

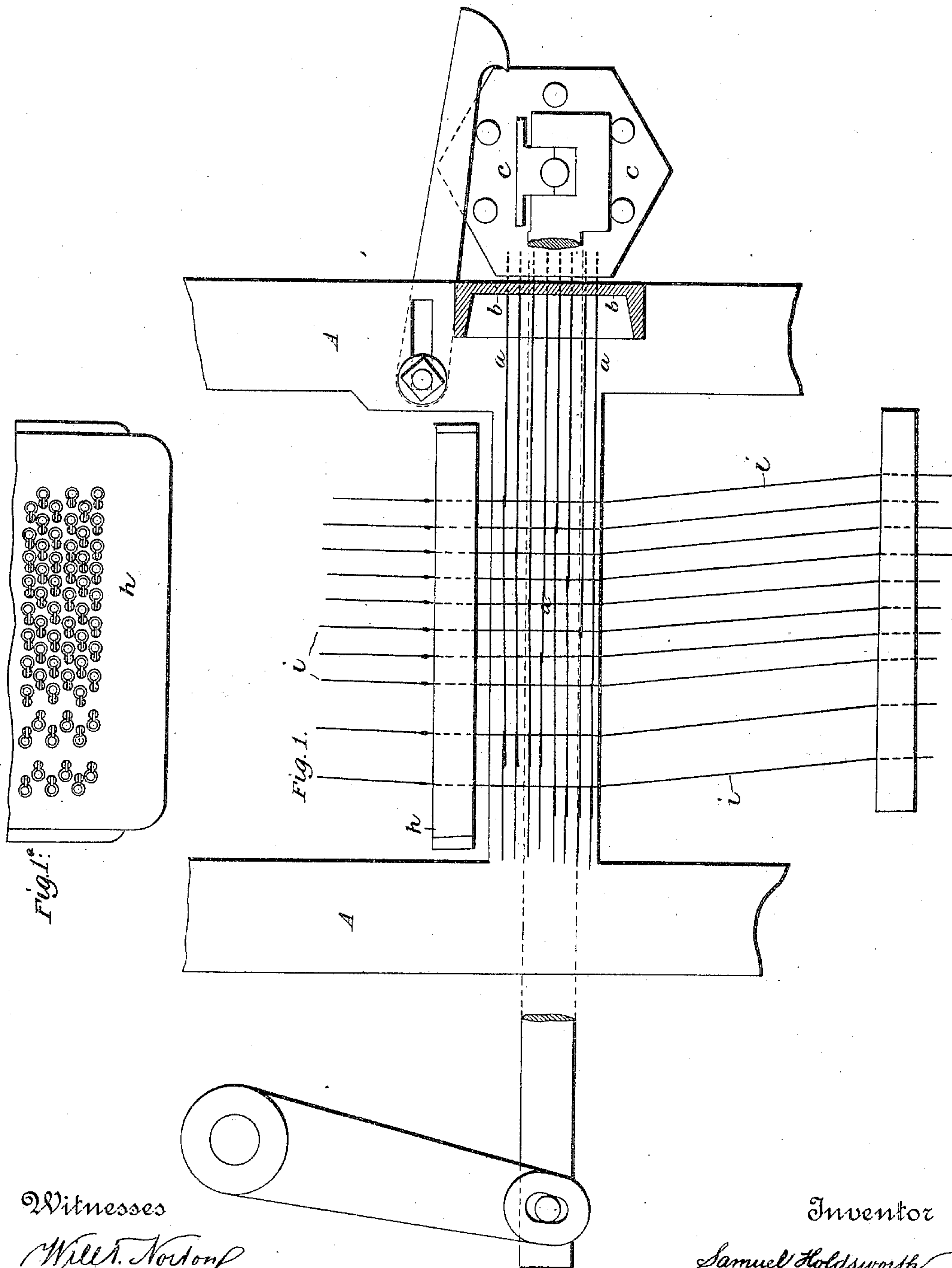
(No Model.)

2 Sheets—Sheet 1.

S. HOLDSWORTH.
JACQUARD APPARATUS.

No. 411,338.

Patented Sept. 17, 1889.



