

J. C. A. WENNING.
WEFT REPLENISHING MECHANISM FOR LOOMS.
APPLICATION FILED OCT. 13, 1908.

959,036.

Patented May 24, 1910.

3 SHEETS—SHEET 1.

FIG. 1—

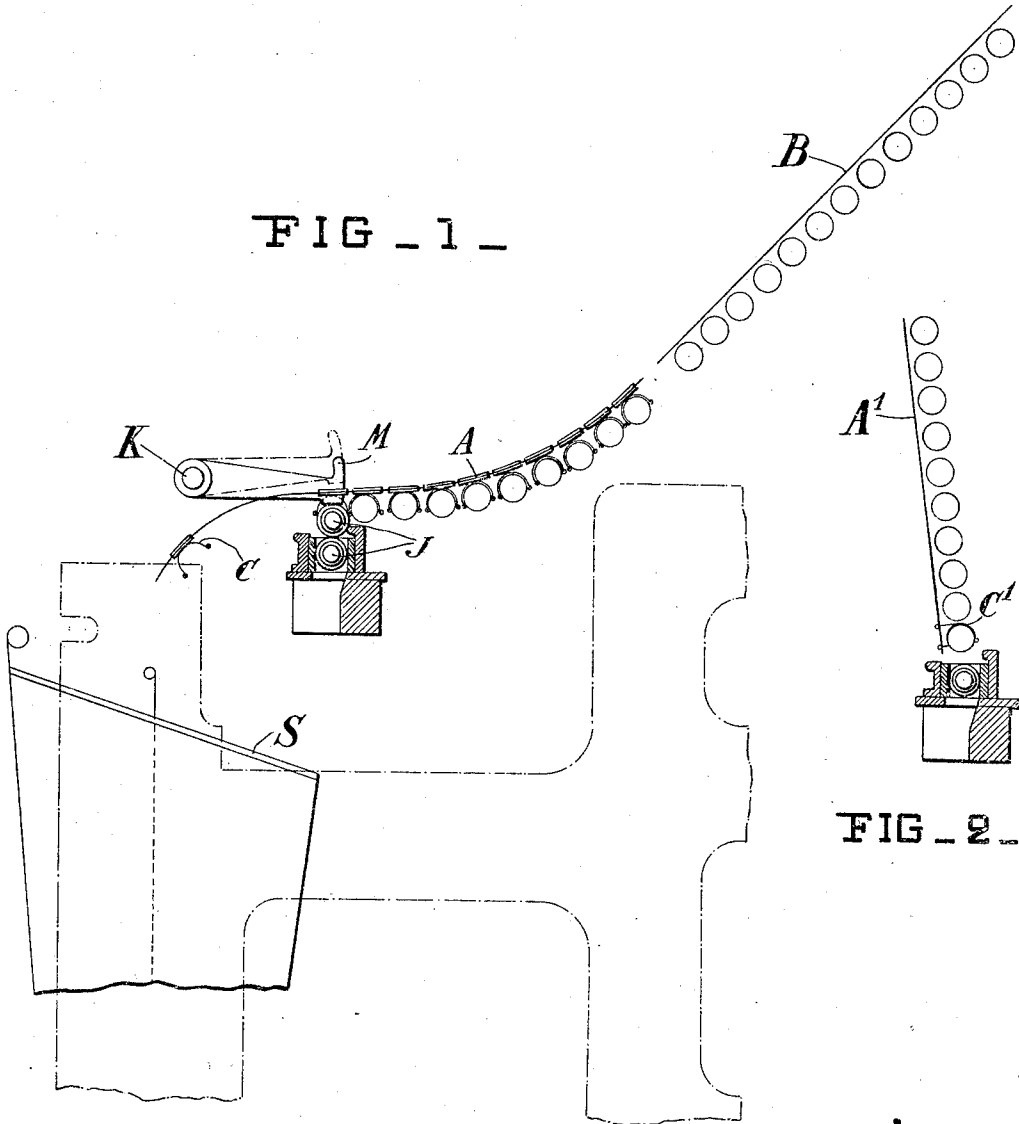


FIG. 2—

WITNESSES:

