

Nov. 2, 1937.

W. P. FORD

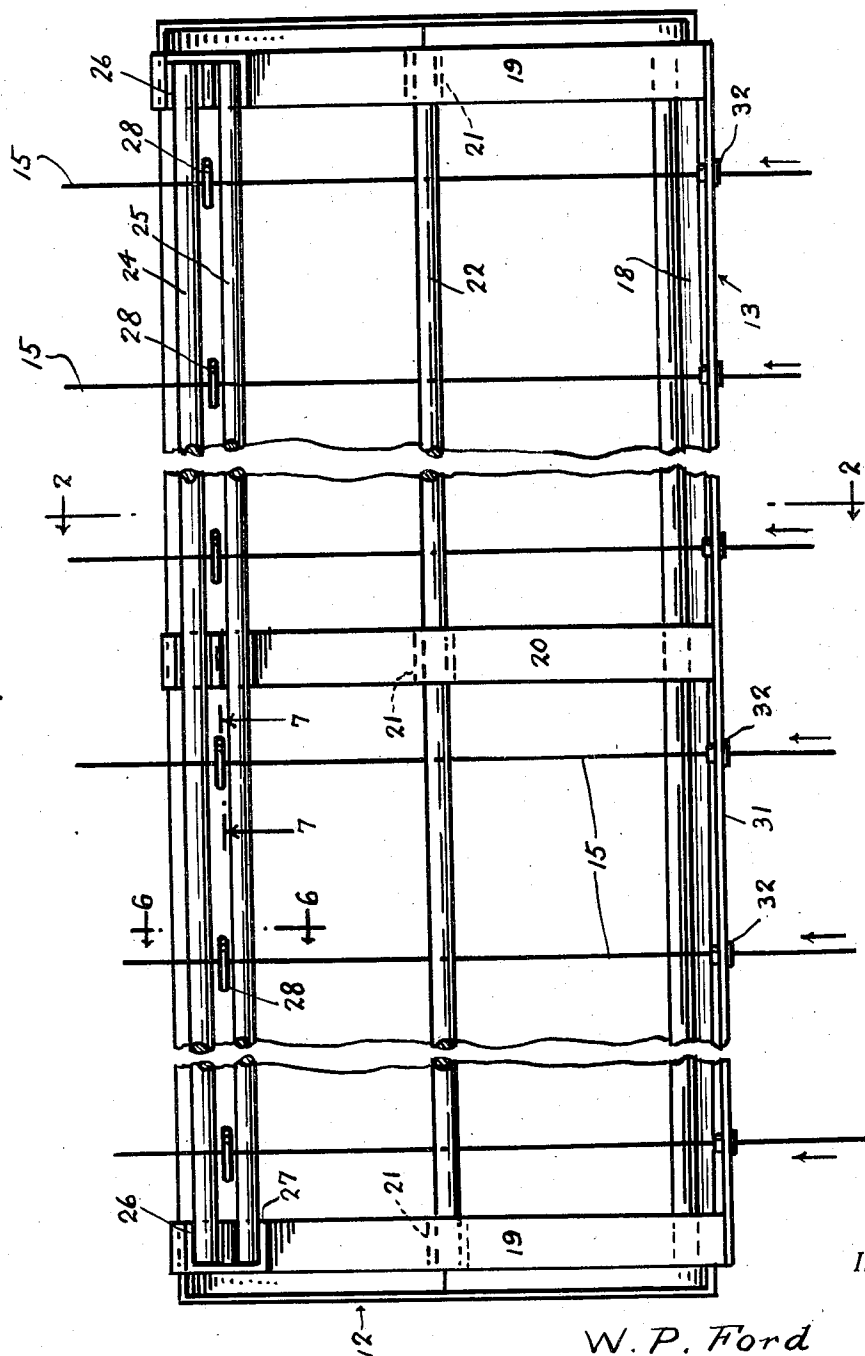
2,097,565

THREAD GUIDE AND TENSIONING MEANS FOR KNITTING MACHINES

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Fig. 1.



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Fig. 2.

