

# Ramel & Drogat, Loom.

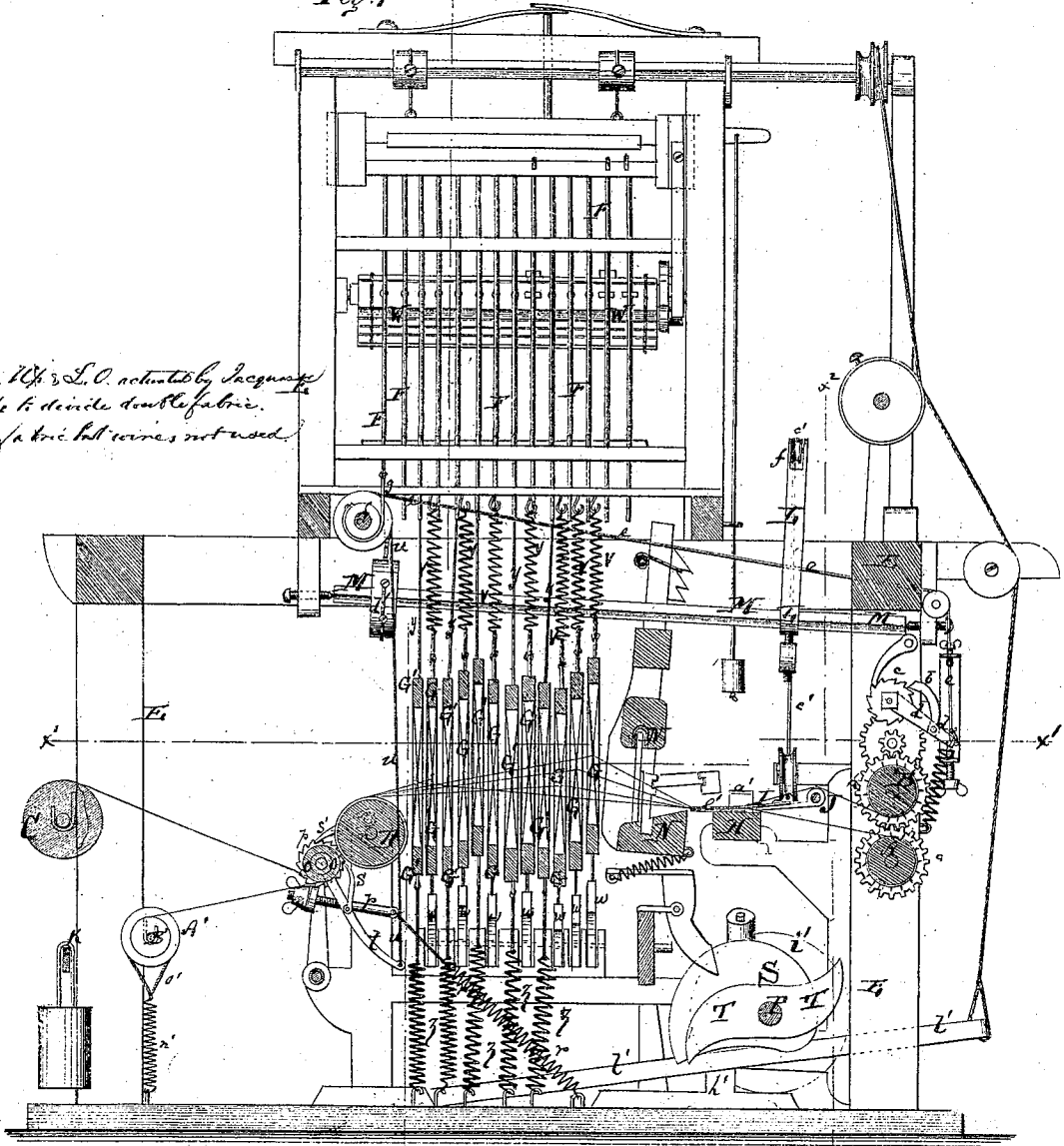
4, Sheets, Sheet 1.

No. 102,039.

Patented Apr. 19, 1870.

Fig. 1

Take W<sup>h</sup> & L<sup>o</sup> actuated by Jacquard  
Knife to divide double fabric.  
Pick up kni but wires not used.



