

L. J. Knowles,

Loom.

Nº 68,303.

Patented Aug. 27. 1867.

Fig. 1.

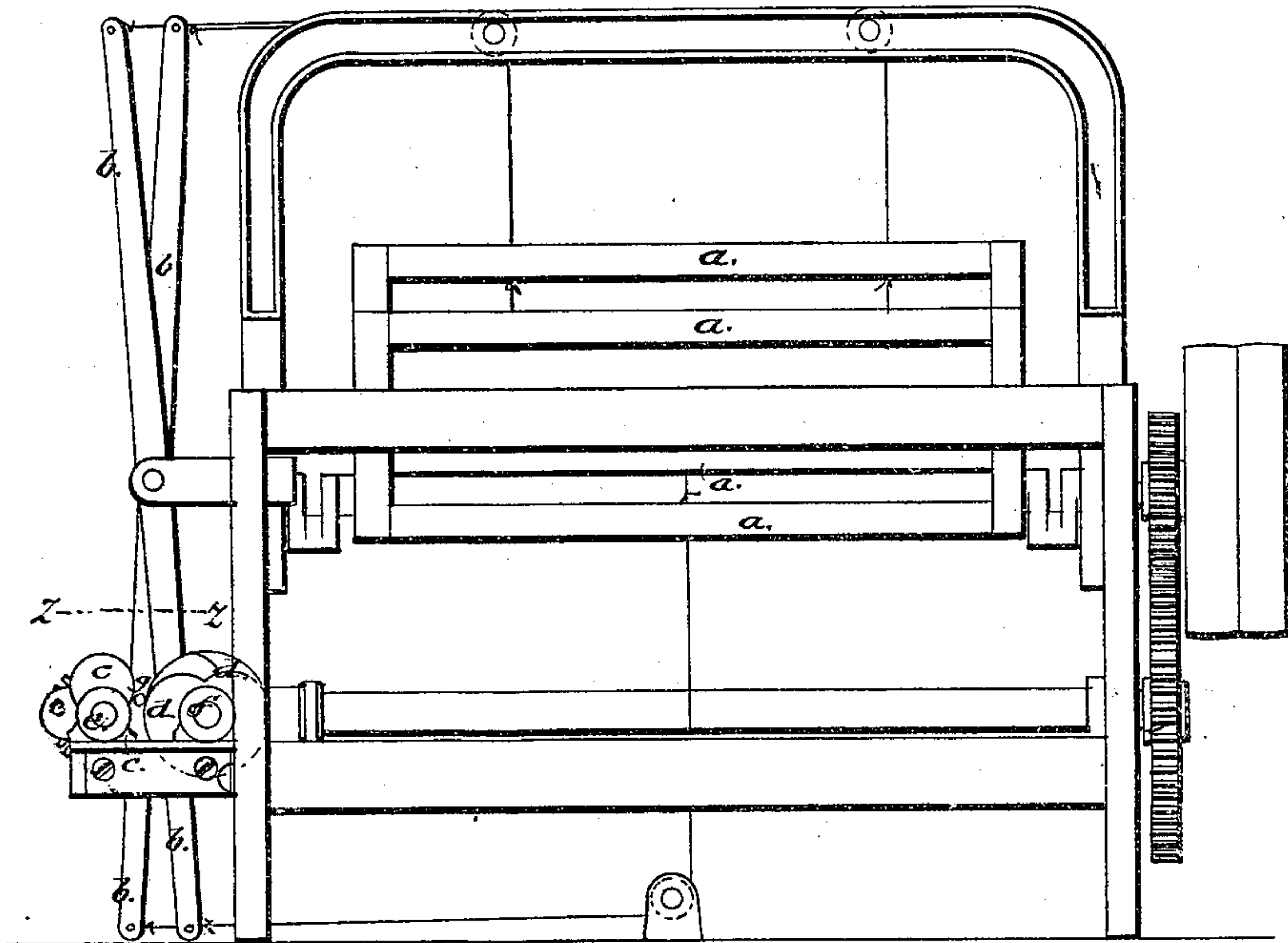


Fig. 2.