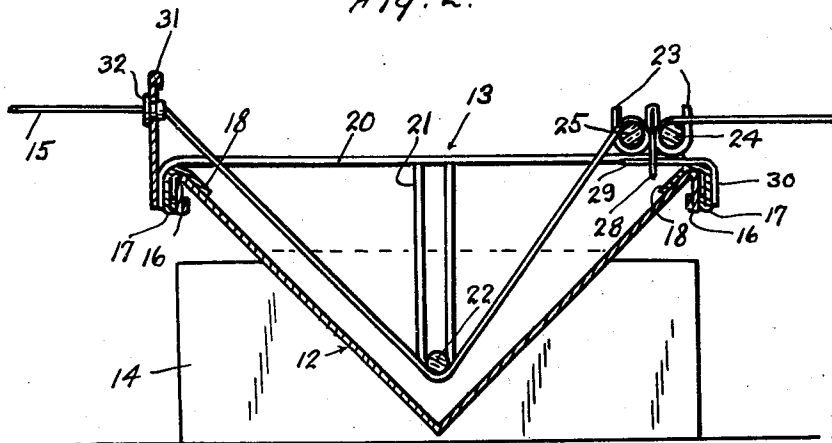


Fig. 6.

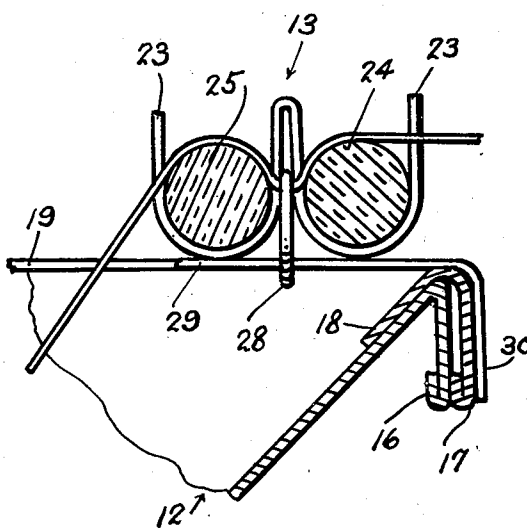


Fig. 7.

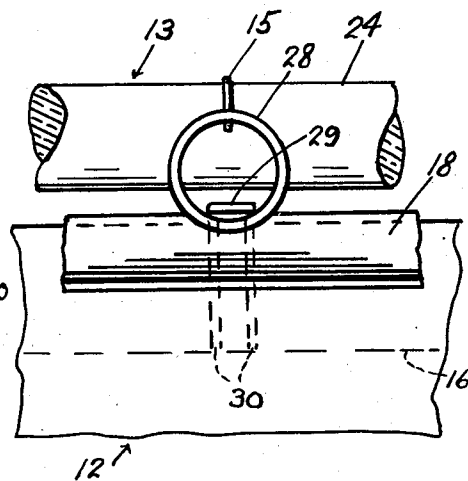
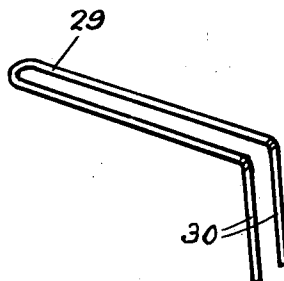


Fig. 8.



