H. E. RATHBUN.

PNEUMATIC SELECTOR FOR SHORT WEFT LOOMS.

APPLICATION FILED JULY 12, 1909.

978,645.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.

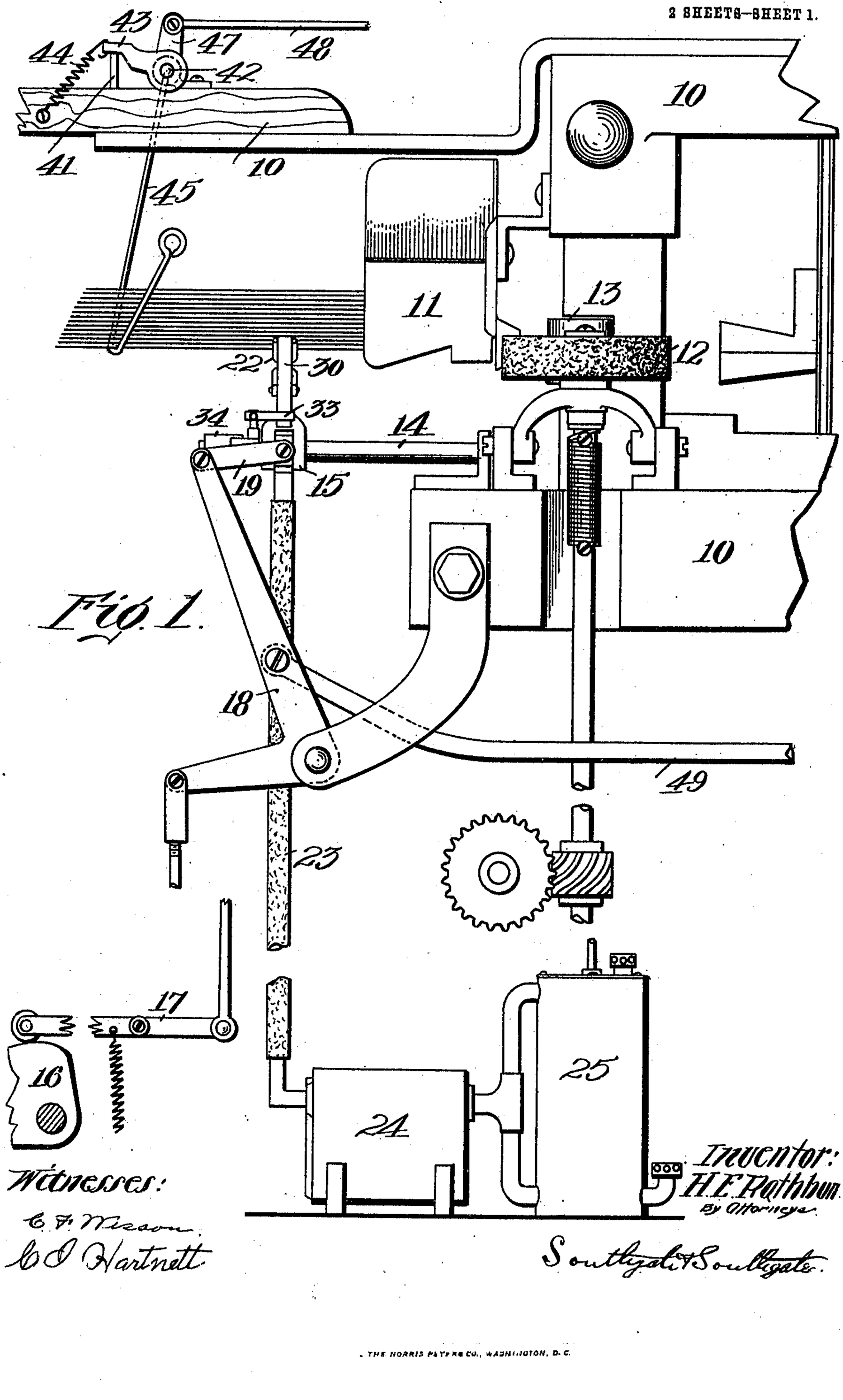

FIG. 1.

Witnesses:

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C. A. Hartnett.

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2 SHEETS—SHEET 2.

