

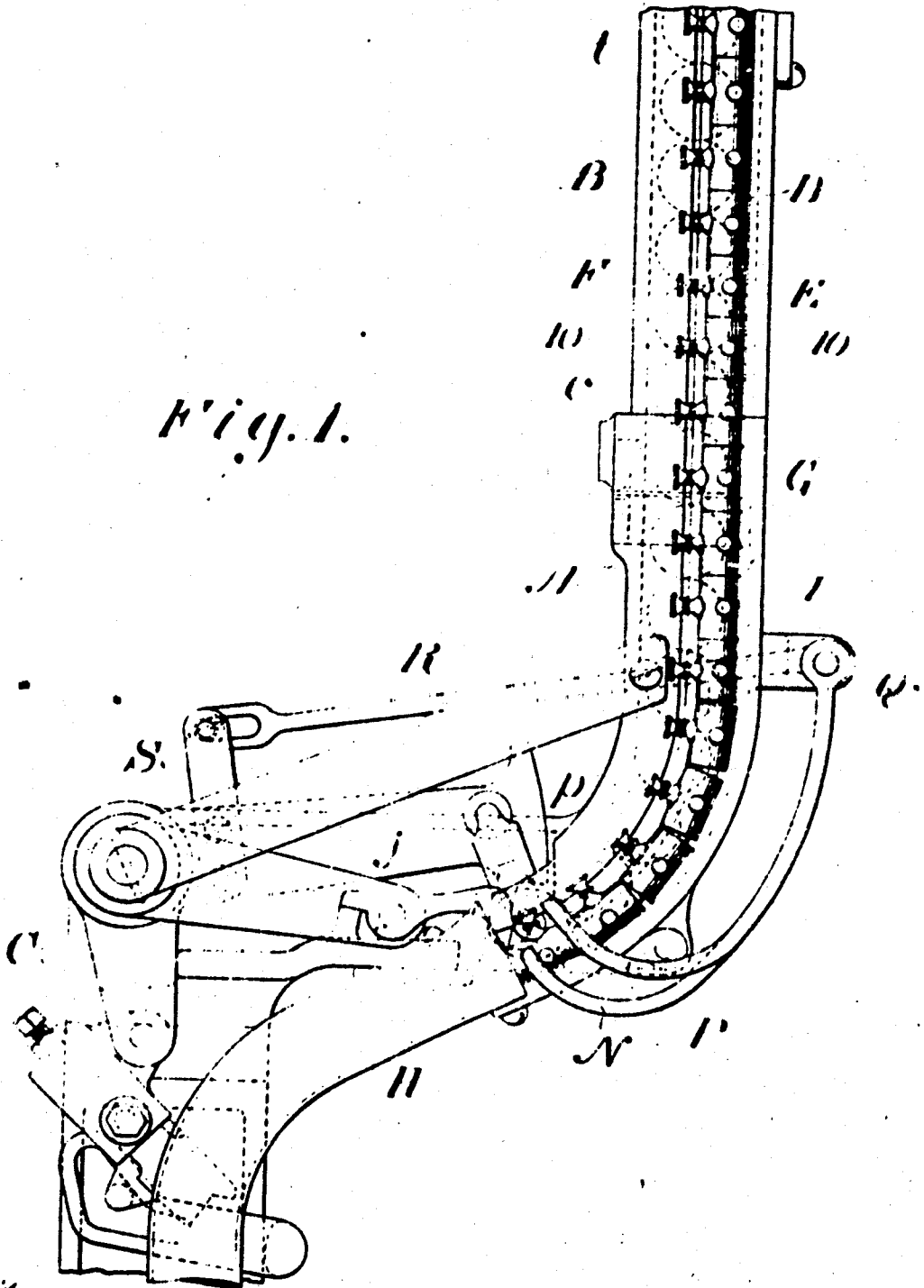
M. L. STONE.
 AUTOMATIC WEFT REPLENISHING LOOM.
 APPLICATION FILED MAY 8, 1905.

964,582.

Patented July 19, 1910.

5 SHEETS-SHEET 1.

Fig. 1.



