I. Orndorff.

Loom.

No. 53,857. Patented Apr. 10, 1866.

Fig. 1.

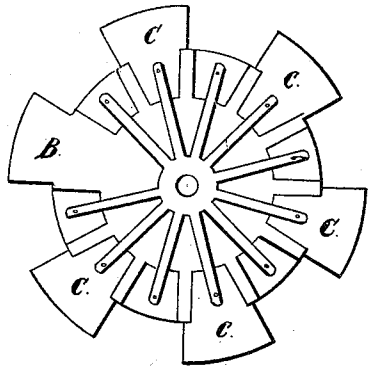


Fig. 2.

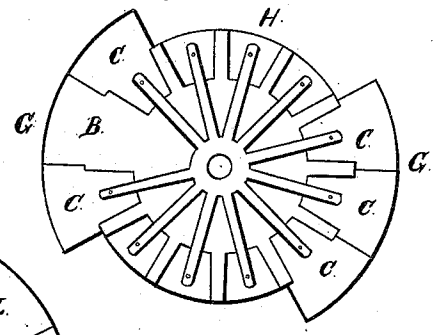


Fig. 7.

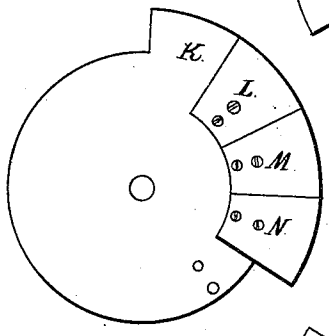


Fig. 3.

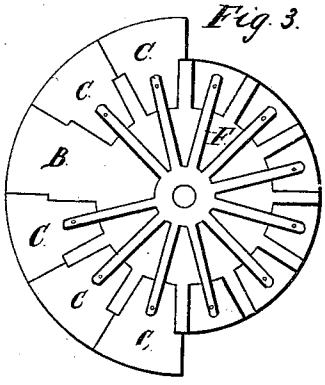


Fig. 4.

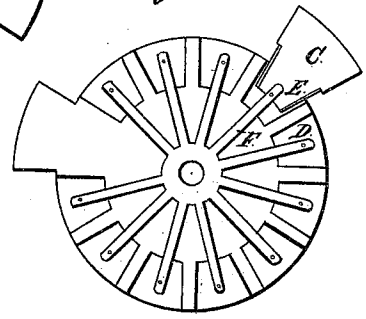


Fig. 8.

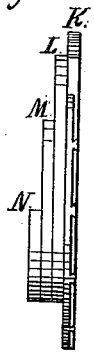


Fig. 5.

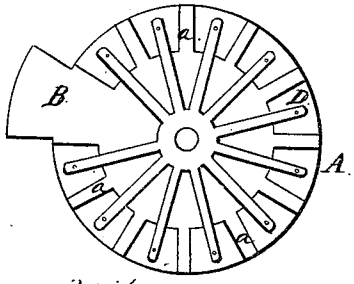
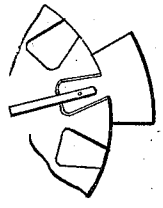


Fig. 6.



Witnesses.
J. D. Peyton
Theodore Leng

Inventor.
Ira Orndorff
by his Attys
Baldwin & Son

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

IRA ORNDORFF, OF RUSSELLVILLE, KENTUCKY.

IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. 53,857, dated April 10, 1866.

To all whom it may concern:

Be it known that I, IRA ORNDORFF, of Russellville, in Logan county, and the State of Kentucky, have invented a new and useful Improvement in Looms; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, and in which—

Figure 1 represents a plan view of a pattern-wheel for weaving regular changes with two shuttles. Fig. 2 is a plan view of the same wheel for weaving quarter-changes. Fig. 3 is the same wheel for weaving half-changes. Fig. 4 is the same wheel showing the mode in which the change-blocks are connected with the wheel. Fig. 5 is the same wheel, for weaving a pattern requiring two picks from one shuttle and twenty-two from the other. Fig. 6 shows a mode of uniting to the pattern-wheel the change-blocks by a dovetailed joint. Fig. 7 shows the side of a pattern-wheel with change-cams attached for four shuttles. Fig. 8 is an edge view of this side-cam pattern-wheel for weaving with four shuttles in separate boxes.

As hitherto practiced, the weaving of checks and plaids automatically with shuttles carrying separate colored thread has been attended with difficulty, because complex mechanism was required; and it is the object of my invention to simplify the pattern-wheel for the production of such fabrics, and thereby enable the common hand-loom to manufacture stripes, checks, or plaids with many colors economically; and my invention consists in dividing the pattern-wheel into regular parts and using pattern-blocks so formed that each block shall suit any of the divisions, or the spaces between the blocks shall equally with the blocks determine the number of picks to be thrown by each shuttle in any given pattern of check or plaided fabrics, or in any design therefor.

