

(No Model.)

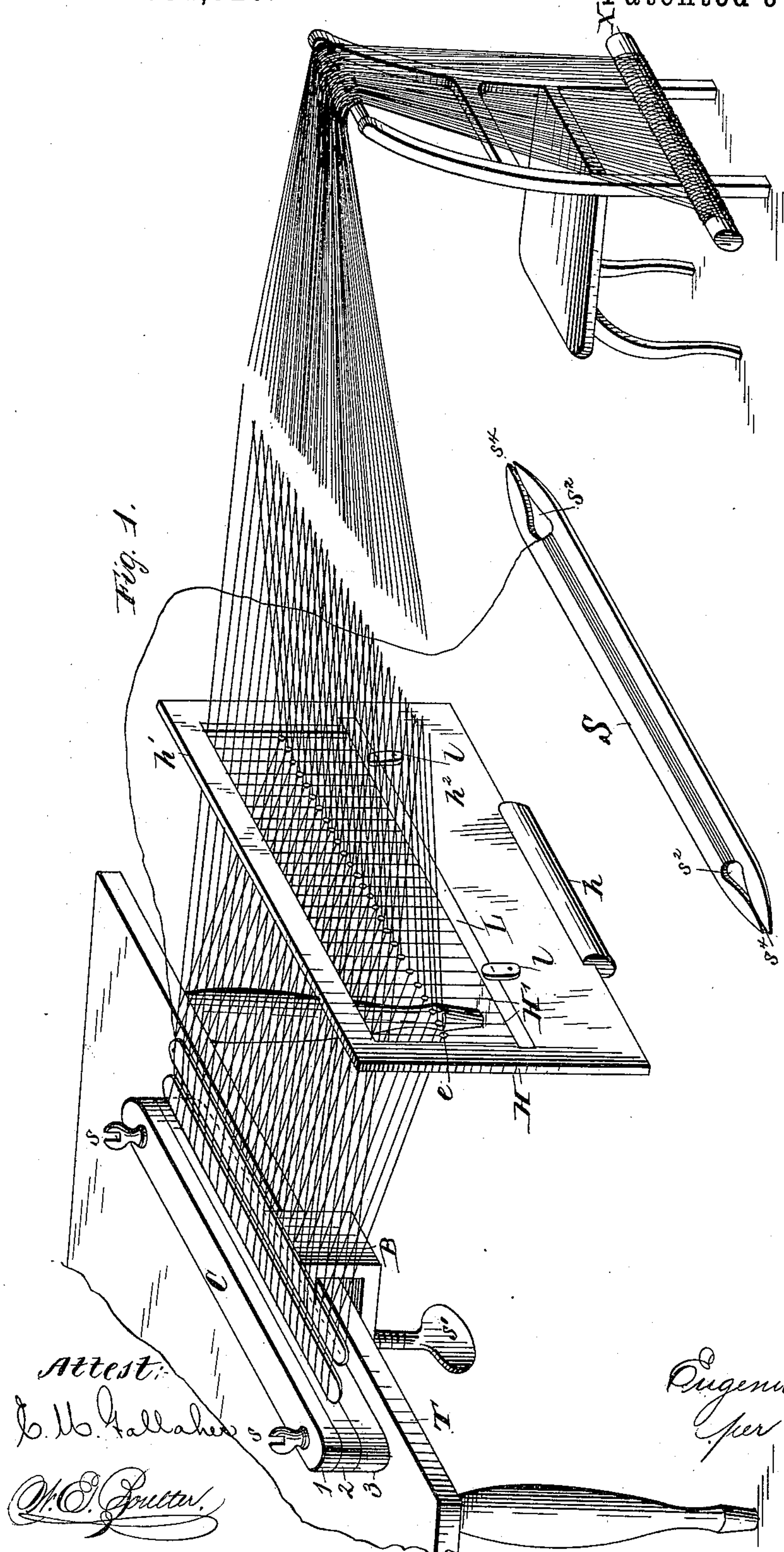
2 Sheets—Sheet 1.

E. WERNICKE.

HAND WEAVING APPARATUS.

No. 334,320.

Patented Jan. 12, 1886.



Inventor:-
Eugenia Kernicke,
per Henry Orth
her atty.

(No Model.)

