No. 647,854. Patented Apr. 17, 1900.

D. J. MACDONALD.

LOOM FOR WEAVING NARROW FABRICS.

(Application filed June 21, 1898.)

(No Model.)

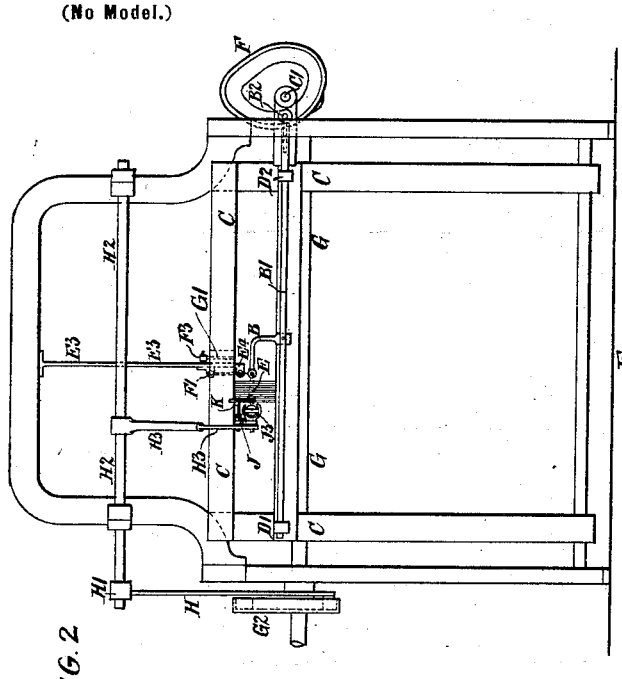

FIG. 2

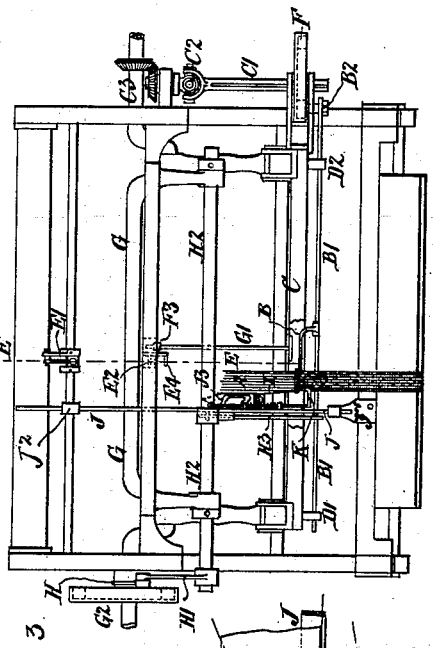

FIG. 3

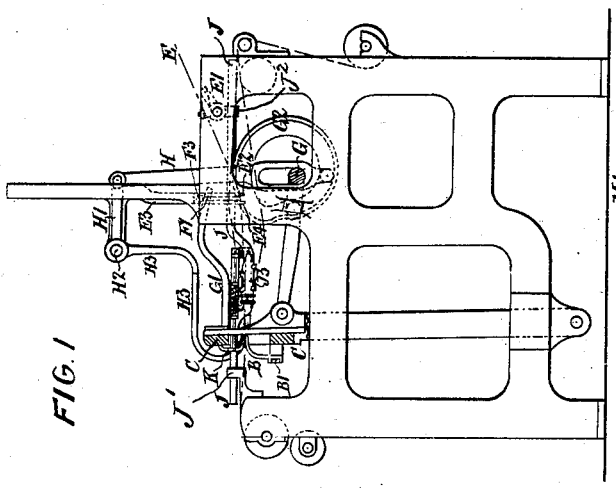

FIG. 1

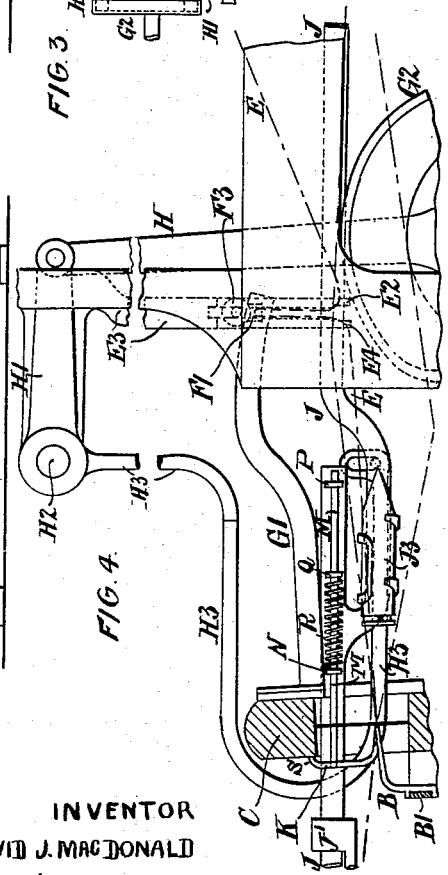

FIG. 4

WITNESSES:

P. W. Wright.

L. C. Crowe

INVENTOR

DAVID J. MACDONALD

BY Howson and Howson

HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

DAVID JOHNSTON MACDONALD, OF DUNDEE, SCOTLAND.

LOOM FOR WEAVING NARROW FABRICS.

SPECIFICATION forming part of Letters Patent No. 647,854, dated April 17, 1900.

Application filed June 21, 1898. Serial No. 684,051. (No model.)

To all whom it may concern:

Be it known that I, DAVID JOHNSTON MACDONALD, a subject of the Queen of Great Britain and Ireland, and a resident of Dundee, in the county of Forfar, Scotland, have invented certain Improvements in Looms for Weaving Narrow Fabrics, (for which I have applied for a British patent, No. 28,322, dated December 1, 1897,) of which the following is a specification.

My said invention relates to looms of the kind in which several separate sets of warps each suitable for the width of narrow fabric to be woven are arranged with intervals between them and bent weft-fingers on a reciprocating bar introduce loops of weft into the sheds formed in the ordinary or any suitable known way in the warps.

My invention consists in combining with other parts of such looms certain contrivances which make them better adapted for weaving narrow fabrics and which are hereinafter described with the aid of a sheet of explanatory drawings.

Figure 1 is a partial side elevation, Fig. 2 a partial front elevation, and Fig. 3 a plan, of parts of a loom sufficient to show my improvements. Fig. 4 is a side elevation of details drawn to a larger scale.

