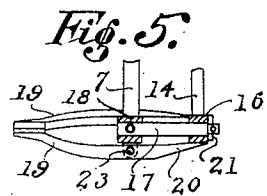
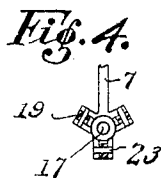
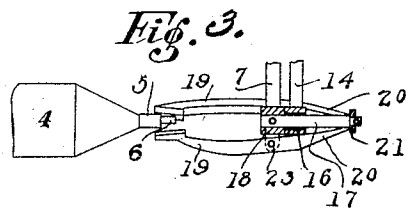
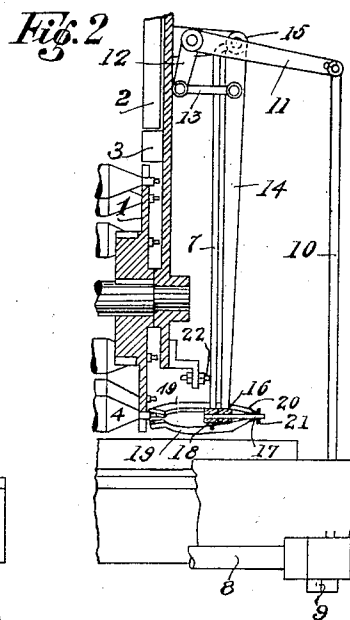
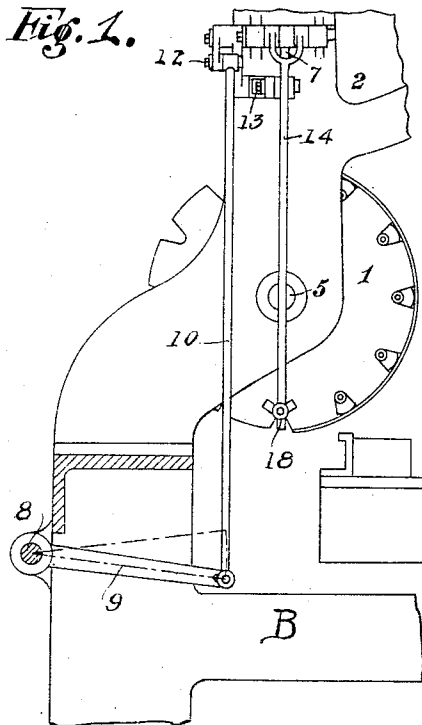


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 AUTOMATIC SPOOL CHANGING APPARATUS FOR LOOMS.
 APPLICATION FILED APR. 25, 1910.

1,039,547.

Patented Sept. 24, 1912.



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AUTOMATIC SPOOL-CHANGING APPARATUS FOR LOOMS.

1,039,547.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed April 25, 1910. Serial No. 557,565.

To all whom it may concern:

Be it known that I, ALBERT GEORG KOECHLIN, a citizen of Switzerland, residing at Steinen, Grand Duchy of Baden, Germany, have invented certain new and useful Improvements in Automatic Spool-Changing Apparatus for Looms, of which the following is a specification.

This invention relates to improved mechanism for automatically drawing the end of the thread off the spool ready to be transferred to the shuttle, and the said mechanism differs from known mechanism of this kind in the drawing off being effected by grippers which grip the thread-end wound on the nose of the spool tube or directly on the spindle and draw sufficient thread from the spool for threading into the shuttle.

One form of the improved mechanism is described hereinafter and illustrated in the accompanying drawings in which all those parts of the loom are omitted which are not necessary for the understanding of the invention.

In the drawings:—Figure 1 is a front elevation of the entire arrangement. Fig. 2 is a side elevation partly in section on the line A—B of Fig. 1. Fig. 3 shows on a larger scale the gripper mechanism separately, with the gripper jaws open. Fig. 4 is a rear elevation of the gripper mechanism, and Fig. 5 shows the gripper mechanism with the gripper jaws closed.

