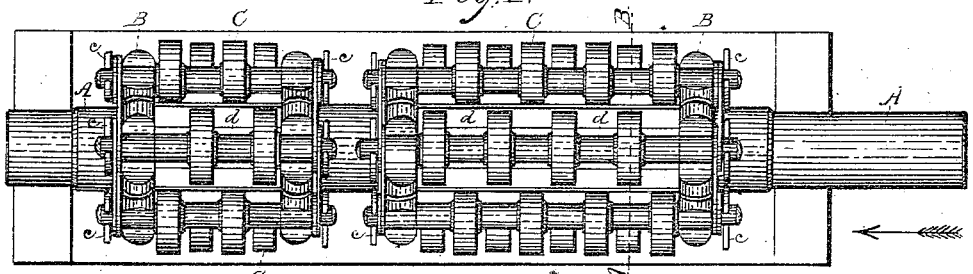
L. J. KNOWLES.

Loom Pattern-Chain.

No. 162,176. Patented April 20, 1875.

Fig. 1.



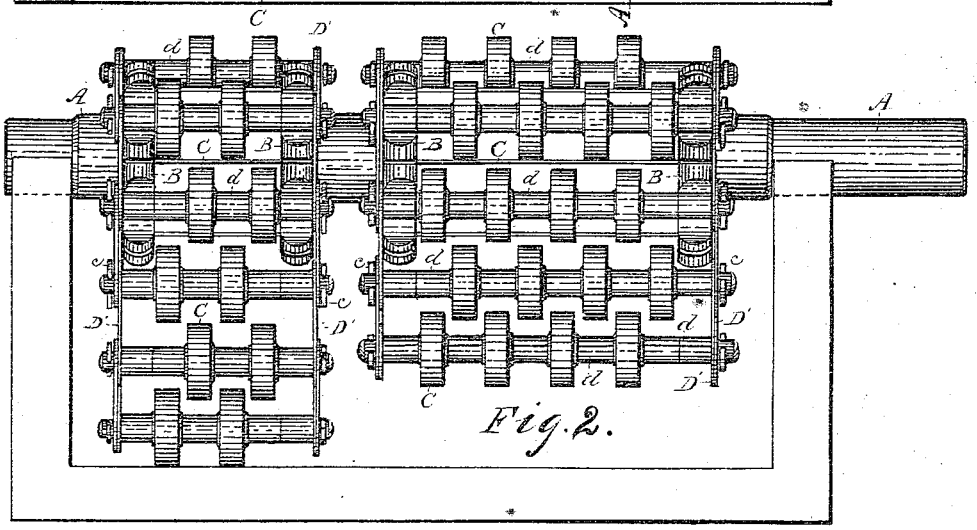


Fig. 2.

Fig. 3.

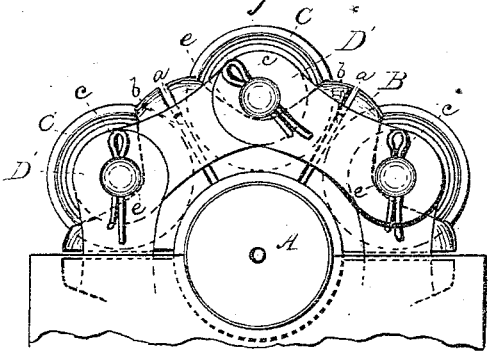
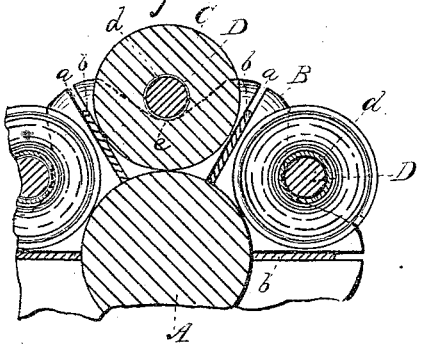


Fig. 4.



Witnesses;

Edwin E. Moore

Thos. F. C. Dodge

Inventor;

Lucius J. Knowles.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

LUCIUS J. KNOWLES, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN LOOM-PATTERN CHAINS.