In the accompanying drawings I have shown my invention as connected with the operation of two shuttle-boxes and limiting the range of changes from two picks with one shuttle to twenty-two with the other, or any variation requiring four picks from each shuttle.

The pattern-wheel A is divided into twelve equal parts by radial ribs *a*, one part or division, B, being left of the full radius of the pattern-wheel, while the remaining portion of the pattern-wheel is cut down far enough to receive section-blocks C, which are fitted into mortises D in the pattern-wheel. The blocks, being provided with tenons E that match the mortises, are held in position by the catch-springs F radiating from the hub of the pattern-wheel; or the tenons may be inserted with longitudinal dovetails into their respective mortises; or they may be held by a dovetailed connection, as shown in Fig. 6, when the spring will only be required to press on the face of the block to hold it securely in place. Thus arranged it is obvious that the several blocks will fit accurately the several mortises, and that if all the mortises were filled with blocks the pattern-wheel would have a regular perimeter and in no wise interrupt plain weaving with a single shuttle.

My shuttle-boxes are placed upon the top of the lay, vibrate with it, and have a forward and back horizontal motion at intervals determined by the pattern-wheel, being kept in such a position as to have the front shuttle-box in line with the shed by a spring-retraction, and the set of boxes being moved forward by the cams or projections L M N on the pattern-wheel, that strike in succession their corresponding uprights or projecting studs on the top of the shuttle-boxes when they are to be changed. The pattern-wheel, being located on a shaft supported in proper uprights on the lay and over the shuttle-boxes, may be actuated by the forward and return movement of the lay through a pawl attached to the frame and a ratchet-wheel on said shaft which receives an intermittent rotation from the pawl; or the pattern-wheel shaft may be otherwise rotated.

Now, when it is proposed to weave checks of equal numbers of picks of different colors, I place the blocks C in every alternate mortise in the wheel, as shown in Fig. 1, when, of course, two picks will be thrown alternately by each shuttle as the pattern-wheel rotates; but if it be desired to throw six picks with each shuttle, then three blocks must be placed together on opposite sides of the pattern-wheel, as in Fig. 2, when the parts G and G′ will be woven by one shuttle and the parts H and H′ by the other in regular succession.

To throw twelve picks with each shuttle the blocks C must all be placed together, as in Fig.

3, when, of course, each shuttle will throw twelve picks in regular succession; and in Fig. 5 the wheel is deprived of all its movable blocks, leaving the stationary one alone, and then one shuttle will weave but two picks, while the other will have to throw twenty-two.

To change the shuttle-boxes when four shuttles are to be used, I use a method for which I have applied for Letters Patent, or I attach removable and adjustable cams K L M N to the side or face of a disk, which enables me to use four shuttle-boxes; but of course this mode of making the changes in the shuttle-boxes, or, in other words, the number of shuttles used, may be increased to any number that can be used with convenience on a single loom, whether it be driven by hand or power. Dividing this disk into as many parts as I wish to use shuttle-boxes, I arrange this division by side cams, as shown in Figs. 7 and 8, outside of each other, with their projecting edges such a distance apart as will keep such shuttle-box in position as long as required to throw the number of picks determined for the pattern, when the passage of the edge of the cam past the stop in the shuttle-box will release one box, and the next cam will catch on its edge the stop in the succeeding shuttle-box and bring it into position for the introduction of the new color into the warp carried by its shuttle, all as shown in my application to which I have hereinbefore referred. For example: Suppose the first shuttle has thrown its determined number of picks, and it is now desired to bring the second shuttle in line with the shed. The cam L on the back of the pattern-wheel will strike the stud on shuttle-box No. 2 and move it forward into the position desired, and hold it there while the shuttle No. 2 is making its picks. When the intermittent rotation of the pattern-wheel has passed to the next stripe to be made in the goods the cam L will have been released from its stud, and the cam M will strike the stud of the third shuttle-box, which, in its turn, will, in the same manner, be brought and held in line with the shed until the next cam strikes the stud of the next shuttle-box, and so on until all the shuttles have delivered their varied colored threads, when the retracting-spring will draw back the shuttle-boxes and leave No. 1 in line with the shed, and so the pattern will be repeated.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The changeable sectional pattern-wheel, when the sections are changed and held in place substantially in the manner and for the purpose described.

2. The adjustable cams arranged on the side of the disk, as shown in Figs. 7 and 8, to change the shuttle-boxes, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

IRA ORNDORFF.

Witnesses:
J. I. PEYTON,
WM. B. DAYTON.