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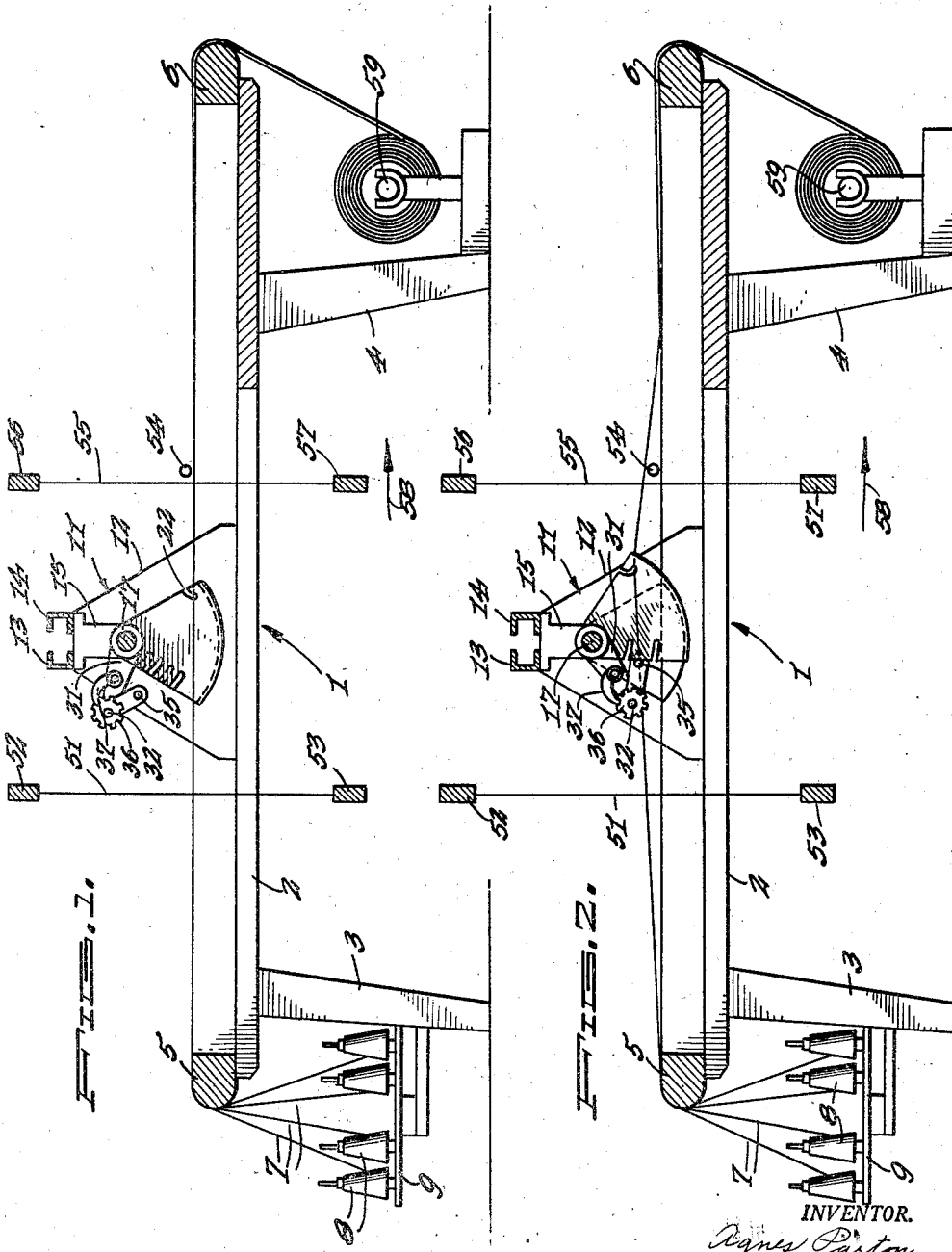
A. PARTON