FIG. 2.

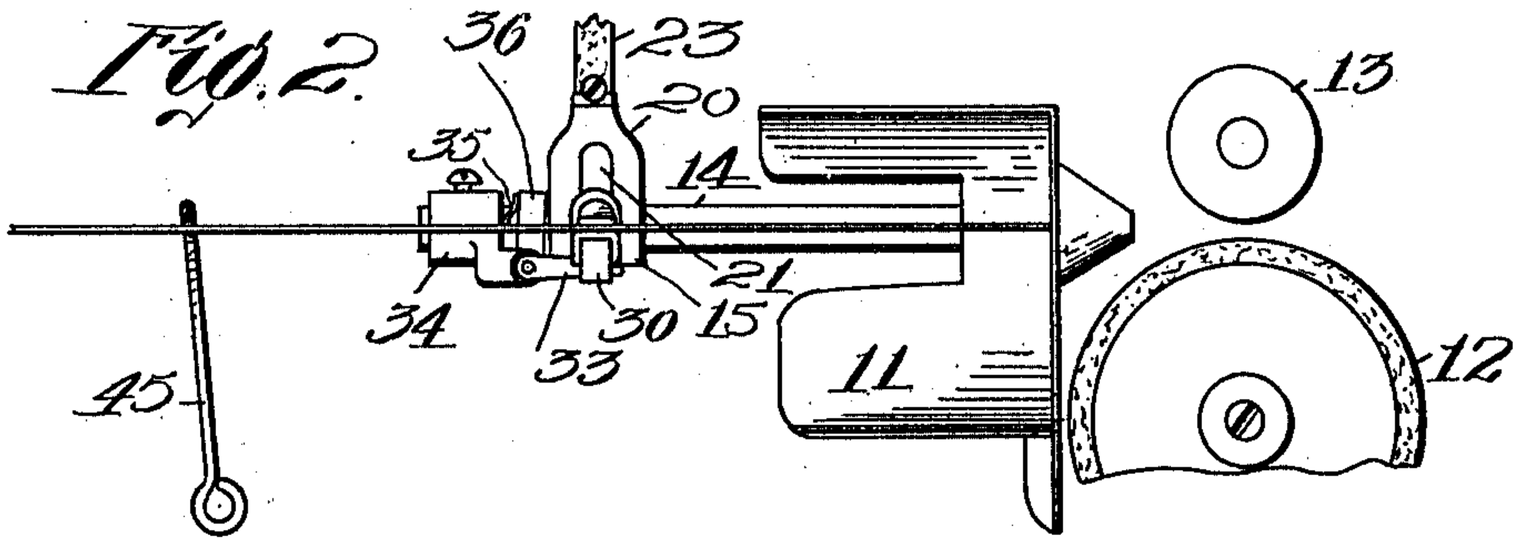


FIG. 6.