Witness:
 J. S. L. L. L.
 E. W. Bond

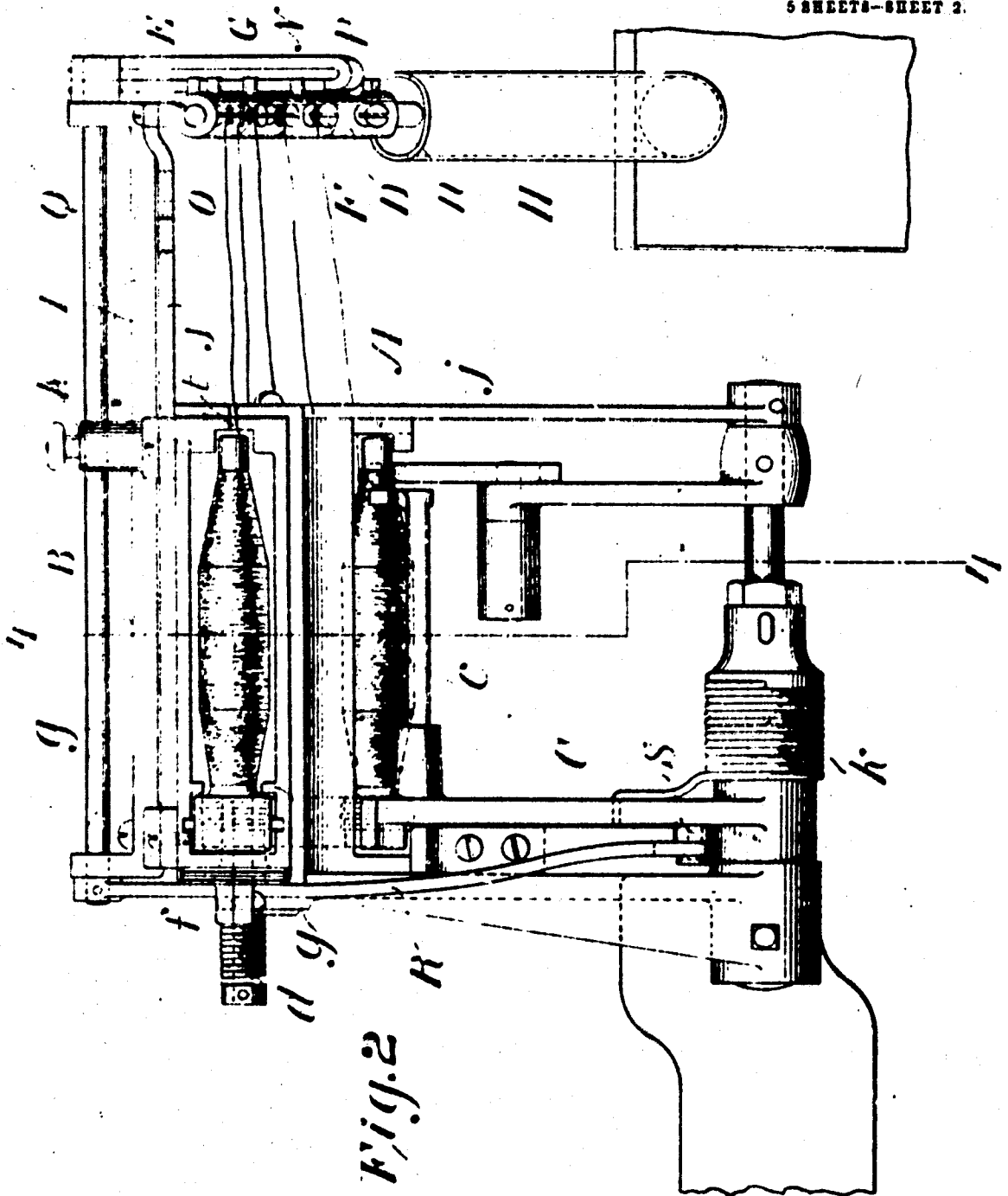
Inventor
 Melvin L. Stone
 by [Signature] Attorney

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5 SHEETS—SHEET 2.



