E. WACKERHAGEN.

SHUTTLE.

APPLICATION FILED SEPT. 10, 1910.

1,001,910. **Patented Aug. 29, 1911.**

2 SHEETS—SHEET 1.

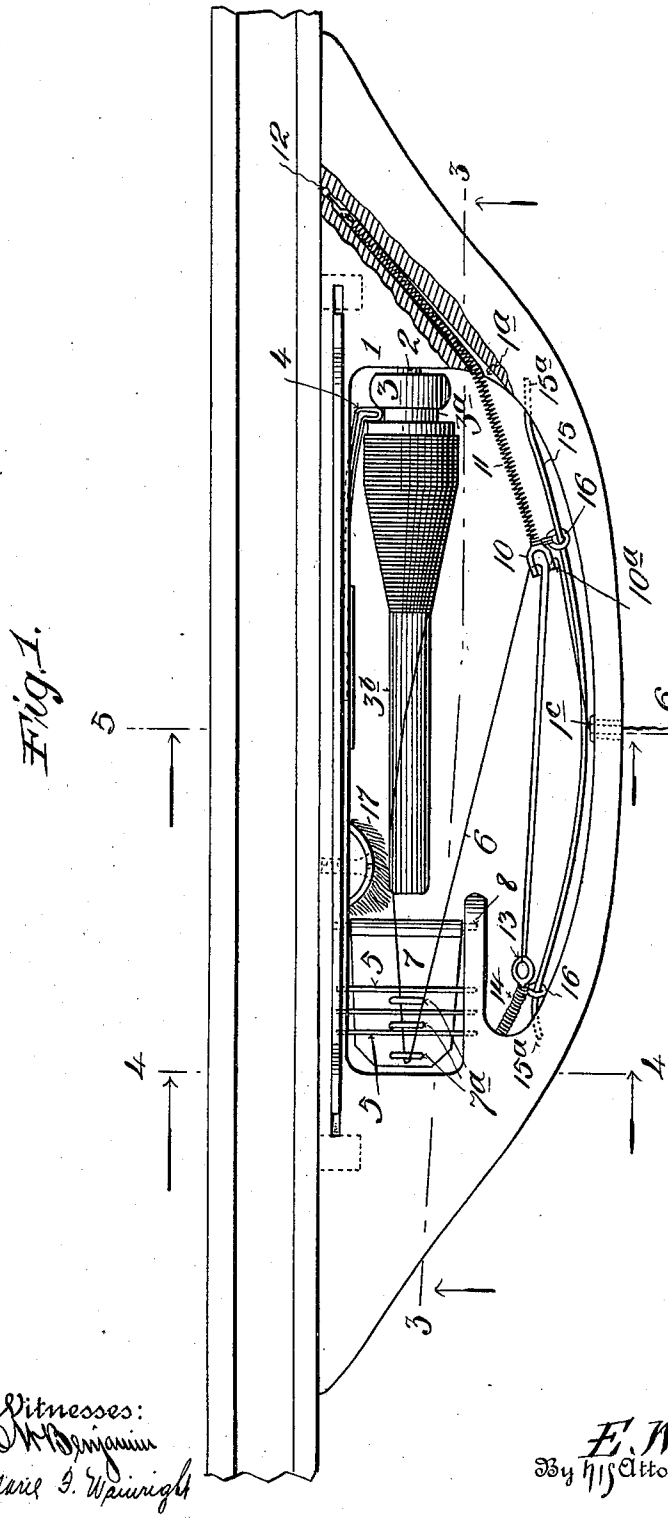

Fig. 1.

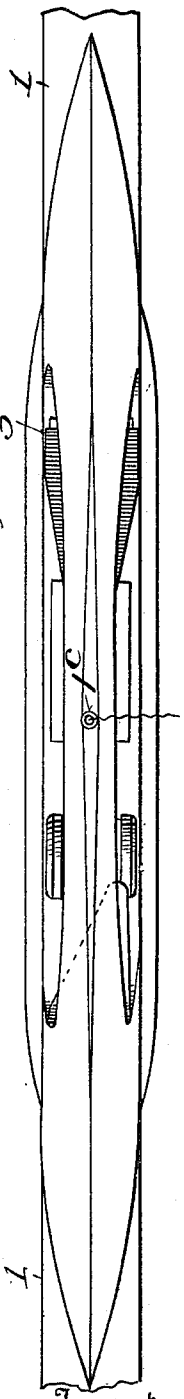

Fig. 2.