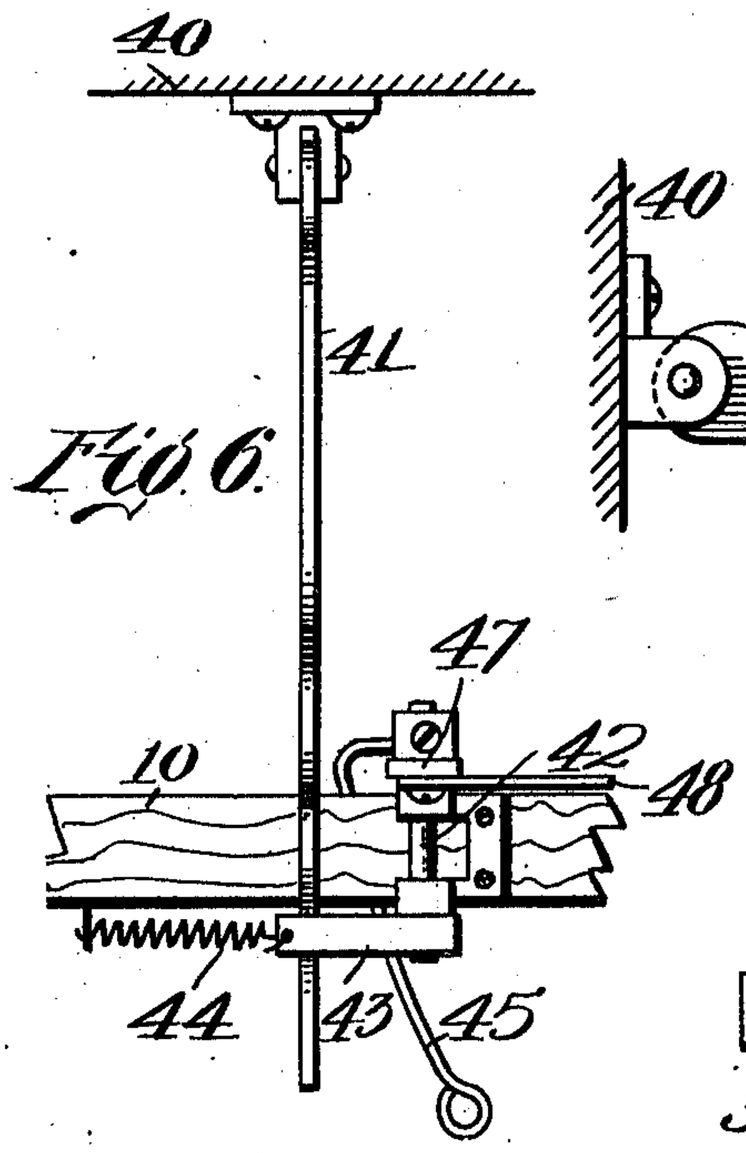


FIG. 7.

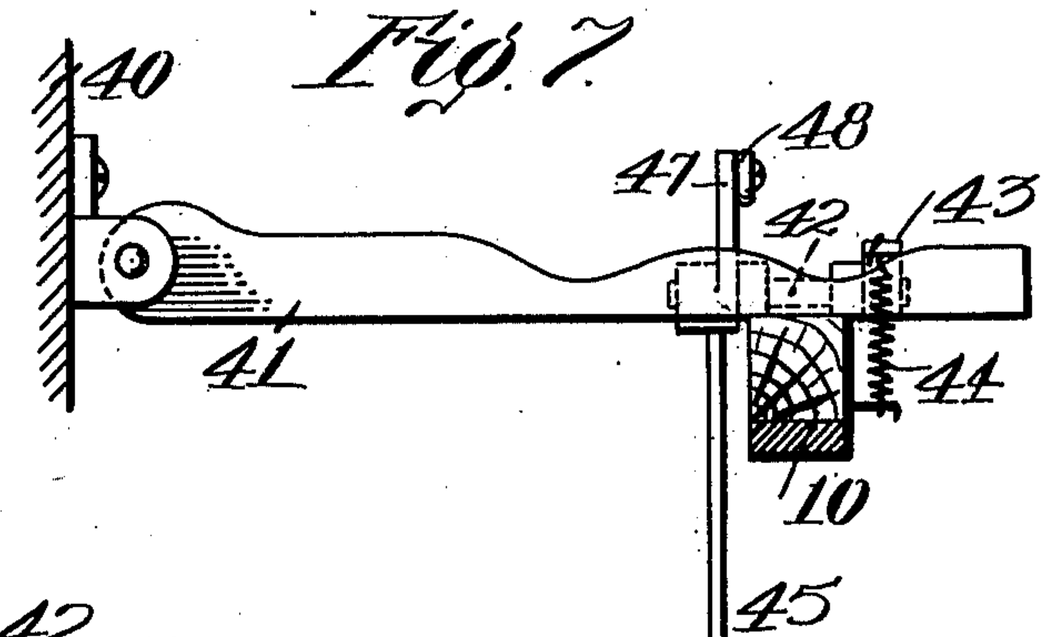


FIG. 5.

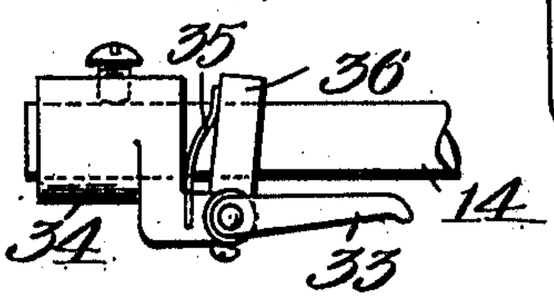


FIG. 3.

