

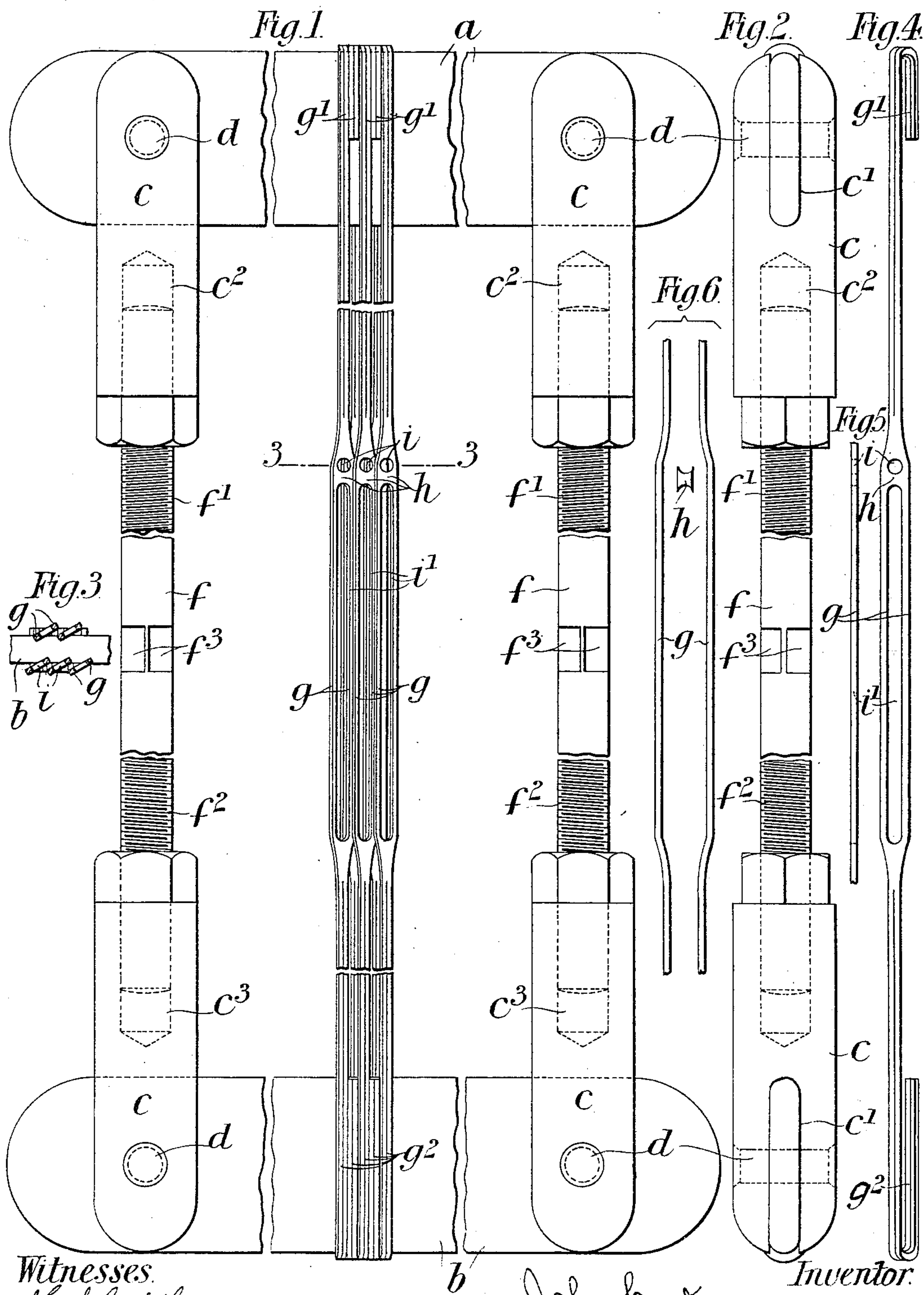
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Patented Sept. 12, 1899.

J. COCKER.
HEDDLE FOR LOOMS.

(Application filed Apr. 27, 1899.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN COCKER, OF HALIFAX, ENGLAND, ASSIGNOR OF TWO-THIRDS TO JOHN CROSSLEY & SONS, LIMITED, AND MATTHEW GRAHAM DOBSON, OF SAME PLACE.

HEDDLE FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 632,834, dated September 12, 1899.

Application filed April 27, 1899. Serial No. 714,706. (No model.)

To all whom it may concern:

Be it known that I, JOHN COCKER, a subject of the Queen of Great Britain, residing at Halifax, England, have invented new and useful Improvements in Healds or Heddles for Looms for Weaving, (for which I have applied for a patent in Great Britain, No. 15,860, dated July 20, 1898,) of which the following is a specification.

10 This invention relates to improvements in healds or heddles for looms for weaving, and comprises improvements in heald-frames, whereby they are more easily adjusted than hitherto, and also improvements in mail or
15 heald wires, as hereinafter more particularly described.