Witnesses:
 Jno. S. L. Lines
 Edw. Bond

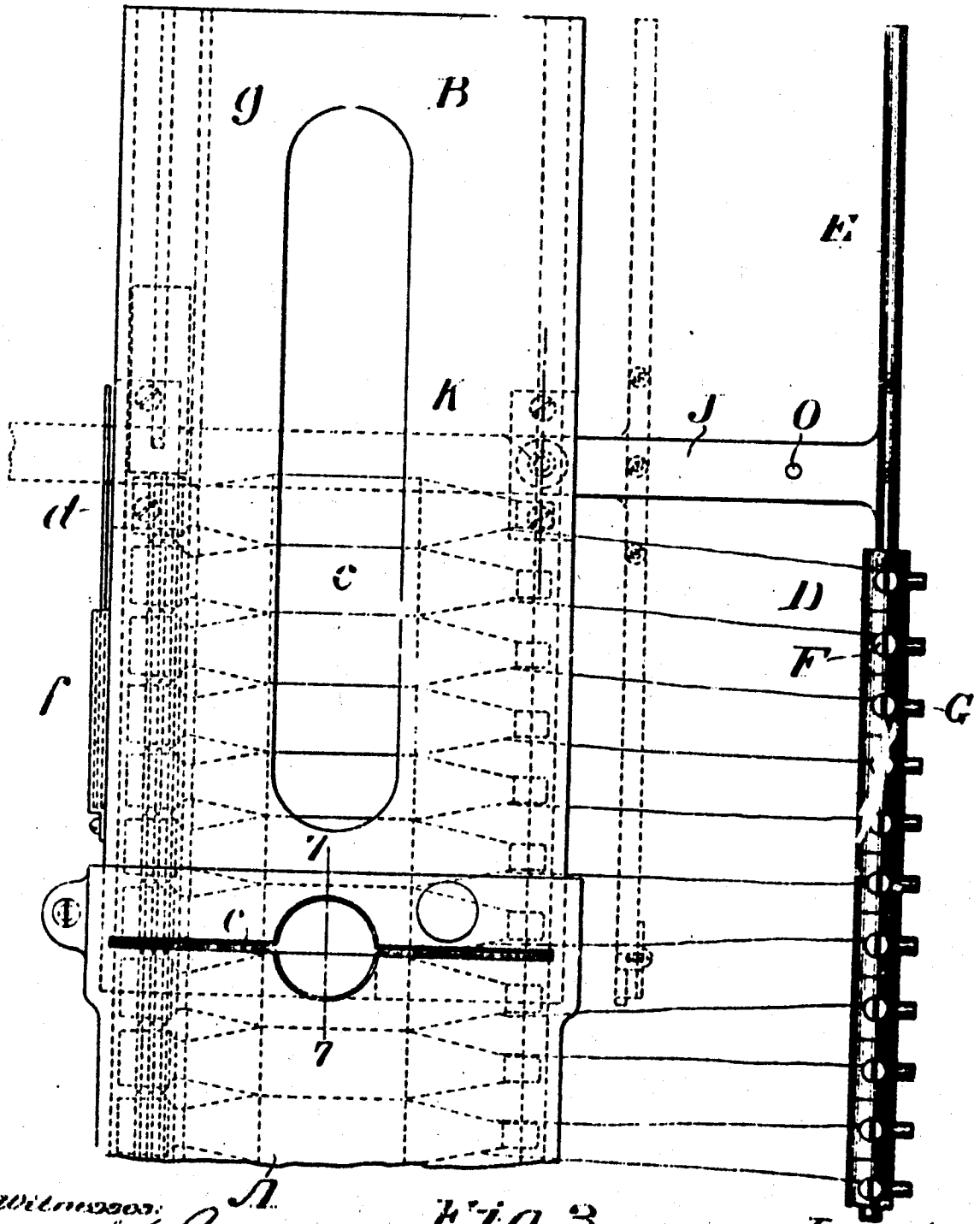
Inventor:
 M. L. Stone
 by *Arthur H. Brown*
 his attorney

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5 SHEETS—SHEET 3.



Witnesses:
 J. S. L. L. L.
 E. W. Bond.

Fig. 3.

Inventor
 Melvin L. Stone
 by Arthur Brown
 his Attorney

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5 SHEETS--SHEET 4

Fig. 4.