2,414,663

LOOM CONSTRUCTION, AND MORE PARTICULARLY A
NEW AND USEFUL SHED FORMING MECHANISM

Filed Jan. 25, 1945

3 Sheets-Sheet 1



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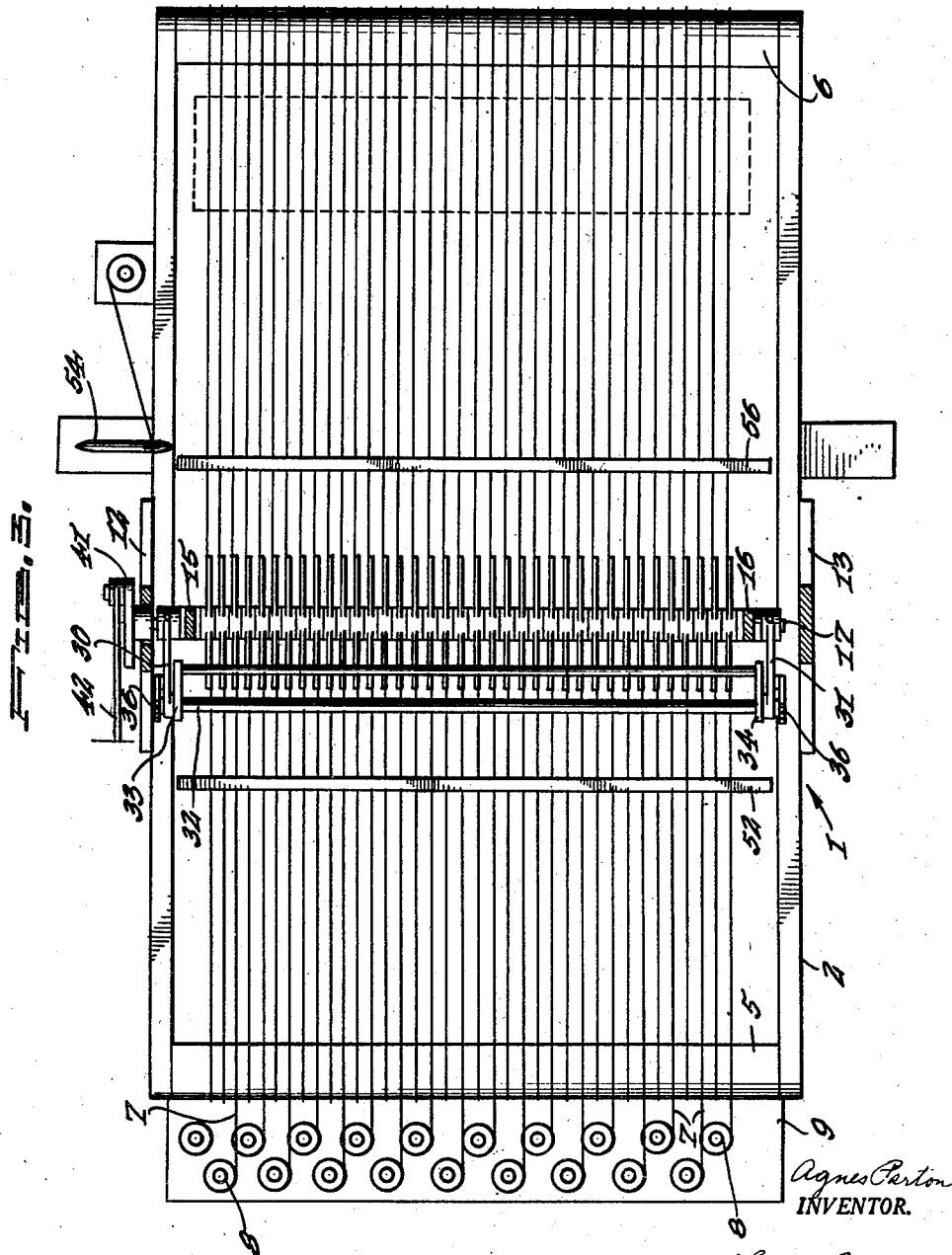
