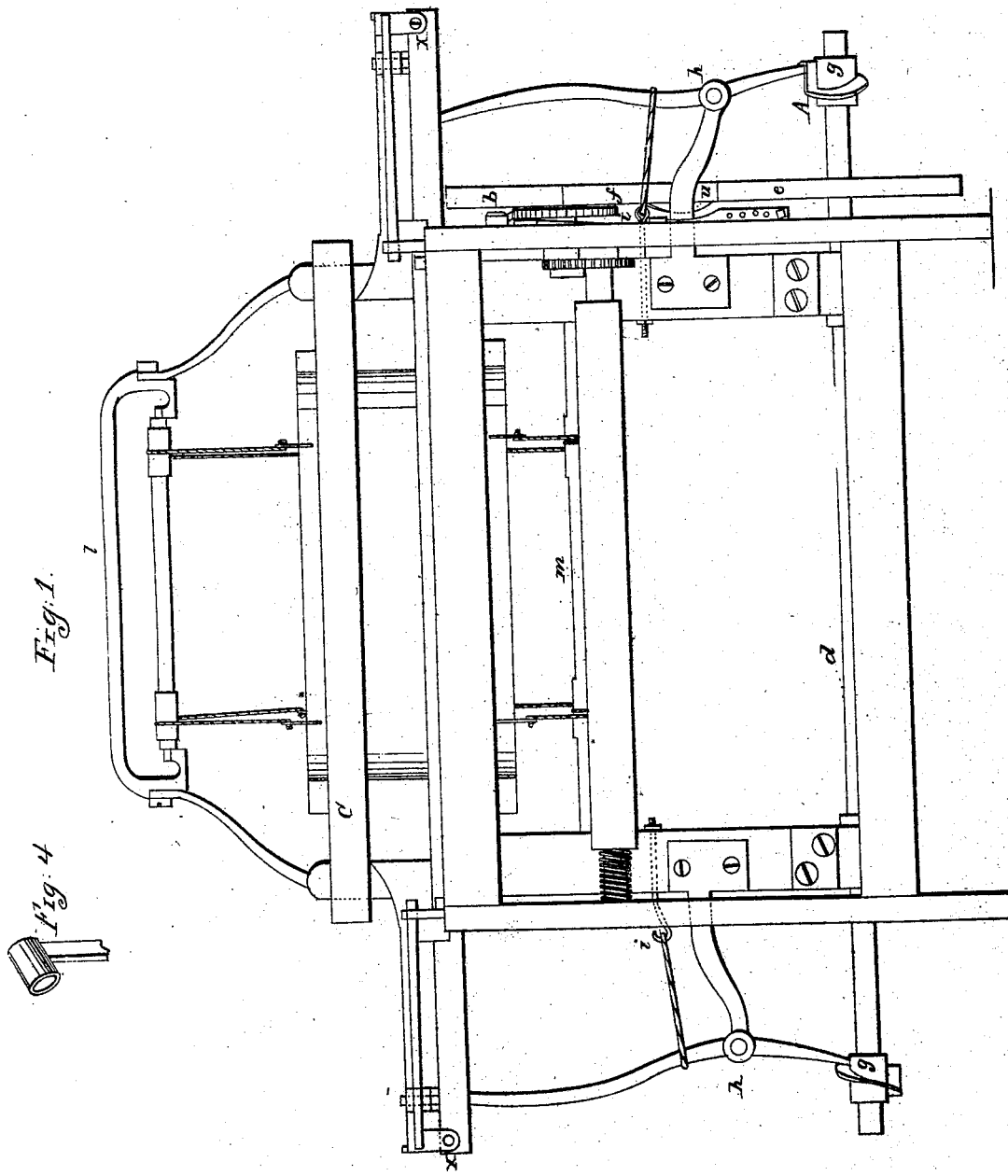


R. Collins.
Loom.

Sheet 1-2, Sheets.

N^o 5,318.

Patented Oct. 2, 1847.



R. Collins.

Sheet 2-2 Sheets.

Loom.

N^o 5,318.

Patented Oct. 2, 1847.

Fig. 2.

