

A. G. KOECHLIN.
STOP MOTION FOR LOOMS.
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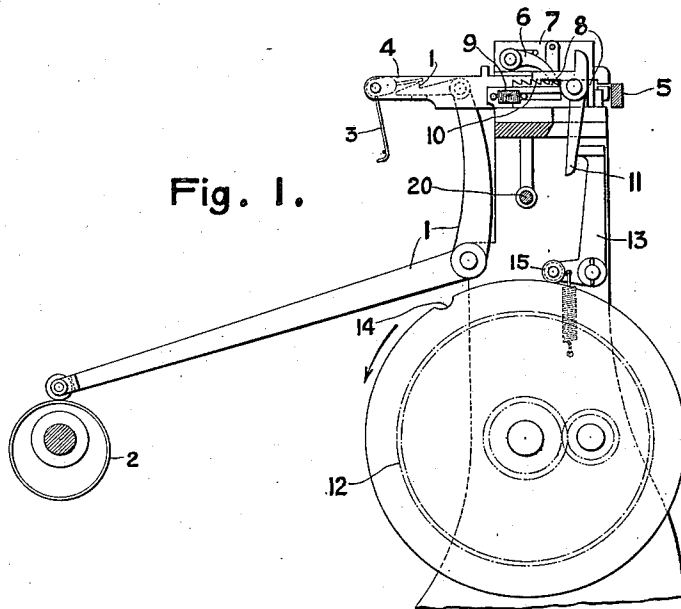


Fig. 1.

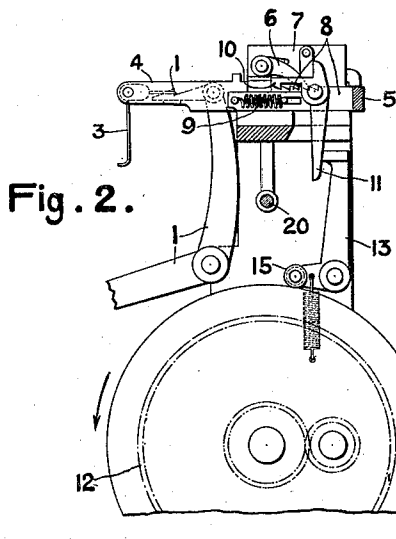


Fig. 2.

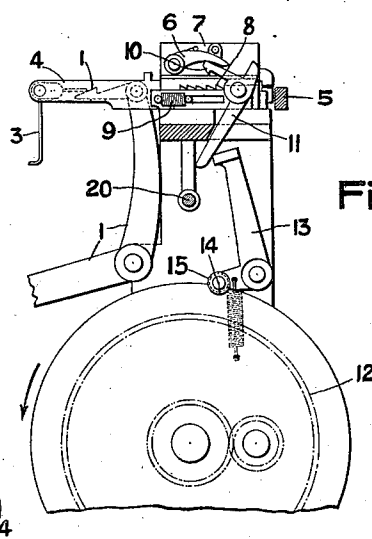


Fig. 3.

Witnesses
H. W. Primmer
H. W. Primmer

Inventor
Albert Gustav Koechlin
William F. Fisher & William F. Fisher
his Attorneys

UNITED STATES PATENT OFFICE.

ALBERT GEORG KOECHLIN, OF BASEL, SWITZERLAND, ASSIGNOR TO SPINNEREI & WEBEREI STEINEN ACTIEN GESELLSCHAFT, OF STEINEN, GERMANY.

STOP-MOTION FOR LOOMS.

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To all whom it may concern:

Be it known that I, ALBERT GEORG KOECHLIN, a citizen of the Swiss Republic, and resident of Basel, Switzerland, have invented new and useful Improvements in Stop-Motions for Looms, of which the following is a full, clear, and exact specification.

In looms having automatic shuttle bobbin change mechanism it often occurs on account of faults, that weft-bobbin changes take place several times at short intervals whereupon the faults are only corrected when the operator realizes some time later that there is a faulty working. It has therefore recently been suggested in looms of this kind to use a stop motion mechanism, which stops the loom whenever during a revolution of a shaft, or part thereof, for instance of the ratchet wheel of the usual fabric take up mechanism, a given number of shuttle bobbin changes have been made, not only as is usual, one immediately after the other, but also in short admissible intervals of time. While, however, the mechanisms of this kind hitherto in use used electrical contacts for this purpose, which may easily be set out of action particularly in looms owing to fluff settling between the contacting surfaces, according to the present invention the same object is attained solely by mechanical means, in such a manner that a toothed spring controlled pusher slide operated at each weft bobbin change by the weft fork carrier by means of a pawl is allowed to return inoperative before reaching the stop lever of the loom owing to the disengagement of the pawl on the weft fork carrier by means of a lever mechanism controlled from the ratchet wheel of the fabric take up mechanism of the loom, as long as when the shuttle bobbin changes succeed to each other not immediately, but at short admissible intervals of time, their number does not exceed a set limit for a given movement of said wheel. In such an arrangement the construction is extremely simple and the operation is compulsory and moreover more secure than when electrical auxiliary means are used.

One method of construction is shown by way of example in the accompanying drawings in which—

Figure 1 is a vertical section of the mechanism in the initial or rest position of

the pusher slide. Fig. 2 is a corresponding sectional view in which the pusher slide has been pushed onward until it lies against the stop lever of the loom so that it will put the loom out of gear at the next movement. Fig. 3 is a further sectional view, showing the pawl disengaged.