Fred White
René Guine

INVENTOR:

Jean Charles Alfred Wenning,
By Attorneys,

Arthur C. Hauptmann

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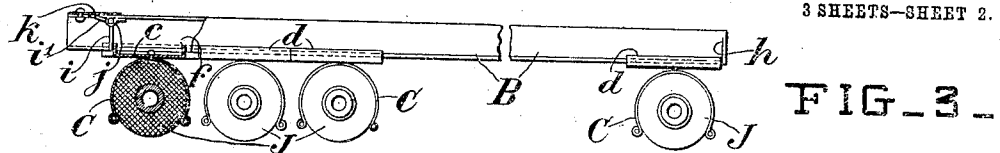


FIG. 3.

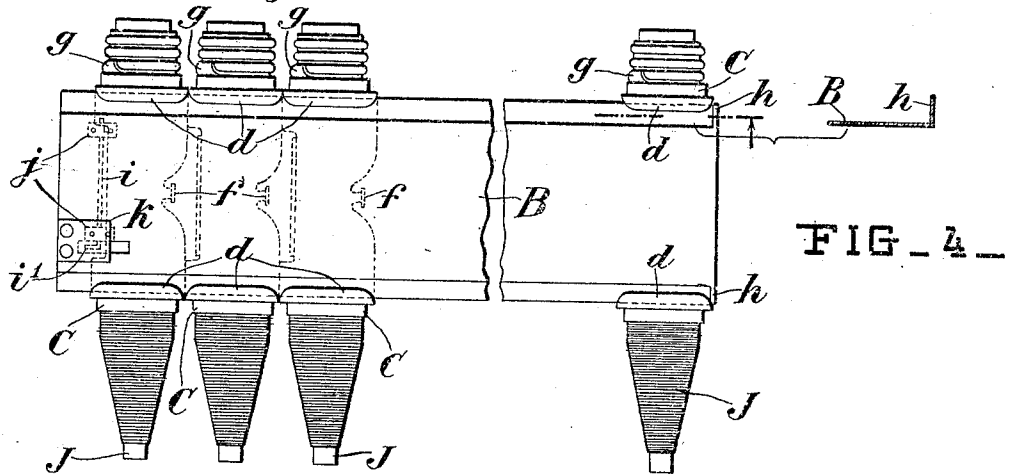


FIG. 4.

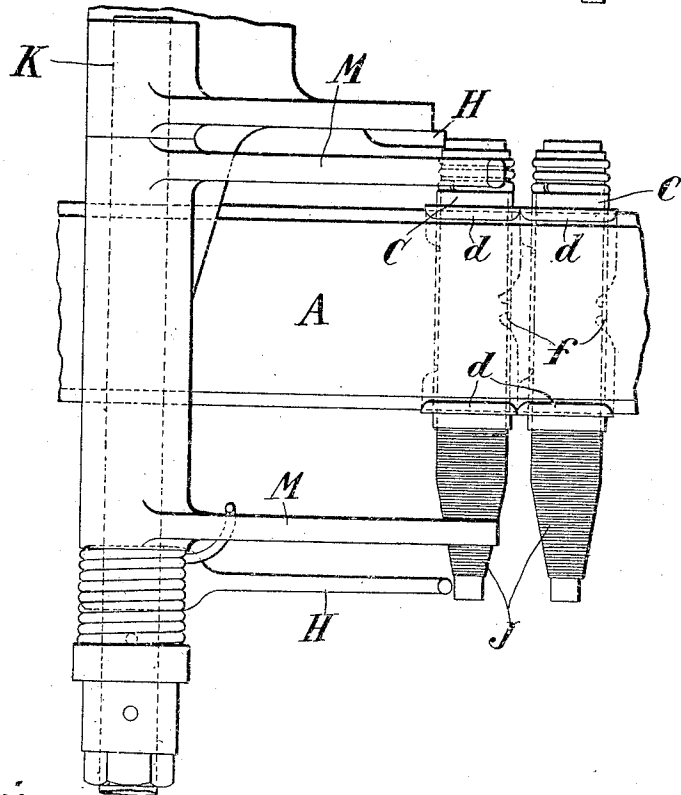


FIG. 5.

