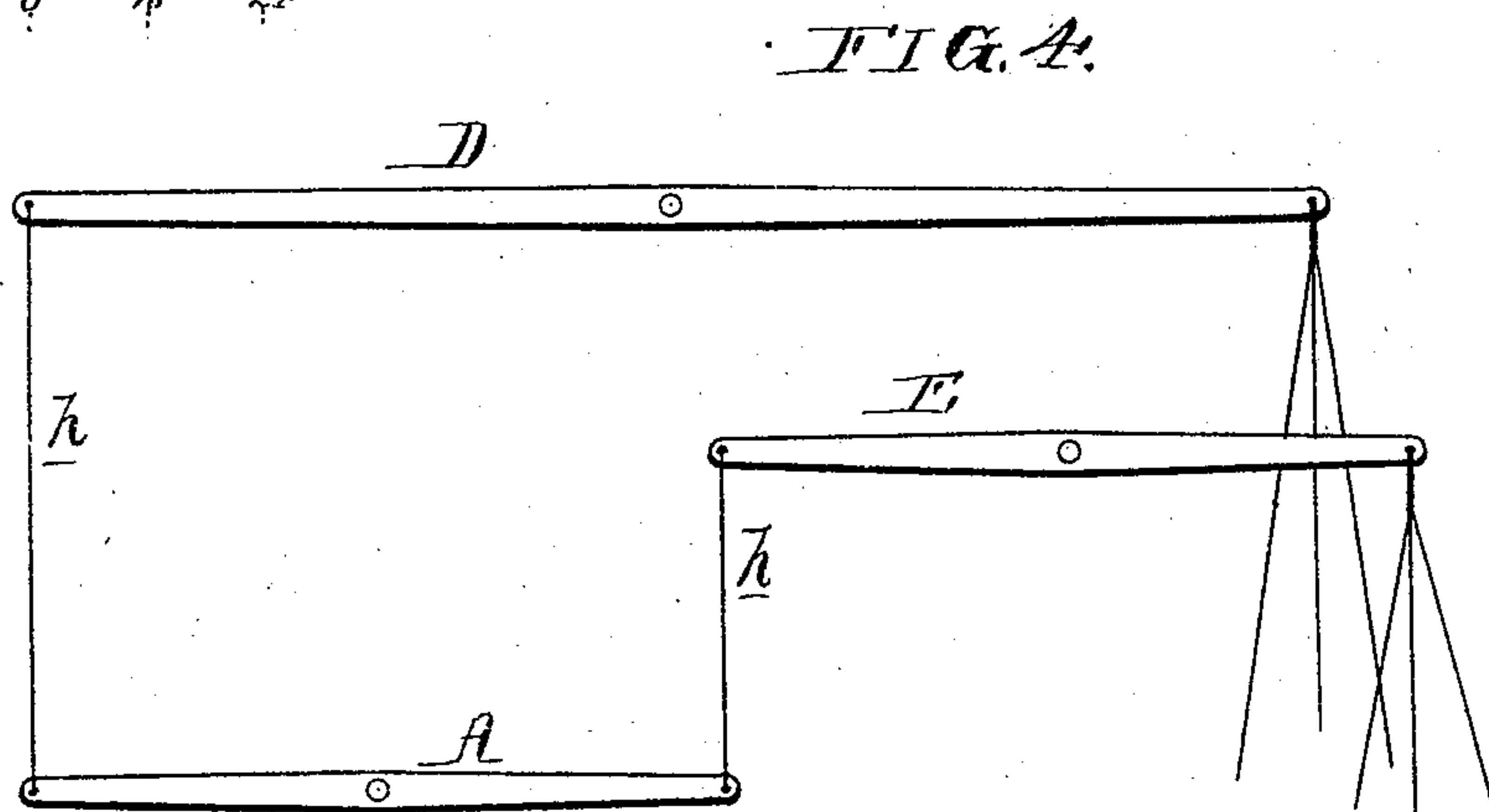