Witnesses

Will. T. Norton

Harry C. Rohrer

Inventor

Samuel Holdsworth

By his

Attorneys

John J. Halsted & Son

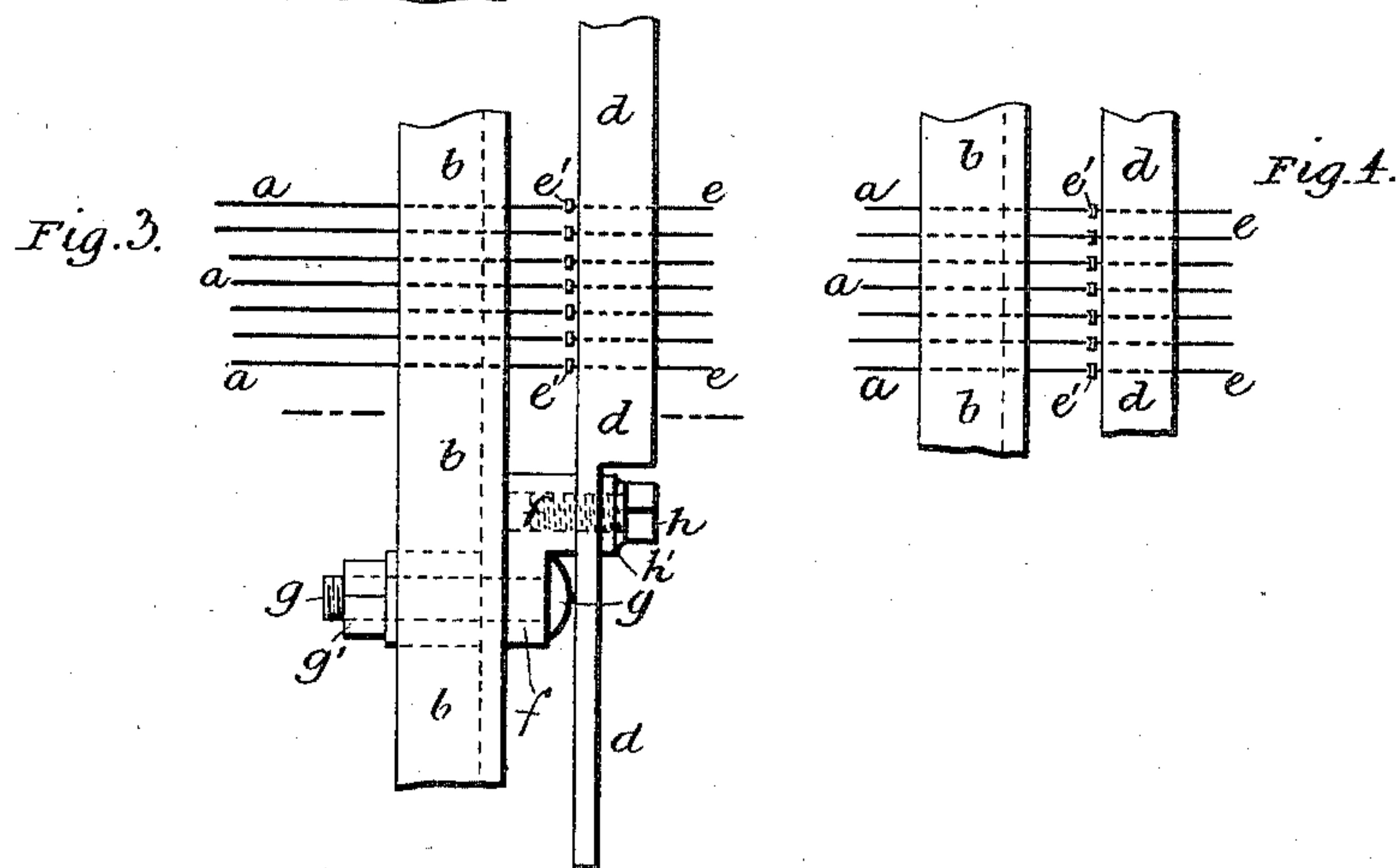
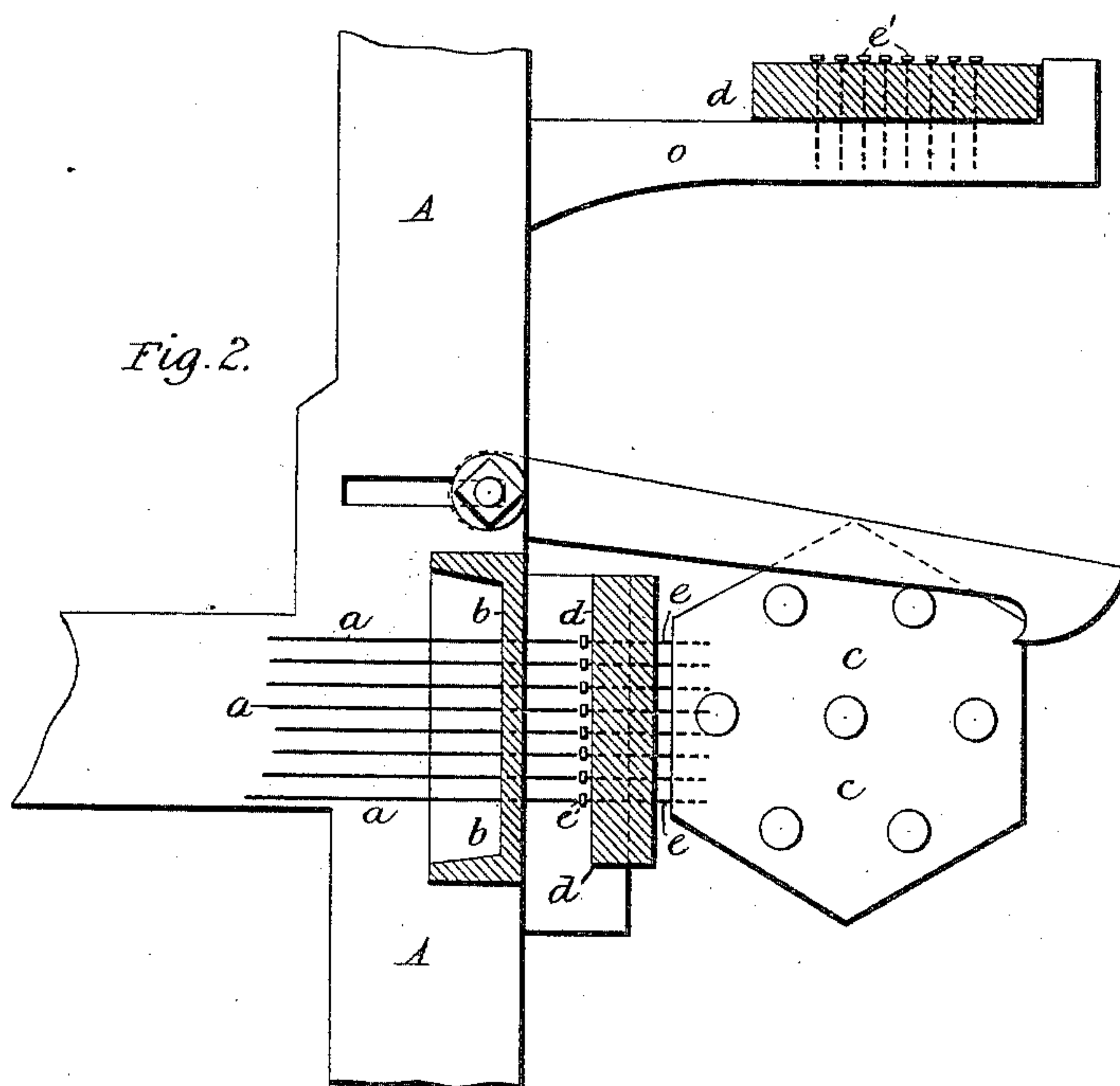
(No Model.)

