

No. 815,949,

PATENTED MAR. 27, 1906.

N. FOERSTER.

SHUTTLE FOR WEFT REPLENISHING MECHANISMS.

APPLICATION FILED JUNE 6, 1903. RENEWED AUG. 29, 1905.

FIG. 1.

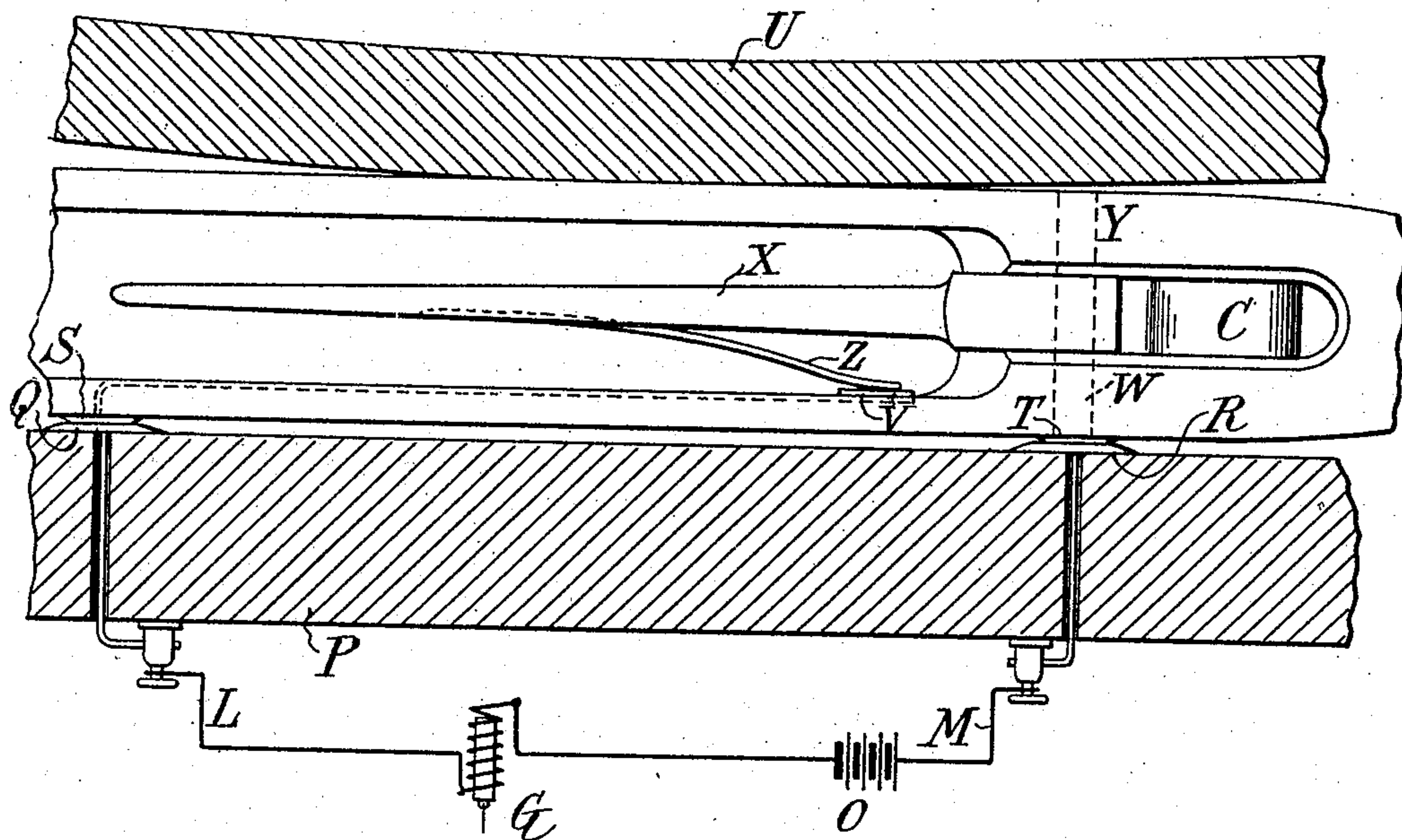
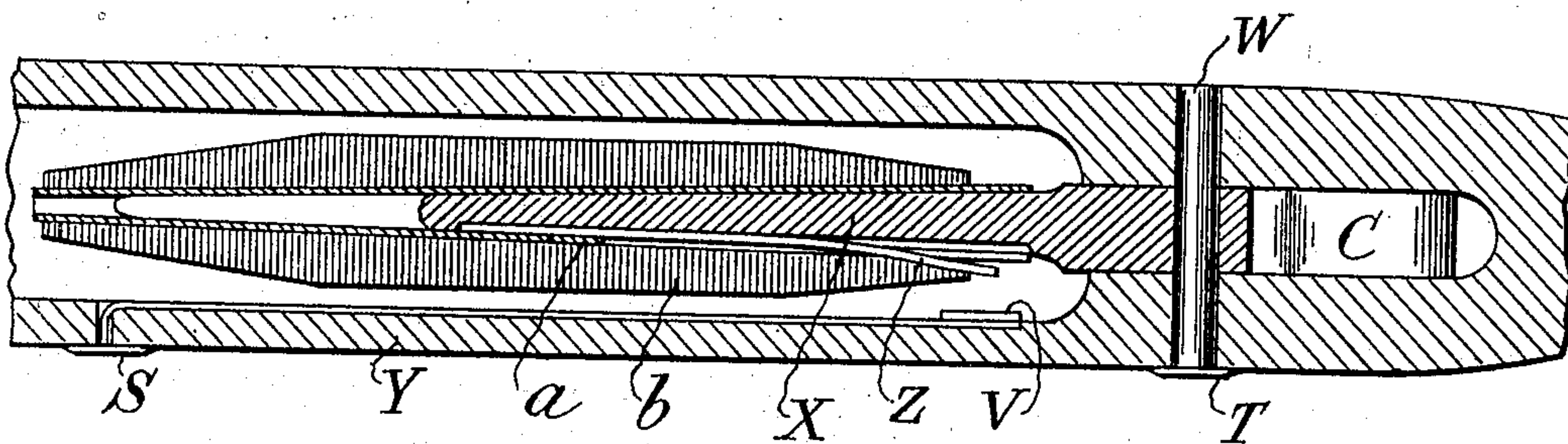