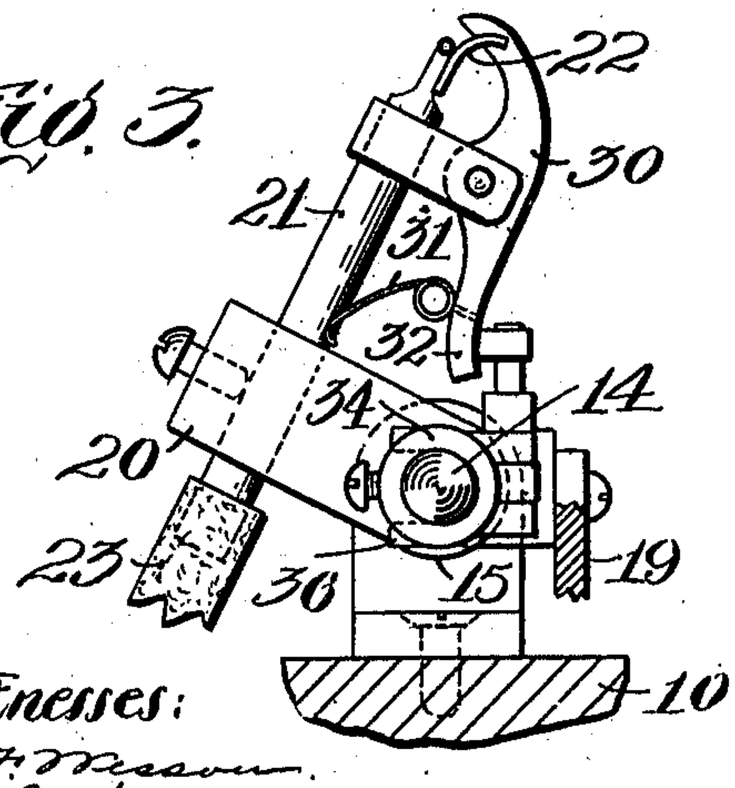
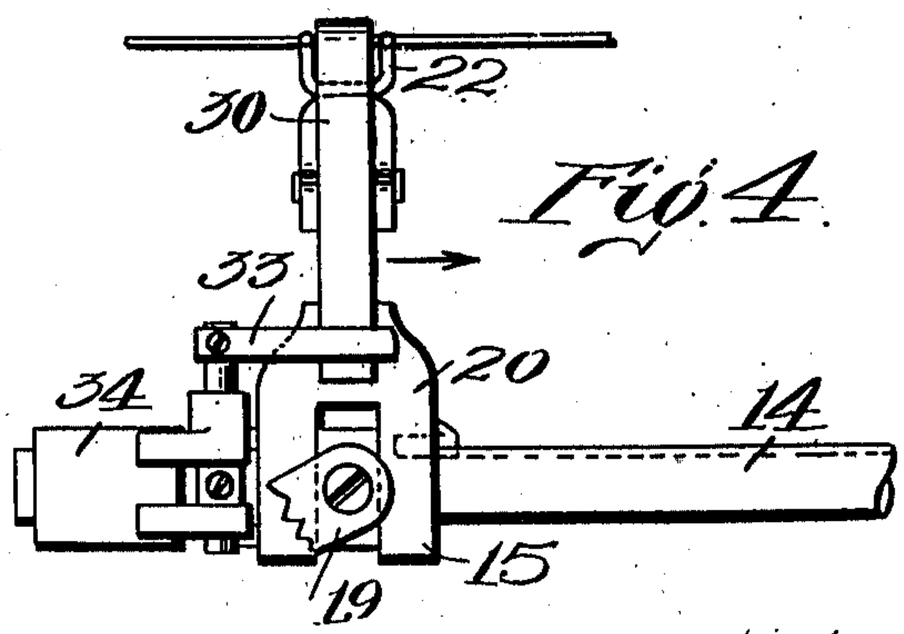


FIG. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY E. RATHBUN, OF WORCESTER, MASSACHUSETTS.

PNEUMATIC SELECTOR FOR SHORT-WEFT LOOMS.