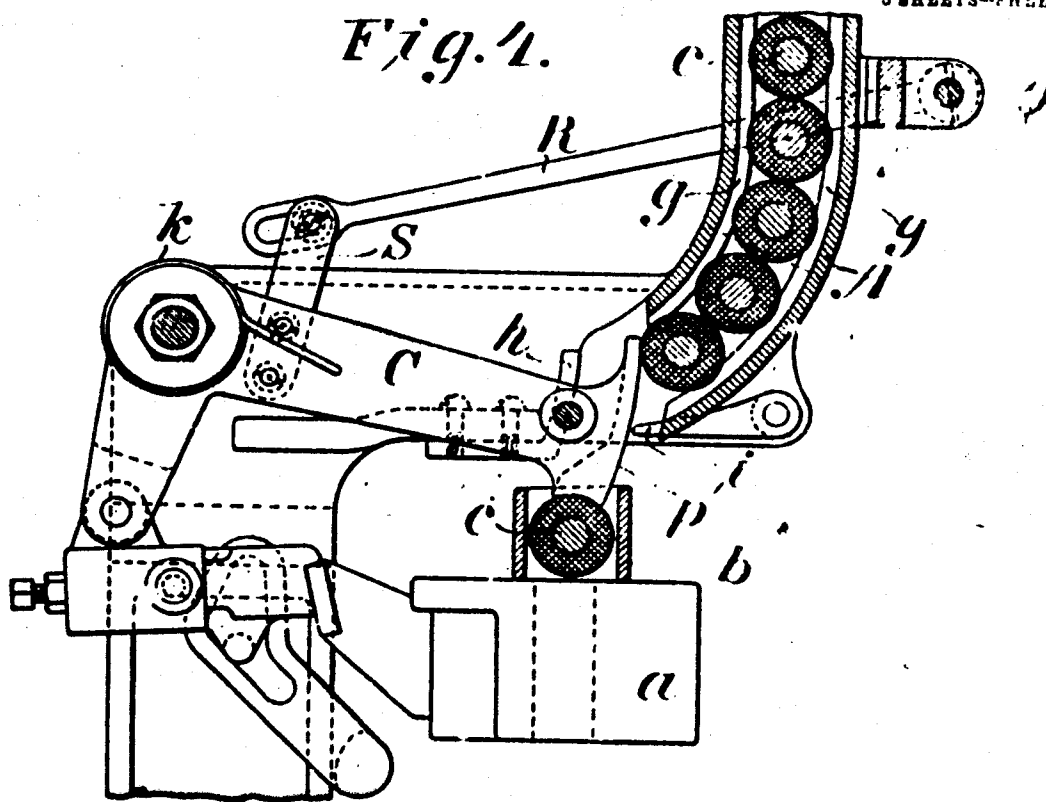
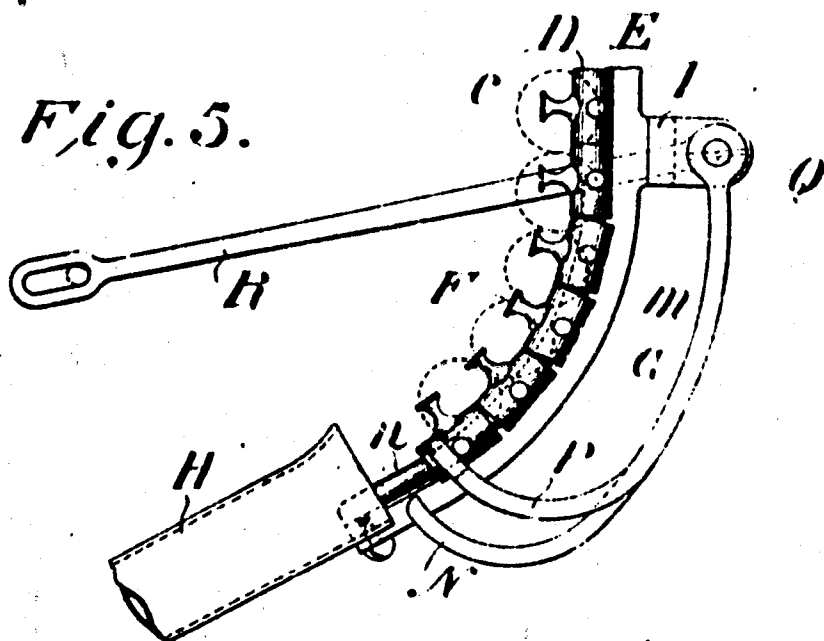


Fig. 5.



Witnesses:
 J. S. Leland
 E. W. Bond.

Inventor:
 Melvin L. Stone
 by Arthur B. Stone
 his Attorney

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6 SHEETS—SHEET 5.

Fig. 6.

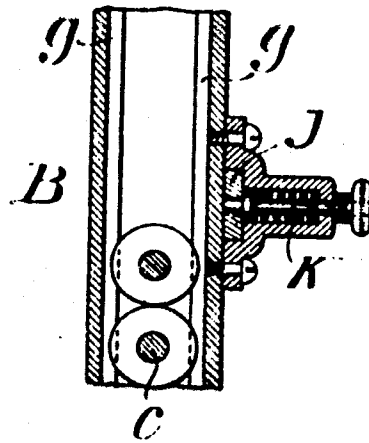


Fig. 7.

