A. MATITSCH.

THREAD TENSIONING DEVICE FOR MACHINES FOR THE MANUFACTURE OF PILLOW LACE.

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Fig. 1

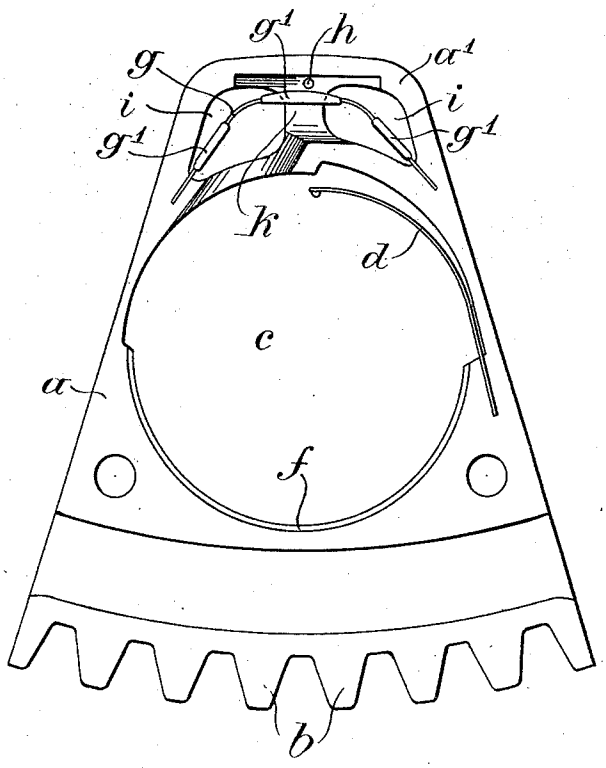
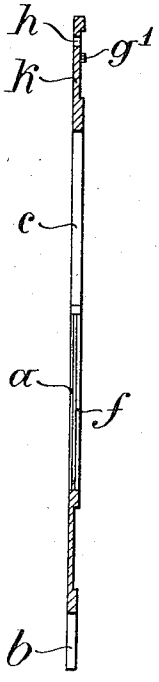


Fig. 2



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THREAD-TENSIONING DEVICE FOR MACHINES FOR THE MANUFACTURE OF PILLOW-LACE.

1,068,515. Specification of Letters Patent. **Patented July 29, 1913.**

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To all whom it may concern:

Be it known that I, AUGUST MATITSCH, a subject of the Emperor of Austria-Hungary, residing at Nottingham, England, have invented Improvements in Thread-Tensioning Devices for Machines for the Manufacture of Pillow-Lace, of which the following is a specification.

In bobbin net lace making machines for the manufacture of point net lace it has already been proposed to mount on the slides carrying the bobbins, in addition to the spring which holds the bobbin in the slide, a spring clamping device for the thread passing from the bobbin to the thread hole in the slide. This clamping device which is attached to one side of the slide and which may be a spring or an elastically mounted disk, lies at right angles to the path of the thread and presses against the thread so that it imparts thereto a certain tension.

In lace making machines with a coarse division of slides, that is in those machines with slide ways which are spaced comparatively wide distances apart and which are used for the manufacture of coarse point nets this known arrangement suffices. When however, as in machines for the manufacture of pillow lace, the divisions of the slides has to be fine and the slides are extremely thin and pass in very close proximity to each other a thread tensioning device of this known kind is useless because when the spring or disk attached to one side of the slide is forced laterally away from the slide by a knot in the thread its projecting end or part catches in the adjacent warp threads and breaks them. Furthermore if still further bent out the projecting end or part would catch in the adjacent neighboring slide which would result in both slides being stopped in their movements and injury to the machine.

In bobbin net pillow lace machines the slides often remain at rest for a comparatively long time in one of the slide combs with the result that the threads of such slides tend to be made slack above the slide on the repeated insertion of the needle which, as is well known, takes place at each revolution, without the thread being worked. Moreover, the slide bobbins, when the slides remain at rest in a comb, continue to rotate and unwind thread owing to the unavoidable shocks which are connected with the stoppage of the slides in the comb so that it is easy for the needles to draw thread out of the slides. In order therefore to enable good pillow lace to be produced on a bobbin net pillow lace machine these disadvantages must be avoided.