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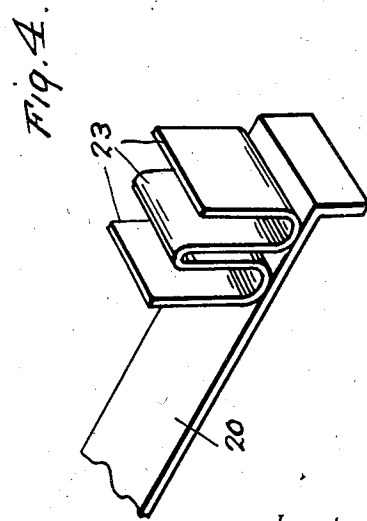
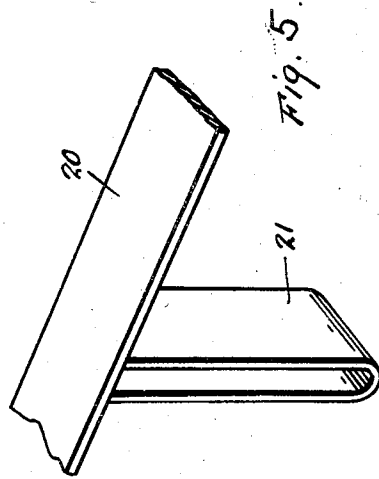
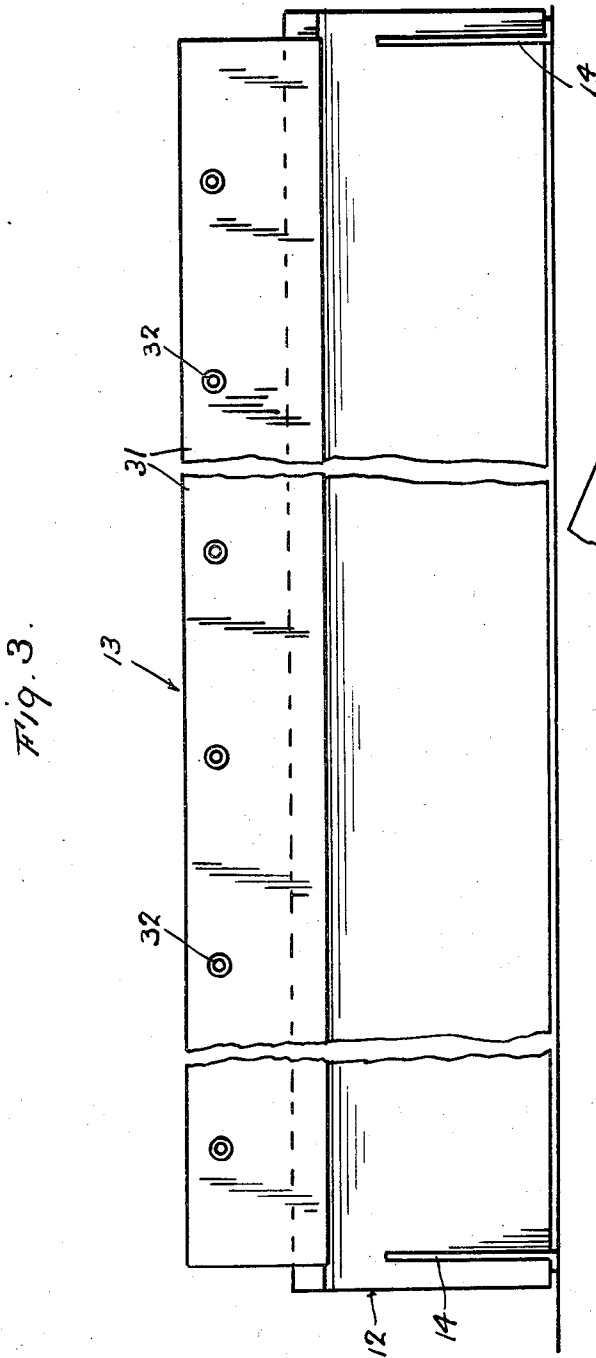
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Fig. 9.

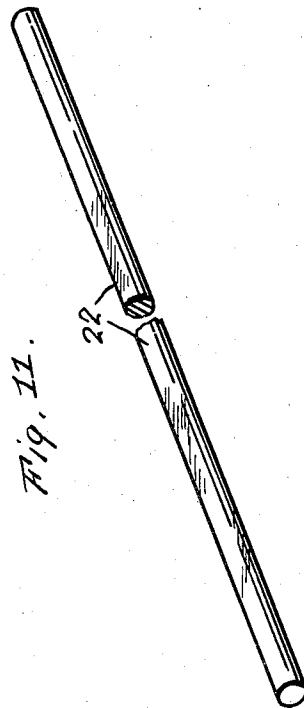
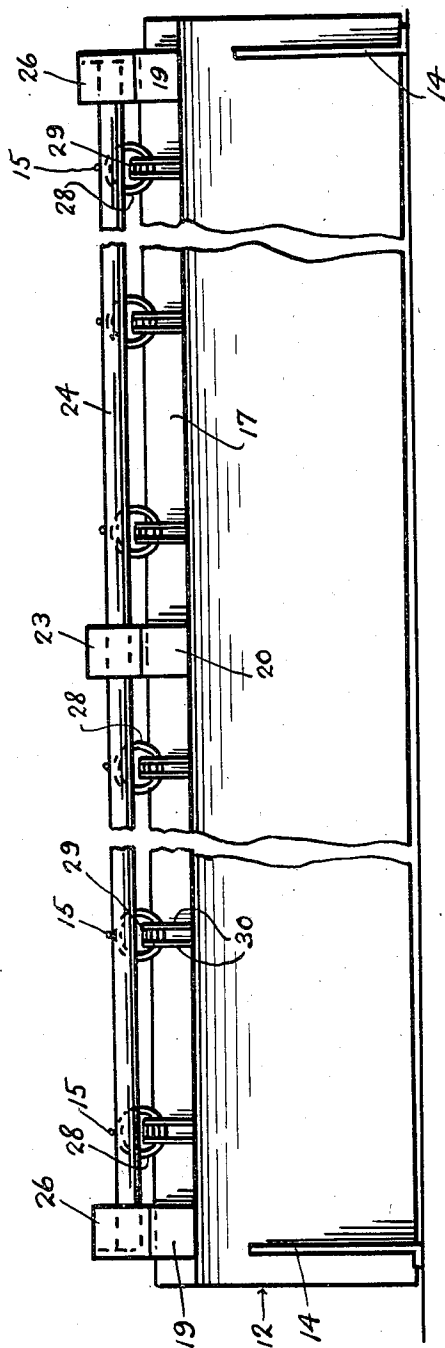


Fig. 11.

