

A. WEIMAR.

SHUTTLE OPERATING MECHANISM FOR NARROW WARE LOOMS.

No. 519,896.

Patented May 15, 1894.

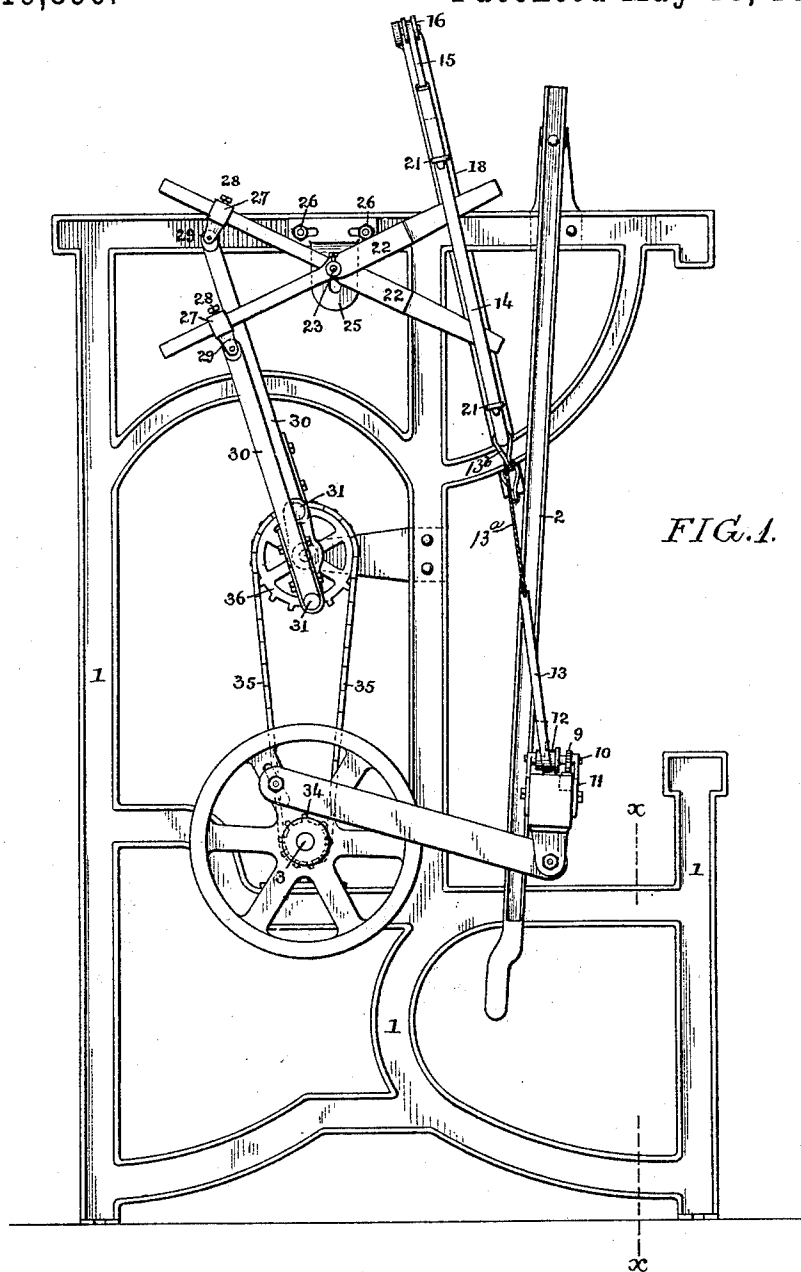
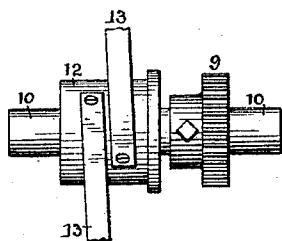


FIG. 3.