WITNESSES:

Ired White
Rene' Ruine

INVENTOR:

Jean Charles Alfred Wenning,
By Attorneys,

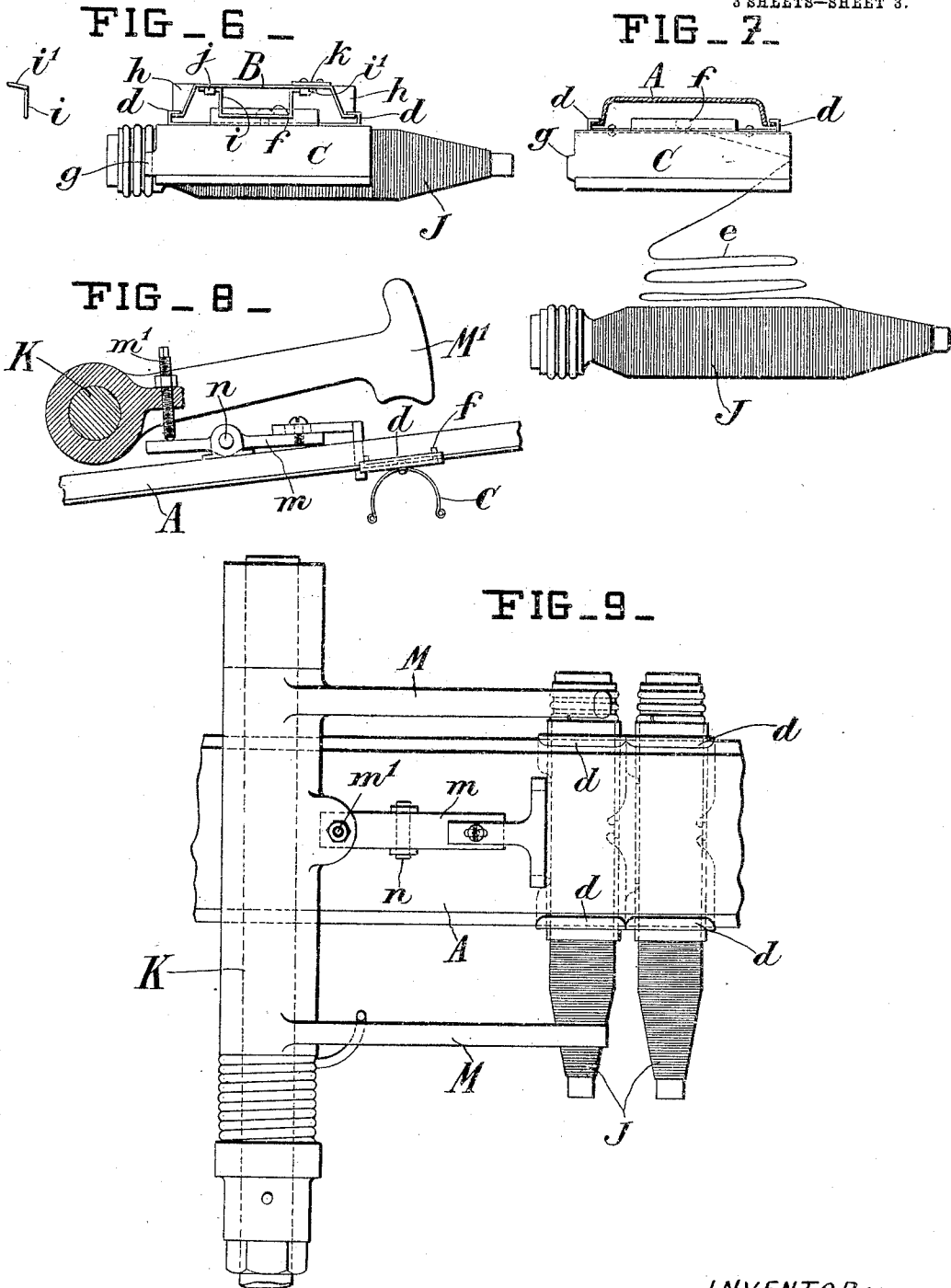
Arthur C. Fraser & Co.

