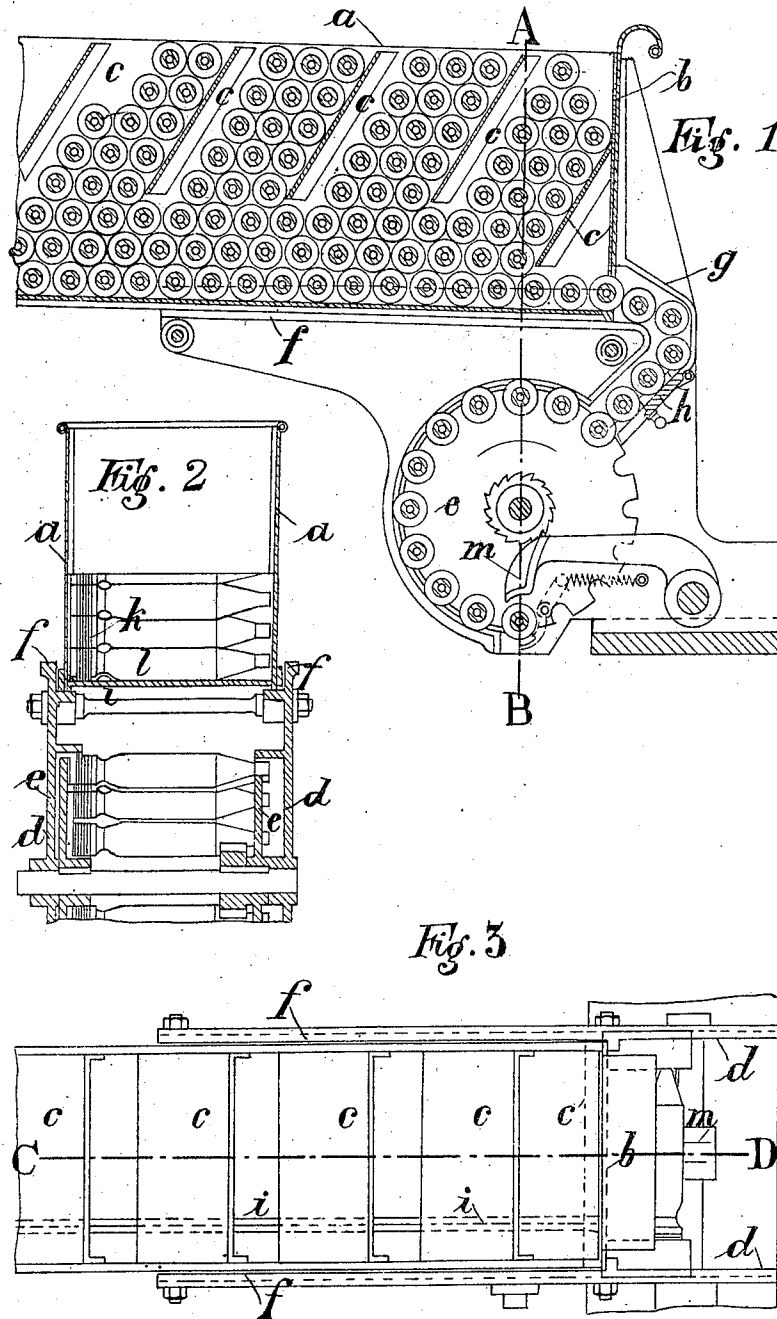


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 AUTOMATIC SPOOL CHANGING APPARATUS FOR LOOMS.
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1,038,898.

Patented Sept. 17, 1912.



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AUTOMATIC SPOOL-CHANGING APPARATUS FOR LOOMS.

1,038,898.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT GEORG KOECHLIN, a citizen of the Swiss Republic, residing at Steinen, in the 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 automatic spool changing apparatus for looms, and it has for its object to provide an improved removable spool magazine, having guide fillet and transverse partitions which latter extend toward the base of the magazine, of the kind adapted to hold a large number of spools, fed out singly by gravity, and to be filled in the spinning mill or elsewhere for use in the weaving room, so that the weaver will be relieved of the labor of attending to the placing of the spools in the loom and as regards the renewal of his stock of spools he will only have to see that the magazine when empty is replaced by a full magazine.

The distinguishing feature consists in that the spools are conveyed from the magazine into the changing mechanism without any mechanically operated movable appliances.

One construction of the improved magazine is illustrated by way of example in the accompanying drawings in which:—

Figure 1 is a vertical longitudinal section on the line C—D of Fig. 3, Fig. 2 is a vertical cross section on the line A—B of Fig. 1, and Fig. 3 is a plan of so much of an automatic spool changing apparatus as is necessary to illustrate the invention.

a is a rectangular box open at the top, having sides and bottom all at right angles to one another and a clear inside width only very slightly greater than the length of a spool. Its other dimensions are preferably such as to enable it to hold as many spools as will allow of convenience in handling the box. One end wall of the box is formed with a spool outlet opening extending the entire inside width of the box adapted to be closed by a slide *b*. In the box are a number of transverse partitions *c c'* whose purpose is hereinafter described.

d are side plates between which a feeder *e* of known construction (that may be rotary as shown, or fixed) is mounted and is provided with arms *f* which are inclined down-

ward toward the feeder and serve to receive and support the magazine acting as brackets extending rearwardly, from the outlet opening of the magazine supported, under and along the base thereof, so as to hold the entire magazine tilted downward toward its front. The arms *f* may be extended and adapted to receive a second magazine, so that as soon as the first magazine is empty, the second full magazine can be moved forward into its place, this work being conveniently done by boys appointed for this purpose. Suitably arranged ledges and stops are provided for determining and securing the correct position of the magazine that is in use at the time.

