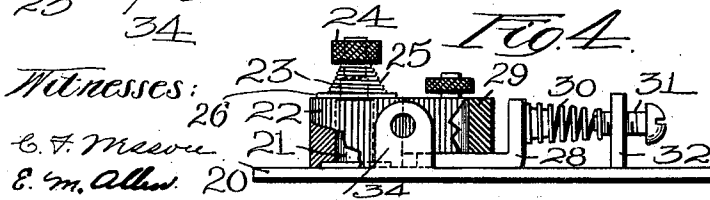
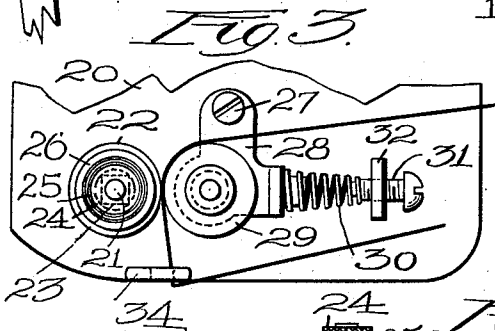
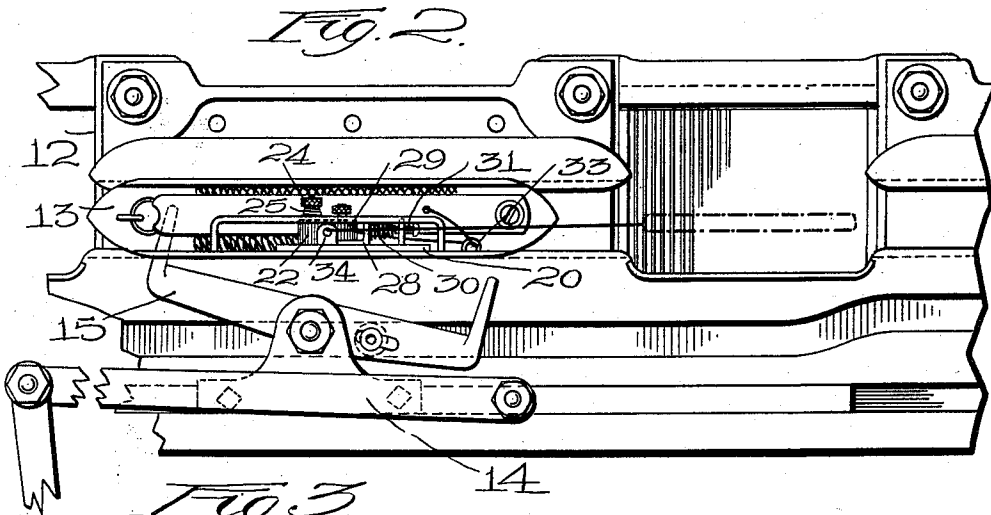
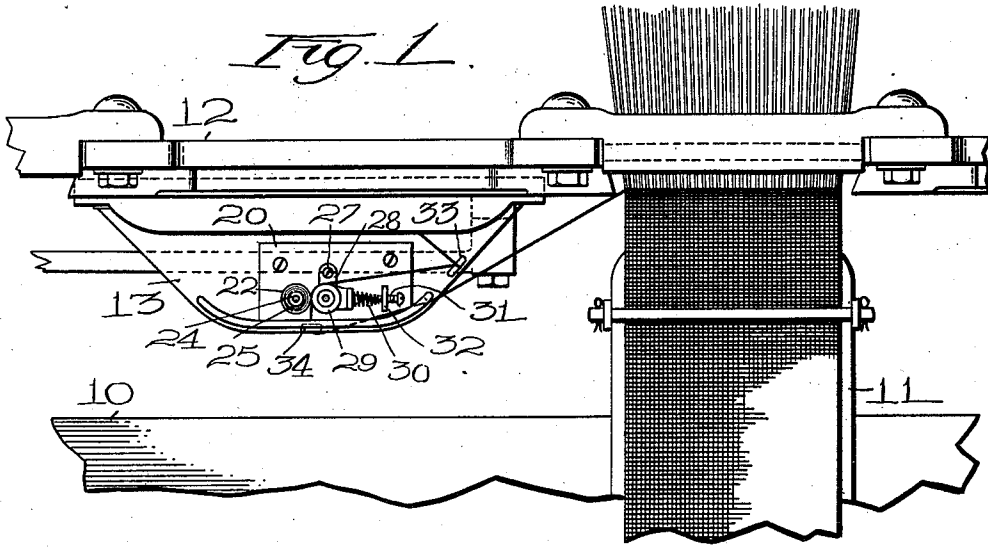


L. KNIGHT.
YARN TENSION FOR LOOMS.
APPLICATION FILED MAR. 10, 1910.

1,019,053.

Patented Mar. 5, 1912.



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UNITED STATES PATENT OFFICE.

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YARN-TENSION FOR LOOMS.

1,019,053.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed March 10, 1910. Serial No. 548,498.

To all whom it may concern:

Be it known that I, LIVINGSTON KNIGHT, a citizen of the United States, residing at Leicester, in the county of Worcester and State of Massachusetts, have invented a new and useful Yarn-Tension for Looms, of which the following is a specification.