J. C. A. WENNING.
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3 SHEETS—SHEET 3.



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Fred White
René Muine

INVENTOR:

Jean Charles Alfred Wenning,
By Attorneys,

Arthur P. Francis & Co.

UNITED STATES PATENT OFFICE.

JEAN CHARLES ALFRED WENNING, OF MÜLHAUSEN, GERMANY, ASSIGNOR TO SOCIÉTÉ
ALSACIENNE DE CONSTRUCTIONS MECANIKES, OF MÜLHAUSEN, GERMANY.

WEFT-REPLENISHING MECHANISM FOR LOOMS.

959,036.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed October 13, 1908. Serial No. 457,503.

To all whom it may concern:

Be it known that I, JEAN CHARLES ALFRED WENNING, a subject of the Emperor of Germany, and resident of Mülhausen, Alsace, Germany, have invented new and useful Improvements in Automatic Weft-Replenishing Mechanism for Looms, of which the following is a full, clear, and exact specification.

This invention relates to automatic weft-replenishing mechanisms for looms of the kind wherein the pirns or bobbins are automatically changed in the shuttle.

In the different kinds of looms now in existence, with mechanisms in which the pirns are automatically changed in the shuttle, the charging has been performed hitherto by pirn upon the loom and by the weaver.

The weft-replenishing mechanism which constitutes the subject matter of the present invention differs considerably from the usual similar mechanisms, particularly in respect of its charging. It comprises a guide, preferably a stationary guide-way at the supply place of a loom and a removable charger connected with the said guide so as to be capable of being removed therefrom and provided with a large number of pirn-carriers independent from one another, carrying full pirns and arranged thereon in such a manner that they can freely slide from the removable charger upon the said guide and thereby to the supply place of the loom, where they are introduced into the working shuttle of the loom in place of the wholly or partially exhausted one. This arrangement permits of freeing the weaver properly speaking of the labor of charging the pirns one by one into the loom and thus allows him to attend to a larger number of looms, the fresh pirns being charged into the removable charger at distance from the loom by a special staff. This operation of charging performed by a special staff is executed more quickly than by the weaver whom it distracts from looking after the looms and can be done by young work people thus economizing labor.

In looms in which the pirns are changed or supplied automatically, it is necessary to stretch the free end part of the thread issuing from the pirns to a fixed point judiciously chosen where it is attached, this being done in order to allow of the automatic threading of the weft thread into the shuttle.

In those looms which possess a charger in a fixed position, the weaver attaches the free end of each weft thread to the fixed point at the same time as he places the pirns in the charger. In the improved mechanism, the pirn carriers consist preferably of movable holding clips placed side by side. These clips are of such a form that they enter into the removable charger which guides them and they have a stop which serves as a gage to assure to all the pirns the same position when they present themselves in front of the shuttle for the changing. In order to allow the weft thread of being automatically threaded into the shuttle, the following arrangement is made: The workwoman who introduces the pirn into the clip which receives it, commences by winding several turns of weft thread around her hand and withdrawing her hand thus constituting a reserve of thread which she places between the pirn and the clip body which possesses a suitable form so that this reserve may be firmly held between these two parts and thus protected against all exterior action. The free end of thread constituting the reserve is attached by the workwoman to a fixed point on the clip body.

