B. E. LINDBERG.

HAND SCHOOL LOOM.

APPLICATION FILED NOV. 11, 1907.

**899,310.** Patented Sept. 22, 1908.

Fig. 1.

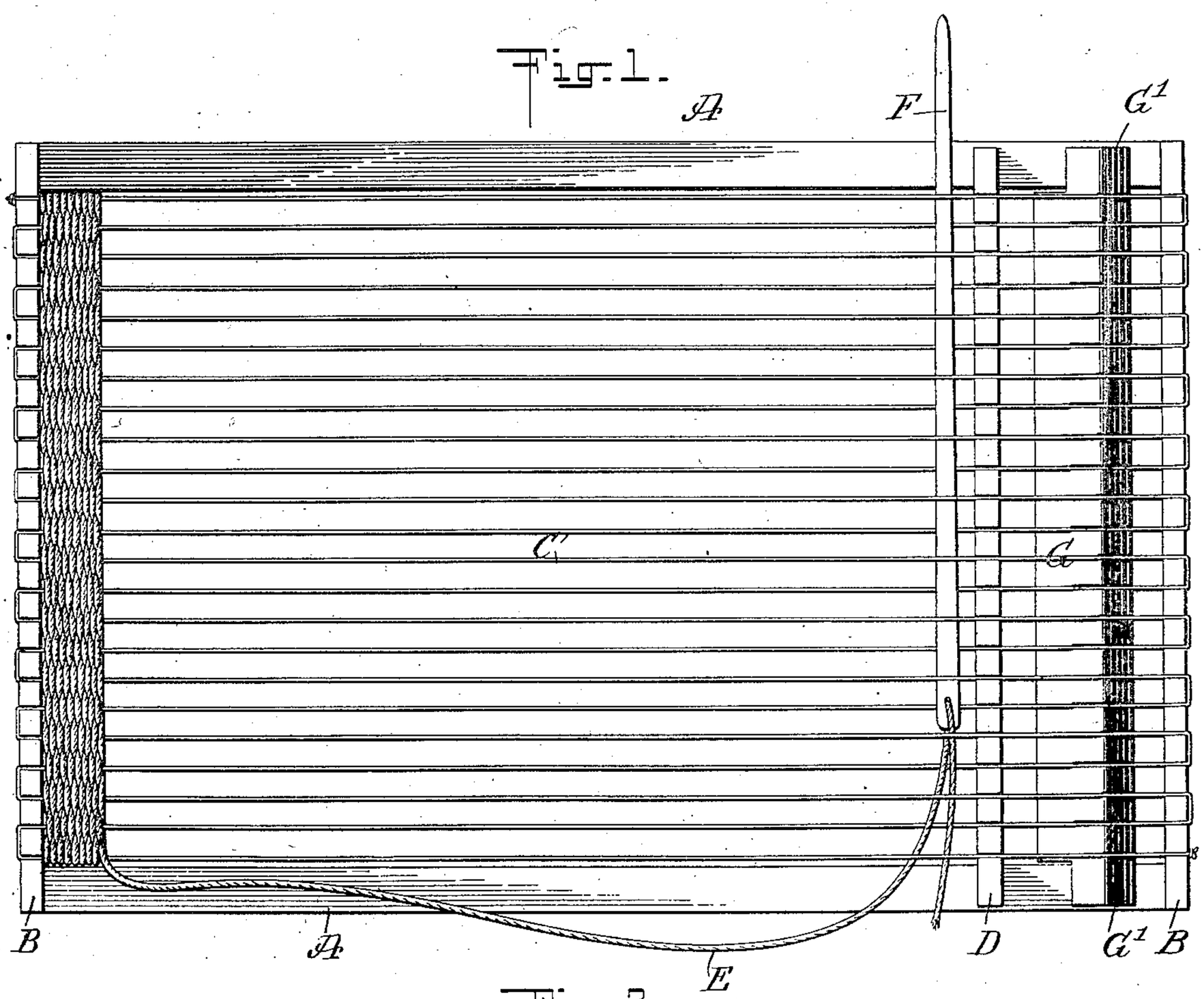



Fig. 2.

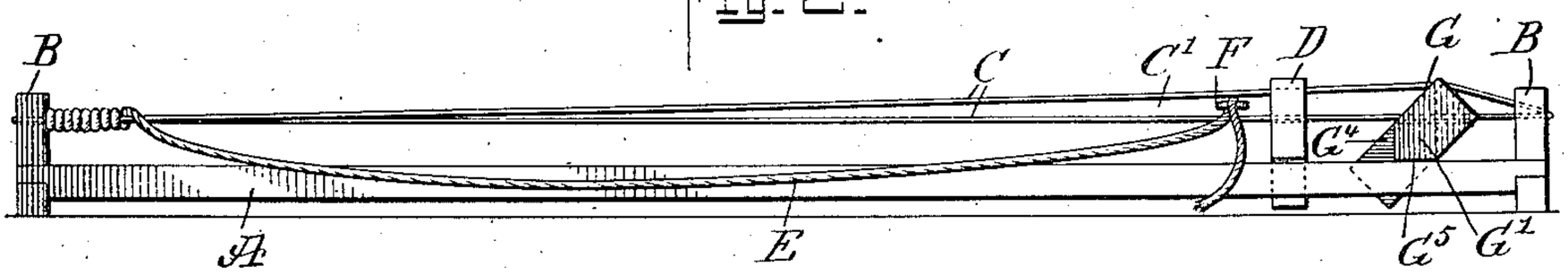



Fig. 3.