2 Sheets—Sheet 2.

S. HOLDSWORTH.
JACQUARD APPARATUS.

No. 411,338.

Patented Sept. 17, 1889.



Witnesses

Wm. A. Norton
Harry S. Roberts.

Inventor

Samuel Holdsworth.

By his Attorneys

John J. Maisted & son

UNITED STATES PATENT OFFICE.

SAMUEL HOLDSWORTH, OF DURHAM, ENGLAND.

JACQUARD APPARATUS.

SPECIFICATION forming part of Letters Patent No. 411,338, dated September 17, 1889.

Application filed August 19, 1889. Serial No. 321,279. (No model.) Patented in England July 26, 1888, No. 10,811, and in France August 9, 1888, No. 179,261.

To all whom it may concern:

Be it known that I, SAMUEL HOLDSWORTH, a subject of the Queen of Great Britain, residing in Durham, England, have invented certain new and useful Improvements in Jacquard Apparatus, (for which I have obtained a patent in Great Britain, No. 10,811, bearing date July 26, 1888, and in France, No. 179,261, bearing date August 9, 1888;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in the jacquards as at present in use; and it consists in placing a second needle-support or face-plate directly in front of the customary needle-support, so that an extra set of needles can be carried or supported and guided by the second needle-support or face-plate, with their inner ends to butt against the points or ends of the usual needles, while the outer ends are operated by the cards. If desired to further insure the extra needles correctly butting or hitting against the points of the ordinary needles, I enlarge the inner ends of the extra needles—say like flat-headed pins—or form thereon cup-shaped or cavity sockets to receive loosely the needle ends, or vice versa, or otherwise insure their correct co-operation. The extra needle plate or support is attached to the framing of the jacquard by bolts and nuts or otherwise, so as to be easily removable to enable any of the extra needles to be taken out or put in, as desired, so as to enable me to drop from the surface of the fabric such threads as for the time being may not be required to form the pattern on the surface of the fabric.

