

S. Holt.

N<sup>o</sup> 46, 754.

Witnesses  
 Lemuel W. Serrell  
 Chas H Smith,

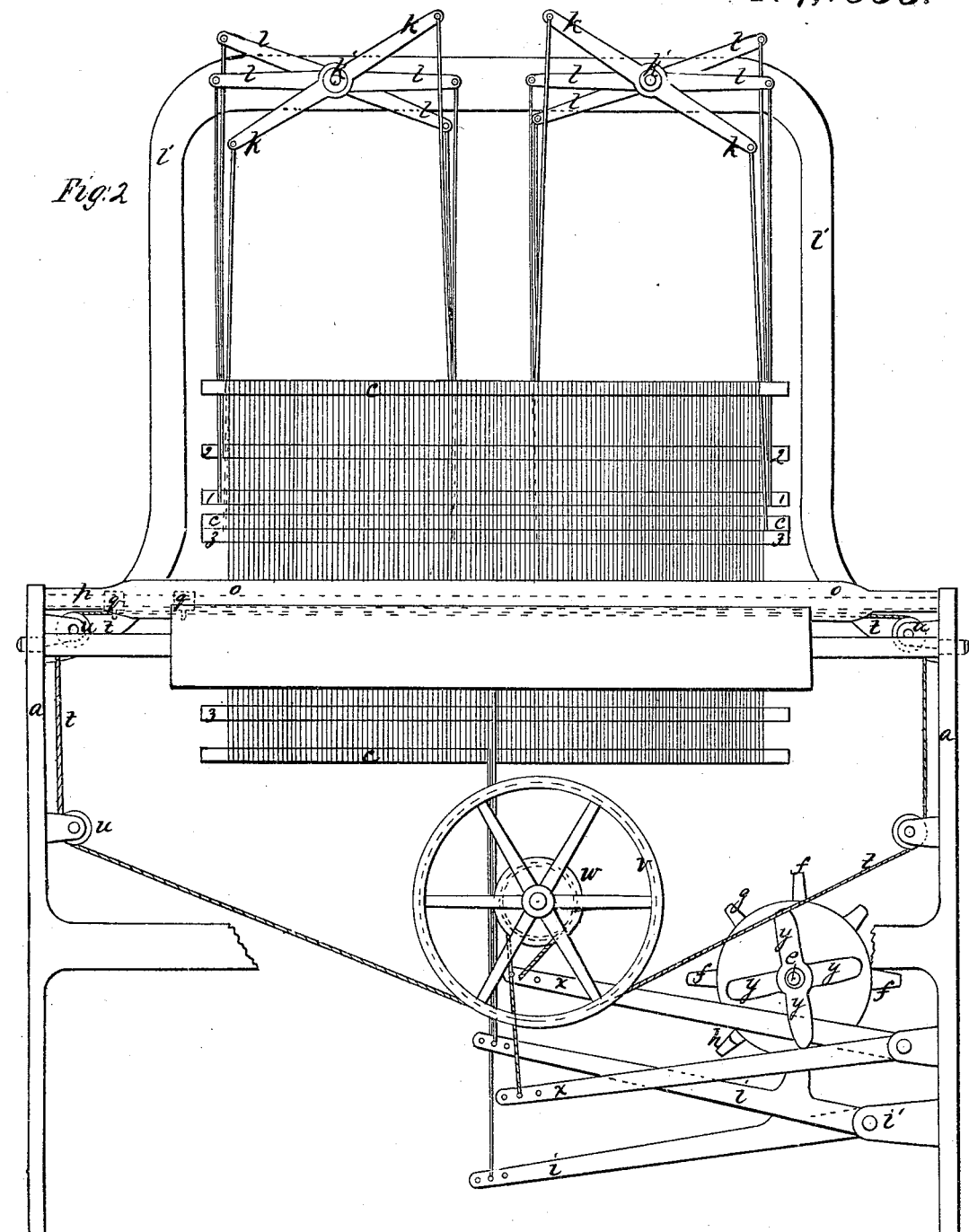
Inventor  
Samuel Holt

*S. Holt.* *Sheet 2 - 2 Sheets.*

*Weaving Pile Fabric.*

*N<sup>o</sup> 46,754.*

*Patented Mar. 7, 1865.*



*Witnesses*  
*Lemuel W. Serrell*  
*Chas H. Smith*

*Inventor*  
*Samuel Holt*

# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN LOOMS FOR WEAVING PLUSH OR PILED FABRICS.

Specification forming part of Letters Patent No. 46,754, dated March 7, 1865.

*To all whom it may concern:*

Be it known that I, SAMUEL HOLT, of Newark, in the county of Essex and State of New Jersey, (formerly of Stockport, Great Britain,) have invented, made, and applied to use a certain new and useful Improvement in Looms for Weaving Plush or Piled Fabrics; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a longitudinal section representing my improved loom, so far as necessary to illustrate my invention. Fig. 2 is a front elevation of the same, and Fig. 3 is a plan of the cutting-knife that separates the piles between the two fabrics.

