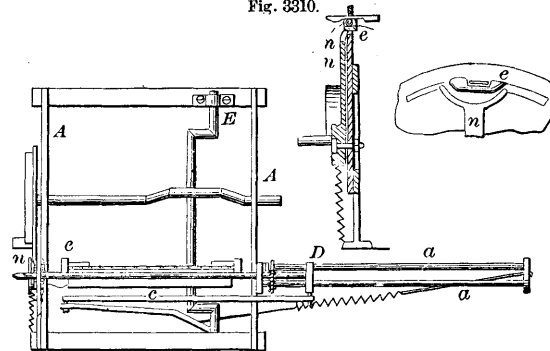


Fig. 3310.



Earnshaw's Needle-Loom.

**Needle-loom.** One in which the weft is carried by a needle instead of a shuttle. The usual form of loom for narrow wares, such as ribbons, tapes, bindings, etc. In the example, the filling is carried through the shed by a reciprocating eye-pointed needle, and the loop of the weft locked at the selvage by the passage through it of a shuttle and its thread. The weft-retractor swings freely on a pin; its shorter arm, when thrown fully back by a projection, rests in a notch on the needle-guide, until the pull of the needle passing through the shed detaches it and draws the retractor forward, taking up yarn from the bobbin.

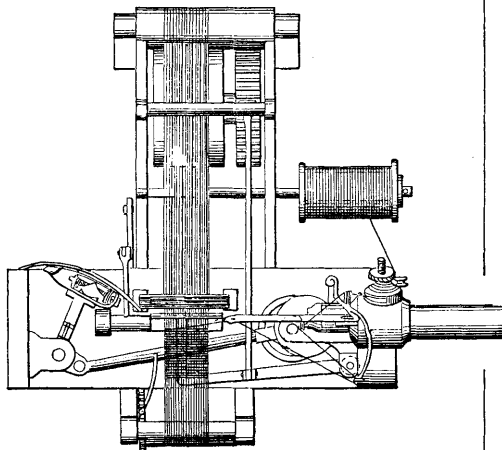
The shuttle operates in an arc of a circle parallel to the plane of the warp, so that in approaching to enter the loop of the weft-yarn it moves nearly parallel with and close to the selvage of the web being woven, and afterward gradually moves away

free manipulation of the warp. The shuttle *c* has a segmental guide groove, and is operated by a divaricated arm upon a rocker-shaft *n*, its two horns engaging the back end of the shuttle alternately.

In Jackson and Merrill's needle-loom, the weft-thread is carried by a needle through the shed and is interlocked by a shuttle-thread, returning to its normal position before the shed changes. The needle is passed through the under part of the shed near the reeds, so as to preserve it from contact with the warps. The needle then receives a swinging movement that passes its end around a standing shuttle or bobbin, the needle returning through the shed near the point of weaving, so that the lay has to move the weft-thread but a short distance.

See also RIBBON-LOOM; NARROW-WARE LOOM.

Fig. 3309.



Robjohn's Needle-Loom.

from the warp, so that in completing its movement at the same time as the needle completes its retiring movement it pulls its yarn or thread tight in a direction transverse to the warp.

In Fig. 3310, the needle is eye-pointed and the weft-thread is carried by it in lieu of a shuttle. A shuttle-thread engages the loop, and the rod is retracted, leaving two filling-threads in the shed. The needle-stock *D* slides on bars *a a* projecting from the side of the loom, and is actuated by a rocker-shaft *E*, a vibrating arm *c*, and connections. The ordinary cap-piece of the reed is removed to permit