

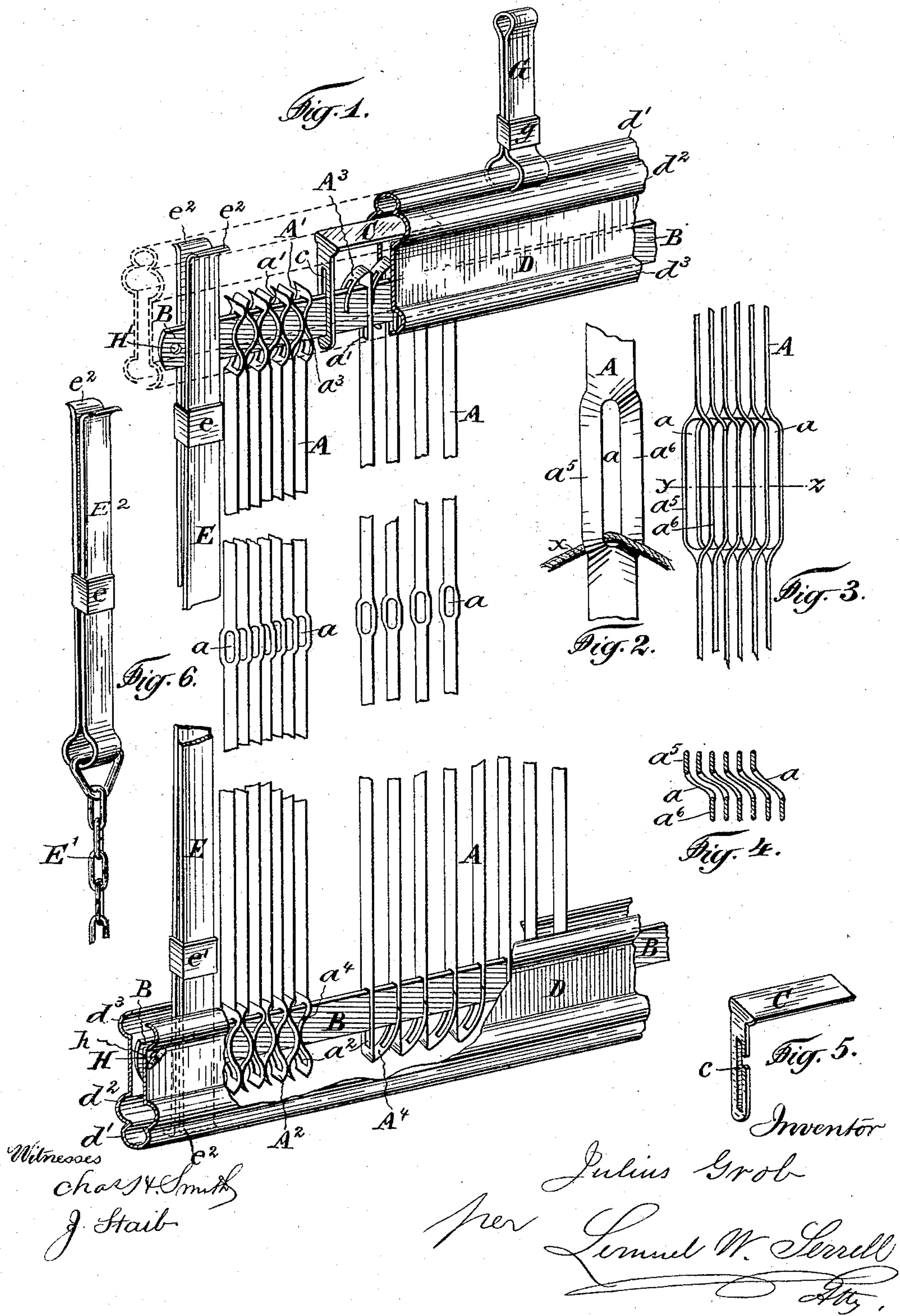
(No Model.)

J. GROB.

HEDDLE AND HEDDLE FRAME FOR LOOMS.

No. 489,631.

Patented Jan. 10, 1893.



UNITED STATES PATENT OFFICE.

JULIUS GROB, OF HORGEN, SWITZERLAND, ASSIGNOR TO GROB & CO.,
OF SAME PLACE.

HEDDLE AND HEDDLE-FRAME FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 489,631, dated January 10, 1893.

Application filed May 28, 1892. Serial No. 434,749. (No model.)

To all whom it may concern:

Be it known that I, JULIUS GROB, of Horgen, canton of Zurich, Switzerland, have invented certain new and useful Improvements in Heddles and Heddle-Frames for Looms, of which the following is a specification.

The invention consists of an improved heddle frame or harness in which the heddles are made of flat metallic blades or bands having their middle parts formed to an eye as it will be described below, and their ends formed so as to act as springs against the ends of the neighbor heddles in view of maintaining the said heddles to a uniform tautness throughout the length of each bar of the frame.

The invention further concerns a new and improved disposition of those bars forming the upper and lower parts of said frame and of the adjustment of the endrods enframing the heddles to the said bars.