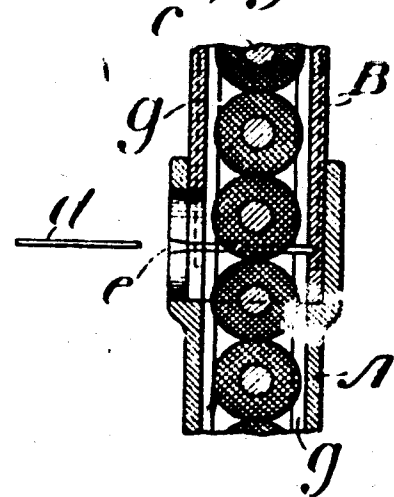


Fig. 8.

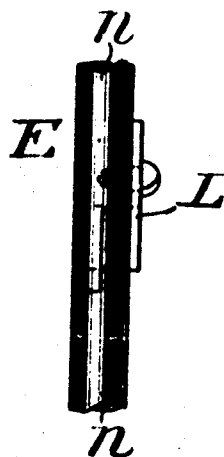


Fig. 9.

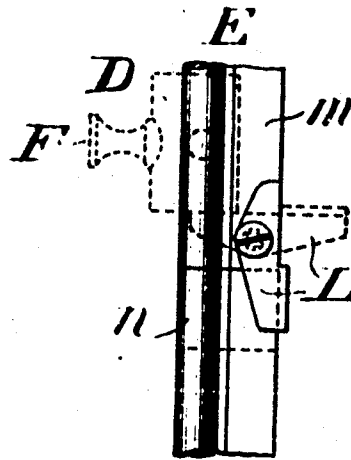
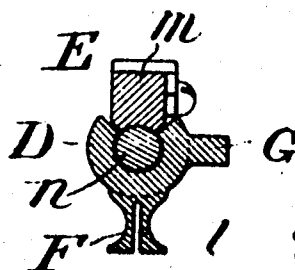


Fig. 10.



Witnesses:
J. S. Latimer
E. W. Bond

Inventor:
Melvin L. Stone
by Arthur W. Brown
his attorney

UNITED STATES PATENT OFFICE.

MELVIN L. STONE, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF PORTLAND, MAINE, AND HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

AUTOMATIC WEFT-REPLENISHING LOOM.

964,582.

Specification of Letters Patent.

Patented July 19, 1910.

Application filed May 8, 1905. Serial No. 259,328.

To all whom it may concern:

Be it known that I, MELVIN L. STONE, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Weft-Replenishing Looms, of which the following is a specification.

The present invention is an improvement upon that set forth in United States Letters Patent No. 921,009, May 18, 1909, and it relates more particularly to the devices employed for holding the threads of weft-carriers during their occupancy of a magazine and prior to their automatic transfer to the shuttle of the loom when the replenishment of weft is required. In said patent there is described a weft-carrier having a detachable weft-end holder which remains on the weft-carrier during its occupancy of the magazine and until just prior to the transfer of the weft-carrier to the shuttle, whereupon automatic mechanism removes the weft-end or thread holder still holding on to the thread so that the thread is held during the transfer of the weft-carrier to the shuttle and during the first flight of the shuttle through the shed. This prior construction has involved the employment of quickly acting motor mechanism to remove the detachable weft-end holder and also the possibility of the breakage of the thread as the result of the removal of the weft-holder.

The primary object of the present invention is to provide a different arrangement for taking care of the weft-ends or threads.

In accordance with the present invention there is provided a separate weft-end holder for each bobbin or other weft-carrier, but the weft-end holder is never connected directly to its weft-carrier but traverses its own guideway concurrently with the movement of the weft-carrier prior to its transfer to the loom. These separately guided individual weft-end holders are governed by a simple escapement mechanism which is actuated whenever a transfer is made of a weft-carrier from the magazine to the shuttle.

In connection with the improved manner of taking care of the weft-ends there are also other features of improvement. The improved weft-end holders are preferably used in connection with a detachable magazine which can be filled with weft-carriers apart from the loom and can be secured to

the loom when desired. In connection with such a detachable magazine there is employed a concurrently detachable guide for the individual weft-end holders.

An embodiment of the present improvements is illustrated in the accompanying drawings in which—

Fig. 1 is a side view of the improved magazine and weft-end holders, with so much of the usual mechanism of a weft-replenishing loom as will enable the improvements to be readily understood. Fig. 2 is a plan view. Fig. 3 is a front view of the detachable part of the magazine, together with the upper portion of the permanent part of the magazine. Fig. 4 is a vertical section in the plane indicated by the line 4—4 in Fig. 2. Fig. 5 is a detail view of the mechanism for controlling the action of the weft-end holders. Fig. 6 is a vertical section of a portion of the detachable magazine. Fig. 7 is a vertical section (in the plane indicated by the line 7—7 in Fig. 3) of the meeting ends of the detachable and permanent portions of the magazine. Figs. 8 and 9 are detail views of the permanent and detachable portions of the guideway for the weft-end holder. Fig. 10 is a cross-section of one of the weft-end holders and the guideway therefor, being taken in the plane indicated by the line 10—10 in Fig. 1.