In the accompanying drawings, which show several examples of carrying out the invention, Figure 1 represents diagrammatically a first form of improved mechanism. Fig. 2 shows, also diagrammatically, a modified form of the mechanism. Figs. 3 and 4 show in side elevation, partly in section, and by a plan view the construction of the removable charger of the first embodiment. Fig. 5 illustrates in plan an ejecting hammer arranged to disengage successively the pirns from their carriers or holding clips at the supply point above the shuttle. Figs. 6 and 7 show one of the pirn-carriers or clips; in Fig. 6 the clip is provided with its pirn and mounted upon the charger, while in Fig. 7 the clip is located upon the stationary guide-way and has its pirn expelled for being introduced into the shuttle. Figs. 8 and 9 represent a modified form of the hammer device for the ejection of the pirns from their carriers into the shuttle.

The device represented in Figs. 1, 3, 4 and 5 comprises a stationary guide-way A arranged at the place of changing of the pirn and a removable charger B placed in line or connected with the said guide-way A so as

to be capable of being removed therefrom and provided with a series of pirn holding clips C. The parts A, B consist each of perforated sheet metal having a U-like cross section as shown by Figs. 6 and 7. The removable charger B occupies upon the loom an inclined position with regard to a horizontal plane (Fig. 1). Each of the pirn holding clips carried by the removable charger is made of sheet metal of such curvature that it has a certain spring action in order to firmly hold the pirn. It possesses a suspending piece *c* engaging by catches *d* (see also Figs. 6 and 7) lateral flanges forming guide-rails of the charger B so as to be capable of sliding thereon in order to be conveyed to the stationary guide-way A having also lateral flanges forming guide-rails. The pirn holding clips have also a locking stop *g* designed to engage between two of the head rings of the pirn body in order to prevent the pirn J from any longitudinal displacement in its holding clip. *e* (Fig. 7) denotes a reserve of weft thread previously unwound from the pirn, adapted for the changing of the pirn and located between the pirn and the body of the pirn holding clip. The free end of this thread reserve is fixed to a nose *f* projecting upward from the suspending piece *c* of the pirn holding clip. The removable charger B, when empty, is removed from the loom and provided again with pirn holding clips at distance from the loom. It is immediately replaced by another full charger. To introduce a pirn into its clip, it suffices to put the locking stop *g* opposite the interval formed by the two first head rings of the pirn and to exert a slight power upon the body of this latter after having taken care to place the reserve of thread at the bottom of the clip and to attach its free end to the nose *f*. The curved sheet metal of the clip gives and the pirn engaging in the clip becomes imprisoned therein and with it the reserve of thread *e* which is thus protected against all exterior action. The locking stop *g* simultaneously seats itself in the groove formed by the two first head rings of the pirn and thus hinders the latter from moving in a longitudinal direction. The pirn thus held in the clip can be easily manipulated. The clips being thus prepared are mounted to the number of about thirty upon the removable charger B upon which they are placed in a row side by side. This series of pirn holding clips is held thereon so as to not escape, on the one hand by upwardly directed flanges *h* of the charger B and on the other hand by a movable stop *i* (Figs. 3 and 6) articulated at *j* to the body of the charger and subjected to the action of a weak spring *k* which tends to maintain it in its locking position, acting upon a bent portion *i'* of the said stop, which latter, however, can be

raised against the action of said spring, when the charger is put in place, in order to liberate the series of pirn holding clips and to allow them of sliding upon the stationary guide-way. This raising of the movable stop *i* is also effected when the workwoman charges the charger B with the provision of pirn holding clips. The pirn holding clips are stopped on the stationary guide-way so as to occupy successively a position situated above the shuttle, by two stop arms H (Fig. 5) which are encountered by the lowest pirn. A rocking shaft carries an ejecting hammer with two heads M, and when this shaft is caused to oscillate, the ejecting hammer M impinges the lowest pirn to disengage it from its holding clip and to introduce it into the shuttle whereby at the same time the empty spool is expelled from the shuttle.