FIG. 2.



WITNESSES:

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SHUTTLE FOR WEFT-REPLENISHING MECHANISMS.

No. 815,949.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed June 5, 1903. Renewed August 29, 1905. Serial No. 276,322.

To all whom it may concern:

Be it known that I, NORBERT FOERSTER, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Shuttles for Weft-Replenishing Mechanisms, of which the following is a specification.

Various mechanisms are known for automatically stopping a loom or replenishing the filling or weft when the latter is exhausted. This invention aims to provide a new shuttle for setting in operation electrical mechanisms of the kind stated and is equally applicable to various mechanisms. The shuttle shown is specially designed for a certain mechanism which I have claimed in my application for patent, Serial No. 168,171, filed August 4, 1903. In the present application I show only the parts of the mechanism immediately adjacent to the shuttle. The entire device is quite simple and cheap and capable of ready application to looms already built. The shuttle is especially valuable because it insures great accuracy in operating only when the thread is exhausted to a predetermined extent. Various other advantages are referred to in detail hereinafter.

An embodiment of the invention is shown in the accompanying drawings.

Figure 1 is a horizontal section through a shuttle-box, showing a shuttle therein in elevation and with the thread exhausted. Fig. 2 is a horizontal section of the shuttle with a full quill of thread in it.

Referring to the drawings, the mechanism is typified in Fig. 1 by a solenoid G, the electric circuit passing through this solenoid and the battery O and thence to the shuttle-box or, it may be, to any other suitable point on the loom. The present application is concerned only with the devices carried by the shuttle for completing the circuit.

A feature of value in the shuttle is that the means for establishing the connection between the terminals of the loom are surrounded, at least in part, by the shuttle-thread and are thereby held in inoperative position. Consequently they must be released when the thread is withdrawn, and they cannot be released until the thread remaining is so short as to yield to the spring which moves the connecting device to its operating position. The connecting device is preferably itself a spring attached at one end to the shuttle-spindle

and free at its other end, this spring being surrounded in whole or in part by the thread on the spindle.

