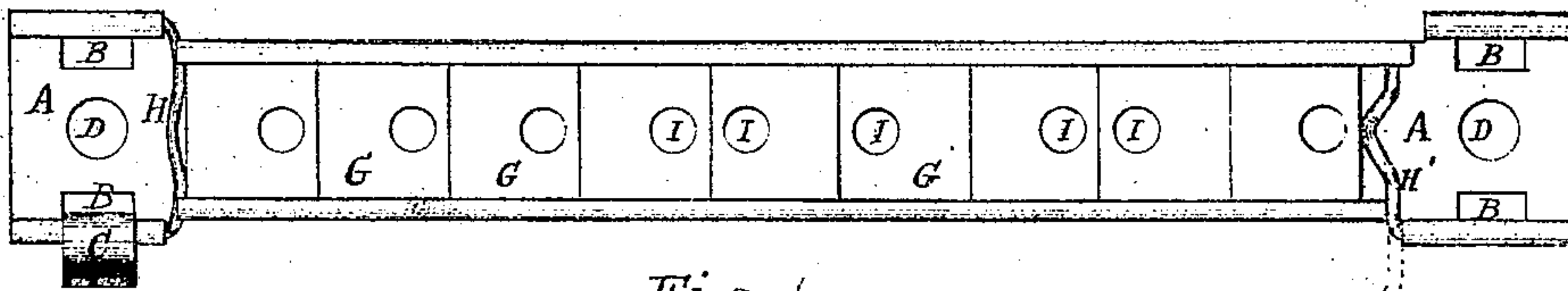


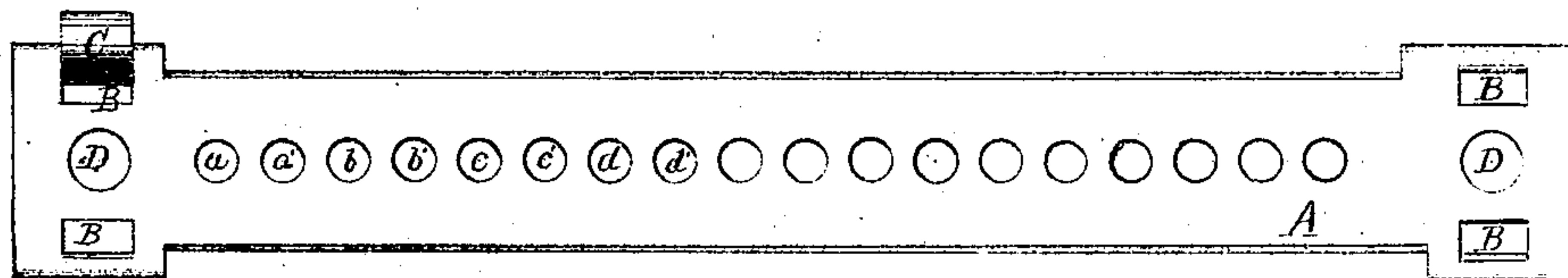
*H. D. Davis,*  
*Pattern Chain Loom.*

*No. 102094.*

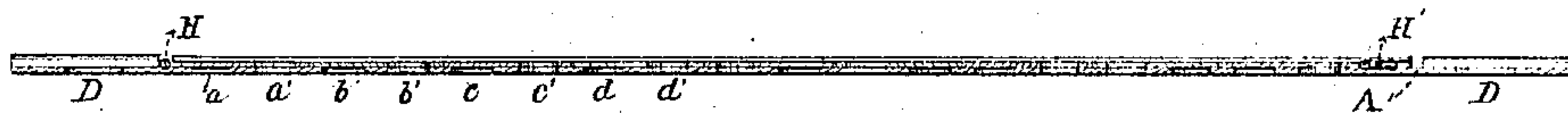
*Patented Apr. 19. 1870.*



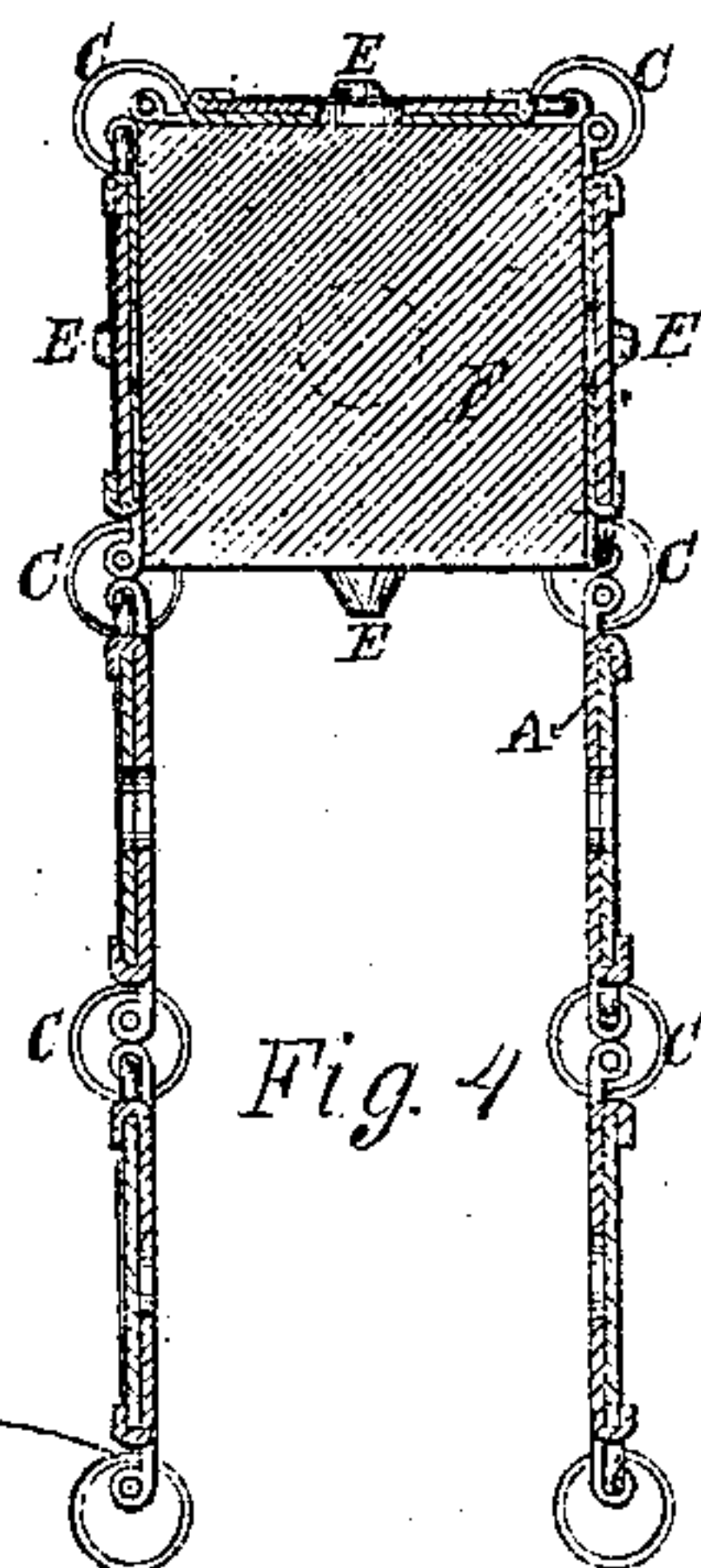
*Fig. 1*



*Fig. 2*



*Fig. 3*



*Fig. 4*

Witnesses

*D. B. Hanson*  
*W. C. Hibbard*

Inventor

*Heiler D. Davis*



# United States Patent Office.

HILAS D. DAVIS, OF NORTH ANDOVER, MASSACHUSETTS.

Letters Patent No. 102,094, dated April 19, 1870.

## IMPROVEMENT IN PATTERN-CHAIN FOR LOOMS.

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

I, HILAS D. DAVIS, of North Andover, in the county of Essex and State of Massachusetts, have invented certain Improvements in Pattern-Chains for Looms, of which the following is a specification.