In the accompanying drawings, Figure 1 is a front elevation of a portion of a heald-frame having my improvements applied thereto.
20 Fig. 2 is a side elevation thereof. Fig. 3 is a section on the line 3 3, Fig. 1. Fig. 4 is an elevation of a mail or heald wire constructed according to the invention. Fig. 5 is a view of a portion of one of the said wires seen at
25 right angles to Fig. 4, and Fig. 6 is a view illustrating the parts from which my mail or heald wires are made.

In carrying out my improvements in heald-frames the top and bottom shafts *a* and *b*, respectively, of the heald-frame are provided at
30 their ends with connections *c c*, which are slotted at their outer ends, as shown at *c' c'*, the slotted ends being passed over the extremities of the shafts and hinged thereto by
35 means of the rivets *d d*. The inner ends of the said connections *c c* are provided with screw-threaded holes *c² c³*.

f f are rods, the extremities of which are formed respectively, with screw-threads *f' f²*
40 and are adapted to enter the screw-threaded holes *c² c³*, formed in the connections *c c*. The screw-threads *f' f²* and the female threads in the holes *c²* and *c³*, corresponding therewith, are respectively right and left hand. With
45 this arrangement by turning the rods through the medium of a key and the flats *f³ f³* upon the rods it will be obvious that the top and bottom shafts *a* and *b* will be moved toward
50 or away from one another according to the direction in which the rods are turned.

My improved mail or heald wires are formed of two wires *g g*, (see Figs. 4, 5, and 6,) each extending from one end of the device to the other. The end portions of the wires lie parallel and close together and are secured
55 together by brazing in the usual way. The central portions of the two parallel wires are bent outwardly away from each other to form an elongated slot, and between the two parallel wires I insert a bit or cross-bar *h*, of steel
60 or other metal, which is preferably located near one end of the slot and divides it into a substantially circular aperture *i* and an elongated aperture or slot *i'*, thus forming a combined heald-wire and double mail. It will be
65 obvious that I may locate the bit *h* at any desired point between the laterally-bent portions of the wires, and thus make the apertures *i i'* above and below the same both elongated, if desired. The bit *h* is secured be-
70 tween the wires by brazing or otherwise, and the V-shaped spaces at the points where the wires separate at each end of the laterally-bent portions are filled with metal, as shown, to prevent the threads from becoming wedged
75 therein.

The ends *g' g²* of the wires are bent over so as to form hooks, as usual; but the upper hook *g'*—that is to say, the hook which engages with the top shaft *a* of the heald-frame—is
80 made shorter than the hook *g²*, which engages with the bottom shaft *b* of the said frame. The said hooks *g' g²* are also turned slightly to one side, as indicated in Fig. 4, so that the wires forming each side of the mails are not
85 equidistant from the front of the loom, thus allowing as much room as possible for the warp-threads to pass between the heald-wires, this arrangement being clearly seen from Figs. 1 and 3 of the drawings.
90

With this construction of heald-frame and heald-wires any one wire can be taken off and put on without the remaining wires being detached from the shaft. To this end the rods
95 *f f* of the frame are turned, as above mentioned, so as to bring the top and bottom shafts *a* and *b* sufficiently near to one another to allow a sufficient portion of the hook *g²*, engaging the bottom shaft *b*, to be below
100 the said shaft. The wire can then be lifted

and taken off the top shaft *a* and the frame adjusted to its normal position.

By the use of my improved heald-wires there is much less friction than usual upon
5 the warp-threads which pass between the heald-wires in weaving, owing to the more pointed ends at the top and bottom of my double mails and the absence of any notch or indentation at the junction of the mails, and,
10 further, the wear at the lower part of the upper or circular mail is diminished by my bit or bar.

Having now particularly described and ascertained the nature of my said invention and
15 in what manner the same is to be performed, I declare that what I claim is—

1. A heddle comprising among its members parallel supporting-bars, a series of heald-wires each composed of two parallel wires
20 having their end portions joined and formed into hooks engaging the said bars, and their central portions separated to form an aperture for the passage of a warp-thread, the hooks at one end of said wires being shorter
25 than those at the other end, and adjustable devices for forcing said parallel bars apart, whereby one of said heald-wires can be removed or replaced without disengaging the others, substantially as described.

30 2. A heddle comprising among its members

parallel supporting-bars, a series of heald-wires each composed of two parallel wires, having their ends united and formed into hooks to engage said bars, and their central portions separated and provided with a trans- 35 verse bit, dividing the slot formed between said separated portions into two parts, the hooks engaging the upper bar being shorter than those engaging the lower bar, and adjustable devices connecting said bars, sub- 40 stantially as described.

3. A heald-wire composed of two parallel wires having their end portions secured together and their central portions separated to form a slot and a transversely-extending 45 bit connecting said separated portions of said wires between the ends of said slot, substantially as described.

4. A heald-wire composed of two parallel wires, having their end portions united and 50 formed into hooks, and their central portions separated to form a slot, and a transverse bit or cross-bar connecting said separated portions of said wires and dividing said slot into two parts, substantially as described.

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Witnesses:

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