Similar marks of reference denote the same parts.

Piled fabrics have heretofore been woven by hand and automatically, the pile extending across between, and thus connecting two pieces of cloth woven simultaneously with said pile. A knife automatically drawn across between said fabrics as the weaving progresses has also been used to cut or divide the uncut pile, leaving a portion of the same projecting from each piece of cloth, and forming the pile or plush.

The nature of my said invention consists in a novel arrangement of devices for moving the knife across between the fabrics to cut the pile, and also in an arrangement of means for moving the heddles to form the cloth and intervening pile, whereby the said loom can be operated by power and the usual jacquard mechanism dispensed with.

The frame *a* of the loom is to be of any desired character, and fitted with the warp-beams and lay, shuttle-boxes, shuttle-drivers, and take-up rollers of any usual or desired character, and, being well known, need no further description. The warps pass between the gage-bars *b b*, the upper ones of which are adjustable in the usual manner and determine the distance between the warps which are to form the body of the cloths, and consequently the length of the pile to be produced. The two heddles *c c* give motion to the warps that form the pile, and as the said warps (shown by red lines) cross from one cloth, *d*, to the other cloth,

*e'*, the heddles *c c* require much more motion than the heddles 1, 2, 3, and 4, which only open the warps sufficiently for the passage of the shuttles in forming the respective pieces of cloth or backing to the pile.

To effect these movements of the heddles I provide a shaft, *e*, driven in unison with the other parts of the loom, and carrying circular ranges of tappets or cams *f f*, *g g*, and *h h*.

The ranges of tappets *f* operate upon levers *i i* on a fulcrum-pin, *i'*, that are connected at their outer ends to the bottom bars of the heddles *c c*, while the upper bars of the same heddles are connected to the levers *k k*, mounted on studs *k'* on the frame *l'*, the front heddle *c* being connected to the inner ends of said levers *k*, and the other heddle *c* being connected to the outer ends of said levers *k*, or vice versa, so that one heddle being pulled down by the tappet *f* acting on the lever *i*, the other heddle is raised, and these tappets *f* are a sufficient length to give the central or pile warp the motion necessary.

The heddles 1, 2, 3, and 4 are also attached to levers *l l* in pairs, in a manner similar to the heddles *c*, and operated by the levers *m m* and *n n*. The connections of these levers with the respective heddles is such that the warps forming the two cloth-backings will be correctly moved, the heddles 1 and 4 being connected to opposite ends of the levers *l*, and 2 and 3 to the opposite ends of the other levers.

The ranges of tappets *g g* and *h h* are of different lengths, so that on one movement of the lay the warps in the heddles 1 and 4 will stand in the middle, and the warps in 2 and 3 will form the extreme of the shed, so that the shuttles can both be thrown simultaneous, and the next movement brings the warps in 2 and 3 to the center, while the warps in 1 and 4 form the extremes of the shed.

It will be evident that this arrangement of tappets and levers applied to the heddles may be extended to any desired number of heddles according to the pattern, and that a jacquard movement might be combined with them to throw any range of heddles out of action during a given period and bring them again into action at the required time.

The fabric, as woven with two cloth-backs and the plush or pile between passes away

from the gage-bars *b* above and below a stationary stretcher, *o*, in front of which is the stationary bar *p*, upon which the knife-stock *q* slides from side to side.

The knife *r* projects through a gage-strip, *s*, (see Fig. 3,) beveled each way, so as to take against the cloth above and below, and insure the separation of the pile at the correct point. This knife is similar to what has before been used, and may also be sharpened in the well-known manner. In order to give motion to this knife I attach a strap or cord, *t*, to each end of the knife-stock. This cord passes around the pulleys *u u* to a wheel, *v*, and is wound upon its grooved periphery. This wheel has a smaller drum, *w*, from which belts or cords pass to the levers *x* that are acted on by cams *y* on the tappet-shaft *e*, so that said tappets press down the levers *x*, alternately giving to the wheel *v* the reciprocating rotary motion neces-

sary to draw the knife from one side to the other to cut the pile.

What I claim, and desire to secure by Letters Patent, is—

1. The levers *kl*, attached to the heddles, as specified, in combination with the tappets *f g h* and levers *i m n*, to actuate the warps in the manner set forth for weaving two pieces of cloth with the pile between, substantially as specified.

2. The arrangement of the wheel *v*, drum *w*, levers *x*, and tappets *y* for actuating the cutter-knife *r* by means of the cord or strap *t*, as specified.

Dated this 21st day of September, A. D. 1864.

SAMUEL HOLT.

Witnesses:

THOS. GEO. HAROLD,  
CHAS. H. SMITH.