In carrying out my invention the loom for weaving a number of narrow fabrics is provided with ordinary or known shedding mechanism, with warp-delivery, and take-up mechanism, such well-known parts being omitted in the drawings to avoid complexity. Separate sets of warps A, each suitable for the width of narrow fabric to be woven, are arranged with intervals between them. Bent weft-fingers B, fixed at regular intervals on a reciprocating bar B′, carried by the lathe C in guides D′ D^2, introduce loops of weft E into the sheds formed in the ordinary way in the warps A. To avoid confusion in the drawings, only one set of warps A, one weft-finger B, one weft E, and other parts repeated for each of the separate fabrics are indicated. The reciprocating bar B′ receives its motion by a pin B^2, acted on by a cam F, carried by the lathe C and driven by a grooved shaft C′, which slides through its center as the lathe moves and is connected by a universal joint C^2 to gearing C^3 on the crank-shaft G of the loom. The weft E, drawn from any suitable source of supply at the back of the loom, is passed through a tension device E′, thence through a fixed guide-eye E^2 at the lower end of a fixed bracket E^3, and then up to and through a movable guide-eye F′ on a pin which can rise and fall in a slot in the bracket E^3. On the pin carrying the movable guide-eye F′ there is a small roller F^3, which is acted on by the outer end of a bent rod G′, attached to the lathe C. The outer end of this rod G′ is so shaped that on the movement of the lathe the movable guide-eye is raised or lowered, as hereinafter described. The weft E passes from the movable guide-eye F′ down again to a second fixed guide-eye E^4 on the lower end of the bracket E^3 and thence to a guide-eye at the end of the weft-finger B.

