate or shield mounted to move with said roll and extending across the space separating the roll and shaft.

3. In a thread doubling and twisting machine, the combination of a thread feed roll, a driving shaft, gearing adapted to connect said roll and shaft, a spring acting to separate members of said gearing to disconnect the roll and shaft when the thread breaks, and a guard plate or shield extending across the space separating the roll and shaft.

4. In a thread doubling and twisting machine, the combination of a driving shaft, a set of thread feed rolls mounted in bearings that are movable vertically to and from the shaft, gearing adapted to connect said shaft and rolls when the latter are in their lowered position, means for automatically raising said rolls to disengage said connecting gearing when the thread breaks, and a vertical guard plate or shield for preventing the broken ends of a thread from becoming entangled with the shaft.

5. In a thread doubling and twisting machine, the combination of a driving shaft, a gear thereon, a set of feed rolls supported by a vertically movable frame above the shaft and provided with pinions adapted to engage said gear when the frame is in its lowered position, a spring acting to lift said frame and feed rolls, and a guard plate or shield extending downwardly from the feed roll supporting frame and over the outer face of which the thread extends after leaving said rolls.

6. A support for the feed rolls of a thread doubling and twisting machine hav-

ing at one end an eye or guide 9 and provided at its opposite end with a depending guard or shield 17, for the purpose described.

5 7. A support for the feed rolls of a thread doubling and twisting machine having at one end an eye or guide 9 and provided at its opposite end with a depending guard or shield, a section 17' of which is
10 projected forward from the main body of the guard, for the purpose described.

8. The herein described support for the feed rolls of a thread doubling and twisting machine comprising a plate like body
15 having formed therein a slot 19 adapted to receive the driving gears of a pair of feed rolls, and provided at its forward end with a depending shield, substantially as and for the purpose described.

9. The herein described support for the 20 feed rolls of a thread doubling and twisting machine comprising a substantially horizontal body having at one end means for engaging a suitable upright or standard and
25 provided at its opposite end with a depending shield or guard plate, said body having at its opposite sides upwardly extending lugs 11, 12, forming guides to receive bearings for a pair of feed rolls, and the body
30 of the plate having a slot 19 through which the gears on such feed rolls can pass.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE F. MACFARLANE.

Witnesses:

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JOHN P. POLLOCK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."