### *Nature and Objects of the Invention.*

My improvements relates to the manner of constructing the pattern-chain, so-called, which is used in fancy looms to select the heddles which are to be raised or depressed to form the sheet, or to select the shuttle that is to be thrown at each pick, if several shuttles are used.

The kind of pattern-chain to which my improvements apply is that where the chain is made up of plates or cards, perforated with holes, and operate upon needles or pushers much in the same way that the cards operate in the well-known Jacquard loom.

My invention consists in forming each plate or card with as many holes through it as there are needles or pushers to be operated, or otherwise removing so much of the plate as will permit the needles to pass through it; and in combining with this a series of separate, changeable, secondary plates, one for each leaf of heddles, which rests upon the main plate or card, each of which plates has a hole or holes through it so located that when the small plate is in one position its hole or holes will coincide with the hole or holes in the large plate or link, and when it is turned round or reversed it will close the hole, and, if desired, will open another hole or holes.

By this means every figure within the capacity of the heddles may be woven from the same pattern-chain by properly arranging the small plates upon the main plate or card, and this may be done without removing the chain from the loom, as will be described.

### *Description.*

In the accompanying drawings—

Figure 1 represents the pattern-plate or card, in plan;

Figure 2 is a plan of the under side of the same.

Figure 3 is a longitudinal section, and

Figure 4 is a transverse section of a portion of the chain and prism upon which it is worked.

The chain here shown is such as I propose to employ to select the heddles when two needles or pushers are to be used for each leaf, to make the selection positive, instead of one needle or pusher for each leaf, as is usual, and therefore twice as many holes are used in each card as is the case where a single needle or pusher is used for each leaf. But the mode of operation of opening or closing the holes in the card or plate by means of the secondary reversible plates is precisely the same in each case.

A is the link or card, which is formed of sheet metal, and provided with a series of holes, *a a'*, *b b'*, *c c'*, &c., of the proper distance apart to receive the needles or pushers, or, instead of the holes, the metal might be

cut away in the form of a long slot, or, if the chain is to be used with a single series of needles, the holes *a' b' c'*, &c., might be omitted.

Each end of the card is provided with slots B to receive the links C, by which the cards are formed into an endless chain, and with holes D to receive the steady-pins E upon the card-prism F, as is usual in Jacquard looms.

The opposite edges of the intermediate part of the card is turned over so as to form two grooves facing inward, as is shown, into which the series of secondary plates G G, &c., are slipped from one end and held therein by the elastic stops H H', as is shown.

Each plate G occupies a length upon the card corresponding to one leaf of the heddles, and has a hole, I, made through it at one side of the center, and is so arranged in relation to the needles and holes through the main plate or card that when the small plate is in one position the hole in it will coincide with one of the holes in the card, and therefore be open to the passage of the needle, and when it is turned round the hole will be closed and the plate will intercept the needle and push it forward in the usual way, so that each needle may be pushed or left as may be desired, independently of the others.

The stop H is made in one piece with the joint-wires at the end of the plate, as is shown, which are secured to the plate by turning the metal over them in a well-known manner.

The other stop, H', has one end only connected with the joint-wire, and the other end rests in the opposite groove that holds the plates G, and its middle rests against the edge of the outside plate, as shown, and by its elasticity holds the plates firmly together edgewise.

To remove the plates to change them, the free end of the stop H' is sprung out of the groove and turned back in the position shown by the dotted lines, which leaves the plates G free to be drawn out between the links C, the plates or cards A being made of a greater width at the ends than in the middle, for that purpose.

While the plates G are being changed, the end of the card having the stop H may be slightly raised, if necessary, to allow the plates to pass over the steady-pin E in the prism. Thus the pattern-chain may be changed from one figure to another without removing it from the loom, in a perfectly obvious manner.

What I claim as my invention is—

The combination of a series of detached reversible plates, with the main plate or link, to form the working-card of a pattern-chain, substantially as described.

Executed March 12, 1870.

HILAS D. DAVIS.

Witnesses:

D. B. HANSON,

WM. C. HIBBARD,