In the drawings, Figure 1 shows a side view of part of the framing A of a jacquard sufficient to indicate the arrangement of jacquard cylinder and needles as now commonly used, with needles *a*, supported in the ordinary plate *b*, and operating with the cylinder *c*, but not illustrating my improvement.

Fig. 1^a shows a plan of part of the trap-

board, and Fig. 2 shows a side view of the corresponding parts of a jacquard, but with my invention applied. *a a* are the ordinary needles, *b* the usual supporting-plate, and *c* the cylinder. *d* is the extra support or plate which I interpose, and *e* are the extra or additional part needles, each held therein coincidently with its corresponding ordinary needle *a*, and having the end thereof opposite the end of needle *a*. In this view I have shown the extra needles with flat enlargements or heads *e'*, but these may be shaped as in the detail Fig. 4.

Fig. 3 shows a plan view of Fig. 2, showing how the extra needle-support *d* is held to a bracket *f* at each end, which bracket is bolted to the framing A of the jacquard by the bolt *g* and nut *g'*. *h* is a screw passing into the bracket *f*, and *h'* is a washer interposed between the head of this screw and the supporting-plate *d*, said screw serving to fix the said plate firmly against the bracket when in operation.

In Fig. 2 *o* represents one of two similar brackets or supports, on which may be temporarily placed for convenience the plate *d* while taking out or inserting any of the extra needles, as required.

In Fig. 1 is shown at *h* an end view of the trap-board, and at *i* the harness-cords in their relation to the eyes and loops of the needles *a*.

My invention is applicable mainly to jacquard mechanism for looms for weaving Brussels carpeting or similar fabrics in which warp-threads of one color underlie those of another. In the Jacquard machine of a loom for woven five-frame Brussels carpeting the needles are arranged in sets of four each, each needle having an eye and a loop for the passage of harness-cords. Four of the said cords belonging to four of the five frames pass through the eyes of the needles—one cord to each eye—while the remaining cord pertaining to the fifth frame passes through the loops of all four needles. In the trap-board the key-hole slots through which the harness-cords pass have the narrow portions of those holes receiving the cords which pass through the loops on the side thereof opposite that on which are the narrow parts of the re-

maining slots. By this arrangement, as is well known, when a needle is operated to carry a cord of one of the first four frames into the narrow part of its slot, so as to be
 5 lifted in the rise of the trap-board, the harness-cord of the fifth frame is placed in the wide part of its slot, so as not to be lifted. In weaving six-frame carpeting the needles are similarly arranged in sets of five. With
 10 this arrangement with the usual cards as at present in use—say, for instance, for a six-frame Brussels carpet, and with my invention applied—the same one set of cards serves to produce five different two-frame patterns,
 15 and a variety of effects involving the use of the whole number of frames, or a less number, may be secured simply by the removal of one or more rows of the extra needles. In like manner without the removal of rows of
 20 needles a further variety of effects may be secured through the omission of individual needles. It will be obvious that when an extra needle or row of extra needles is omitted the harness cord or cords passing through the
 25 eye or eyes of the ordinary needles operating in connection with the needles which have been removed will no longer be acted upon so as to cause it or them to be engaged and raised by the trap-board, and consequently the cor-
 30 responding threads will disappear from the face of the fabric, while on the other hand the harness-cords passing through the loops of the same needles will be engaged by the trap-board and the corresponding threads
 35 will appear on the surface of the fabric. This

mode of operation is as is set forth in my application for Letters Patent for improvement in Jacquard mechanism for looms filed September 6, 1888, Serial No. 284,682.

By taking out any one color or any one thread—that is, by causing it to disappear from the surface of the woven fabric—the pattern becomes at once changed, and with a single set of cards hundreds of combinations result and variations in the pattern, the number
 45 of which is practically without limit.

I claim—

1. In combination with the trap-board, the ordinary needles *a*, the harness-cords controlled thereby, and with the cylinder *c*, the
 50 removable extra needles *e* interposed between the cylinder and needles *a*, and having the ends thereof opposite the ends of needles *a*, the combination being and operating substantially as and for the purpose set forth. 55

2. The combination, in Jacquard apparatus for weaving carpets and other woven fabrics, with the trap-board, the ordinary needles *a*, the harness-cords controlled thereby, and with the cylinder *c*, of the removable extra needles
 60 *e* interposed between said needles *a* and the cylinder and having the ends thereof opposite the ends of needles *a*, extra frame plate or support *d* and brackets *f*, and means for securing the plate or support *d* to the bracket, 65
 substantially as and for the purposes set forth.

SAMUEL HOLDSWORTH.

Witnesses:

WILL. T. NORTON,
 ARTHUR H. ABELL.