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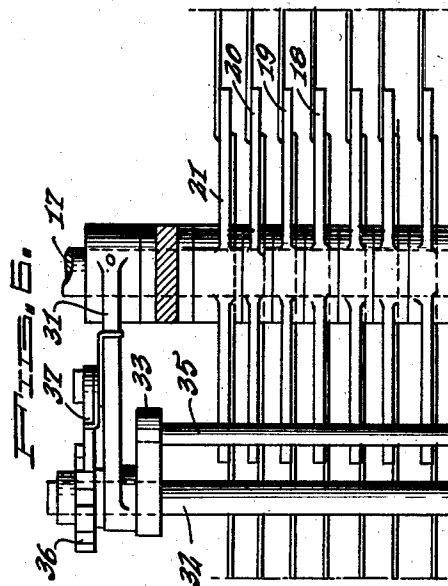
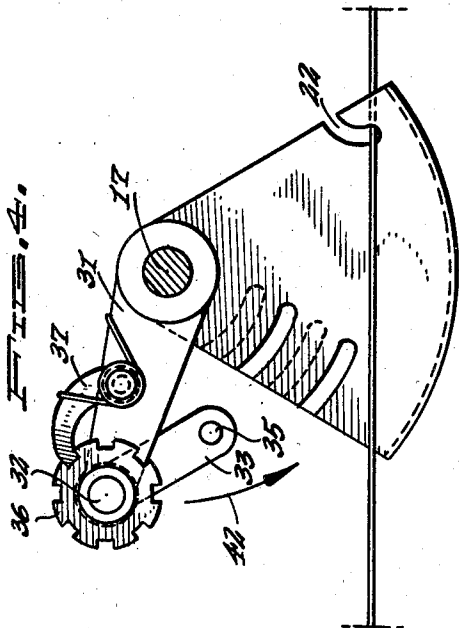
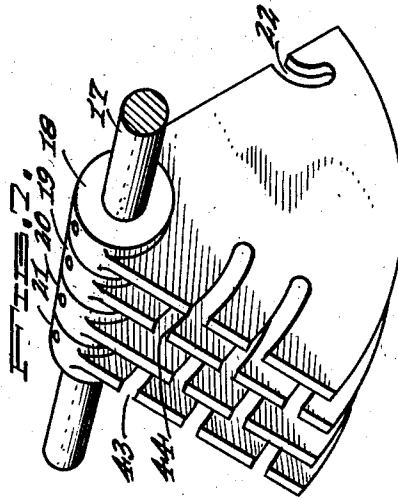
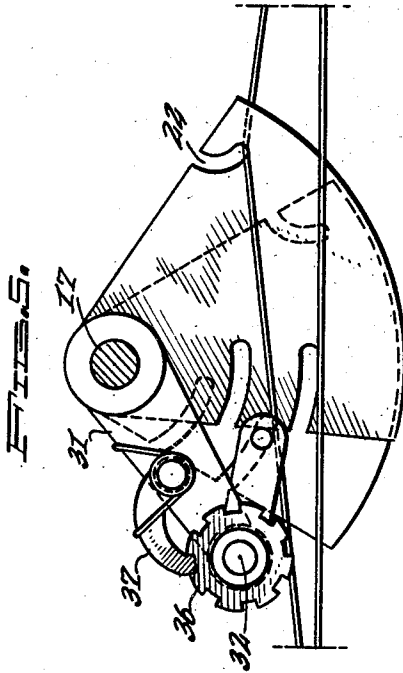
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UNITED STATES PATENT OFFICE