To properly understand the working, reference will be made to Fig. 1, in which is shown a filled removable charger B in line with the stationary guide-way A also containing ten pirns. Owing to the inclination of the removable charger B and of the stationary guide-way A, the pirn holding clips which are charged that is to say the clips with their pirns slide under the action of their own weight on the lateral guide-rails of the removable charger B and of the fixed guide-way A and the two ends of the lowest pirn come in contact with the stop arms H (Fig. 5); this pirn thus becomes placed underneath the two headed ejecting hammer M, which at the moment of its action drives the full pirn into the shuttle at the same time expelling the empty one therefrom. This exchange operation may be set in action by a feeling device (not represented) adapted to coöperate in the known manner with the pirn in the working shuttle (when being on the opposite side to the loom) so as to cause the exchange of the pirn in the working shuttle when this pirn is wholly or partially exhausted. After the introduction of the full pirn into the shuttle, the clip still retains the pirn by the reserve thread *e* (Fig. 7), stretches it and thus facilitates its automatic severance; as soon as the thread has been cut, the clip becomes free and continues to slide along the fixed guide-way A to fall finally into one of the two compartments of a small box S (Fig. 1) fitted up for this purpose; the empty spool expelled from the shuttle falls in its turn into the other compartment of this box. After the removal of the lower pirn all the others held in their clips advance and come into contact one after the other with the stop arms H (Fig. 5) and consequently present themselves to the two headed hammer M.

Figs. 8 and 9 represent a modification of the stopping device for the supply pirns at their change position in the loom, which offers certain advantages over that described

in so far as it does not engage directly the
 pirn itself, but coöperates with the pirn
 holding clip which comes into contact with
 it. The device consists of a lever *m* pivoted
 5 at *n*, engaging through an opening of the
 guide-way A, with the suspending piece *c*
 of the pirn holding clip C and which can be
 disengaged therefrom when the ejecting
 hammer M¹ moves downward, whereby an
 10 adjustable screw *m*¹ comes into contact with
 the rear end of the said lever *m*.

In Fig. 2, the stationary guide-way A¹
 occupies a position almost vertical, the pirn
 holding clips C¹ having a modified construc-
 15 tion slightly different from that above de-
 scribed, as is well understood from the draw-
 ing.

What I claim is:

1. In an automatic weft replenishing
 20 mechanism for looms, the combination of a
 guide at the supply place of the loom, said
 guide being adapted to receive and feed pirn
 carriers toward such supply place, a remov-
 able charger connected to said guide so as
 25 to be capable of being removed therefrom,
 a reserve of independent pirn carriers carry-
 ing full pirns and movably mounted on said
 removable charger, said charger being adapt-
 ed to direct said pirn carriers to said guide,
 30 and means for introducing the pirns from
 their carriers into the shuttle of the loom.

2. In an automatic weft replenishing
 mechanism for looms, the combination of a
 stationary guide at the supply place of the
 35 loom, said guide being adapted to receive
 and feed pirn carriers toward such supply
 place, a removable charger connected to said
 guide so as to be capable of being removed
 therefrom, a reserve of independent pirn
 40 carriers carrying full pirns and movably
 mounted on said removable charger, said
 charger being adapted to direct said pirn
 carriers to said guide, and means for intro-
 ducing the pirns from their carriers into
 45 the shuttle of the loom.

3. In an automatic weft replenishing me-
 chanism for looms, the combination of a sta-
 tionary guideway at the supply place of a
 loom, a removable charger having an in-
 50 clined position with regard to a horizontal
 plane and placed in line with said stationary
 guideway, and a reserve of independent
 pirn carriers carrying full pirns and slid-
 ably mounted on the said removable charger
 55 so that they can freely slide, owing to the
 inclination of the latter and by their own
 weight, from the removable charger upon
 the stationary guideway and to the pirn sup-
 ply point of the loom.

4. In an automatic weft replenishing
 60 mechanism for looms, the combination of a
 stationary guideway at the supply place of
 a loom, a removable charger placed in line
 with said stationary guideway and having
 65 lateral guide rails, and a reserve of inde-

pendent pirn carriers, carrying full pirns,
 slidably mounted in a row side by side on
 the lateral guide rails of the removable
 charger so that they can freely slide from
 the removable charger upon the stationary
 70 guideway and to the pirn supply point of
 the loom.