Witnesses:

R. Schlicher.

A. V. Group.

Inventor:

Andrew Weimar

by his Attorneys

Howson & Howson

(No Model.)

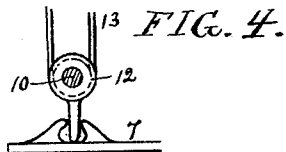
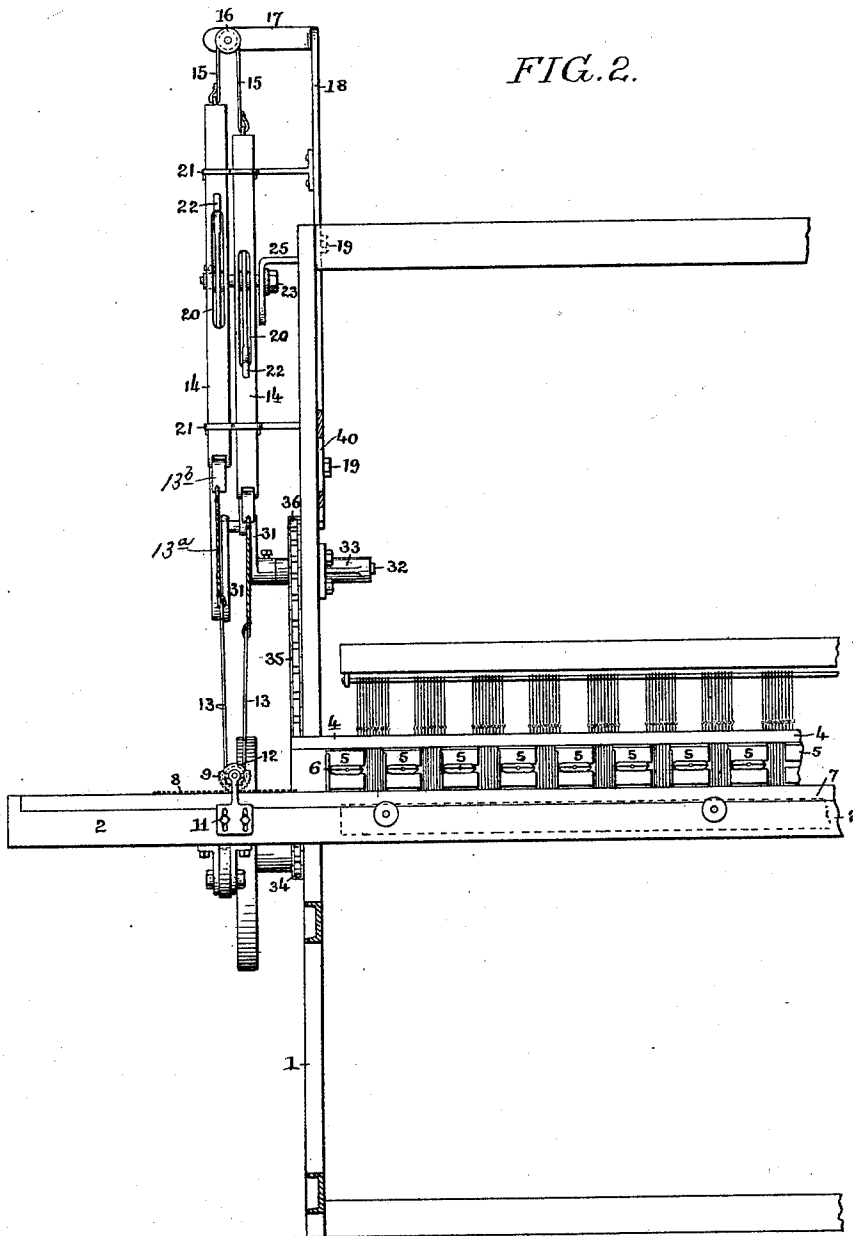
2 Sheets—Sheet 2.

A. WEIMAR.

SHUTTLE OPERATING MECHANISM FOR NARROW WARE LOOMS.