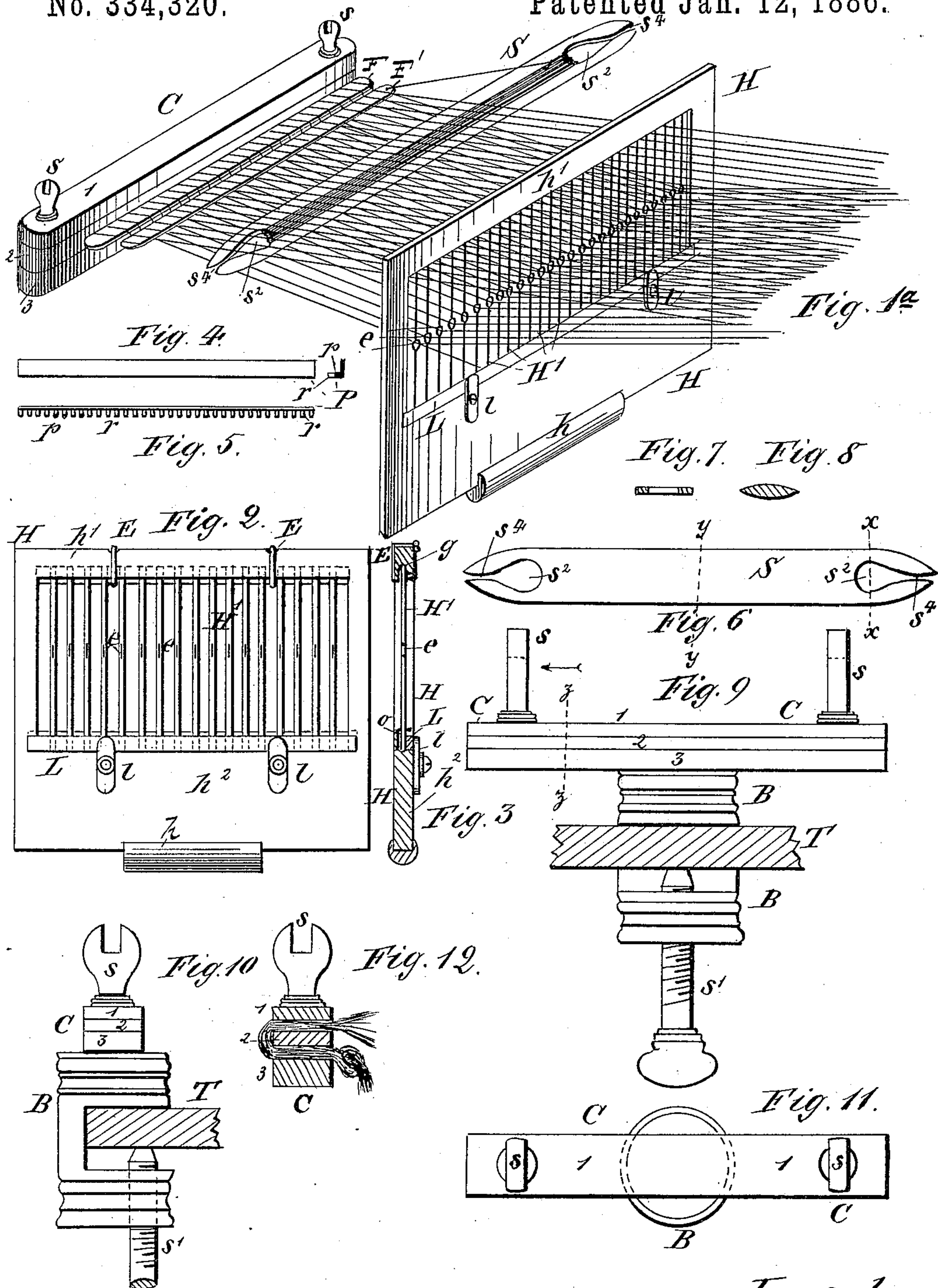
2 Sheets—Sheet 2.

E. WERNICKE.

HAND WEAVING APPARATUS.

No. 334,320.

Patented Jan. 12, 1886.



Witnesses
W. E. Souther.
J. M. Knobloch.

Inventor
Eugenia Herricke
for Henry Orth
her atty

UNITED STATES PATENT OFFICE.

EUGENIA WERNICKE, OF BERLIN, GERMANY.

HAND-WEAVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 334,320, dated January 12, 1886.

Application filed July 24, 1884. Serial No. 138,678. (No model.) Patented in Germany November 22, 1882, No. 22,777, and in England April 17, 1883, No. 1,947.