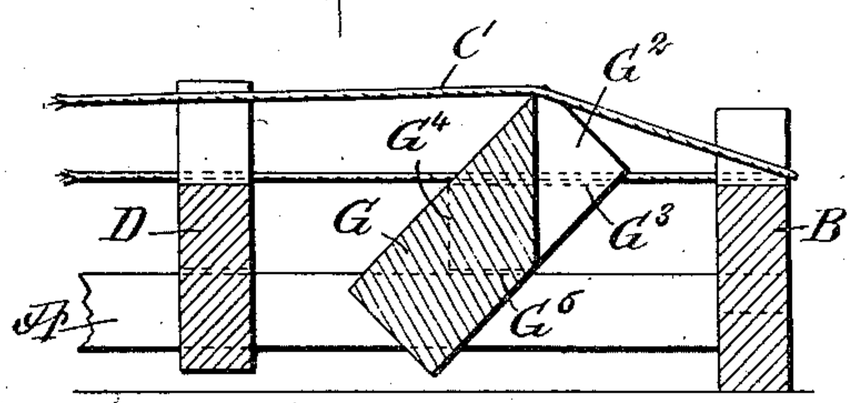
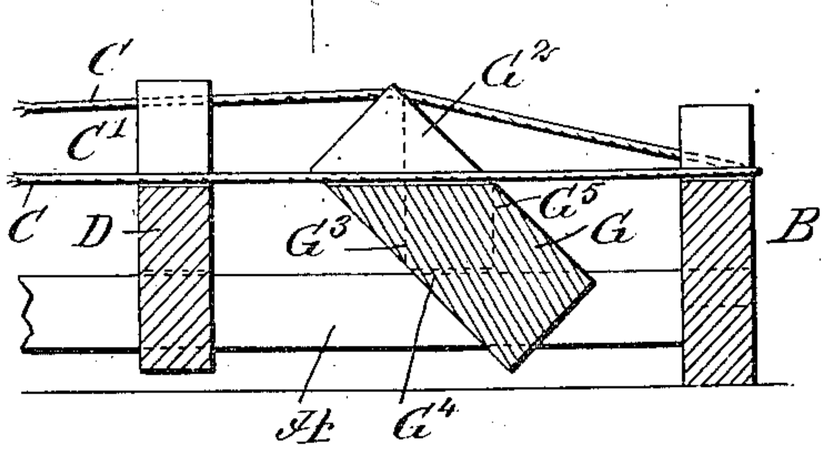



Fig. 4.

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# UNITED STATES PATENT OFFICE.

BEATRICE E. LINDBERG, OF FARIBAULT, MINNESOTA.

## HAND SCHOOL-LOOM.

No. 899,310. Specification of Letters Patent. Patented Sept. 22, 1908.

Application filed November 11, 1907. Serial No. 401,597.

*To all whom it may concern:*

Be it known that I, BEATRICE EVA LINDBERG, a citizen of the United States, and a resident of Faribault, in the county of Rice and State of Minnesota, have invented a new and Improved Hand School-Loom, of which the following is a full, clear, and exact description.

The invention relates to kindergarten or school looms, such as shown and described in the Letters Patent of the United States, No. 703,799 and No. 764,479, granted to me on July 1, 1902, and July 5, 1904, respectively.

The object of the present invention is to provide a new and improved hand school loom, arranged to permit the weaver to quickly and conveniently open and change the shed for the passage of the shuttle or needle used for carrying the weft through the open shed.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement; Fig. 2 is a side elevation of the same; Fig. 3 is an enlarged sectional side elevation of the improvement, showing the heddle in one position for holding the shed open, and Fig. 4 is a like view of the same, showing the heddle in another position for changing the shed and holding it open in the changed position.

The frame of the hand loom consists of the side bars A, connected with each other by the end bars B, having spaced slots or notches for receiving and holding the strands of the warp C, also engaged by the slots of the lay D used for beating up the weft E, inserted in the open shed of the warp by a needle or shuttle F manipulated by the weaver.

The loom so far described is the same as illustrated and described in my prior patents above referred to.