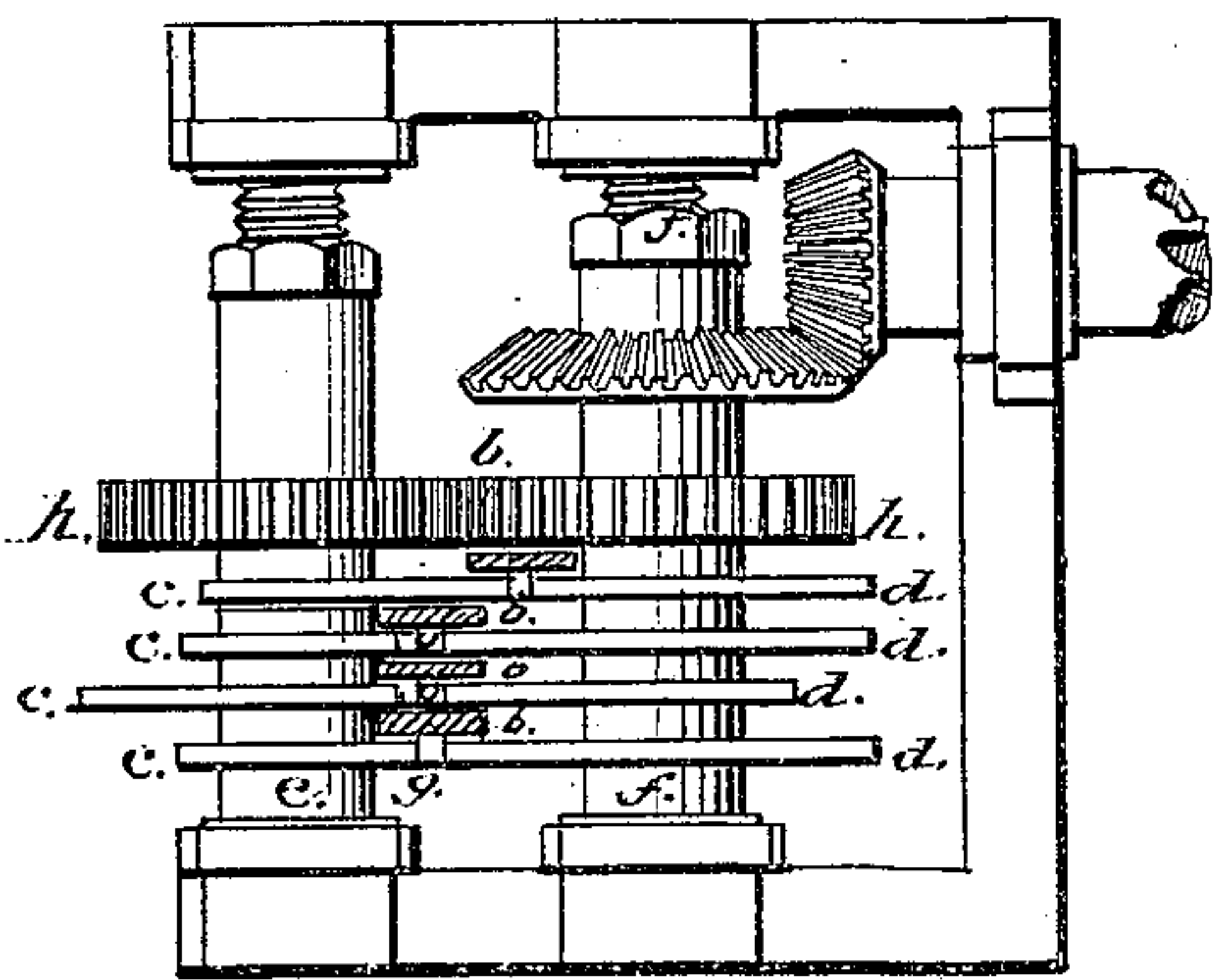
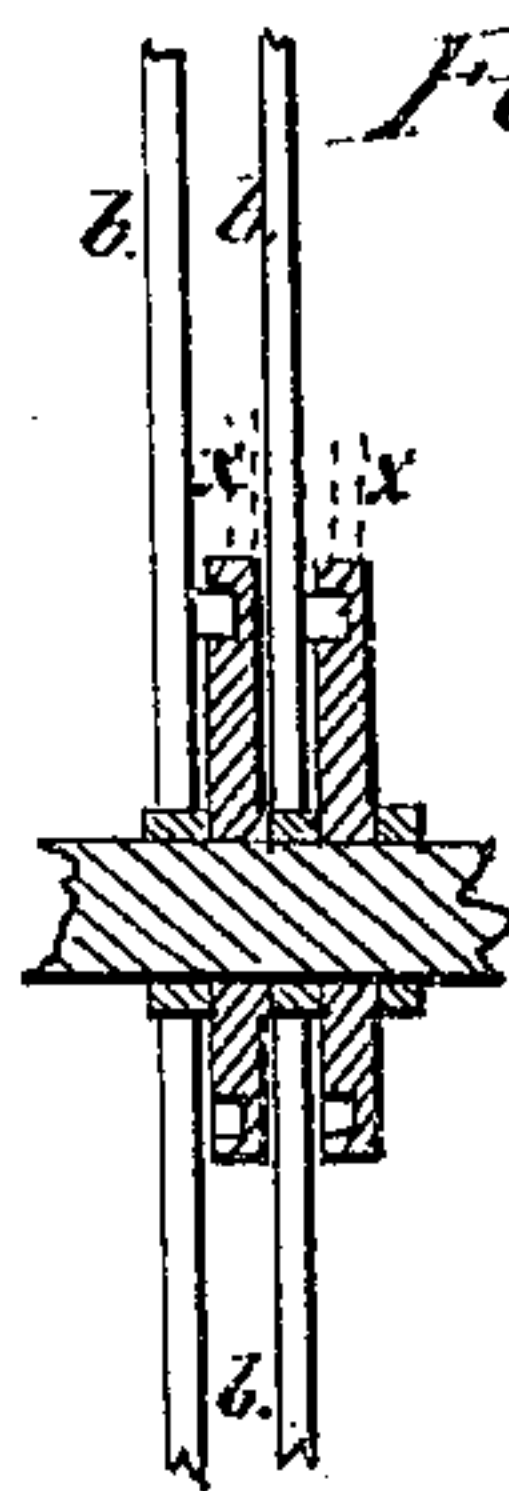