To all whom it may concern:

Be it known that I, EUGENIA WERNICKE, a subject of the King of Prussia, residing at 7 Bessel-Strasse, Berlin, Prussia, German Empire, have invented certain new and useful Improvements in Hand-Weaving Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as 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 or figures of reference marked thereon, which form a part of this specification.

My invention comprises a combination of devices for weaving by hand, whereby a fabric may be produced without mechanical appliances for moving or reciprocating the heddles, and whereby but one heddle-frame is necessary to form the shed.

The object of this invention is to provide convenient devices for weaving by hand. These devices consist, essentially, of a clamping device for clamping the warp-threads, said clamping device being constructed and adapted to be itself clamped or otherwise removably secured to any suitable fixed support—as, for instance, an ordinary table; of a cross bar or bars, forming a guide against which the weft is beaten up; of a heddle-frame composed of a frame in which are adjustably and detachably secured a series of healds composed of cords or wires, each provided with an eye or loop for the passage of one set of warp-threads, said heddle-frame being provided with a hand-hold, and adapted for operation by hand, and of a shuttle composed of a bar or needle of a lenticular form in cross-section, upon which the weft-thread is wound, and constructed to permit the free unwinding of the weft-thread, substantially as hereinafter more fully described, and shown in the accompanying drawings, in which—

Figure 1 is a general perspective view of my improved hand-weaving apparatus ready for operation. Fig. 1^a is a like view showing the shuttle in the warp, the fixed support, the clamp for securing thereto the devices to which one end of the warp-thread is attached, as well as the support for the other end of the

warp-threads, being omitted to avoid confusion. Fig. 2 is a front elevation of the heddle-frame. Fig. 3 is a vertical transverse section thereof. Fig. 4 shows by a front elevation and transverse section, and Fig. 5 by a top plan view, one of the retaining-plates for the healds of the heddle-frame. Fig. 6 illustrates my improved shuttle. Figs. 7 and 8 are sections thereof on lines *xx* and *yy*, respectively. Figs. 9, 10, and 11 are respectively a front and side elevation and a top plan view of the warp-thread clamp, showing the means for securing the same to a fixed support, the latter being shown in section; and Fig. 12 is a transverse section of the warp-thread clamp on line *zz* of Fig. 9, looking in the direction of the arrow.

Like letters represent like parts whenever such occur in the several figures of the drawings.

C is a clamping device composed of three clamping-bars, 1 2 3, secured together by means of screws *s*, that work in threaded openings formed in said bars near their ends. Centrally of the bar 3 is secured a clamping-bracket, B, Figs. 1, 9, and 10, whereby and a clamping-screw, *s'*, the clamp C is secured to any suitable fixed support—as, for instance, a table, T. To this clamp is secured one end of the warp-threads. The heddle-frame, Figs. 1, 2, 3, is composed of a frame, H, provided at its lower edge with a hand-hold, *h*, the healds H' being preferably made of wire, each provided midway of its length with an eye, *e*, for the passage of one set of the warp-threads.

Instead of making the healds of wire, cords may be employed; but these should be strung on the heddle-frame in any suitable manner so as to be very taut.

As the heddle-frame is to be operated by hand it is necessary that the healds should be more or less rigid, and for this reason I prefer to make the healds H' of wire.

In order to adapt the apparatus for weaving fabrics of different texture, I connect the healds H' with the heddle-frame H in such manner as to enable them to be readily removed and the number of healds to be varied according to the width and texture of the fabric to be

produced. This I preferably effect as follows: The upper cross-bar, h' , of the heddle-frame has in its under side a groove, g , that extends from one end of the cross-bar to the other. The lower cross-bar, h^2 , of the frame has an offset, o , that extends also from end to end of said cross-bar.

P, Figs. 4 and 5, is an angle bar or plate, the horizontal portion p of which is provided with a number of notches or recesses, r , forming a rack. One of these plates P is secured in the groove g and the other to the shoulder of the offset o , with their racks projecting horizontally and parallel to each other, the interspaces of the racks lying in the same vertical planes. The plate P of the upper cross-bar is secured in proper position by means of stirrups E, and the plate on the lower cross-bar by means of a locking-bar, L, held in position by pivoted latches l , Figs. 1^a, 2, and 3. By means of this arrangement any desired number of healds may be employed, said healds being detachably connected with the heddle-frame, as described.

A number of rack-plates, P, each differing from the others in the number of notches for the healds, may be used, and interchangeably connected with the heddle-frame, according to the number of healds it is desired to employ.