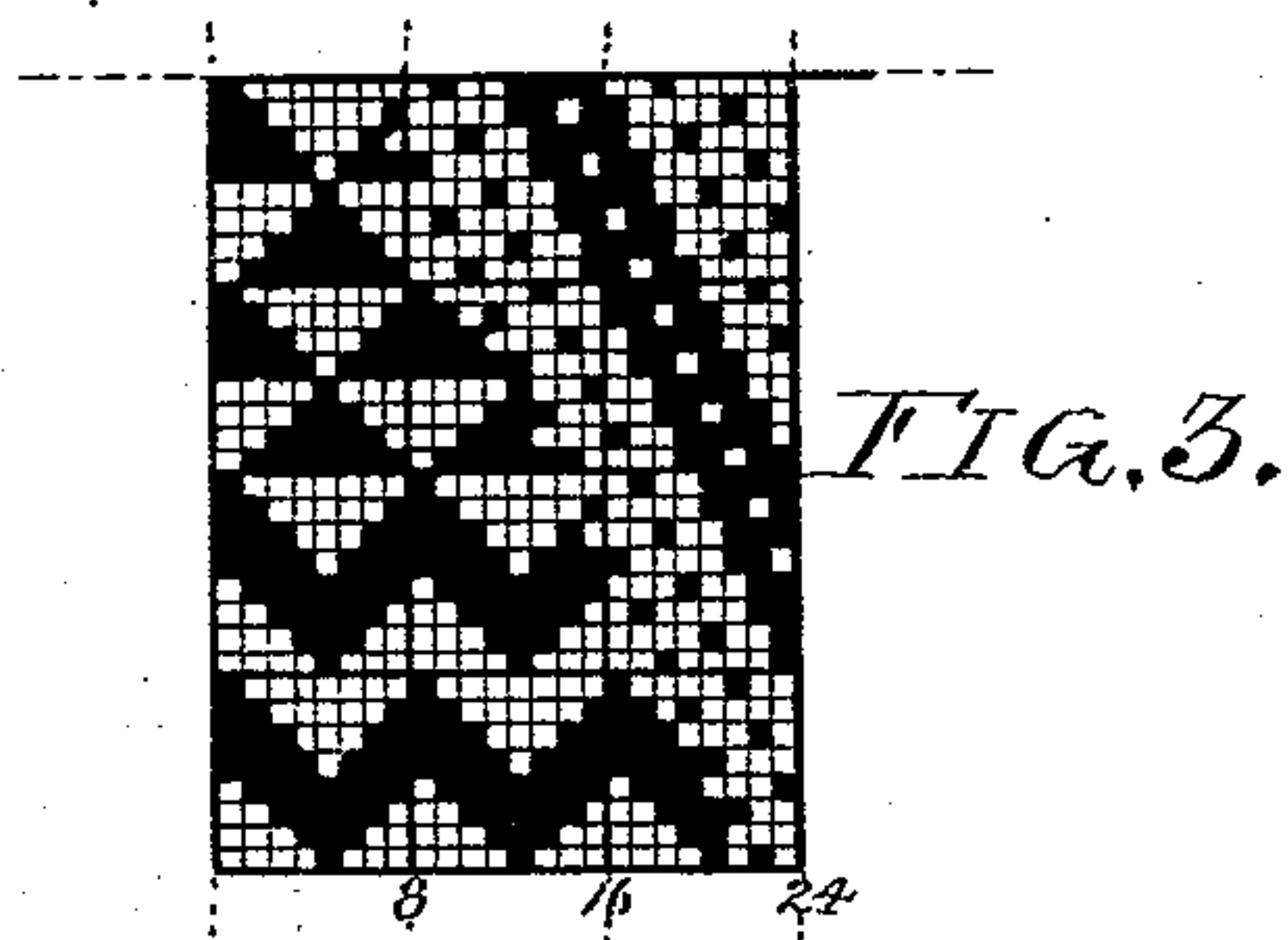