The strands of the warp C are engaged by a manually operated heddle G, in the form of a bar having its ends G′ resting on the sides A, A of the loom frame, the heddle being located preferably immediately in the rear of the lay D, as plainly indicated in Figs. 1 and 2. The heddle G is provided on the top with spaced alternating slots or notches $G^2$, $G^3$, for the reception of successive strands of the warp C, the slots $G^2$ starting at the forward top corners of the heddle bar and extending in a rearward and downward direction, while the slots $G^3$ start at the rear top corners of the heddle bar and extend in a forward direction, the bottoms of the said slots $G^2$, $G^3$ being approximately in a right-angle position, one relative to the other, as will be readily understood by reference to Figs. 3 and 4. The ends G′ of the heddle G are provided at the under side with bevels $G^4$, $G^5$, extending in opposite directions and approximately at a right angle one to the other, the bevels $G^4$ being parallel to the bottoms of the slots $G^2$ (see Figs. 3 and 4) while the bevels $G^5$ are approximately parallel with the bottoms of the slots $G^3$. Now by the arrangement described, the heddle G, when in the position shown in Figs. 1, 2 and 3, raises alternate strands of the warp C, while the remaining strands of the warp C are in a lowermost position, that is, in the bottoms of the slots $G^3$, and when the heddle G is turned into the position shown in Fig. 4, then the strands of the warp C in the slots $G^2$ are lowered, while the other strands are raised. Thus, in either case the alternate warp strands are raised and the others lowered to form an open shed C′ for the convenient passage of the needle or shuttle F employed for carrying the weft E through the open shed C′ in front of the lay D, to be subsequently beaten up by the weaver moving the lay D forward.

From the foregoing it will be seen that the weaver by alternately turning the heddle G, as described and illustrated in Figs. 3 and 4, can quickly open the shed for the convenient passage of the needle or shuttle F, to greatly facilitate the weaving operation.

By having the ends G′ of the heddle G provided with beveled surfaces arranged in harmony with the bottoms of the slots $G^2$, $G^3$, it is evident that a positive raising and lowering of the corresponding warp thread takes place whenever the position of the heddle G is changed, as above explained.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A loom provided with a heddle in the form of a bar having spaced slots for the passage of the warp threads, the bottoms of

successive slots being inclined in opposite directions.

2. A loom provided with a heddle in the form of a bar having spaced slots for the passage of the warp threads, alternate slots being inclined from the front top corner of the bar rearwardly, and the remaining slots being inclined from the rear top corner of the bar forwardly.

3. A loom having a frame provided with means for supporting the warp, and a heddle mounted to rock on the sides of the said frame and having spaced slots for engagement with the warp threads, successive slots having their bottoms inclined in opposite directions and extending approximately at right angles to each other, to raise alternate warp threads and to lower the remaining ones for forming open sheds for the passage of the weft.

4. A loom comprising a loom frame provided with means for supporting the warp, and a heddle bar having spaced slots for engagement with the warp threads, the slots having their bottoms inclined in opposite directions, the ends of the heddle bar being mounted to rock on the side bars of the said loom frame and having flat surfaces adapted to rest alternately on said side bars.

5. A loom comprising a loom frame provided with means for supporting the warp, and a heddle bar having spaced slots for engagement with the warp threads, the slots having their bottoms inclined in opposite directions, the ends of the heddle bar having bevels extending in opposite directions and approximately parallel with the bottoms of the said slots, the said bevels being adapted to rest alternately on the sides of the said loom frame.

6. A loom provided with a hand heddle comprising a rectangular bar having spaced slots in its top for the passage of the warp threads, the bottoms of successive slots being inclined in opposite directions and extending approximately at right angles to each other, the ends of the heddle bar being reduced and provided at the under side with beveled surfaces extending in opposite directions.

7. A loom provided with a heddle comprising a rectangular bar having spaced slots in its top for engagement with the warp threads, successive slots having their bottoms inclined in opposite directions and arranged approximately at right angles to each other, the ends of the bar being provided at the under side with bevels extending in opposite directions and approximately at right angles one to the other, one of the bevels being parallel with the bottoms of alternate slots and the other bevel being parallel to the bottoms of the remaining slots.

8. A loom provided with a heddle in the form of a bar, arranged to engage the warp threads and hold alternate warp threads up and the others down for forming an open shed, the ends of the heddle bar being provided on the under side with beveled surfaces inclined in opposite directions.

9. In a loom, the combination with a frame having side bars, and end bars connecting the side bars and provided with means for supporting the warp, and a lay for engaging the warp, of an approximately rectangular heddle bar having spaced slots in its top for engagement with the warp threads, alternate slots being inclined from the front top corner of the bar rearwardly and downwardly and the remaining slots being inclined from the rear top corner of the bar forwardly and downwardly, the ends of the heddle bar being mounted to rock on the side bars of the frame, and having on their underside flat surfaces extending at right angles to each other and adapted to rest alternately on the said side bars.

10. A loom comprising a frame having side bars, and end bars connecting the side bars and provided with means for receiving and holding the warp, and a lay adapted to be engaged by the warp, of a heddle bar having its ends mounted to rock on the side bars of the frame, the heddle bar having spaced slots for engagement with the warp threads, successive slots having their bottoms inclined in opposite directions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BEATRICE E. LINDBERG.

Witnesses:
THOS. H. QUINN,
NELLIE SHEERAN.