Witnesses:
Benjamin
Marie G. Wainright

Inventor
E. Wackerhagen.
By His Attorney
T. F. Bourne

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 3.

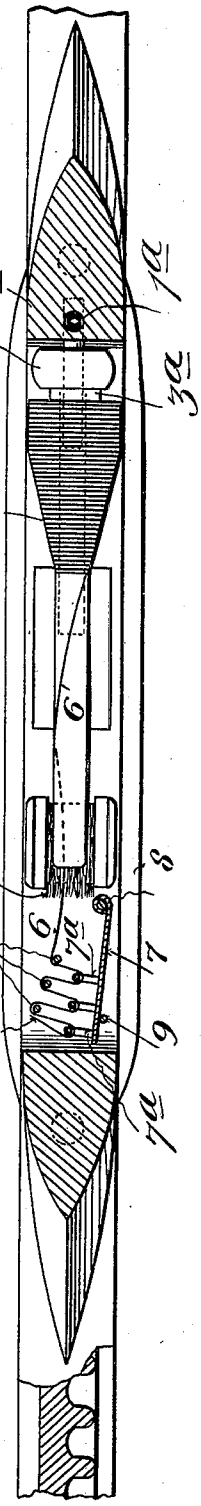


Fig. 5.

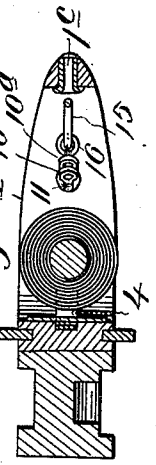
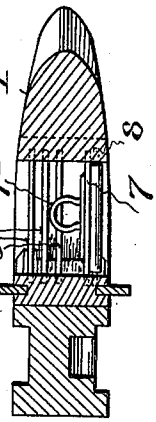


Fig. 4.



Witnesses:
W. F. Benjamin
Marie S. Wainright.

Inventor
E. Wackerhagen,
By his Attorney
T. F. Bourne

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD WACKERHAGEN, OF FORT LEE, NEW JERSEY.

SHUTTLE.

1,001,910. Specification of Letters Patent. **Patented Aug. 29, 1911.**

Application filed September 10, 1910. Serial No. 581,346.

To all whom it may concern:

Be it known that I, EDWARD WACKERHAGEN, a citizen of the United States, and resident of Fort Lee, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Shuttles, of which the following is a specification.

The object of my invention is to provide improved means to resist or prevent breaking of the threads as drawn from the bobbins in the shuttles; to maintain proper tension on the threads, and to guide the threads in their shuttles from the bobbins in an effective manner.

My invention comprises novel details of improvement and combination of parts that will be more fully hereinafter set forth and then pointed out in the claim.

Reference is to be had to the accompanying drawings forming part hereof, wherein, Figure 1 is a plan view of a shuttle, partly broken away, embodying my improvements; Fig. 2 is an edge view thereof; Fig. 3 is a section on the plane of the line 3, 3, in Fig. 1; Fig. 4 is a cross section substantially on the plane of the line 4, 4, in Fig. 1; and Fig. 5 is a similar section substantially on the plane of the line 5, 5, in Fig. 1.

Similar numerals of reference indicate corresponding parts in the several views.