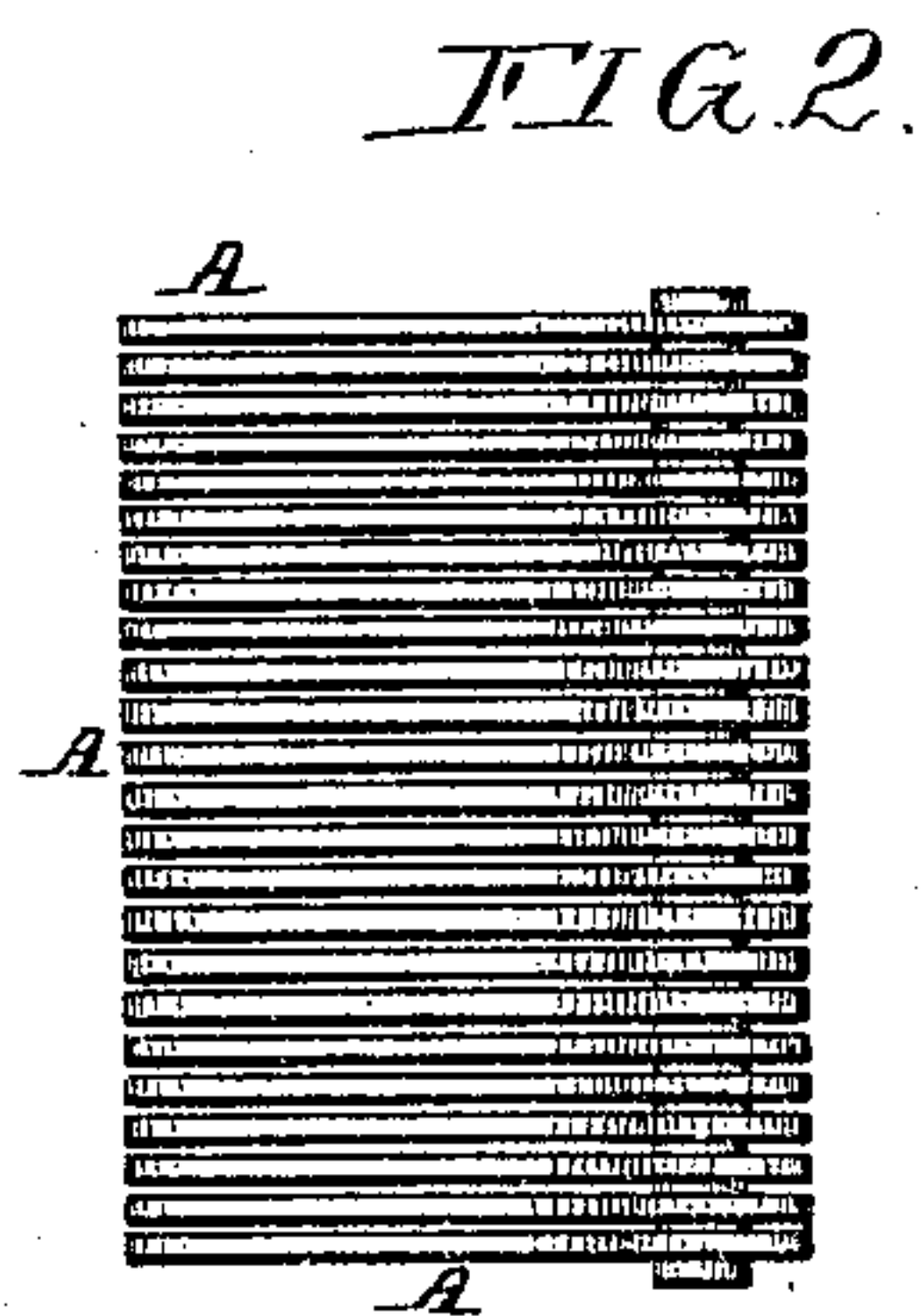