When the slide *b* is drawn up, the spools are caused by their weight and the inclination of the magazine to roll out unimpeded through the opening in that end of the box. Each spool as it issues from the box, is guided at its ends by guide fillets *g* which are provided on the side plates *d*, and is thereby caused to pass unimpeded directly to the feeder *e* which conveys the spools in the usual manner to a point where they are acted upon by the inserting hammer *m* of the spool-changing apparatus.

The transverse partitions *c* and *c'* have the function of relieving the lower rows of spools of some of the superincumbent weight of the upper rows, which would otherwise prevent the lower spools from moving forward. The partitions are spaced to provide room between each two partitions for superimposed rows of filled spools and are each vertically inclined and extend down toward the base, so as to leave a permanently free passage for two or more filled spools, excepting the last inclined partition, before the outlet opening, which only leaves a permanently free passage for one filled spool.

The transverse partition *c'* which as indicated extends down almost to the lowest row of spools has also more particularly the function of causing the foremost spools to pass in turn and with complete freedom out of the box and into the guides *g*. The lower guide fillets are formed on both sides with an opening closed by a spring-pressed flap *h*. Any spools which have been ejected from the loom shuttle on account of breakage of the thread and which still contain more or less thread, may be placed by the weaver by hand through these openings back into the

series of advancing spools so that they may enter the feeder *e* again. It would not be advisable to put such spools back into the box *a* because owing to their smaller diameter they might hinder the regular advance of the other spools. A guide fillet *i* provided on the bottom of the box, is arranged to keep the lowermost spools in position by engaging in the groove formed by the foot $\frac{1}{2}$ of the spool tube and the weft filling *z*.

The magazine may be filled in the spinning mill, where the spools are taken from the spinning machine and placed directly into the magazine, provided that the free end of the thread has been already wound on the nose of the spool tube or on a detachable cap mounted thereon for the purpose of enabling it to be drawn off subsequently by automatic means. Where the free end of the thread is separated after the spool has been removed from the spinning machine, the magazine may be filled in any other place.

What I claim is:—

1. A removable spool magazine of rectangular open-topped box shape, with sides and bottoms all at right angles to one another, and of an internal width very slightly greater than the length of a spool, a spool outlet opening in its front end wall extending the whole internal width of the magazine, of a depth slightly greater than the greatest diameter of a filled spool, means for closing said outlet opening, transverse partitions spaced to provide room between each two partitions for superimposed rows of filled spools and each vertically inclined and extending down toward the base so as to leave a permanently free passage for one filled spool, and a guide fillet shaped to engage in the groove formed by the foot and the yarn filling of the spool, along the bottom of the magazine, as set forth.
2. In automatic spool changing apparatus for looms, the combination of a removable spool magazine of rectangular open-topped box-shape with sides and bottoms all at right angles to one another, and of an internal width very slightly greater than the length of a spool, a spool outlet opening in its front end wall extending the whole internal width of the magazine, of a depth slightly greater than the greatest diameter of a filled spool, means for closing said outlet opening, transverse partitions spaced to provide room between each two partitions for superimposed rows of filled spools and each vertically inclined and extending down toward the base, so as to leave a permanently free passage for two or more superposed filled spools, excepting the last inclined partition, before the outlet opening, which only leaves a permanently free passage for one filled spool, and a guide fillet along the bottom of the magazine, with

brackets extending rearwardly, from the outlet opening, under and along the base of the magazine for holding the entire magazine tilted downward toward the front, whereby when the magazine, filled with spools resting in rows on one another across the magazine, is placed in position and the said outlet opening is unclosed, the spools will, unimpeded, travel down in succession from front to back and roll forward along the bottom of the magazine and pass out singly through said outlet opening, as set forth.

3. In automatic spool changing apparatus for looms the combination of a removable spool magazine of rectangular open-topped box shape, with sides and bottom all at right angles to one another, and of an internal width very slightly greater than the length of a spool, a spool outlet opening in its front end wall extending the whole internal width of the magazine, of a depth slightly greater than the greatest diameter of a filled spool, means for closing said outlet opening, transverse partitions spaced to provide room between each two partitions for superimposed rows of filled spools and each vertically inclined and extending down toward the base, so as to leave a permanently free passage for two or more superposed filled spools, excepting the last inclined partition before the outlet opening, which only leaves a permanently free passage for one filled spool, and a guide fillet along the bottom of the magazine, with a feeder and guides between the magazine and said feeder, whereby the spools passing out unimpeded from the magazine are caused to travel by gravity in succession directly to said feeder, as set forth.

4. In automatic spool changing apparatus for looms, the combination of a removable spool magazine of rectangular open-topped box shape, with sides and bottom all at right angles to one another, and of an internal width very slightly greater than the length of a spool, a spool outlet opening in its front end wall extending the whole internal width of the magazine, of a depth slightly greater than the greatest diameter of a filled spool, means for closing said outlet opening, transverse partitions spaced to provide room between each two partitions for superimposed rows of filled spools and each vertically inclined and extending down toward the base, so as to leave a permanently free passage for two or more superposed filled spools, excepting the last inclined partition before the outlet opening, which only leaves a permanently free passage for one filled spool, and a guide fillet along the bottom of the magazine, with a feeder, guides for the spools between the magazine and said feeder, a framing in which said feeder is mounted, side frames extending up from said framing

and continued in the form of brackets to extend rearwardly, from the magazine outlet opening, under and along the base of the magazine, and having an upper surface inclined downwardly toward said guides, whereby when the magazine is simply placed on said brackets it will be held tilted downward toward said guides, as set forth.

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

ALBERT GEORG KOECHLIN.

Witnesses:

AUGUST OOSTERMAN,
MARIE KOECHLIN STAHELIN.

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