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LOOM CONSTRUCTION, AND MORE PARTICULARLY A NEW AND USEFUL SHED FORMING MECHANISM

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3 Claims. (Cl. 139—33)

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This invention is a new and useful loom construction, and more particularly a new and useful shed forming mechanism. The invention will be fully understood from the following description read in conjunction with the drawings in which:

Fig. 1 is a longitudinal section through the apparatus of my invention;

The showing in Fig. 2 is the same as that in Fig. 1 except that some of the elements are in a different operative position;

Fig. 3 is a top view (with some parts in section) of the apparatus of my invention;

Fig. 4 is a detailed side view of a part of the construction shown in Fig. 1;

Fig. 5 is a detailed side view of part of the construction shown in Fig. 2;

Fig. 6 is a detailed top view of part of the construction shown in Fig. 3, and

Fig. 7 is a detailed perspective view of part of the construction shown in Figs. 1 and 3.

Referring to Fig. 1, 1 designates a loom including the bed 2 carried by four supporting legs, of which the remote ones 3 and 4 appear in Figs. 1 and 2. Adjacent one end of the bed is the warp guide 5 and adjacent the other end is the breast or fabric beam 6. The warp threads 7 are carried on spools 8 supported by the shelf 9 adjacent one end of the bed and as in usual practice are carried in spaced relationship up over the warp guide 5.

My invention consists specifically in the shed forming mechanism indicated generally by 11. This includes the upstanding flanges 12 and 13 (Figs. 1, 2 and 3) attached to either side of the bed 2 and which support the transverse channel rails 13 and 14. These rails in turn support the depending lugs 15 and 16 (Figs. 1, 2 and 3) which in turn constitute bearings for the transversely extending shaft 17.

As shown in Fig. 7, this shaft carries rotatively mounted thereon a series of dependent plates, such as 18, 19, 20 and 21. As shown in Fig. 3 and in greater detail in Fig. 6, one of these plates is substantially in line with and parallel to one of each of the warp threads. Each of the plates is provided with a slot 22 adjacent the forward end thereof, in which the corresponding warp thread is slipped and through which the warp thread slides as it moves progressively forward; the warp thread rides in this slot throughout the entire weaving operation.

These plates are freely turnable on the shaft 17. By reference to Figs. 3 and 4, it will be noted that the arms 30 and 31 are also carried by the

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shaft 17 and are pinned or otherwise immobilized with reference to shaft 17. The outer end of each arm forms a bearing for the shaft 32 which in turn carries the arms 33 and 34 which between them carry the pusher bar 35. The arms 33 and 34 are immobilized with reference to the shaft 32 and each end of shaft 32 is provided with a toothed wheel such as 36 cooperating with the pawl 37 by which the shaft 32 may be set in any desired position, thereby holding the pusher bar 35 at any desired radial distance from the shaft 17 by which the plates are pivotally carried. The shaft 17 may be turned by means of the crank 41 and the lever 42 (Fig. 3) or in any other suitable manner to move the pusher bar in the direction indicated by the arrow 42 in Fig. 4. Referring again to Fig. 7, it will be noted that the plates 19 and 21 are provided with radial slots 43 and 44 at a given distance from the shaft 17, whereas the plates 18 and 20 are unslotted at the same radial distance. In consequence of this construction, if the pusher bar 35 is moved in the direction indicated by the arrow 42 while it is set at this radial distance from the shaft 17, the plates 18 and 20 will be moved to the position shown in solid outline in Fig. 5, thereby lifting the warp thread carried by each such plate, whereas the slotted plates 19 and 21 will not be moved.

In designing or assembling the apparatus, therefore, the plates corresponding to those warps which are to be lifted in the first shed-forming operation are unslotted at a particular selected radial distance from the shaft 17, whereas those which are not to be lifted define radial slots such as 43 and 44 at this radial distance. The weaver then determines which warps are to be lifted in the next shed forming operation and by selecting on these plates a second radial distance from the shaft 17 he provides those plates which are not to be lifted with radial slots while the remainder of the plates corresponding to the warps which are to be lifted are left unslotted at this radial distance so that when the pusher bar 35 is reset to this radial distance from shaft 17, it will operate the lift only the desired warp threads. The weaver then determines in the same manner which warp threads are to be lifted in the third operation and selecting a third radial distance from the shaft 17, he provides radial slots at this distance for the plates corresponding to the warp threads which are not to be lifted while leaving unslotted the plates corresponding to the warp threads which are to be lifted to form the shed.