The magazine consists of a stationary chute A suitably secured to the side of the loom and overhanging the shuttle-box at one end of the lay when the lay is forward. The lay in its forward position is shown at *a* in Fig. 4, and the position of the shuttle *b* thereon is indicated at the time when a weft-carrier *c* is being transferred thereto. The detachable magazine is shown at B. The fixed chute A has an open socket at its top, as indicated in Fig. 7, into which the lower end of the detachable magazine B may be inserted and fitted, resting therein by gravity. Prior to putting the detachable magazine in place its open bottom is closed by a removable slide *d*. When the detachable magazine is in place, this slide is removed through a suitable opening *e* in the front wall of the fixed chute (see Figs. 3 and 7) and is then placed in a suitable pocket *f* (see Fig. 3) on the detachable magazine, where it is ready for future use. The fixed chute and the detachable magazine, when in place, furnish a continuous channel for the

5 west-carriers *c* and they may be of any desired height to receive any convenient number of west carriers. The west-carriers descend by gravity and the butt ends are guided in a known way by inwardly projecting ribs *g, g*, with which the fixed chute and detachable magazine are equipped. The stack of west-carriers is supported in the magazine in a well known way: the butt of the lowermost west-carrier being supported by the fixed stop *h* and the yielding spring-upheld finger *i* (see Fig. 4) and the tip end of the west-carrier being upheld by the yielding spring-uplifted finger *j* (see Fig. 2). The transfer of the lowermost west-carrier to the shuttle on the lay is effected in the customary way by a transferer *C* which swings downwardly (as shown in Fig. 4) to transfer a west-carrier, its downward action being brought about in the usual way when the condition of the west in the shuttle demands. The transferer is restored to its normal uplifted position by the usual spring *K*. There is a west-end holder *D* for each west carrier but each west-end holder is always detached from its corresponding west-carrier. The west-end holder is constructed to fit over and slide upon a guide *E*, as clearly shown in Fig. 10. Each west-end holder has an appropriate forwardly projecting stud *F* on which the west-end belonging to its west-carrier is wound (see Fig. 2) and it also has a laterally projecting lug *G* which coöperates with the escapement mechanism. In case the thread stud *F* becomes filled with thread, the thread can be readily removed by cutting it, a slot *l* being provided in the thread stud *F* for the insertion of a knife. The west-end holders *D* fit loosely on the guide *E* so that they can readily slide down the same by gravity. The guide extends parallel with the magazine and fixed chute, and at its lower end there is secured to it an open-mouthed funnel *H* which conveys the spent west-end holders to a suitable receptacle. The guide comprises a rib *m* and a track *n*, the track being circular in cross-section (see Fig. 10) to receive the west-end holders. The rib *m* prevents the rotation of the west-end holders, thereby maintaining them with their thread studs *F* in front. The funnel *H* is secured to the lower end of the rib *m*, while the lower end of the track *n* terminates within the open mouth of the funnel so that the west-end holders as they leave the track fall into the funnel and are thereby directed to any suitable receiver.

60 The west-end holder guide is in two sections, the lower section being a stationary one and suitably secured to the fixed chute *A* through the fixed bracket *I*. The upper section of the guide is adjustably secured to the detachable magazine by means of the horizontal slide *J* (as shown in Figs. 3 and

65 6). When the magazine *B* is detached, the upper section of the guide *E* occupies the position shown in dotted lines in Fig. 3, being maintained in this position by means of the spring bolt *K* (see Fig. 6) carried by the detachable magazine which enters a hole *o* (see Figs. 2 and 3) in the slide *J*. When the upper portion of the guide is in this position the west-carriers are placed one by one into the open top of the detachable magazine, and corresponding west-end holders are placed upon the guide *E*, and as each west-carrier is placed in position the end of its thread is wound around the thread stud of the corresponding west-end holder. During this time the west-end holders are maintained on the movable part of the guide by means of the pivoted latch *L* at the bottom of the movable portion of the guide, which then occupies the position shown in dotted lines in Fig. 9.