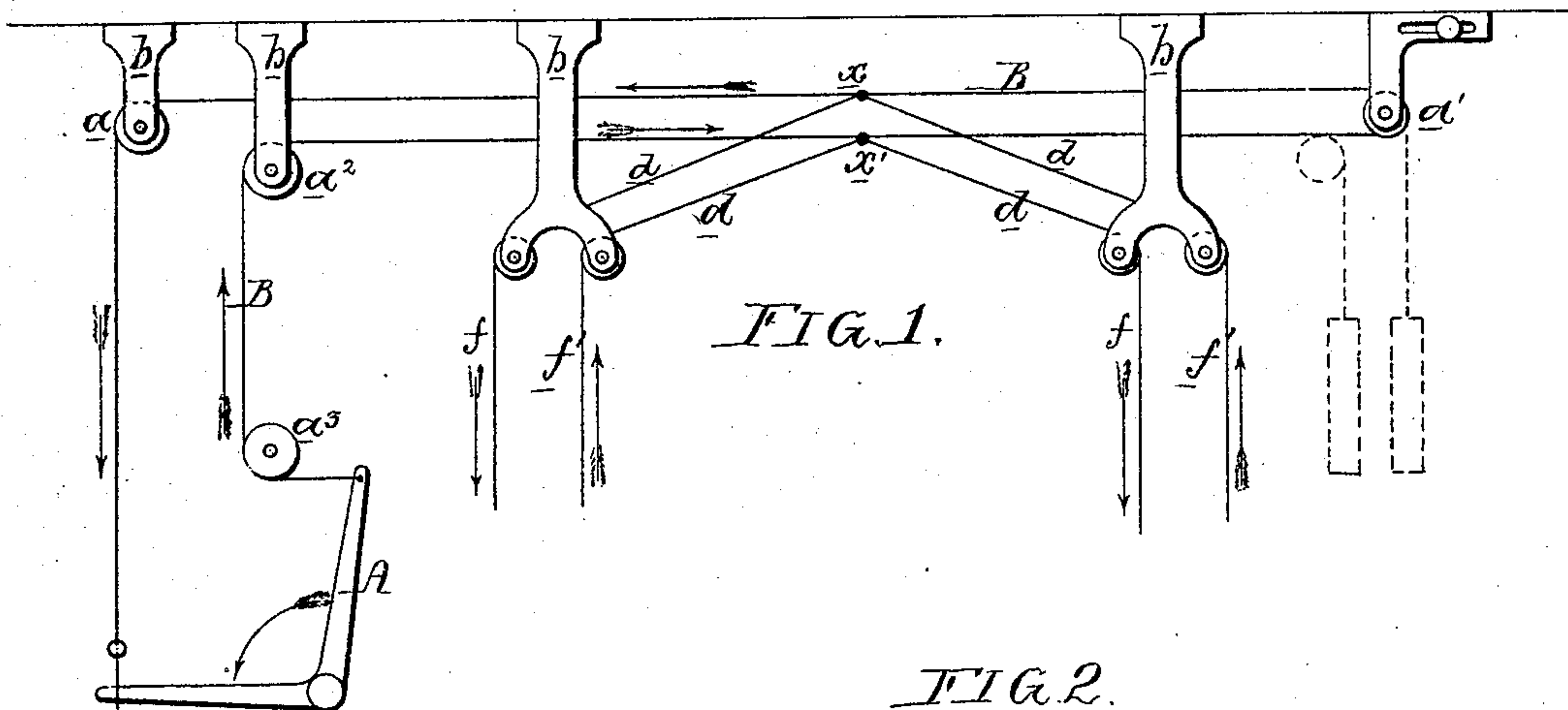