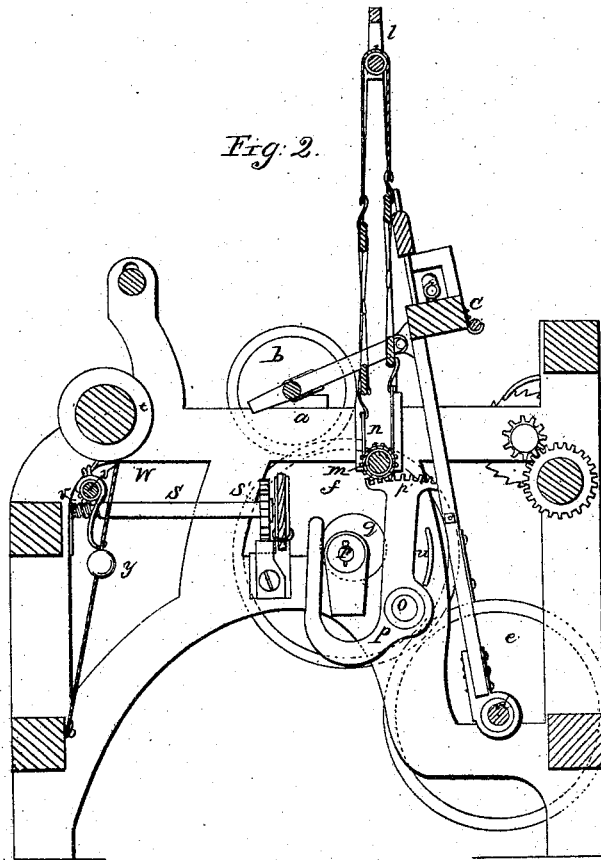
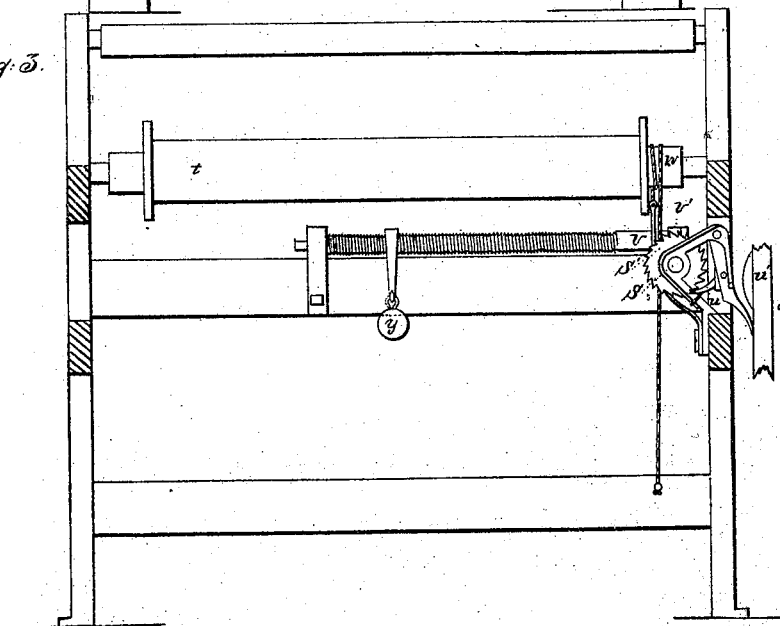


Fig. 3.



UNITED STATES PATENT OFFICE.

RICHARD COLLINS, OF CABOTSVILLE, MASSACHUSETTS.

LOOM.

Specification of Letters Patent No. 5,318, dated October 2, 1847.

To all whom it may concern:

Be it known that I, RICHARD COLLINS, of Cabotsville, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Looms, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation; Fig. 2, a vertical section through the loom from front to back; Fig. 3, a section showing the back part of the frame inside together with the warp beam and apparatus for regulating the tension of the warp.

The same letters indicate like parts in all the figures.

The frame of my loom is constructed like those in common use; on the crank shaft (*a*) there is a driving pinion (*b*) and the usual pulleys; the lathe (*c*) is constructed similar to those of ordinary looms with the picker staff passing up through the bottom of the box; the shaft (*d*) on which the swords of the lathe are hung revolvers being driven by the pinion (*b*) of the crank shaft, this pinion (*b*) is connected with a spur wheel (*e*) on the shaft (*d*) of twice its diameter by an intermediate wheel (*f*) of the same size as wheel (*e*); by this arrangement the shaft (*d*) is turned once around during two revolutions of the crank shaft. On each end of shaft (*d*) which projects a sufficient distance beyond the frame there is a side cam or projecting screw thread (*g*), this is clearly represented in Fig. 1, it makes but one turn around the shaft and the gain is just sufficient to draw back the picker staff; the two ends of this screw thread are connected by a bar shown on the right hand worm; the end of the screw thread falls off a little at (*A*) so as to allow the picker to move forward sufficiently to rest firmly against the end of the shuttle before it is thrown. The picker bears at its lower end against the inside of the worm, its fulcrum being at (*h*) on an arm that projects from the side of the sword of the lathe for that purpose; above this fulcrum (*h*) a spring strap of metallic or other suitable india rubber is fixed around the staff and extends up to a ring (*i*) on a bolt that passes through the sword and has a

nut on the opposite side which can be used for adjusting the tension of the spring. The upper end of the picker staff within the shuttle box has a socket in it (see Fig. 4) in which a piece of leather is driven to form the picker.