When the magazine is filled with west-carriers and the attached portion of the guide *E* is filled with west-end holders the same are transferred to the loom and the detachable magazine is set in place within the socket on top of the fixed guide chute *A*. The slide *J* is then moved outwardly to the position shown in full lines in Fig. 3, where it is secured in place by the spring bolt *K* entering a second hole (similar to the hole *o*) in the slide, as indicated in Fig. 3. This outward withdrawal of the slide *J* draws off thread from all of the west-carriers to the same extent. At the same time the movable portion of the guide *E* is brought into register with the stationary part, as indicated in Figs. 8 and 9, and the latch *L* is then swung to the position shown in full lines in Fig. 9, thereby maintaining the two sections of the guide in proper registering relation so that a continuous track is formed for the west-end holders.

The latch *L* is swung to the position shown in full lines at the same time that the supporting slide *d* (see Fig. 7) is withdrawn from the west-carriers themselves so that the west-end holders drop down to the same extent that the west-carriers drop down in the fixed chute. The stack of superimposed west-end holders is supported by an escapement mechanism. The escapement comprises a stop *N* and a detent *P*, both of which are secured to a rock shaft *Q* mounted in bearings at opposite ends of the bracket *I*, as best shown in Figs. 2, 4 and 5. The normal position of the stop and the detent is shown in Fig. 1. As there shown, the stop *N* is then in the path of the lug *G* of the lowermost west-end holder. At this time the free end of the detent *P* is not in line with the lugs *G* of the west-end holders, as will be clearly evident from Figs. 1 and 2 because, as shown in Fig. 2, the free end of the detent is turned inwardly, and, as shown in

Fig. 1, this inturned end terminates well in front of the path of the lugs G. The rock shaft Q at its inner end has a crank arm R which at its forward end has a slotted connection (shown in Fig. 1) with an arm S secured to the transferer C. As a consequence, when the transferer moves downwardly to transfer a west-carrier, the stop M and detent P are concurrently swung to the position shown in Fig. 5. As here shown, the stop N is swung downwardly and rearwardly out of the path of the lugs G on the west-end holders, thus permitting the lowermost west-end holder to drop into the open mouth of the funnel H. At the same time the superimposed stack of west-end holders drops down by gravity, but they do not escape because the detent P is then in position to stop their descent. When the transferer C again rises to its initial position, the stop and detent also rise, thereby moving the detent P out of the way again, but bringing the stop N first into the path of the lugs G so that the further descent of the west-end holders after passing the detent is prevented by the stop. This affords a ready, convenient and simple mechanism for feeding the west-end holders one by one concurrently with the feeding of the west-carriers, the same being under the control of the transferer and hence under the control of the devices which indicate the exhaustion, breakage, or approaching exhaustion, of the shuttle thread in use.

It is desirable that, in the first instance, the lowermost west-end holder should not have a thread attached to it, so that the bottom west-carrier shall have its front attached to the west-end holder next above the lowest one. The reason for this is that the lowermost west-end holder is dropped into the funnel concurrently with the first traverse through the shed of the freshly inserted west-carrier, and it is desirable that the west-end holder then holding on to the end of the thread should be itself stationary. Accordingly, in first placing the west-end holders upon the guide the lowermost holder will have no thread attached to it.

During the action of the transferer the stack of west-end holders is supported in a known manner by means of a retainer p on the transferer, as shown in Fig. 4. There is a continuous slot t in the outer wall of the chute A and magazine B, respectively, (see Figs. 1 and 2) through which the west-ends extend from the west-carriers c to the west-end holders D. This improved method of taking care of the west-end threads is applicable to looms having an always stationary magazine as well as to one having a detachable magazine.

I claim as my invention:

1. A west-replenishing loom having, in combination, a magazine for a plurality of

west-carriers; a guide for west-end holders; a plurality of west-end holders independent and separate from each other and from the west-carriers, there being a west-end holder for each west-carrier, said west-end holders moving upon said guide; a transferer for automatically transferring the west-carriers one by one into weaving position on the loom when the running west is to be replenished; an escapement device operatively connected with said transferer and cooperating with said west-end holders to release them one by one from the guide; and a funnel for directing the west-end holders after they leave the guide to a suitable receiver. 70 75 80

2. A west-replenishing loom having, in combination, a magazine for a plurality of west-carriers; a guide for west-end holders; a plurality of west-end holders independent and separate from each other and from the west-carriers, there being a west-end holder for each west-carrier, said west-end holders moving upon said guide; a transferer for automatically transferring the west-carriers one by one into weaving position on the loom when the running west is to be replenished; and an escapement device operatively connected with said transferer and cooperating with said west-end holders to release them one by one from the guide. 85 90 95