5. In an automatic weft replenishing
 mechanism for looms, the combination of a
 stationary guideway at the supply place of
 75 a loom, a removable charger placed in line
 with said stationary guideway and a reserve
 of independent pirn carriers which are
 adapted to hold each one single pirn, and
 an unwound thread reserve to permit the
 80 automatic exchange, and are slidably mount-
 ed on the removable charger so that they can
 freely slide from the removable charger
 upon the stationary guideway and to the
 pirn supply point of the loom.

6. In an automatic weft replenishing
 mechanism for looms, the combination of a
 stationary guideway at the supply place of
 a loom, a removable charger placed in line
 with said stationary guideway and a reserve
 90 of independent pirn carriers which are
 adapted to hold each one single pirn and an
 unwound thread reserve to permit the auto-
 matic exchange and are each provided with
 a piece for the attachment of the free end of
 95 said thread reserve, the said pirn carriers
 being slidably mounted on the removable
 charger so that they can freely slide from the
 removable charger upon the stationary
 guideway and to the pirn supply point of
 100 the loom.

7. In an automatic weft replenishing
 mechanism for looms, the combination of a
 guide at the supply place of the loom, said
 guide being adapted to receive and feed pirn
 105 carriers toward such supply place, a remov-
 able charger connected to said guide so as
 to be capable of being removed therefrom,
 a reserve of independent pirn carriers carry-
 ing full pirns and movably mounted on said
 110 removable charger, said charger being
 adapted to direct said pirn carriers to said
 guide, means for introducing the pirns from
 their carriers into the shuttle of the loom,
 said guide being adapted to deliver the
 115 empty pirn carriers after the supplying of
 the pirns in the loom, and a box with two
 compartments adapted to receive in one
 compartment the empty pirn carriers and in the
 120 other the empty spools which may be ex-
 pelled from the shuttle by the supplied full
 pirns.

8. In an automatic weft replenishing
 mechanism for looms, the combination of a
 guide at the supply place of the loom, such
 125 guide being adapted to receive and feed
 pirn carriers toward such supply place, a
 removable charger connected to said guide
 so as to be capable of being removed there-
 from, a reserve of independent pirn carriers
 130

carrying full pirns and movably mounted on said removable charger, said charger being adapted to direct said pirn carriers to said guide, an ejecting hammer designed to introduce the successive pirns from their carriers into the shuttle of the loom at the supply point of the latter, and a movable stopping device for the pirn carriers in relation with said ejecting hammer, so that it can be brought out of the path of said pirn carriers by the ejecting movement of this hammer.

9. In an automatic weft replenishing mechanism for looms, the combination of a stationary guide at the supply place of the loom, said guide being adapted to receive and feed pirn carriers toward such supply place, a removable charger connected to said guide so as to be capable of being removed therefrom, a reserve of independent pirn carriers carrying full pirns and movably mounted on said removable charger, said charger being adapted to direct said pirn carriers to said guide, and means for introducing the pirns from their carriers into the shuttle of the loom, the said guideway and

charger consisting of sheet metal, and having lateral flanges to constitute guide rails for the pirn carriers.

10. In an automatic weft replenishing mechanism for looms, the combination of a guide at the supply place of a loom, a removable charger combined with said guide, a reserve of independent pirn-holding clips carrying full pirns by spring action and movably mounted on said removable charger, said charger being adapted to convey said pirn carriers to said guide and said guide being adapted to convey said pirn carriers to a position where the supplying of the shuttle of the loom is to be effected, and means to cause at said position the introduction of the pirns supplied from their holding clips into the shuttle of the loom.

In witness whereof I have hereunto signed my name this 30th day of September 1908, in the presence of two subscribing witnesses.

JEAN CHARLES ALFRED WENNING.

Witnesses:

AMAND RITTER,
ARNOLD T. ZUBER.