According to the present invention the thread is prevented from becoming slack after it has issued from the slide by the provision of a tensioning device that only allows the thread to pass when it is strongly pulled. For this purpose the thread clamping spring, which is mounted close to the thread hole in the slide, is attached at both ends to the slide in the plane thereof, and is made of such shape that it possesses sufficient elasticity to permit of the passage of knots in the thread without being forced appreciably out of the plane of the slide or creating an obstruction which would jeopardize the movements of the adjacent neighboring slide.

Figures 1 and 2 of the accompanying illustrative drawings show in elevation and in transverse section respectively a bobbin slide provided with a thread tensioning or clamping device according to the invention.

The slide a, which is provided in the usual way for the purpose of enabling it to be driven by toothed racks, with a series of teeth b and also with a holding spring d which serves to hold the bobbin in the opening c, and with a sector shaped guide rib f, has a perforated upper portion a^1, in which is placed the clamping spring g. This spring lies immediately beneath the hole h through which the thread coming from the bobbin passes to go up to the needles. The spring g consists advantageously of a curved length of wire widened or flattened out at three points g^1. The two ends of the spring which are round in cross section are so inserted in the slide and soldered fast thereto that they lie in the plane thereof. The portions of round cross section lying between the widened or flattened portions g^1 enable the spring to be accurately bent and of the said widened or flattened portions only the middle one bears with its uppermost part against the slide in order to permit of an uninterrupted entrance of any knots between the spring and the body of the slide, while at the same time it serves to firmly

hold the thread passing between the slide and the spring. The two other widened or flattened portions are for the purpose of imparting to the spring greater strength and sufficient elasticity to enable it to accommodate itself in its position to suit the varying thickness of the threads passing through.

The spring *g* must be fastened at both ends to the slide in the plane thereof as otherwise it might happen that when the spring was forced out by a knot in the thread the projecting end thereof would catch on the adjacent warp threads and break them. Furthermore such end when still further forced out would extend into the path of the adjacent neighboring slide which would cause both slides to be stopped in their movement and injuries to the machine. In order that a knot in the thread may be able to pass between the spring *g* and the slide it must, before it is clamped, have entered between these two parts. To enable this to be effected the slide is thinned out flat or weakened near the thread hole at its web-like part *k* lying between the openings *i* so that the middle widened out part g^1 of the spring bears with only its uppermost part and not with its whole breadth against the slide; a knot in the thread can therefore easily pass between the lower part of the clamping spring and the web. The clamped thread then goes up past the clamped point only when it is drawn up over the same during the progress of the formation of the work. Slackening of the bobbin thread by the hereinbefore mentioned shocks cannot therefore take place above the hole *h* so that when the thread is clamped by the clamping spring it remains taut above the slide and the needles can be correctly inserted.

I claim—

1. The combination with the slide having a bobbin receiving opening; of an arcuate spring having its ends secured to the slide and its middle portion engaging the slide.

2. The combination with a slide having a bobbin receiving opening and an upper portion having perforations separated by a web portion thinner than the body of the slide; of an arcuate tension spring having its ends secured to said slide and its middle contacting with said thin web.

3. The combination with a slide having a bobbin receiving opening and an upper portion having perforations separated by a web portion thinner than the body of the slide; of an arcuate tension spring having its ends secured to said slide and its middle flattened and contacting with said thin web.

4. The combination with a slide having a bobbin receiving opening and an upper portion having perforations separated by a web portion thinner than the body of the slide; of an arcuate tension spring having its ends secured to said slide and its middle flattened, the upper edge of said flattened portion contacting with said thin web.

5. The combination with a slide having a bobbin receiving opening and an upper portion having perforations separated by a web portion thinner than the body of the slide; of an arcuate spring having its ends secured to said slide and having flattened portions lying in said perforations and a middle flattened portion the upper edge of which contacts with said thin web.

6. The combination with a slide having a bobbin receiving opening and an upper portion having a thread hole and perforations separated by a web thinner than the body of the slide; of an arcuate tension spring having its end secured to the slide and having flattened portions in said perforations lying in substantially the plane of the slide and a flattened middle portion whose upper edge lies against the thin web below the thread hole.

Signed at Nottingham England this 9th day of November, 1912.

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