3. A west-replenishing loom having, in combination, a magazine for a plurality of west-carriers; a guide for west-end holders; a plurality of separable west-end holders independent and separate from each other and from the west-carriers, there being a west-end holder for each west-carrier, said west-end holders moving upon said guide; a transferer for automatically transferring the west-carriers one by one into weaving position on the loom when the running west is to be replenished; and means cooperating with said west-end holders to release them one by one from the guide as the west-carriers are transferred. 100 105 110

4. A west-replenishing loom having, in combination; a magazine for a plurality of west-carriers; a guide for west-end holders; a plurality of separable west-end holders independent and separate from each other and from the west-carriers, said west-end holders moving upon said guide; a transferer for automatically transferring the west-carriers one by one into weaving position on the lay when the running west is to be replenished; and means cooperating with said west-end holders to release them one by one from the guide. 115 120

5. A west-replenishing loom having, in combination, a transferer for transferring west-carriers one by one into weaving position on the loom whenever the running west is to be replenished; a fixed chute for directing the west-carriers into position to 125 130

be acted upon by said transferrer; a readily removable magazine for west-carriers adapted to be readily connected to and disconnected from said fixed chute for directing west-carriers thereto; a guide for west-end holders arranged substantially parallel with said fixed chute and movable magazine, said guide having two portions, one a fixed portion and the other a movable portion; a slide mounted on said movable magazine to which is secured the movable part of the said guide; means for locking the said slide to said magazine; means for retaining the west-carriers within the movable magazine when detached from the loom; a plurality of west-end holders, one for each west-carrier, adapted to move upon said guide; and means for retaining the west-end holders upon the movable portion of the guide when the magazine is detached from the loom, and for maintaining the movable and stationary portions of the guide in register when the magazine is in position on the loom.

6. A west-replenishing loom having, in combination, a transferrer for transferring west-carriers one by one into weaving position on the loom whenever the running west is to be replenished; a fixed chute for directing the west-carriers into position to be acted upon by said transferrer; a readily removable magazine for west-carriers adapted to be readily connected to and disconnected from said fixed chute for directing west-carriers thereto; a guide for west-end holders having two portions, one a fixed portion and the other portion being movable with said movable magazine; and a plurality of west-end holders, one for each west-carrier, adapted to move upon said guide.

7. A west-replenishing loom having, in combination, a transferrer for transferring west-carriers one by one into weaving position on the loom whenever the running west is to be replenished; a fixed chute for directing the west-carriers into position to be acted upon by said transferrer; a readily removable magazine for west-carriers adapted to be readily connected to and disconnected from said fixed chute for directing west-carriers thereto; a guide for west-end holders having two portions, one a fixed portion and the other a removable portion; and a plurality of west-end holders, one for each west-carrier, adapted to move upon said guide.

8. A west-replenishing loom having, in combination, a guide for west-end holders having two portions, one a fixed portion and

the other a removable portion; a plurality of west-end holders adapted to move upon said guide; and means for retaining the west-end holders upon the movable portion of the guide when detached from the loom.

9. A west-replenishing loom having, in combination, a guide for west-end holders having two portions, one a fixed portion and the other a removable portion; and a plurality of west-end holders adapted to move upon said guide.

10. A west-replenishing loom having, in combination, a magazine for west-carriers; a guide for west-end holders; and a plurality of separable west-end holders, one for each west-carrier and unconnected therewith, adapted to move upon said guide.

11. A west-replenishing loom having, in combination, a guide for west-end holders; a plurality of west-end holders moving upon said guide; and an escapement device co-operating with said west-end holders to release them one by one from the guide, said escapement device comprising a rock-shaft having a stop which normally retains the holders, and a detent which detains all but one of the holders when the rock-shaft is rocked to move the stop away from the holders.

12. A west-end holder for an automatic west-replenishing loom having a thread-stud and a lug to cooperate with actuating mechanism.

13. A west-end holder having a thread stud with a knife-receiving slot, said slot intersecting the portion of the stud upon which the thread is wound.

14. An automatic west-replenishing loom having a chute with a socket at its top and a movable magazine adapted to fit and rest in said socket.

15. A removable magazine having a removable bottom-slide, and a pocket for holding said slide when removed.

16. A west-replenishing loom having, in combination, a magazine for west-carriers; a guide for west-end holders; a plurality of separable west-end holders adapted to move upon said guide, said west-end holders being unconnected with the west-carriers.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

MELVIN L. STONE. [L. S.]

Witnesses:

ALBERT O. HAMEL,
WILLIAM H. SPENCER.