This invention relates to automatic spool change devices for power looms. More particularly it relates to a device of this character in which the hammer or spool pusher is attached to the rear of the lathe or lathe-carrying parts, and in which a single member, controlled by the feeler or weft fork, actuates mechanism adapted to position a fresh spool, to operate the hammer or spool pusher, and to bring into operative position a control member or safety device capable of preventing operation of the hammer or spool pusher when the shuttle is not in the proper position to receive a fresh spool.

The nature of the invention will be more clearly understood by reference to the accompanying drawings, in which are shown two practical, specific embodiments of the principles of the invention, though it is to be understood that the description of these embodiments is purely illustrative and is not restrictive.

In the drawings:

Fig. 1 is a side elevation showing the device in rest position,

Fig. 2 is a front elevation showing the parts mounted on the breast beam of a loom,

Fig. 3 is a side elevation showing the device in working position,

Fig. 4 is a plan view showing the device in rest position, and,

Figs. 5 to 8 are corresponding views of another embodiment of the invention.

Referring to Figs. 1 to 4, 1 is a supporting frame for the spool magazine 2, which can swing thereon, frame 1 being supported on breast beam 3. 3 is the lathe and leg thereof. On the rear side of lathe 3 is pivotally supported hammer or spool pusher 4 to which one end of arm 5 is pivotally attached. Arm 5 is operable to cause the spool changing action of the pusher, when the opposite end of the arm is struck by other mechanism hereinafter described. 7 is a support or bracket attached to the breast beam and carrying block 8, with safety arm 9 pivotally attached thereto.

25 is the feeler or weft fork indicating the exhaustion of the weft yarn on the spool in the shuttle or the breakage of the weft yarn unwinding from such spool. Parts 25, through the cross spindle 24 and lever 26, actuate cross bar 27, which carries the safety arm 9 and the members 10 and 12. 10 is a lever having an arcuate slot therein, which serves to guide a pin sidewise mounted in swinging arm 11, fulcrumed at one end on breast beam 6. Hence when lever 10 is swung, arm 11 is caused to swing into position to strike pusher actuating arm 5. 15 is a lever pivotally attached to a rork 12. Fork 12 is in turn pivotally attached to breast beam 6 and the prongs of such fork engage pin 28 which is rigidly connected to the bottom end of the spool magazine 2.

The device operates in the following manner.

When the feeler or weft fork 25 actuates the cross bar 27, lever 13 swings the fork 12 and with it the spool magazine 2, in such manner that the end of the spool magazine is positioned directly above the shuttle when the lathe has reached the end of its forward movement. Concurrently the safety arm 9, which is caused by cross bar 27 to swing about its pivot on block 8, closely approaches the end of the shuttle and passes by it, if the shuttle is in proper position, but if the shuttle is not in the proper spool changing position, the end of arm 9 strikes the projecting end of the shuttle and rebounds in such manner as to neutralize the movement of the slotted lever 10 and arm 11, which through arm 5 would ordinarily actuate pusher 4. If the shuttle is in the correct position for spool changing, lever 11, having been moved to a substantially horizontal position by slotted lever 10, strikes the end of arm 5 when the lathe reaches the end of its forward movement. The hammer or spool pusher 4 is thereby caused to move downwardly in such manner that it forces a fresh spool into the shuttle, at the same time ejecting the exhausted spool.

The spool change having been effected, the lathe moves backward, thereby disengaging arms 5 and 11, whereupon all parts automatically assume their rest positions.

Referring to Figs. 5 to 8, the device is very similar to the one above described and in...
cludes breast beam 32, lathe 33 and leg thereof and hammer or spool pusher 34. A distinguishing feature, however, resides in the fact that spool magazine 31 is stationary mounted on breast beam 32. The spool magazine is fitted with an endless spool carrying device moving on gears 36, 45 and the magazine also has an extensible slide 47 fitted in its bottom portion to carry a fresh spool from the endless spool carrying device to spool changing position. As in Figs. 1 to 4 this slide is operated by fork 42 and is carried into spool changing position by the same mechanical movements, hammer or spool pusher 34 being actuated when arm 35 is struck by arm 41. 38 in Figs. 5 to 8 corresponds to cross bar 27 of Figs. 1 to 4, 43 to lever 19, and 39 corresponds to safety arm 9, respectively.

The spool change gears shown may be used in connection with any chain drive system and may also be used in connection with other known continuous systems for supporting reserve spools in such manner as to regulate their descent and hold the free ends of the weft yarn in order to facilitate the threading of the yarn in the shuttle.

It is to be understood that numerous details of construction and arrangement may be varied without departing from the scope of the invention as defined in appended claims.

What is claimed is:

1. An automatic spool change device for power looms, comprising the combination with a loom including a lathe, a breast beam, a shuttle, and a weft detecting mechanism, of spool changing means mounted on said lathe, a spool magazine mounted on said breast beam, and mechanism carried by said breast beam and controlled by said weft detecting mechanism, operable to position said spool magazine over said shuttle and to actuate said spool changing means.

2. An automatic spool change device for power looms comprising the combination with a loom including a lathe, a breast beam, a shuttle, and a weft fork, of spool pushing means mounted on the rear of said lathe, a spool magazine mounted on said breast beam, mechanism carried by said breast beam and controlled by said weft fork, operable to position said spool magazine over said shuttle and to actuate said spool pushing means, and a safety device adapted to render the spool changing mechanism inoperative when said shuttle is not in proper position to receive a fresh spool.

3. An automatic spool change device for power looms comprising the combination with a loom including a lathe, a breast beam, a shuttle and a weft fork, of a spool pusher mounted on said lathe, a spool magazine pivotally mounted on said breast beam, and means associated therewith, operated by said weft fork to swing said spool magazine over said shuttle at predetermined times.

4. An automatic spool change device for power looms comprising the combination with a loom including a lathe, a breast beam, a shuttle and a weft fork, of a spool pusher mounted on the rear of said lathe, an arm pivotally mounted on said spool pusher, a spool magazine mounted on said breast beam, mechanism carried by said breast beam and actuated by said weft fork, operable to actuate said spool pusher, such mechanism including a slotted lever, an arm associated therewith, movable to engage said arm pivotally mounted on said spool pusher, a lever associated with said spool magazine and operable to position the lower portion thereof over said shuttle, and a safety device adapted and arranged to render the spool changing mechanism inoperative when said shuttle is not in proper position to receive a fresh spool.

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