No. 519,896.

Patented May 15, 1894.



Witnesses:

R. Schleicher
A. V. Groupé

Inventor:
Andrew Weimar
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

ANDREW WEIMAR, OF PHILADELPHIA, PENNSYLVANIA.

SHUTTLE-OPERATING MECHANISM FOR NARROW-WARE LOOMS.

SPECIFICATION forming part of Letters Patent No. 519,896, dated May 15, 1894.

Application filed September 1, 1892. Serial No. 444,777. (No model.)

To all whom it may concern:

Be it known that I, ANDREW WEIMAR, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Shuttle-Operating Mechanism for Narrow-Ware Looms, of which the following is a specification.

My invention consists of certain improvements in the construction of the shuttle driving mechanism of narrow ware looms, such for instance as are employed for the weaving of tape, ribbons, suspender bands, &c., and its object is to so construct and arrange the driving mechanism that the loom may be run at a greater speed than is now possible without interfering with the proper throwing of the shuttles and the various parts may be so adjusted as to throw the shuttles through sheds of greater or less width for weaving different materials.

In the accompanying drawings:—Figure 1, is a side elevation of sufficient of a narrow ware loom to illustrate the application of my improved shuttle operating mechanism thereto. Fig. 2, is a sectional view of the same on the line $x-x$ Fig. 1; and Fig. 3, is a view on an enlarged scale illustrating a detail of construction which will be more specifically referred to hereinafter. Fig. 4 is a view illustrating a modification of part of the invention.

Referring to the drawings, 1 represents the frame of the loom provided with a lay 2 which is operated from the crank shaft 3 and provided with the usual reeds, and 4 represents the shuttle carrying beam of the lay which is provided as usual with a series of shuttles 5, corresponding in number to the number of reeds, and adapted to operate upon these shuttles are vertical pins 6 secured to a reciprocated shuttle driving bar 7. As far as described the construction of this part of the loom may be of any desired or approved character and the movement of the bar 7 may be transmitted to the various shuttles either by the vertical pins as shown, or by the ordinary racked shuttle and pinions, such as are used for weaving wider strips of material.

The bar 7 is provided with a rack 8 with which engages a segment 9 secured to a short shaft 10 held in vertically adjustable bear-

ings 11 on the lay, and mounted on this shaft 10 is a drum 12 from which extend straps 13 connected by means of cords 13^a and looped straps 13^b to reciprocated bars 14 which receive vertical movement alternately and operate to turn the drum 12 for a part of a revolution first in one direction and then in the opposite direction, the movement being transmitted by the segment 9 to the rack 8 on the bar 7.

The upper ends of the bars 14 are connected together by a strap 15 passing over a grooved pulley 16 supported on the projecting portion 17 of a vertically adjustable bar 18, which latter is slotted as at 40 for the reception of the bolts 19 whereby it is secured to the frame of the loom in such manner that it may be raised or lowered so as to be properly adjusted in respect to the bracket for the operating lever 22 hereinafter referred to.

The bars 14 are slotted at 20 and are held in suitable guideways 21 extending from the bar 18 and into the slots 20 project the ends of the levers 22 pivoted to a pin 23 which is adjustably secured in a slotted bracket 25 the latter being also slotted and secured by bolts 26 to the frame of the loom, so that it can be moved backward and forward thereon.

The rear ends of the levers 22 are provided with boxes 27 adjustably secured to the levers by set screws 28 and each box carries on its under side a lug or pin 29 to which is connected one end of a rod 30 the opposite ends of these rods being connected respectively to the two pins of the double crank 31, which is secured to a shaft 32 adapted to turn in a bearing 33 on the frame, and to which motion is transmitted by a sprocket wheel 34 on the crank wheel 3 through the medium of a belt wheel 35, and a sprocket wheel 36 mounted on said shaft 32.

