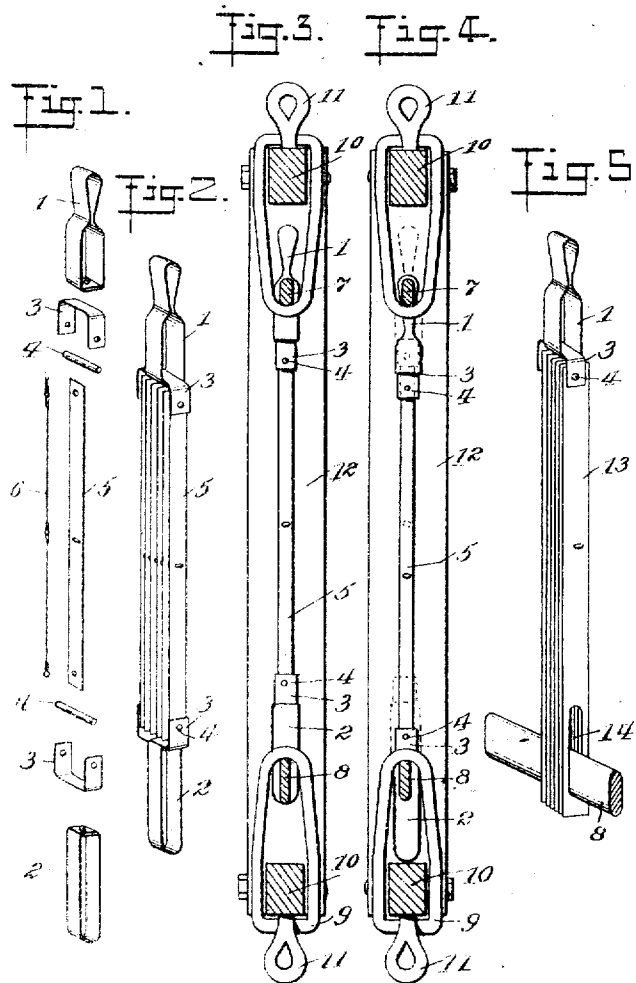


G. H. MAY.
 HEDDLE FOR WIRE WEAVING.
 APPLICATION FILED APR. 20, 1911.

1,023,263.

Patented Apr. 16, 1912.
 2 SHEETS-SHEET 1.



WITNESSES
Edwin J. May
Y. L. O. Smith

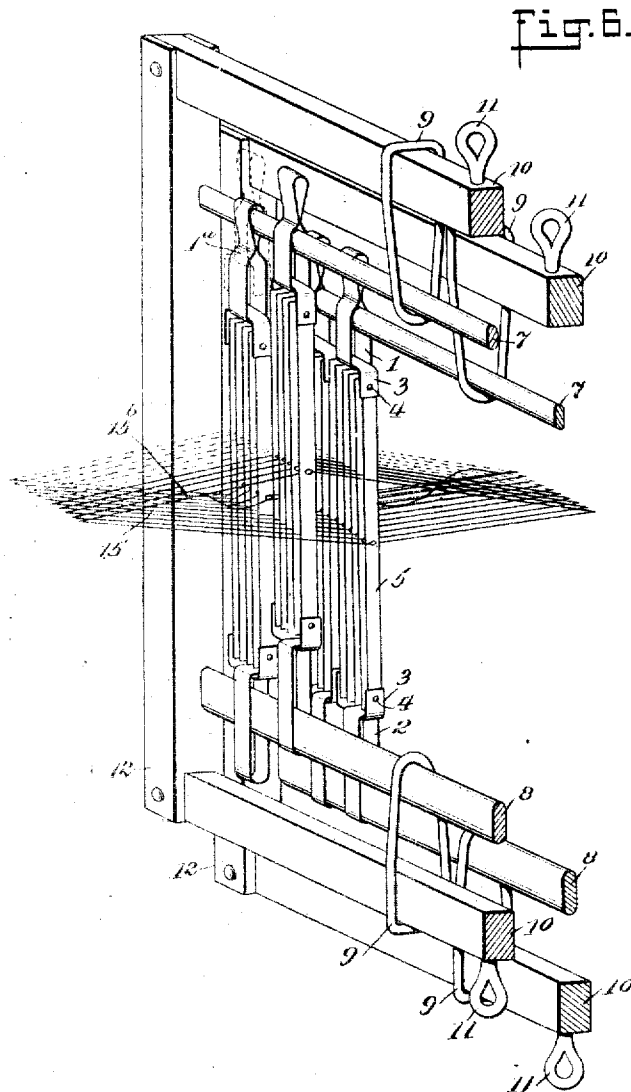
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HEDDLE FOR WIRE-WEAVING.