This invention relates to means for tensioning the filling as it is laid in position by the shuttle of a loom so that the filling will be caused to assume a taut condition. It has been the practice heretofore in this industry to provide flat springs under which the filling passes as it is introduced into the fabric. These flat springs have been open to objection because if there is any unevenness in the yarn, the passage of a thicker portion under them adds to the tension and causes the weave to be uneven, also if there is a knot in the yarn it is liable to come against the comparatively sharp edge of the spring and cause the yarn to break. In addition to this, the yarn always passes under the spring at substantially the same place so that eventually the underside of the spring becomes worn and the edge sharpened, thus increasing the liability of breaking the yarn. The amount of possible adjustment of the flat springs is limited.

Among the objects of this invention are to provide means for effectively tensioning the yarn which will readily yield to permit a knot or enlargement of the yarn to pass through without increasing the tension, and which will not have any edge against which the knot can come in such a way as to break the yarn; to provide means of this character in which the wearing of the surface will be greatly reduced and in which if it does wear, no sharp edge will be produced thereby; to provide a tension device capable of sufficient adjustment to permit of its use to regulate the width of the fabric; to provide a rotary tension member for the yarn which will not be open to the defects of the stationary tension springs; and to provide rotary means for pressing the yarn against the same capable of yielding to permit knots to pass.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a plan of a portion of a loom, with one embodiment of this invention applied thereto. Fig. 2 is a side elevation of

the same. Fig. 3 is a plan of the tension device on enlarged scale, and Fig. 4 is a front view of the same partly in section.

The invention is shown as applied to a loom for weaving close mesh, hard woven fabric having as usual a breast beam 10, stand 11, lay 12, shuttle 13, carriage 14, and finger 15 for operating the shuttle.

In the form shown, this tension device comprises a plate 20 on which is fixed a stud 21, movable with the shuttle. Rotatably mounted on this stud is a wheel 22. This wheel is designed to be rotated by the motion of the yarn in contact with its surface. For the purpose of retarding the rotation of the wheel and keeping the same under tension so as to hold the yarn taut, the stud 21 is provided with a square portion 23 and a screw-threaded end. On the latter is a nut 24 under which is a spring 25 bearing on a washer 26. This washer bears on the end of the wheel and the tension on it is capable of being adjusted by the nut. By turning this nut it will be seen that the amount of frictional resistance presented to the rotation of the wheel can be varied at will. The washer has a square perforation fitting the portion 23 and is non-rotatable.

Pivotally mounted on a stud 27 on the plate 20 is a frame 28 which carries a roller 29 adapted to come into contact with the wheel 22. This pivoted frame 28 is connected by a spring 30 with a screw 31 which passes through a screw-threaded opening in a stationary lug 32 on the plate 20. In operation the yarn comes from the shuttle, passes through a guide eye 33, and then comes into engagement with the wheel or roller 29 around which it passes to a guide eye 34. The yarn extends from this guide eye to the cloth. The spring 30 yieldingly forces the rotary member 29 against the rotary member 22 and the latter retards the motion of the yarn on account of the fact that it is not perfectly free to rotate as explained above. This keeps the yarn taut and causes it to be laid smoothly and evenly on the warp. At the same time it will be seen that if the yarn which comes between the two rotary members has a knot or other protuberance, there will be practically no tendency to break the yarn as the spring 30 will yield slightly and permit the obstruction to pass. It will be seen also that what little wear there is on the surface of the wheel

22 will not tend to make a sharp edge
against which the yarn will bear. On this
account there is practically no danger of
any reduction in the efficiency of the device
5 due to wear. With this construction the
tension can be regulated to such a degree
that the width of the cloth and tightness of
weave can be controlled by it in a very simple
manner. It will be understood, of course
10 that any decrease in efficiency of the spring
25 can be taken up by tightening the nut 24.

While I have illustrated and described a
preferred embodiment of the invention, I am
aware that many modifications can be made
15 therein by any person skilled in the art without
departing from the scope of the invention
as expressed in the claim. Therefore,
I do not wish to be limited to all the details
of construction shown and described but

20 What I do claim is:—

In a loom, the combination with a shuttle,
of a tension device for the filling movable
with the shuttle and comprising a stud hav-

ing a square portion and a cylindrical por-
tion, a wheel rotatably mounted on the cylin- 25
drical portion of the stud, a frame pivoted
adjacent thereto, a freely rotatable wheel
mounted on the frame at a distance from its
pivot, yielding means located on the side of
the last named wheel opposite the first 30
named wheel for yieldingly forcing the
frame toward the first named wheel to bring
said wheels into contact, and a spring non-
rotatably mounted on the square portion of
the stud for retarding the rotation of the 35
wheel thereon and an eye for the filling on
the side of the second wheel opposite the
first wheel.

In testimony whereof I have hereunto set
my hand, in the presence of two subscribing 40
witnesses.

LIVINGSTON KNIGHT.

Witnesses:

FRANK R. BATCHELDER,
CLARENCE E. SMITH.

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