In the accompanying drawings Figure 1 is a perspective view of a loom harness of my system in which some parts are broken off to clearly show the interior devices and in which two different forms of heddles are shown. Fig. 2 shows in side elevation and at an enlarged scale, how the eyes a are formed in the heddles A. Fig. 3 is a front elevation of a series of such heddles at the same enlarged scale. Fig. 4 is a section through the line Y Z of Fig. 3. Fig. 5 shows separately and in perspective view one of the supports C. Fig. 6 shows another form of the end bars E.

In all the figures the same letters of reference refer to the same parts.

The heddles A are made of a metallic blade or band preferably of steel, of suitable length, having both ends provided with a suitable slit or mortise a' or a^2 to engage the upper and lower cross-rods B which run through all the heddles of the harness as shown in Fig. 1. The said ends of the heddles A are moreover bent either as shown at A' and A^2 , Fig. 1, or as shown at A^3 and A^4 in the said Fig. 1, or in any suitable manner whatever, so as to have those heddles A bearing with a spring shaped part of their ends the one against the other, thus insuring a regular tautness of the heddles in the harness. The said heddles A are formed at a suitable height, that is to say approximately at half of their length with an eye a

substantially as shown in Fig. 2. The said eye a is a slot of suitable length made in the blade or band A, and by bending the one half of the metal a^5 in one direction and the other half a^6 in the opposite direction, out of the plane of the band A (see Figs. 2, 3 and 4). The edges of the eye a are suitably rounded and smoothed, the thread x passes through the same as shown in Fig. 2, and will be guided with very little friction and, as it will be seen by Figs. 3 and 4, the heddles may be drawn very taut the one to the other without any interference of the one with the other.

In view of replacing the one or the other of the heddles in the harness without disconnecting the whole device, one may cut the upper and lower end of such a heddle as shown at a^3 and a^4 in Fig. 1, and by bending somewhat the whole device such a heddle will easily be removed from the rods B and replaced by a new one. The rods B are connected to the hollow bars D, which are made of a slit tube having suitable embossments or longitudinal ribs d' , d^2 , d^3 extending throughout their whole length, by means of a suitable number of supports or bearings C, Fig. 5, formed of two arms at right angle the one to the other, the one arm being of suitable breadth to slide within the embossments (for instance in d^2) and the other arm being provided with a slot c through which passes the rod B. The slotted arm of the piece C has a lateral opening so as to be slipped upon the rod B without withdrawing the heddles A which might already be threaded upon the same. The ends of the hollow bars D and of the rods B are provided with corresponding holes H and H' through which are engaged suitable bolts or screws h .

The endbars E of the harness are provided with suitable lateral projections e^2 which engage one of the ribs, for instance the interior of the rib d' . The said endbars E are intended to maintain the heddles A at a suitable tension upon the rods B and these end bars are provided with two, or more sliding buckles e e' . When the buckles or bands e e' are slid along on the bars E close to the rods B they will cause the divergence of the ends of the said bars E and the projections e^2 of those ends will be pressed thereby firmly into the interior of the ribs d' , the rod B be-

ing at the same time firmly clasped between the bars E.

To facilitate the lateral spreading of the heddles A, if such spreading is necessary in using the harness, the end bars will preferably be made as shown in Fig. 6, with a chain or other suitable connection E' between the upper and lower bars E².

For the suspension of the heddle-frame in the loom there are provided one or more harness clutches G embracing one or more of the ribs *d'* *d*² &c. of the bar D and provided with a sliding buckle or band *g* by means of which said clutch may be closed or released.

The whole device may suitably be plated, tinned or galvanized to be preserved from rust.

Having thus fully described my invention, I claim:

1. The heddles A. of flat metallic blades formed with mortises and springs near the ends, the springs at the ends of one heddle bearing against the ends of the adjacent heddles, substantially as set forth.

2. The combination with the heddles having central eyes, end mortises and springs near the ends, the springs of one heddle bearing against the ends of the adjacent heddle to keep them apart, of bars passing through the mortises of the heddles, the inclosing metallic tubular bars having longitudinal ribs, and angular supports C. mortised for the bars and passing within the longitudinal ribs of the tubular bars, substantially as set forth.

3. The combination with the heddles hav-

ing end mortises, and contiguous springs to separate the heddles of bars B passing through the mortises, the end bars E adapted to receive the bars B and the bands *e* upon the end bars E for clamping the bars B, the inclosing tubular bar D having longitudinal ribs into which the ends of the bars E are received, substantially as set forth.

4. The combination with the heddles having mortises near their ends and contiguous springs, of the bars B passing through the mortises, the supporting pieces C through which the bars B pass, the tubular bars D having longitudinal ribs and receiving within them the ends of the heddles, the bars B and the supports C, the end bars E and their sliding bands *e*, adapted to pass at opposite sides of the bars B and having outwardly turned ends *e*² for passing within the longitudinal ribs of the bars D, substantially as set forth.

5. The combination with the heddles having central eyes and end mortises and adjacent springs, of the bars B passing through the mortises of the heddles, the inclosing tubular bars D having longitudinal ribs, and the harness clutches G adapted to grasp the ribs of the bars D, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JULIUS GROB. [L. S.]

Witnesses:

ALFRED STIEFEL,

GOTTFRIED ASCHMANN.