1 is the usual weft fork lever to which a constant to and fro movement is imparted by means of the cam disk 2.

3 is the well known weft feeler fork which is pivoted to a cradle or movable carrier 4, and when the weft thread fails or breaks, takes up, in the well known manner, such a position that it can then be caught by the hook of the weft fork lever. The stop motion lever 5 (also called stop spring) of the loom is arranged behind the carrier 4, and is shown diagrammatically in the drawing. Instead of the cradle or carrier 4 operating directly on the stop lever 5 as is usual, it operates by means of a pawl 6 which is pivoted in a lug 7 of the cradle on a toothed pusher slide 8, the back end of which lies opposite the end of the stop lever 5 of the loom. The slide 8 is drawn forward by means of a tension spring 9. If it is moved backward by the pawl 6, then it is held in this fresh position by means of the locking hook 10 of a lever 11, while the weft fork carrier 4 can return forward again. The hook 10 serves at the same time to disengage the pawl 6 when the lever 11 is rocked by the spring controlled bell-crank lever 13 operated by the ratchet wheel 12 of the usual fabric take up mechanism of the loom. A notch 14 is provided in the periphery or in a peripheric part of the known ratchet or take up wheel 12; of course several such notches could be provided. One arm of the bell-crank lever 13 carries at one end a small roller 15 which engages the periphery of the take up ratchet wheel 12. When the take-up ratchet wheel 12 revolves and the roller 15 enters the notch 14, the bell-crank lever 13 moves inward and its upper arm presses against the lever 11, so that this is brought into the position shown in Fig. 3. The locking hook 10 is thereby lifted out of the toothing of the slide 8 and if the said slide was in a rear position, this may immediately be drawn forward into its position of rest by means of the tension spring 9.

The mode of operation of the mechanism

is briefly as follows: When the well known weft fork carrier 4 is pushed backward by the weft fork lever 1 owing to a thread breakage or an empty weft shuttle, in order to turn the change shaft 20 for the shuttle changing apparatus by means of an intermediate mechanism, not shown, which causes the shuttle bobbin to be changed, then the pawl 6 pushes the slide 8 one tooth backward, that is to say outwardly against the stop lever 5 of the loom. Should two shuttle bobbin changes follow upon one another without the pawl 6 being disengaged by the lever mechanism 11, 13 then this pushes the slide 8 at the second movement close against the stop lever 5 of the loom. This is the position of the parts in Fig. 2. Should, however, three shuttle bobbin changes follow one upon the other without the disengagement of the pawl 6, then the slide 8 pushes the stop lever 5 of the loom out of its well known stop notch and the loom is stopped. The loom is, however, not stopped if the take-up ratchet wheel 12 has meanwhile turned so that the roller 15 of the bell-crank lever 13 falls into the notch 14, and the pawl 6 has thereby been lifted out of engagement with the toothing of the slide 8 by the lever 11, as the slide 8 has been then drawn forward into its original position by means of its spring 9 and the next stroke of the slide is then inoperative as regards the stop lever of the loom.

It will be evident from the above that if only one notch 14 is provided in the take-up ratchet wheel 12, the loom is not stopped when during one complete revolution of the take-up ratchet wheel 12, one or two shuttle bobbin changes have taken place; should however, three shuttle bobbin changes be made then the slide 8 operates the stopping of the loom.

What I claim is:—

1. In an automatic stop motion for looms with automatic shuttle bobbin exchange, the combination of a shuttle bobbin changing mechanism, a stop motion member for the loom, a feeler member for starting the operation of said changing mechanism when the weft thread fails or breaks, a movable carrier for said feeler member, a toothed spring controlled pusher slide for operating said stop motion member, a pawl on said carrier engaging the toothing of said slide for shifting the latter step by step when shuttle bob-

bin changes occur, a lock for locking said slide when having been shifted, releasing means for unlocking said slide and for disengaging said pawl, a fabric take up mechanism on the loom and interconnecting means between said take up mechanism and said releasing means, so arranged that they may allow of the return of said slide, when having been shifted, to an inoperative position or position of rest as long as any plurality of bobbin changes not immediately succeeding to each other does not exceed a given limit number for a given movement of said take up mechanism, substantially as and for the purpose described.

2. In an automatic stop motion for looms with automatic shuttle bobbin exchange, the combination of a shuttle bobbin changing mechanism, a stop motion member for the loom, a feeler member for starting the operation of said changing mechanism when the weft thread fails or breaks, a movable carrier for said feeler member, a toothed spring controlled pusher slide for operating said stop motion member, a pawl on said carrier engaging the toothing of said slide for shifting the latter step by step when shuttle bobbin changes occur, a locking lever for locking said slide when having been shifted and adapted also to disengage said pawl, a fabric take up mechanism on the loom, having a rotary ratchet wheel, a spring acted releasing lever engaging on the one hand with a part of said ratchet wheel and on the other hand with said locking lever, means on said ratchet wheel to allow of the operation of said releasing lever once for one revolution of said ratchet wheel for actuating said locking lever, so that the pusher slide may be caused to return, when having been shifted, to an inoperative position or position of rest as long as any plurality of bobbin changes not immediately succeeding to each other does not exceed a given limit number for one revolution of said ratchet wheel, substantially as and for the purpose described.

In witness whereof I have hereunto signed my name this 29th day of July 1911, in the presence of two subscribing witnesses.

ALBERT GEORG KOECHLIN.

Witnesses:

GEO. GIFFORD,
AMAND RITTER.