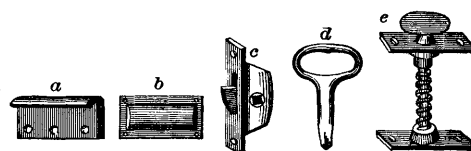


Fig. 5046.



a b, Shutter-Lifts; c d, Shutter-Locks; e, Shutter-Screw.

thrown by hand or by the fly. In the latter case, the ends of the shuttle-race form boxes into which the shuttle is received, and out of which it is driven by a picker.

John Kay, of Bury, England, was the inventor of the fly-shuttle, 1735. This reduced the labor of weaving by one half, and raised it from the position it had occupied since the time the pyramids of Egypt were built. He, like many of his class, was driven from town to town, persecuted by the weavers who used his shuttle, died in poverty in Paris, and was buried in obscurity.

"My days are like a weaver's shuttle." — Jos.

The following show a few of the numerous varieties of loom-shuttles: —

Fig. 5047 has a spindle on a hinge. The bearing of the serpentine spring is so placed on the spindle-head as to hold the spindle up, when completely raised for the substitution of the

Fig. 5047.



Loom-Shuttle.

bobbins; but when the spindle is slightly depressed the spring acts to return it to working position, and with accumulative force.

In Fig. 5048, the upright guide-wire placed within the cavity at the delivery end of the shuttle is so shaped as to assist the

Fig. 5048.



Weaver's Shuttle.

operator in guiding the thread to a narrow slit in the side of the shuttle, and thence to the eye.

In Fig. 5049, the devices are to regulate the tension of the filling as it runs from the spool to the eye of the shuttle. A spring-

Fig. 5049.

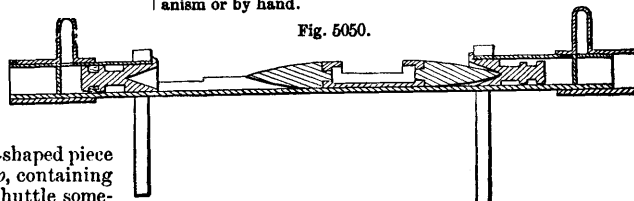


Tension Device for Shuttles.

loop is placed on the inside, near the eye, in connection with a stationary wire by which the strain is equalized and the kinks straightened out. In threading, a curved wire hook is introduced through a guide-way cut in the shell of the shuttle, to catch the filling and draw it through the eye.

In Fig. 5050, the shuttle is thrown by pistons operated by condensed air. The race terminates at each end in a cylinder in which the piston plays. The air is introduced through flexible tubes, and the valves may also be moved by any proper mechanism or by hand.

Fig. 5050.

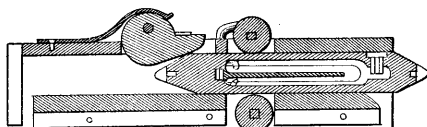


Shuttle operated by Condensed Air.

Shuttle. 1. (Weaving.) A boat-shaped piece of wood which carries a *bobbin* or *cop*, containing the yarn of the *weft* or *woof*. The shuttle sometimes has wheels to facilitate its motion. It is

In Fig. 5051, pickers are dispensed with, and the shuttle is driven by rapidly revolving frictional rollers, which intermittently are brought into contact with its sides.

Fig. 5051.



Roller-driven Shuttle.

An eccentric *swell* gradually checks the shuttle upon its being received by the shuttle-box, and instantly releases the same upon its expulsion.

In Lyall's loom the shuttle is carried through the shed on a carriage which moves on an iron raceway, and is carried back and forth by a band which receives an alternating longitudinal motion from a wheel. Upon this carriage is laid the shuttle which rests on the rollers *b b*. These rollers revolve because they are in contact with the rollers *a a*, which are in turn caused to rotate by the movement of the carriage on the race-

Fig. 5052.



Positive-Motion Shuttle.

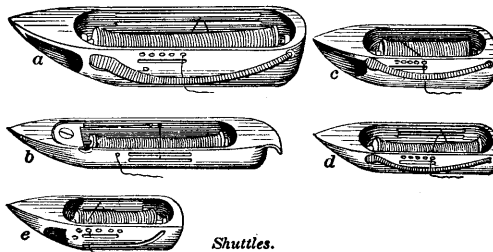
way, and impart a precisely equal motion to the rollers *c c* of the shuttle. Hence, in passing over the lower threads of the shed, the shuttle produces no friction. The shuttle is held down by a projection above, against which the rollers *d d* play. The upper threads of the shed pass between this projection and the rollers *d d*. See POSITIVE-MOTION LOOM, Fig. 3903, page 1772

The shuttle for haircloth weaving has no *pick*, but a spring-catch to hold the ends of the hair forming the *wefl*, and carry them through the *shed* when the shuttle is thrown.

2. (*Sewing-machine.*) The sliding thread-holder which carries the lower thread between the needle and the upper thread, to make a lock-stitch. See SEWING-MACHINE.

Fig. 5053 illustrates different forms and relative sizes of shuttle employed in several lock-stitch sewing-machines.

Fig. 5053.



Shuttles.

a, Singer, for manufacturing purposes.

b, Howe, "C."

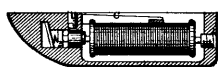
c, Singer, No. 5.

d, Singer family-machine.

e, another form of "Singer."

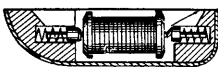
In Fig. 5054 a lever *c* is so bent and placed within the shuttle that one end bears upon the bobbin-thread, while its other end bears against a spiral spring, which presses a sliding bearing against the axis of the bobbin. The diminution of the thread relieves the pressure of the lever upon the spring.

Fig. 5054.



Shuttle.

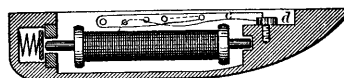
Fig. 5055.



Shuttle.

Fig. 5055 has spring bearings for both journals of the bobbin. In Fig. 5056, the thread tension is regulated by means of the

Fig. 5056.



Shuttle.

free end of the spring *c* being locked in a notch of the adjustable cam *d*.