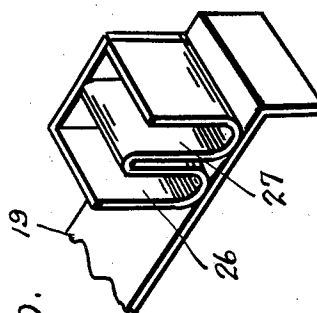


Fig. 10.

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UNITED STATES PATENT OFFICE

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THREAD GUIDE AND TENSIONING MEANS
FOR KNITTING MACHINES

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Application October 24, 1936, Serial No. 107,488

3 Claims. (Cl. 66—125)

The present invention relates to a combined thread fastening trough, guide, and tensioning means for use in conjunction with a full fashioned hosiery knitting machine.

5 The salient feature of the invention relates to a bodily detachable guide frame constructed for cooperation with a thread moistening trough with especially designed and properly allocated tensioning elements acting on the multiplicity of individual threads as they are withdrawn from the trough and moved in the direction of the knitting machine.

15 Stated more specifically, the chief novelty is predicated upon the aforementioned guide frame unit characterized primarily by the association therewith of a pair of spaced parallel glass rods over which the moistened threads are drawn, there being a plurality of weighted glass rings located between the rods and hung on the threads to put the threads under proper tension, and said rings being associated with guard fingers.

20 Other and more specific features and advantages of the arrangement will become more readily apparent from the following description and drawings.

25 In the drawings, wherein like numerals are employed to designate like parts throughout the views:—

30 Figure 1 is a top plan view of the complete apparatus as constructed in accordance with the principles of the present invention.

Fig. 2 is a transverse or vertical sectional view taken approximately on the plane of the line 2—2 of Fig. 1.

35 Fig. 3 is what may be called a front elevation showing the liquid containing trough and the eyelet equipped guide plate attached thereto and rising therefrom.

40 Figs. 4 and 5 are fragmentary perspective views of features of the removable frame showing the glass rod accommodation or adapter keeper and bearing elements.

Figs. 6 and 7 are detail sections on the lines 6—6 and 7—7 respectively, of Fig. 1.

45 Fig. 8 is a perspective view of one of the glass ring guard and retention fingers.

Fig. 9 is an elevation of the apparatus.

Fig. 10 is a view similar to Fig. 4, showing the duplex bearing elements for the ends of the thread tensioning rods or rollers.

50 Fig. 11 is a perspective view of one of the glass rods or rollers.

Briefly, and by way of introduction, it is to be pointed out that the apparatus is composed essentially of two distinguishable units; namely

the trough 12 (see Fig. 2) and the bodily detachable thread guide and tensioning unit or assembly 13. The trough is substantially V-shaped and supported on appropriate rests 14 and is adapted to contain a suitable liquid through which the threads 15 are drawn for proper moistening before passing on to the hosiery knitting machine (not shown). As shown in Figs. 6 and 7, the diverging side walls of the trough are provided with depending vertical flanges 16 and advantage is taken of this arrangement to detachably associate the thread guide and tensioning unit 13 therewith.

15 The unit 13 comprises what may be generally referred to as a bodily applicable or detachable frame. The longitudinal frame members are in the nature of inverted V-shaped adapters to engage over the flanged walls of the trough. The outer flanges of the adapters are denoted at 17 and engage the depending flanges 16 while the inner downwardly diverging flanges 18 rest upon or against the inner surfaces of the trough walls. The frame also includes horizontal cross members secured as by soldering to the longitudinal frame members, there being three of such cross members, and these are distinguished by the numerals 19 and 20. That is to say the two end cross members are denoted by the numerals 19 and the central or intervening one by the numeral 20. All three of these members 19 and 20 are provided at their central portions with depending U-shaped hangers 21 which serve to accommodate a glass roller or thread tensioning rod 22. This is submerged in the liquid in the trough and the threads pass therebeneath as shown in Fig. 2. The rod is permitted to raise or lower itself in the hangers 21 so as to take care of varying pressure. That is to say, the roller or rod 22 is substantially floating and self adapting. On the discharge side of the trough it will be observed that the central cross member 20 is provided with double acting U-shaped keepers or adapter members 23 of the type shown in Fig. 4. These serve to accommodate the central portion of a pair of spaced parallel thread tensioning rollers or rods 24 and 25 of glass. Similar closed saddle-like bearings 26 and 27 are mounted on corresponding ends of the cross straps 19 and these serve to accommodate and hold in place the outer ends of the two glass rollers 24 and 25.