978,645. Specification of Letters Patent. **Patented Dec. 13, 1910.**

Application filed July 12, 1909. Serial No. 507,063.

To all whom it may concern:

Be it known that I, HENRY E. RATHBUN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Pneumatic Selector for Short-Weft Looms, of which the following is a specification.

This invention relates to a loom for weaving short weft fabrics such for example as straw matting and the like. Heretofore in the manufacture of these classes of goods the straws or other weft strands have been held in a hopper on the lay and fed by a feeding device to feed rolls or wheels which take the straws and run them into the shed. This is a satisfactory operation theoretically but in practice it is found that the feed skips so may times that the production of the loom is cut down by a very large percentage from its theoretical capacity. The introduction of two straws at once also frequently occurs and this also necessitates the stopping of the loom and taking out the two straws woven in which also materially reduces the production.

The principal object of this invention is to provide means whereby both of these difficulties will substantially be done away with so that substantially the full capacity of the loom can be produced and to provide a mechanism for that purpose of very simple and inexpensive construction and one which is practically sure to work every time. For this purpose a pneumatic weft selector is employed, and means is employed in connection with it for assisting in getting the weft strands properly placed upon it so as to be fed into the shed one at a time at each pick.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is an elevation of a portion of the lay of a loom for weaving short weft fabrics showing a preferred form of this invention applied thereto; Fig. 2 is a plan of a portion of the same; Fig. 3 is an end view of the selector and its associated parts; Fig. 4 is a plan of the same on enlarged scale; Fig. 5 is an elevation of a detail thereof; Fig. 6 is a plan of a portion of the mechanism for getting the straws into proper position; and Fig. 7 is an elevation thereof.

The invention is shown as applied to a loom having a lay 10 which beats back and forth in the usual manner and which is provided with a hopper 11 for the straws, and feed rolls 12 and 13 for receiving the straws from the hopper and for inserting them in the shed.

Mounted to move with the lay at a point adjacent to the hopper is a guide rod 14 parallel with the length of the hopper. On this guide-rod reciprocates a selector slide 15, operated by a cam 16, levers 17, bell-crank 18, and link 19, or in any other convenient manner, so that the selector slide moves back and forth as the lay beats to and fro. Projecting from the selector slide is a bracket 20 on which is adjustably mounted a nozzle 21 having a mouth on the end thereof in the form of an opening or slit against which the straws are adapted to engage as indicated in Fig. 3. At the side of this mouth is located a stop 22 to keep the straws from going too far and to hold them in position to cover the mouth. This nozzle projects up into the bottom of the hopper so as to be able to engage the straws and is connected by a hose or the like 23 with a reservoir 24 which is exhausted by an air pump 25 or in any desired way. Consequently, there is suction produced at the mouth of the nozzle and when a straw covers it the straw will be held against the mouth of the nozzle, by the pressure of the air on the other side, and then as the selector slide moves along the guide rod 14 that straw will be introduced between the feed rolls 12 and 13. It will be observed that this is not a positive feed and in order to assist this action a gripper 30 is pivotally mounted on the nozzle, and consequently is supported by the selector slide. A spring 31 normally forces the gripper toward the mouth of the nozzle so that when this spring is permitted to act after a straw is in position on the nozzle, the straw will be positively driven and carried forward with the selector slide. This spring is in such position that it can act at all times except when the tail 32 of the gripper comes into engagement with one arm 33 of a lever shown in the form of a bell crank which is mounted on a bracket 34 on the end of the guide rod. A spring 35 normally holds the other arm 36 of this lever out so that the arm 33 will be in position to engage the tail of the gripper when the selector slide moves

up to the end of its stroke and into engagement with the other arm 36 of the bell crank lever. At that time, the gripper being between the guide rod and lever arm 33, the motion of the slide brings the lever arm inwardly toward the guide rod and retracts the gripper, as shown in Fig. 3.