The shuttle 1 is shown provided with the pin or stud 2, upon which the bobbin 3 is mounted in suitable manner, said bobbin being shown provided with an annular recess 3^a receiving the spring 4 carried by the shuttle, for retaining the bobbin on pin 2. At 5 are a suitable number of tension pins carried by the shuttle over which the thread 6 of the bobbin passes, and at 7 is a movable member, shown in the form of a plate, pivotally supported at one end upon the shuttle, and adapted to swing on a pivot 8, said member 7 having a suitable number of tension eyes 7^a beneath the pins 5, the thread 6 being shown passing over and under the guides 5 and 7^a successively. The relation of the pins and the eyes is such, that when the plate is swung toward the pins 5, the eyes and pins intermesh, whereupon, the thread 6 may be passed through the eyes over the side of the pins farthest from the plate 7, and in a straight line; thus providing a quick and easy means of threading the shuttle. Member 7 is adapted normally to rest upon a support, shown in the form of a pin or bar 9, being normally retarded in that position by means of gravity, and the thread is zigzagged over the pins and through the eyes, thus providing a tensioning means for the thread. The thread 6 passes from the guides 5, 7^a to an eye 10 carried by a spring 11, shown in the form of a coiled spring received within a bore 1^a of shuttle 1 and retained by a pin 12. From the eye 10 thread 6 passes to an eye 13 carried by a spring 14, which may be arranged similarly to spring 11; from eye 13 thread 6 passes to an eye 10^a carried by spring 11, and from the eye 10^a thread 6 passes through the hole or guide 1^c of the shuttle. The eyes 10, 10^a, are formed in the respective furcations of the bifurcated member which is connected to one of the travelers 16. By means of this arrangement, the thread passes rightward and downward through the eye of the upper furcation, and afterward passes through the eye of the lower furcation 10^a, and thereby avoids undesirable contact or interference at different sections of the thread, such as would result by passing the thread twice through a single eye. The member 13 is also shown connected with one of the travelers or rings 16, which is adapted to travel upon a guide 15, shown in the form of a wire or bar extending along the outer portion of the shuttle, and free between its ends 15^a that are attached to the shuttle, whereby said eyes are movably retained in proper position against the tension of thread 6, and yet said eyes may have free movement as the thread passes through them. The members 10, 10^a, 11, 13, 14, 15, and 16 collectively constitute a take up means for the thread, as well as an auxiliary tension therefor.

At 17 is a guide carried by the shuttle and bearing against the cop or spool 3^b of the bobbin, between which guide and cop or spool the thread 6 passes. Guide 17 is preferably made of fibrous material, such as felt, or the like to bear with slight tension upon the thread passing between the same and the cop, and yet with sufficient friction to retain the thread against the cop and serve as a check to prevent surplus unwinding of the thread as it passes to the guides 5, 7^a.

As the thread is drawn from the shuttle, during reciprocations of the latter, in a loom or other machine, the thread will be held under the desired tension by the springs 11, 14 and the eyes 10, 10^a and 13, which

eyes may have free movement as required, and the member 7, as the thread passes along the guides 5, 7ª, will rise and fall as may be required to maintain tension upon the thread, take up slack in the thread, and tend to prevent undue unwinding of the thread from the bobbin. The thread will thus be maintained under the tension at all times, during operation of the shuttle, and if at any time extra tension comes upon the thread the member 7 will be lifted by the thread to vary the relative positions of guides 5 and 7ª and lessen the resistance to the thread at such guides.

My invention is not limited to the details of construction set forth, as the same may be varied, within the scope of the appended claim, without departing from the spirit thereof.

Having now described my invention what I claim is:

In combination with a shuttle having a thread carrying means therein, a thread tensioning device in an end of said shuttle, an auxiliary tension device comprising a wire guide having its ends secured in the end portions of the shuttle, a traveler on each end of said wire guide, retractile springs secured to the shuttle and to the travelers for normally holding said travelers toward the respective ends of the wire guide, one of said travelers having a tension eye secured thereto, and the other traveler being disposed in the opposite end of the shuttle from said thread tensioning device and comprising a bifurcated member having eyes in the furcations thereof for accommodating and separating the oppositely moving portions of the thread, substantially as described and specified.

Signed at New York city, in the county of New York and State of New York this 9th day of September, A. D. 1910.

EDWARD WACKERHAGEN.

Witnesses:
HERMAN HERST, Jr.,
T. F. BOURNE.