50 Thus the rollers are disposed in spaced parallelism and rotatably mounted in the respective bearing elements 23, 26 and 27 as is obvious. This arrangement facilitates assembly and replacement of the glass rollers 24 and 25.

I next call attention to the thread tensioning rings 28. There is a ring for each thread and the ring is located between the respective rods 24 and 25 and preferably constructed of glass. It is suspended or hung on that portion of the thread which passes over the two rollers 24 and 25 as shown in the drawings. The ring is in effect a weight and places the desired tension on the thread operating in conjunction with the turnable or rotatable rollers 24 and 25. Incidentally, it is immaterial whether the so-called rollers turn or not, since they are primarily adapted to permit the threads to ride thereover in an obvious manner.

Of utmost importance is the association with each ring of a guard finger 29 of the type shown in Fig. 8. This is made of a single length of wire bent upon itself into general U-shaped form and the free ends or prongs 30 are anchored on the flange 17 as shown in Fig. 6 for instance as by soldering. The horizontal projecting portion of the finger extends through the ring as shown in the same figure, and limits the upward lifting of the ring, and also prevents the ring from dropping down in the trough if and when the thread on which it is hung, breaks. This makes it unnecessary to fish into the trough when passing another thread through the momentarily useless ring.

Looking at the other or intake side of the trough as shown in Fig. 2, it will be observed that the frame unit 13 may also include the part of an upstanding guide plate 31 and this is provided with eyelets 32 through which the threads pass. The threads are drawn off of the customary cones or spools (not shown) threaded through the eyes 32, carried down in the liquid in the trough, underneath the floating glass rod or roller 22. Then each thread is passed over the adjacent parallel tensioning rollers 24 and 25 while at the same time being threaded through the adjacent or cooperable tensioning ring.

One outstanding feature of the invention has to do with the provision of the complete separable unit or assemblage 13 which is bodily attachable and detachable in relation to the trough 12. This permits the unit 13 to be lifted off of the trough and allows the trough to be cleaned without detaching or breaking the threads.

A second feature is predicated on the provision of the frame structure having the eye equipped guide plate 31 on one side and the ring equipped tensioning roller assembly on the opposite longitudinal side.

Further novelty apparently resides in the provision of the unit 13 characterized by the V-shaped adapters composed of the elements 17 and 18, and the cross straps having the saddle-like bearings to accommodate the three distinguish-

able glass rollers or rods. Of outstanding importance, however, is the arrangement wherein the rollers or rods 24 and 25 are arranged in close spaced parallelism and on an even plane with each other, and supported in appropriate bearings on the detachable frame unit 13, there being glass rings located between said rollers and said rings permitting the threads to pass individually there-through and the rings being cooperable with guard fingers so that they are limited in their upward lift and prevented from dropping down into the trough in an obvious and purposeful manner.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in shape, size and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:—

1. As a component part of a thread guide tensioning unit of the class described, a frame, a pair of spaced parallel freely removable and turnable glass rods mounted on said frame to permit passage thereover of a thread, a glass ring disposed between said rods and hung on the threads, and a relatively fixed guard finger extending thru said ring to limit the upward movement of the ring and to prevent the ring from dropping down in the manner and for the purposes described.

2. In a structure of the class described, a frame, a multiple eye equipped thread guide plate on the frame, a pair of spaced parallel glass rods on the frame in opposed relationship to said plate, a plurality of glass tension rings located between said glass rods, and a relatively fixed guard finger for each glass ring, said finger extending normally through the ring in the manner and for the purposes described.

3. In a structure of the class described, a frame of substantially rectangular shape, a multiple eye-equipped plate upstanding from one side of said frame, a pair of opposed hangers depending from the ends of the frame, respectively, a glass rod freely mounted at its opposite ends in said hangers, a pair of similar rods rotatably mounted side-by-side on the other side of said frame, a plurality of tensioning rings disposed between the rods of said pair, and a plurality of fixed guard fingers extending from said other side of the frame through said rings, respectively.

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