C. H. LANDENBERGER & H. ATKINSON.

Loom-Shedding Mechanisms.

No. 145,216.

Patented Dec. 2, 1873.



Witnesses, Harry Smith
Thomas McIlvain

Chas. H. Landenberger
and Henry Atkinson
by their Attys,
Howes and Son.

UNITED STATES PATENT OFFICE.

CHARLES H. LANDENBERGER AND HENRY ATKINSON, OF PHILADELPHIA, PA., ASSIGNORS TO MARTIN LANDENBERGER & CO., OF SAME PLACE.

IMPROVEMENT IN LOOM SHEDDING MECHANISMS.

Specification forming part of Letters Patent No. **145,216**, dated December 2, 1873; application filed September 25, 1873.

To all whom it may concern:

Be it known that we, CHARLES H. LANDENBERGER and HENRY ATKINSON, both of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Looms, of which the following is a specification:

The object of our invention is to impart a greater variety of movements than usual to a series of heddles operated by the levers of a Crompton or witch loom without increasing the number of said levers.

We attain this object by causing each lever A to impart a rising movement to some of the heddles controlled by it simultaneously with a falling movement to others, the said opposite movements being transmitted from each lever to its heddles through the medium of an endless cord, B, as shown in the elevation, Figure 1 of the accompanying drawing, or through supplemental levers D and E, as illustrated in Fig. 4, or through other equivalent devices. The levers A are controlled in their movements by a pattern chain or cylinder through the medium of a series of jacks and reciprocating frames, the whole constituting the well-known witch movement, which it has not been deemed necessary to illustrate in the drawing.

In an ordinary loom of this class, each lever controls a series of heddles, the whole of which must be moved simultaneously in one direction or the other, so that, in weaving a pattern of a given number of threads in width, each thread or series of threads to be moved simultaneously must be under the control of a separate lever. This necessarily limits the loom to the production of comparatively plain or narrow patterns, twenty to twenty-four levers being as many as can be conveniently worked.

With our invention, which we will now proceed to describe in detail, we are enabled to impart opposite movements to two threads or series of threads with each lever, thus doubling the capacity of the loom for the production of elaborate patterns without increasing the number of levers.

The levers are arranged as closely together

as possible at one side of the loom, and above the warps, in the manner shown in Fig. 2, and to the extremities of the arms of each lever are connected the opposite ends of a cord, B, which extends transversely across the top of the loom, and is sustained and guided by pulleys a , a^1 , a^2 , and a^3 , attached to the loom-frame, or to hangers b secured to the rafters above the loom. (See Fig. 1.)

It will be observed that when the lever is vibrated the portion x of the cord will be moved in one direction and the portion x' in the opposite direction, and, as the connections d with the heddles f and f' are made through these opposite portions of the cord, it follows that the said heddles must also be moved in opposite directions when the lever is vibrated, as indicated by the arrows in Fig. 1.

In the present instance, the lever A is represented as operating four heddles, two of which are raised to the same extent, by the opposite portions of the cord, simultaneously with a corresponding depression of the remaining two; but it will be evident that, by employing the usual comber-boards and other devices well known to weavers, the number of heddles to be operated by a single lever may be increased to any required extent; but, whatever may be the number of heddles, a portion can always be raised simultaneously with the depression of the others.

Our invention is of especial utility in the production of figured shawls and other double-faced goods. In producing the pattern, Fig. 3, for instance, for which forty-eight independently-controlled threads are required, one-half of which appear upon one side of the fabric when the others are upon the opposite side, twenty-four levers will be sufficient, while with the ordinary arrangement the same number of threads would require forty-eight levers, which could not be practically operated.

It is not absolutely necessary, in carrying out our invention, that an endless cord, B, should be employed, as two cords weighted at their ends, or a single weighted cord, might be used in connection with each lever, as indicated by dotted lines in Fig. 1. Another mod-

ification, by which the same result may be attained, is illustrated in Fig. 4. In this case, movement in opposite directions is transmitted from each lever A to two sets of heddles through the medium of supplemental levers D and E and connecting-cords *h*.

We claim as our invention—

A witch loom in which each of the levers A is caused to move two heddles, or two sets of heddles, simultaneously in opposite directions

through the medium of the devices described, or their equivalents, for the purpose specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES H. LANDENBERGER.

HENRY ATKINSON.

Witnesses:

HENRY DORNEMANN,

JOHN F. TAGUE.