For the purpose of storing the largest possible quantity of spools, the well-known revolving magazine 1 is combined with a box magazine 2 (likewise of well-known construction), in such manner that at each step of the forward movement of the revolving magazine a fresh spool moves into the uppermost empty spool carrier of the revolving magazine, while a filled chamber of the box magazine which rocks on an eccentric axis is brought by known means opposite the chutes 3 leading to the revolving magazine as soon as the preceding carrier is emptied.

In the improved apparatus the loose thread-end, previously wound in the spinning mill above the yarn 4 upon the spool tube 5 or in many cases upon the naked spindle 6, is gripped by the gripper jaws, drawn off and held fast until the spool has been transferred to the shuttle and the thread

has been threaded in the shuttle. For this purpose the gripper mechanism is fixed on a rocking lever 7 by which it is operated. The rocking of the lever 7 is produced by the weft-stop motion shaft 8 which is provided in all looms and which, as is well known, starts the operation of changing the spools in automatic looms. As soon as this shaft is moved by the action of the weft feeler, the rod 10 which is connected to the shaft 8 by means of the lever arm 9, causes the horizontal lever arm 11 to swing upward, with the result that the short vertical arm 12, to the end of which the lever arm 14 is connected by a rod 13, is swung outward.

The rod 14 is forked at the top and is pivoted on the same pin 15 as the lever 7. The lower cylindrical end 16 of the arm 14 is slidable on the pin 17 which is fixed to the lower end 18 of the lever arm 7.

The gripper mechanism consists of a number of two-armed levers 19, 20 arranged around the end 18 of the lever arm 7, and pivoted on pins 23 fixed thereto. The front lever arms 19 constitute the gripper jaws, and the rear lever arms 20 are pressed by springs (not shown) against the pin 17 so that the gripper jaws 19 are apart, that is to say, the gripper is open (Fig. 3). If now the arm 14 swings outward, the end 16 first forces the rear gripper arms 20 apart and thus closes the gripper jaws 19. Then the end 16 meets the disk 21 fixed on the pin 17, whereupon it carries the lever arm 7 and gripper mechanism along with it until the end of the outward movement.

Since in the position of rest the nose of the spool which is ready to be transferred into the shuttle, is situated just between the gripper jaws 19, the first portion of the movement of the lever arm 14 effects the gripping, and the second portion effects the drawing off of the thread-end from the spool. If then the arm 14 swings inward again, this movement is also shared by the arm 7 until it is stopped by a stop 22 fixed to the loom framing, whereupon the return movement of the arm 14 back to the starting point, effects the closure of the levers 20 and the opening of the gripper jaws 19.

The improved apparatus allows of the use of wooden throstle spool tubes, as well as of ordinary self-acting mule spool tubes and ordinary throstle spool tubes of paper.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In automatic spool changing apparatus
 5 for looms, the combination with a spool magazine having a step by step rotation and a spool changing shaft, of positively actuated apparatus for drawing the thread-
 10 ing-in thread off the spool, comprising means, extending longitudinally with the axis of the spool, and serving to grip the thread-end wound on the nose of the spool tube or of the spool spindle, immediately
 15 prior to transference of the spool, means which draw the thread-end off the spool and hold it fast until it has been threaded into the shuttle.

2. In automatic spool changing apparatus for looms, the combination with a spool
 20 magazine having a step by step rotation and a spool changing shaft, of apparatus for automatically drawing the threading-in thread off the spool comprising a bell

crank lever, a rod connected thereto, an arm attached to said rod and the spool-changing 25 shaft, a first lever arm jointed to said bell crank lever, and a second lever arm rotatable on the same pin as the first lever arm, a gripper and a pin fixed on the lower end of said second lever arm, the end of the 30 said first lever arm being slidable on the second pin mentioned, whereby the gripper is swung out and in, and the gripper jaws are closed and opened while the changing shaft rocks once to-and-fro and produces a 35 similar rocking of the said first lever arm when a fresh supply of weft thread is required.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit- 40 nesses.

ALBERT GEORG KOECHLIN.

Witnesses:

CARL W. SCHMITT,
 AUGUST OOSTERMAN.

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