It will be noticed that the reciprocated bars 14 are placed at an angle to the vertical, the angle being such that the bars will accord as closely as possible with the arc of a circle through which the acting portion of each lever 22 travels when it is bearing upon the bar to raise the same, that is to say, during the upper portion of the movement of the lever arm, and the extent of movement may be varied at pleasure by adjusting the boxes 27 on their respective levers to a point nearer

to or farther from the pivot pin 23 and so giving to the levers a greater or less throw, and consequently imparting to the segment 9 greater or less rotative movement which will act through the rack 8 and the drive bar 7 and so move the shuttles the proper distance to accord with the width of the strips being woven and to accommodate strips of greater or less width, the bearings 11 for the drum shaft 10 may be adjusted vertically on the lay, and segments of greater or less diameter and having a greater or less number of teeth may be placed on the shaft 10 in order to effect the desired throw of the shuttle with uniform movement of the bars 14. With a driving mechanism of this character the various parts may be so adjusted as to drive shuttles of different lengths for different distances and by altering the point of contact of the levers 22 with the bars 14, the force of the pull upon the shuttle may be regulated or the shuttle may receive a gradually increasing or decreasing speed as it travels across the shed. If desired the mechanism described may be applied to that construction of loom where the ordinary operating drum 12 and a crank acting upon suitable projections upon the shuttle driver as in the case of ordinary fly shuttles are employed for imparting the movement of the drum to the shuttle driver. Each of the levers 22 only moves its bar 14 positively in one direction, that is to say, upwardly, each bar being pulled downwardly by the rise of the other bar, which motion may or not be assisted by the action of the lever 22 upon the bar at the bottom of the slot. Each bar 14 is therefore free to be moved by hand in the direction in which it would otherwise be moved by its lever, hence in the event of the shuttles failing to completely cross the sheds in stopping the loom, all that is necessary in order to again start the loom is that the attendant move the shuttle bar so as to complete the shuttle movement, the bars 14 being free to move in order to permit this, so that the loom will not start with the shuttles in the sheds. The timing of the shuttles can also be readily regulated by adjusting the frame 18 vertically upon the fixed frame of the loom so as to cause an earlier or later action of the levers upon the bars 14, and the force of the blow delivered upon the shuttle operating bar by the lever can also be regulated by the adjustment of

said frame 18, the lever striking the bar most directly and hence with the greatest force when at or about mid-stroke.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination in shuttle operating mechanism for looms, of a double crank shaft, and means for rotating the same, pivoted shuttle operating levers each connected at one end to said double crank, connected bars upon which the opposite ends of said levers act by impact, one bar moving in one direction, as the other bar is moved in the opposite direction, a drum, connections between the bars and said drum, a shuttle drive bar, and means for transmitting the movement of the drum to said shuttle drive bar, substantially as specified.

2. The combination in shuttle operating mechanism for looms, of a double crank shaft and mechanism for rotating the same, pivoted shuttle operating levers, each connected at one end to the double crank, connected bars upon which the opposite ends of said levers act by impact, one bar being moved in one direction, as the other bar moves in the opposite direction, a frame carrying said bars and adjustable vertically so as to vary the position of the bars in respect to the levers, a drum, connections between said bars and the drum, the shuttle drive bar, and means for transmitting the movement of the drum to said shuttle drive bar, substantially as specified.

3. The combination of the double crank shaft, and means for rotating the same, the pivoted shuttle levers, an adjustable pivot pin carrying said levers, an adjustable bracket upon which said pivot pin is mounted, adjustable boxes carried by the levers, pivot ears on said boxes, rods connecting the double crank to said pivot ears, connected bars acted upon by said levers, a shuttle drive bar and means for transmitting the movement of said lever-actuated bars to said shuttle drive bar, substantially as specified.

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

ANDREW WEIMAR.

Witnesses:

FRANK E. BECHTOLD,
JOSEPH H. KLEIN.