1,023,263.

Specification of Letters Patent.

Patented Apr. 16, 1912.

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To all whom it may concern:

Be it known that I, GEORGE H. MAY, a subject of the King of Great Britain, and residing at Parkhead, Glasgow, in the county of Lanarkshire, Scotland, have invented certain new and useful Improvements in Heddles for Wire-Weaving, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in heddles for wire weaving, and has for its object the prevention of the accidental cutting of the warp, and "slacks" which occur whenever a broken thread, or any obstruction hinders the free passing of the heddles.

In arranging the harness frames of wire weaving looms it has been heretofore customary to string the heddles on to rods continuously, the said rods being afterward fixed rigidly to the staves of the harness frames, this is a very undesirable arrangement for owing to the rigidly fixed heddles having no resiliency apart from the frames, whenever a warp thread breaks and becomes interlocked in the reciprocating sheds, the result is, either a cutting of the warp threads, or else what is termed a "slack" sometimes both occur.

Various attempts have been made to remedy the above mentioned defects, such as by suspending the heddles from the harness frames, by means of lengths of thread attached to the top of each heddle, with a weight at the bottom. Also in order to try and obtain sufficient resiliency in the heddles, they have been strung on to india rubber tubing, fixed to the upper and lower outside edge of the harness frames, the results obtained from these attempts have so far been very unsatisfactory, for whenever a warp thread broke and crossed the shed it held it with the interlocked warp threads midway between the higher and lower plane of the shed, immediately in the path of the shuttle, and it in its flight usually cuts away the interlocked warp threads, thereby causing much damage to the web.

This invention has accordingly the one object, the production of a novel and effective means of preventing accidents of this nature, wherein instead of fixing the heddles rigidly to the harness frames, I suspend them on cross bars in a series of independent sections or units, preferably by means of a thin me-

tallic spring clip, that will so yield as to allow each section under abnormal working conditions, a limited vertical movement independent of that of the harness frames.

The invention is fully disclosed in the following specification of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a perspective view of the separate parts of one of my improved heddle sections or units and showing said parts in position to be connected; Fig. 2 a perspective view of a heddle section or unit complete; Fig. 3 a sectional view cutting the staves of the harness frame transversely and also cutting the bars on which the heddle sections or units are mounted transversely, and showing one of the heddle sections or units in side elevation, and also showing one of the end members of the harness frame; Fig. 4 a view similar to Fig. 3, but showing the heddle section or unit in a different position; Fig. 5 a perspective view of a heddle section or unit complete and showing a modification thereof and showing one of the bottom cross bars of the harness frame, and; Fig. 6 a perspective view of parts of the harness frame complete and showing a number of my improved heddle sections or units in operative position and indicating the operation thereof.

In the practice of my invention I provide a heddle section or unit shown complete in Fig. 2 and the details of which are shown detached in Fig. 1, and in the construction of these heddle sections or units I provide a top oblong spring link-shaped clip 1 made out of thin metallic flat stock and the sides of which, in the form of construction shown, are bent inwardly to divide said clip into top and bottom parts or loop members, the ends of the stock or flat strip from which the clip is made being connected or joined at the bottom thereof by solder or a rivet as may be desired. I also provide a bottom oblong link member 2 preferably made out of similar material, and the ends of which are joined at one end in the same manner, together with two yoke-shaped devices 3—3 made out of similar flat stock and bent into the required form as shown and provided with holes which are drilled in the side arms thereof, said holes being adapted to receive pins 4—4 on which either the flat metallic

heddles 5, or the round twisted wire heddles 6 are strung, after one of the yoke members 3 is linked into the spring clip 1 at one end of the device and the other yoke member is linked into the oblong link member at the other end of the device. For a better illustration of my invention I prefer to show the heddle sections or units as being formed in connection with the flat metallic heddles 5, although the wire heddles 6 are equally applicable.

In Fig. 2 one of the heddle sections or units is shown complete and ready to be placed on the top and bottom cross bars 7 and 8 of the harness frame, and the bottom link member 2 is so formed as to provide it with a limited vertical movement relative to the cross bar 8 on which it is mounted, and as shown in Figs. 3 and 4 in which the main top and bottom staves 10 of the harness frame are shown together with one of the end uprights or members 12 together with the top and bottom cross bars 7 and 8 and the method of connecting them with the top and bottom staves 10 of the harness frame.