Specification forming part of Letters Patent No. **162,176**, dated April 20, 1875; application filed March 29, 1875.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in the Mechanism for Operating Harnesses and Shuttle-Boxes in Looms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming a part of this specification, and in which—

Figure 1 represents a top or plan view of my improvement in said mechanism. Fig. 2 represents a side view. Fig. 3 represents an end view of so much of Fig. 1 as is necessary to illustrate my improvement, and Fig. 4 represents a vertical section on line A B, Fig. 1, of so much of the mechanism as is necessary to illustrate my invention.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

As my present improvements have special reference to the mechanism for supporting and turning the pattern-chains of looms by which the harness and shuttle-boxes of looms are brought into action at the proper time, it is only necessary to show or represent in the drawings the pattern-chains when supported and operated according to my present invention, the operation of the loom in other respects being well known.

In the drawings, A represents a shaft upon which are arranged, or rigidly secured, projecting hub-pieces B, said hub-pieces being recessed or cut out at *a* to receive the pocket-blades *b*, which form pockets to receive the pattern-wheels or rolls C, which are arranged upon horizontal shafts D, connected together by the link-pieces D′ arranged upon the ends of shafts D, and held in place by spring-keys *c*. Shafts D are provided with thimble-pieces *d* between the pattern-rolls C, and at their ends, inside of the link-pieces D′. The thimble-pieces *d* upon the ends of shafts D, when shaft A is revolved so as to bring them upon the upper side, strike into and are supported by the curved seats *e* in the hub-pieces B, as indicated in full and dotted lines in the drawings, while the pattern wheels or rolls C fit into the pockets formed by the pocket-blades *b*, in combination with shaft A. The pattern wheels or rolls C are each loose upon their shaft, and are retained in their proper relative positions longitudinally thereon by means of thimble-pieces *d* arranged between them, said thimble-pieces being slipped upon the shaft when the pattern-rolls are being arranged thereon. The holes in the pattern wheels or rolls C are made a little larger than the shafts D; consequently the greater part of the strain which comes upon said pattern wheels or rolls at the time they act upon their respective harness or shuttle-box fingers or levers, as the case may be, is borne by the pocket-blades *b b* and shaft A, thus relieving, to a very great extent, shafts D and their link-pieces D′, which is an important practical advantage, as those skilled in the art will readily perceive. By the arrangement above described the liability, when wide pattern-chains are employed, of the shafts or rods upon which the pattern-rolls are placed springing in the middle is obviated, while at the same time the wearing of the links D′ is also obviated in a great measure. Still another advantage resulting from this arrangement is due to the fact that but very little care or attention is required in finishing the pattern wheels or rolls C for use, particularly the finishing of the center hole, since that is made large enough to have a very loose fit on its shaft, as before explained.

In Figs. 1 and 2 of the drawings, two separate pattern-chains are shown, the one on the right being designed to operate the loom-harnesses, while the one on the left is designed to operate the shuttle-boxes, and it will be observed that the shuttle-box chain is much longer than the harness-chain. By arranging both chains upon one shaft, but separate from each other, an increased number of shuttle-boxes can be operated with a given number of harnesses from what there could be if the same pattern-chain were employed to operate both the harnesses and the shuttle-boxes; consequently it will be seen that by my arrangement great simplicity is obtained in operating the pattern-chains of loom-harnesses and shuttle-boxes, viz: by a single

shaft, while the relative number of shuttle-boxes and harnesses may be varied, as above described.

It will be understood that shaft A may be revolved or driven by suitable gear or pawl and ratchet mechanism, in any of the well-known modes of operating loom pattern-chain shafts.

Having described my improvements in the mechanism for operating harnesses and shuttle-boxes in looms, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with shaft A and hub pieces B, of the pocket-blades *b*, substantially as and for the purposes set forth.

2. The combination, with shaft A and pocket-blades *b*, of the pattern wheels or rolls C, fitted loosely upon their shafts D, substantially as and for the purposes set forth.

LUCIUS J. KNOWLES.

Witnesses:
EDWIN E. MOORE,
THOS. H. DODGE.