In this construction of parts it will be perceived that the picker staff is gradually carried back during the whole of the revolution of the shaft (*d*) and is then suddenly forced forward by the spring to throw the shuttle; this obviates the necessity of a sudden blow from a cam as in ordinary looms and the consequent wear and loss of power attendant thereon. The shuttle boxes are made of one casting having lugs or ears (*x*) cast on to the four corners that come down over the sides of the race beam and have common wood screws put through them to fasten the box to its place; this forms a cheap and substantial fixture easily fitted up and applied.

The harness frame (*l*) and harness roll are of ordinary construction, but the harness is connected with a shaft (*m*) below and parallel with the roll. This shaft has its bearings in the lower ends of the goose necks of the harness frame and has on the right hand end, or that on which the gearing above described is placed a small pinion (*n*); below this shaft there is a stud (*o*) on which a yoke or U formed lever (*p*) is hung near the bend with the two arms projecting upon each side of an eccentric (*q*) that is fixed on a short shaft (*r*) on which the wheel (*f*) above named is placed, this has one revolution to two of the crank shaft. The eccentric causes the yoke to vibrate each way during its revolution. On the upper end of the forward arm of the yoke (*p*) there is a segment rack (*p'*) that gears into the pinion (*n*) on the shaft (*m*) and causes said shaft to turn back and forth at each vibration of the yoke, thus regularly springing the harness up and down without any sudden action which is found in the ordinary cam looms so destructive to the harness and warp and which wastes so much power.

My movement of the harness is regular and easy and with it the slackest twisted or most tender warp can be woven into cloth without danger of constantly breaking down—a thing of the greatest importance in weaving soft flannels and other goods on which a nap is to be raised.

Directly in the rear of the eccentric there

is a projection on the frame which serves as the forward bearing of a shaft (*s*) that extends back to the rear of the frame under the yarn beam (*t*); on the front end of this shaft (*s*) there is a ratchet wheel (*s'*) into which a dog (*u*) works, this dog is struck by a projection (*u'*) on the side of wheel (*f*) at every revolution which causes the shaft to revolve; on the rear end of this shaft (*s*) there is a worm wheel that works into a pinion (*v'*) on a shaft (*v*) placed above and at right angles to the shaft (*s*); the bearing of the shaft (*v*) nearest the pinion is permanent, that at the other end allows the shaft to move up and down; a band (*w*) is attached to this shaft just inside of the pinion that passes up and winds around the yarn beam (*t*) and thence down to the frame, this is for the purpose of regulating the tension of the warp.

A screw is cut on the shaft (*v*) on which a hook with a female screw cut in it fits and hangs; to this hook a weight (*y*) is suspended and is gradually drawn as the shaft is made to revolve from the inner end up toward the fulcrum or outer bearing. By this arrangement the greatest accuracy of tension of warp is preserved throughout the whole process of weaving it into cloth.

What I claim as my invention and desire to secure by Letters Patent is—

1. The method of working the picker

staves as herein described by means of a worm so constructed as to draw back the picker staves gradually during the whole revolution, by coming into direct contact with the staves; and throwing the shuttle by means of springs constructed and arranged substantially in the manner and for the purpose set forth.

2. I also claim constructing the picker in the manner described by forming a metal socket on the end of the picker staff and inserting therein a piece of leather or other suitable material by which a cheap and substantial picker is made.

3. I claim the apparatus for moving the harness consisting of a bottom roller to which the harness is attached which is turned by a segment rack moved by an eccentric on the second shaft, substantially in the manner described, by which a great saving is made in the harness and warp and the ordinary cam shaft is dispensed with.

4. I claim regulating the tension of the warp in the manner substantially as described, causing the weight gradually to approach the fulcrum of the shaft by revolving said shaft or lever on which a screw is cut for that purpose in the manner set forth.

RICHARD COLLINS.

Witnesses:

J. J. GREENOUGH,
JAMES H. KELLER.