The shuttle S, Figs. 1, 1^a, 6, 7, and 8, is of lenticular form in cross-section and flattened out and made tapering at its extremities. It is provided at each end with an eye, s^2 , of considerable diameter and semi-cylindrical at the rear, thence converging on curved lines toward the point or end of the shuttle, and terminating in a slit, s^4 . Near the point of the shuttle the walls of the slit s^4 diverge to facilitate the passage of the weft-thread, which is wound on the shuttle the same as the cord or thread in a netting-needle. By means of this construction of shuttle the points thereof are not encumbered by the weft-thread, and the shape of the shuttle-body and its points is such as to facilitate the throwing or passing of the same through the shed.

The operation of the devices may be briefly explained as follows: The clamp C being secured to a table, one end of the bunch of warp-threads is tied together by a thread or cord, then clamped between the bars 1, 2, and 3 of the clamp C, as shown in Fig. 12. The threads are then separated and passed over and under the cross-bars F F', Fig. 1^a. From this point the threads are divided into two sets—one passing through the eyes e of the healds and the other between said healds alternately, as shown in Fig. 1, the other ends of the warp-threads being tied to or wound on a bar or rod, which may be hung over a suitable support—as, for instance, the back of a chair, as shown in Fig. 1. The loom is now mounted and ready for weaving. The shuttle is filled with weft-thread, the end of which is tied to a cross-bar, F', or to a warp-thread, the cross-bars serving here as a guide against which the

weft is beaten up, the heddle-frame being held in the left and the shuttle in the right hand.

By alternately lowering and raising the heddle-frame that set of warp-threads that is passed through the heald-eyes is raised and lowered with it, thus crossing the warp-threads to form the shed, through which the shuttle and weft-thread are passed each time the heddle is raised or lowered, the weft being beaten up by means of the shuttle, which for this reason has its body of lenticular form in cross-section, to facilitate the beating up of the weft against the cross-bar F', the general operation, as will be seen, being substantially like that of an ordinary loom. When a certain length of fabric has been woven, the warp-thread ends are removed from the clamp C and the fabric is clamped therein.

By means of the described devices patterns may be woven by passing the shuttle over or under single threads of the shed, instead of passing it through the open shed, and in this manner various patterns may be woven by hand.

Several shuttles, each filled with thread of different color, may be used in conjunction with a multi-colored warp for weaving colored patterns.

Having thus described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a holder for one end of the warp-threads, a clamping device for securing said holder to a fixed support, and a holder for the other end of the warp-threads, of one or more bars adapted to be inserted in the warp, to serve as a guide against which the weft is beaten up, a heddle-frame constructed to be held in and operated by hand, and a shuttle, also constructed to be operated by hand, said devices constituting a hand-weaving apparatus, substantially as described.

2. The combination, with a fixed support for one end of the warp-threads, and a free support for the other end of said warp-threads, of one or more bars adapted to be inserted in the warp, to serve as a guide against which the weft is beaten up, a heddle-frame constructed to be held in and operated by the hand, and a shuttle, also constructed to be operated by hand, substantially as and for the purpose specified.

3. The combination, with a fixed support for one end of the warp-threads, and a free support for the other end of said threads, of one or more bars adapted to be inserted into the warp, and to serve as a guide against which the weft is beaten up, a heddle-frame constructed to be held and operated by hand, and a shuttle of lenticular form in cross-section, operated by hand to pass the weft-thread through the warp and for beating up the lay, substantially as described.

4. The holder or clamping device for one end of the warp-thread, consisting of the clamp-

ing-bars 1 2 3, the latter being provided with a screw-clamp or clamping-bracket, B, and the screws s, said parts being constructed for operation substantially as and for the purpose specified.

5 5. The heddle-frame consisting of a rectangular frame, H, the upper cross-bar, h' , of which is provided with a groove, g , in its under side, and the lower cross-bar, h^2 , with
10 an offset, o , in combination with the rack-bars P, rectangular in cross-section, the healds H', the stirrups E, the locking-bar L, and locking-latches l, substantially as and for the purpose specified.

6. The herein-described shuttle, the body 15 of which is of lenticular form in cross-section, having slitted points, the slit of which terminates in an eye, s^2 , substantially as and for the purpose specified.

In testimony whereof I affix my signature 20 in presence of two witnesses.

EUGENIA WERNICKE.

Witnesses:

A. DEMELIUS,
B. ROY.