In Fig. 4 I have shown one of the heddle sections or units in the abnormal position it assumes as a result of having yielded under abnormal strain thrown thereon and dropped into its lowest position on the top and bottom cross bars 7 and 8 in which position the top cross bar 7 enters the upper end portion of the clip device 1.

The construction shown in Fig. 5 is a modification of one of the heddle sections or units in which the link attachments 2, 3 and 4 are omitted, while the lower ends of the heddles 13, which are the same as the heddles 5 shown in other figures of the drawing, are provided with longitudinal slots 14 through which the bottom cross bar 8 passes and this construction as will be understood, permits of a vertical movement of the heddle sections or units similar to that provided for in the construction shown in Figs. 1 to 4, inclusive, and hereinbefore described.

In Fig. 6 of the accompanying drawing I have shown portions of two harness frames complete with a number of my improved heddle sections or units in position for use and, with the warp 15 drawn in and supported on the cross bars 7 by means of the yielding spring clips 1 at one end, and the metallic links 2 on the cross bars 8 at the other, the overhead rockshaft with its flexible connections as well as the treadle connections are not shown, but means to connect the same are provided for by the affixed eyebolts 11 in the top and bottom staves 10 of the harness frames, the said frames are in turn loosely connected to the heddle supporting bars 7 and 8 by means of a sufficient number of metallic sliding links 9. The back descending frame with two of my im-

proved heddle sections or units thereon, is shown as having taken the shed down to the lower plane, the front ascending frame likewise with two of said heddle sections or units thereon, is shown as having risen only one section to the higher plane, the adjacent section owing to the abnormal strain thrown on to its spring clip 1, through the interlocking of the broken warp thread 15, is shown as having been arrested in its upward path and left its normal dotted line position and been carried downward with the interlocked warp threads 15 and 15* by the oppositely moving frame to the plane of the lower shed as shown. The spring clips are so adjusted as to possess just sufficient power to raise the shed to the higher plane with the warp working at normal tension but should the tension increase through the aforesaid interlocking of the sheds by a broken warp thread, the abnormal strain thrown on to the spring clips as already described and shown, will cause them to leave their normal position on the supporting bars, and be carried downward with the sections of heddles they contain, to the lower plane of the oppositely moving shed, thereby preventing all damage to either the warp or woven cloth. The attendant immediately he notices the interlocked and released section, or sections, stops the loom, replaces the section, or sections, by means of their spring clips again on to the cross bar, pieces up the broken warp thread, the loom is then ready to start again.

I do not comprise in my invention the use of any particular form of heddles, the ordinary wire, or flat metallic heddles, as well as those I may specially construct, are equally applicable to form my yielding heddle sections or units. I may in some special cases modify the precise construction and arrangement of parts herein shown, but without any intention of departing from the spirit and scope of the invention, nor yet do I wish to confine myself in all cases to employ my invention in the upright position as shown in the drawings, for the whole arrangement of my invention is equally adapted to work in a loom in either an upright or an inverted position, it being understood that the movement of the heddle sections or units on the bars 7 and 8 of the harness frames on which they are mounted is a longitudinal movement in the plane of said frames no matter whether said frames be in a vertical or a horizontal position, and it will also be seen that by reason of the formation of the end clips 1 of the heddle sections or units the said sections or units are tensionally held in their normal position and are automatically thrown out of said position by abnormal or unusual strain thrown thereon in the operation of weaving. Having fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is:—

1. A heddle section or unit for wire weaving, adapted to be mounted on cross bars connected with harness frames, said heddle section or unit comprising a plurality of heddles provided at their ends with oblong link or clip connections through which said bars pass, one of said clip or link connections being formed of spring material and the sides thereof being provided with inwardly directed parts whereby it is divided into two portions.

2. A heddle section or unit for use in wire weaving, said section or unit comprising a plurality of heddles placed side by side, yoke-shaped members pivoted to the opposite end portions thereof and oblong link or clip members connected with said yoke-shaped members, one of said link or clip members being composed of spring material and the sides thereof being provided with

inwardly directed portions whereby it is divided into two parts.

3. The combination with the crossbars of a wire weaving harness frame of vertically movable heddles mounted thereon, said heddles being provided at their upper end with oblong link members of spring material through which the upper crossbars pass, the sides of said link members being curved inwardly so as to divide the same into two portions whereby said members are adapted to hold said heddles in two different positions.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this tenth day of April, 1911.

GEORGE H. MAY.

Witnesses:

OLIVER MAY,
JOHN GEMMELL.