Fig. 3.



Witnesses:
S. B. Kidder,
W. W. Frothingham

Inventor:
L. J. Knowles.
By his Atty.
Crosby & Gould.

United States Patent Office.

LUCIUS J. KNOWLES, OF WARREN, MASSACHUSETTS.

Letters Patent No. 68,303, dated August 27, 1867.

IMPROVEMENT IN HARNESS-MOTION FOR LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, LUCIUS J. KNOWLES, of Warren, in the county of Worcester, and State of Massachusetts, have invented an improvement in Looms; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

This invention relates to the arrangement of the heddle-lever cams for operating the heddle-levers, which work the harness-frames of a loom, to make the changes in the shed needed to produce desired figured appearances on the surfaces of woven goods.

The object of this invention is to so compact the arrangement of the heddle-levers and the harness-frames as to be able to increase the number thereof located in a given space, and thus increase the capacity of the loom for producing complex configuration of the goods woven therein; as in the Patent No. 59,613, dated November 13, 1866, I make use of heddle-levers with a pin in each, through which pins cams operate to move said levers. But in my said patent I make use of path-cams, the depths of the grooves therein being equal to the length of the pins projecting from the heddle-levers, and as the material forming the sides of the grooves must be united, it follows that in the arrangement of the heddle-levers, room must be given for the thickness of material used to unite the sides of the cam-grooves. In the arrangement which forms the subject of my present invention, this room is saved, and may be utilized for placing additional heddle-levers and the harness-frames connected therewith.

In my present invention I make use of two sets of plate or disk-cams, arranged on two shafts, the edges of said plates or disks being cam-shaped, and each heddle-lever having its pin or roller acted on by and between each of two opposite disks or cams, making a co-operative pair, so that the heddle-levers may be located in a space, one dimension of which is determined by the sum of the thickness of the levers, plus the sum of the projections of the heddle-lever pins. An embodiment of my invention is illustrated in the drawings—

Figure 1 showing, in side elevation, enough of a loom to represent the harness-frames *a*, the heddle-levers *b*, and the heddle-lever cams, and the means for operating the same, and

Figure 2 showing in plan, taken below the line *z z*, fig. 1, that part of the loom-frame containing the heddle-lever cams, and parts therewith immediately connected. The shafts on which the plate or disk-cams *c* and *d* are secured are marked respectively *e* and *f*, and the pins in the heddle-levers are marked *g*, the shafts *e* and *f* being connected by gears *h h*, so as to rotate said shafts isochronously.

Figure 3 shows a diagram of a path-cam arrangement for driving the heddle-levers, and it will be seen readily, on inspection, that the spaces, shown in said figure, marked *xx* therein, and which are necessary to the path-cam construction, are not needed in my present construction, so that the space thus saved may be utilized by the presence of additional heddle-levers.

I claim, in combination with the heddle-levers of a loom, the arrangement of disk or plate-cams in pairs, with respect to each heddle-lever and the pins thereof, so that both disks may act continuously upon the pins, substantially as described.

L. J. KNOWLES.

Witnesses:

Jos. F. HITCHCOCK,

W. L. POWERS.