In order that the weft strands may be agitated sufficiently to cause them eventually to come into position over the mouth of the nozzle, the frame 40 of the loom is shown as provided with a pivoted member 41 which rests on the lay and which has an upper sinuous surface provided with indentations and projections. Mounted on the lay is a shaft 42 having an arm 43 fixed thereon and held down on the sinuous surface by a spring 44 so that as the lay beats forward and back this arm will be oscillated by the motion of the member 41. This oscillates the shaft 42 and with it a wire 45 fixed thereon which I term the shaker. This wire extends down under the weft strands in the hopper, and every time it is agitated it correspondingly agitates the strands so that they will sooner or later be brought into position directly over the mouth of the nozzle, and whenever one of them covers the mouth it will be held thereon by atmospheric pressure as described above. On this shaft 42 is another arm 47 connected with a link 48 for operating a similar shaker (not shown) on the other side of the loom. A link 49 also operating a slide (not shown) similar to slide 33 on the other side. No particular way of operating the feed rolls, lay, etc. has been described, as it will be understood that this invention is applicable to various types of short weft looms.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction herein shown and described but

What I do claim is:—

1. In a loom for weaving short wefts, the combination with a hopper for holding the straws or the like constituting the wefts, and a feed device for taking straws therefrom, of a nozzle movable along the hopper, and means for exhausting air from said nozzle, whereby when the mouth of the nozzle comes into contact with a straw the latter will be pressed against it by atmospheric pressure.

2. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, and a device for inserting the wefts in the shed, of pneumatic means for feeding the wefts from the hopper to the said device.

3. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, and a device for inserting the wefts in the shed, of pneumatic means for feeding the wefts from the hopper to said device, said pneumatic means being movable along the hopper toward said device, and means for moving it.

4. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, of a selecting device movable parallel with the length of the hopper, and a pneumatic device carried by said selecting device for moving the wefts longitudinally in the hopper.

5. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, of a guide rod located parallel with the length of the hopper, a selector slide movable on said rod, a nozzle carried by the selector slide and having a mouth thereon adapted to receive a weft, pneumatic means for causing a weft to be carried along with the nozzle when entering said mouth, and means for moving said slide along the guide rod.

6. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, of a guide rod located parallel with the length of the hopper, a selector slide movable on said rod, a nozzle carried by the selector slide and having a mouth thereon adapted to receive a weft, pneumatic means for causing a weft to be carried along with the nozzle when entering said mouth, means for moving said slide along the guide rod, and a gripper mounted on said slide for assisting in holding the weft on said nozzle.

7. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, of a movable nozzle having a mouth for receiving the wefts, and a gripper mounted on the slide for assisting in holding the weft on said mouth.

8. In a loom for weaving short wefts, the combination with a lay, of a hopper, a feed device, and a selector mounted thereon, and means operated by the swinging of the lay for agitating the weft in the hopper.

9. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, and a feed device for taking the wefts from the hopper, of a selector slide movable parallel with the length of the hopper, a gripper on said selector slide for gripping a weft, means mounted in stationary position for retracting the gripper when the slide moves to the rear limit of its stroke, and means for agitating the wefts over said weft gripper.

10. In a loom for weaving short wefts, the combination with a hopper for holding short wefts, of a pneumatic means for feeding the wefts from the hopper, and means

for agitating the wefts in the hopper so as to cause one of them to come into direct contact with the pneumatic means.

11. In a loom for weaving short wefts, the combination with a lay, of a hopper, a feed device, and a pneumatic selector mounted thereon, said selector comprising a nozzle having a mouth adapted to receive one weft at a time, and means operated by the swinging of the lay for agitating the wefts in the hopper.

12. In a loom for weaving short wefts, the combination with the lay, of a hopper thereon, and a selecting device for moving the wefts from the hopper, of means mounted on the lay for agitating the wefts in the hopper as the lay beats, said means comprising a pivoted vibratory shaker passing under the wefts in the hopper, and means for swinging said shaker on its pivot.

13. In a loom for weaving short wefts, the combination with the lay and a frame, of a member mounted on the frame and having a surface provided with projections and indentations, a shaft on the lay having an arm thereon engaging said surface, whereby as the lay beats said arm will be swung back and forth and the shaft oscillated, and a shaker fixed to said shaft and passing under the wefts for vibrating them.

14. A loom for weaving short weft fabrics comprising a feed mechanism, means for holding short wefts, and a pneumatic selector for feeding the short wefts to the feed mechanism.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

HENRY E. RATHBUN.

Witnesses:
A. E. Fay,
C. Forrest Wesson.