Referring again to the drawings, the shuttle Y is provided with means for connecting the two wires L and M, and thus completing the circuit automatically on exhaustion of the shuttle-thread to a predetermined extent. The parts are of such strength that this operation takes place when there is just about enough thread left for another shoot of the shuttle back to the other side of the loom, where it is to be discharged. The shuttle for completing the circuit has a pair of terminals on its outside—that is, at such points that they may engage corresponding terminals on the inside of the shuttle-box. The shuttle-box terminals are the ends of the wires L and M. Means are then provided in the shuttle for establishing a connection between the outside shuttle-terminals referred to at the proper moment, and thus completing the circuit.

The terminals on the shuttle-box P may consist of plates Q and R, connected, respectively, to the ends of the wires L and M. Similarly-spaced plates S and T on the outside of the shuttle are so spaced that they lie in contact with the plates Q and R, respectively, when the shuttle is in its thrown position. The usual swell U at the back of the shuttle-box holds the shuttle firmly in this position. The terminal S is connected, as shown, to a terminal V on the inside of the shuttle, while the terminal T is connected to the shaft W, which forms the pivot of the spindle X of the shuttle Y. Attached at its outer end to the spindle X is a spring Z, adapted to be surrounded, at least in part, by the thread and constituting a terminal adapted to engage the terminal V when the thread of the spindle X is exhausted. It is understood that the spindle X and its shaft W are of conducting material, so that in the position of the parts shown in Fig. 1 the circuit is complete. When the slotted quill a, carrying the load of thread b, is placed on the spindle X, the spring-terminal Z is withdrawn and is not released until the thread is substantially exhausted. In case a wooden spindle is used the connection of the terminal T with the spring Z may be made by any suitable means, a variety of which will suggest themselves readily to persons skilled in the art. The terminal T may likewise be con-

5 nected in various ways to the spindle. The long plates Q R and S T render the action certain without the necessity of any very accurate adjustment or locating of the shuttle in the box.

The arrangement of the terminals S, T, and V on the wall of the shuttle with the spring-terminal Z entirely on the outside of the spindle makes a simple and most reliable device. 10 The necessary movement of the spring to complete the circuit is large and cannot happen accidentally. The construction is also very cheap and can be almost as easily applied to shuttles already in existence as in the 15 making of new shuttles.

Though I have described with great particularity of detail an apparatus embodying my invention, yet it is to be understood that the invention is not limited to the specific 20 structure shown. Various modifications in detail and in the arrangement and combination of the parts may be made by those skilled in the art without departure from the invention.

25 What I claim is—

1. The combination with a shuttle-body, of a pair of terminals on the outside thereof, one connected to the shuttle-spindle, an inside terminal the contact-point of which is located at the inner side of the shuttle-wall and 30 which is connected to the other outside terminal, and means for connecting the shuttle-spindle with the inside terminal on exhaustion of the shuttle-thread to a predetermined 35 extent.

2. The combination with a shuttle-body having a pivoted spindle, of a pair of terminals on the outside thereof, one connected to the shaft of the spindle, an inside terminal 40 the contact-point of which is located at the inner side of the shuttle-wall and which is connected to the other outside terminal, and means for establishing a connection between the inside terminal and the spindle automat-

ically on exhaustion of the shuttle-thread to 45 a predetermined extent.

3. The combination with a shuttle-body having a pivoted spindle, of a pair of terminals on the outside thereof, one connected to the shaft of the spindle, an inside terminal 50 the contact-point of which is located at the inner side of the shuttle-wall and which is connected to the other outside terminal, and a spring-terminal on the outside of the spindle and connected thereto and adapted to be 55 released and to make connection with the inside terminal on exhaustion of the shuttle-thread to a predetermined extent.

4. The combination with a shuttle, of a shuttle-box, terminals on the outside of the 60 shuttle and on the shuttle-box adapted to make connection with each other when the shuttle is in the box, one of said outside shuttle-terminals being connected to an inside 65 shuttle-terminal, and the other outside shuttle-terminal to the shuttle-spindle, and a spring Z attached at one end to the shuttle-spindle, adapted to be surrounded and held inward by thread on the spindle and when 70 released to spring out and contact with said inside terminal.

5. The combination with a shuttle-body of a pair of terminals S and T on the outside thereof, said terminal T being electrically 75 connected to the shuttle-spindle, an inside terminal V on the inner side of the shuttle-wall and electrically connected to the terminal S, and means for connecting the shuttle-spindle to the inside terminal V on exhaustion of the shuttle-thread to a predetermined 80 extent.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

NORBERT FOERSTER.

Witnesses:

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