A cam G^2, keyed on the crank-shaft G, acts through a connecting-rod H on a lever H′, keyed on a rocking shaft H^2, which has fast on it (for each fabric) a rocking arm H^3, connected to a bar J, sliding in guides in brackets J′ J^2. The arm H^3 is curved, its lower part returning backward under the lathe-rail and having at its back end a short slot, into which projects a pin on the bar J. The bar J carries a pointed shuttle J^3, lying parallel to the warps in a holder fixed to the bar and formed with fingers partly embracing the shuttle without preventing the weft-loop from passing over it.

A bent wire K is fixed on the outer end of a rod M, movable in guides N P on the bar J, the rod being formed with a collar Q, between which collar and the guide N a spring R is placed. An upwardly-projecting part S is formed on the wire K, and on the beat up the lathe C acts on this part of the wire and moves the wire out, compressing the spring R, which on the return of the lathe takes the wire back.

When the bent weft-finger B has just passed the weft-loop E through the warp-shed A, the position of the shuttle is forward of the loop—that is, nearer the operator—and then the motion of the lathe forward toward the operator, combined with the backward motion of the bar J, causes the shuttle to pass through the loop in the direction in which the shuttle-point faces. By the movement of the reciprocating bar B′ the beat-up action of the lathe,

combined with the motion transmitted by the cam G^2 through the connecting-rod H, lever H′, rocking shaft H^2, and rocking arm H^3, attached to bar J, carrying the shuttle J^3, causes the weft-loop E to pass over the pointed shuttle J^3, and after the weft-finger has returned sufficiently to clear the shuttle J^3 then the shuttle passes backward rapidly through the weft-loop and carries its thread through the loop. The weft-loop E passes off the shuttle J^3 and falls on the bent front end of the wire K, which assists in tightening the weft, so as to form a good selvage at the other side of the fabric, the loop afterward passing off the wire K, which is carried forward by the continued beat-up of the lathe. The weft-loop E when released from the wire K falls on the shuttle-thread L, to which a suitable tension is applied in the shuttle J^3. When beat up by the lathe, the weft-loop E is drawn tight by the action of the rod G′ on the roller F^3, attached to the movable guide-eye F′. The shuttle-thread L thus made to pass through the weft-loop E forms a selvage with it. The lathe C then retires and the shuttle J^3 returns ready for the next shot.

What I claim as my invention is—

1. In a loom for weaving narrow fabrics, the combination with warp-shedding mechanism and with a reed and lathe and operating devices for the latter, of a horizontal weft-bar, with means to make the said bar reciprocate, a shuttle-operating mechanism for the shuttle, and a movable rod carrying a bent wire to take the loop of weft-thread from the shuttle, substantially as and for the purpose described.

2. In a loom for weaving narrow fabrics, the combination with warp-shedding mechanism and with a reed and lathe and operating devices for the latter, of a horizontal weft-bar carried by the lathe, a cam on the lathe to reciprocate said bar, a grooved shaft on which the cam can slide, driving means and a universal joint for said shaft, all substantially as described.

3. In a loom for weaving narrow fabrics, the combination with warp-shedding mechanism and with a reed and lathe and operating devices for the latter, of a horizontal weft-bar carried by the lathe, with means to make said bar reciprocate, a shuttle and means for reciprocating it parallel with the warps and a bent wire K adapted to take the loop of weft-thread from the shuttle, substantially as described.

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

DAVID JOHNSTON MACDONALD.

Witnesses:
WILLIAM YOUNG,
ALFRED LANDALE.