In actual practice, it probably will not be necessary to actually slot the plates for each succeeding weave but instead to select a plate having the desired arrangement of slots from a bank or reserve of plates, some of which have been slotted in every desired manner.

If the number of desired combinations exceeds that which can be obtained conveniently with the particular geometric form of plates shown in the drawings, it will be understood that the plates can be formed defining a larger segment of a circle, or if desired the segment of an Archimedean spiral so that the slotted portion of the plate may be of any desired length and may also be positioned at a higher level in relation to the warp threads to avoid any possibility that the warp threads will become caught in the slots when a particular plate is moved.

As in usual practice, the warp threads are held in spaced relationship by a series of wire 51 extending downwardly from the beam 52 to the beam 53 (Figs. 1 and 2). As in usual practice, whenever a shed has been formed, the filling thread is carried into position within the shed by means of a shuttle such as 54 (Fig. 3) and whenever a filling thread has been so positioned, the weave may be compacted and the filling thread forced into the final desired position by means of wires 55 suspended between the beams 56 and 57, i. e., by moving the beam 57 in the direction indicated by arrow 58. As the weave is formed, the cloth is wound up on the roller 59 so that the point of shed formation is always held in the same place with reference to the loom as a whole.

It will, of course, be understood that for small looms in which it might be difficult to incorporate this forward movement of the fabric, the shed-forming mechanism may be moved progressively toward the warp beam 5 as the weave is formed.

While I have shown my shed forming mechanism applied to a relatively simple type of loom, it will be understood that its application is not so limited and that it may be applied to any mechanical type of loom desired. In this case, it will be desirable to use several different pusher bars instead of a single pusher bar which must be reset to different radial distances with reference to the shaft 17 and to connect each of these pusher bars back to a suitable mechanical control so that the operation of any particular pusher bar will be integrated with the operation of the loom as a whole and the entire weaving operation will proceed automatically.

The foregoing description is by way of illustration and not of limitation, and it is, therefore, my intention that the invention be limited only by the appended claims or their equivalents, in which I have endeavored to claim broadly all inherent novelty.

I claim:

1. In a loom for weaving textile fabrics including means for holding warp threads in position and means for passing filling threads through the warp threads, shed forming mechanism comprising a series of plates parallel to the warp threads, each of said plates defining a warp-engaging slot and each of said plates being mounted for a movement adapted to lift the warp-engaging slot, a part of said plates defining slots and unslotted areas at given positions and the remainder of said plates defining slots and unslotted areas at different positions and a pusher-bar adapted to move the plates defining unslotted areas at a selected position while leaving the remainder unmoved whereby different combinations of warp threads may be moved into shed forming position by adjustment of said pusher-bar.

2. In a loom for weaving textile fabrics including means for holding warp threads in position and means for passing filling threads through the warp threads, shed forming mechanism comprising a series of plates parallel to the warp threads and pivotally mounted for movement about a common transverse axis, each of said plates defining a warp-engaging slot, a part of said plates defining slots and unslotted areas at given distances from the transverse axis and others of said plates defining slots and unslotted areas at different distances from the transverse axis and a pusher-bar adapted to move the plates defining slotted areas at a selected distance from the transverse axis while leaving the remainder unmoved whereby different combinations of warp threads may be moved into shed forming position by adjustment of the distance of said pusher-bar from said transverse axis.

3. In a loom for weaving textile fabrics including means for holding warp threads in position and means for passing filling threads through the warp threads, shed forming mechanism comprising a series of plates parallel to the warp threads and pivotally mounted for movement about a common transverse axis, each of said plates defining a warp-engaging slot, a part of said plates defining radial slots and unslotted areas at given distances from the transverse axis, the remainder of said plates defining radial slots and unslotted areas at different distances from said transverse axis and a pusher-bar adapted to move the plates defining slotted areas at a selected distance from the transverse axis while leaving the remainder unmoved whereby different combinations of warp threads may be moved into shed forming position by adjustment of the distance of said pusher-bar from said transverse axis.

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