Witnesses:

Chas. Nida  
Mott Brooks  
ID

Inventor:

P. P. Ramel  
J. Drogat  
PER Munnell  
Attorneys.



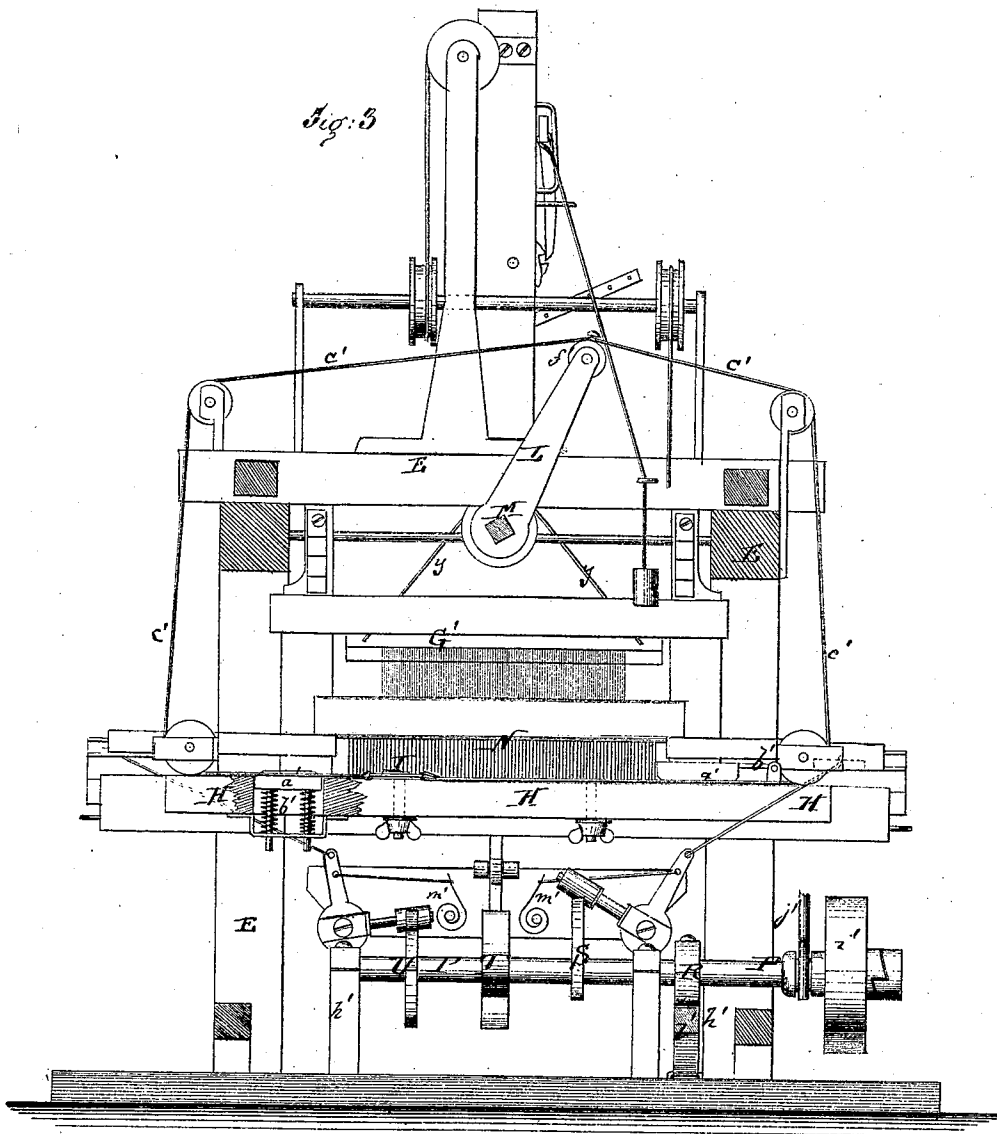
*Ramel & Drogat,*

*L1 Sheets, Sheet 3.*

*Loom.*

*No. 102 039.*

*Patented Apr. 19. 1870.*



Witnesses:

*Chas. Nida*  
*Wm. F. Brooks*

Inventor:

*P. F. Ramel*  
*J. Drogat*  
PER *J. M. Muff*  
Attorneys.

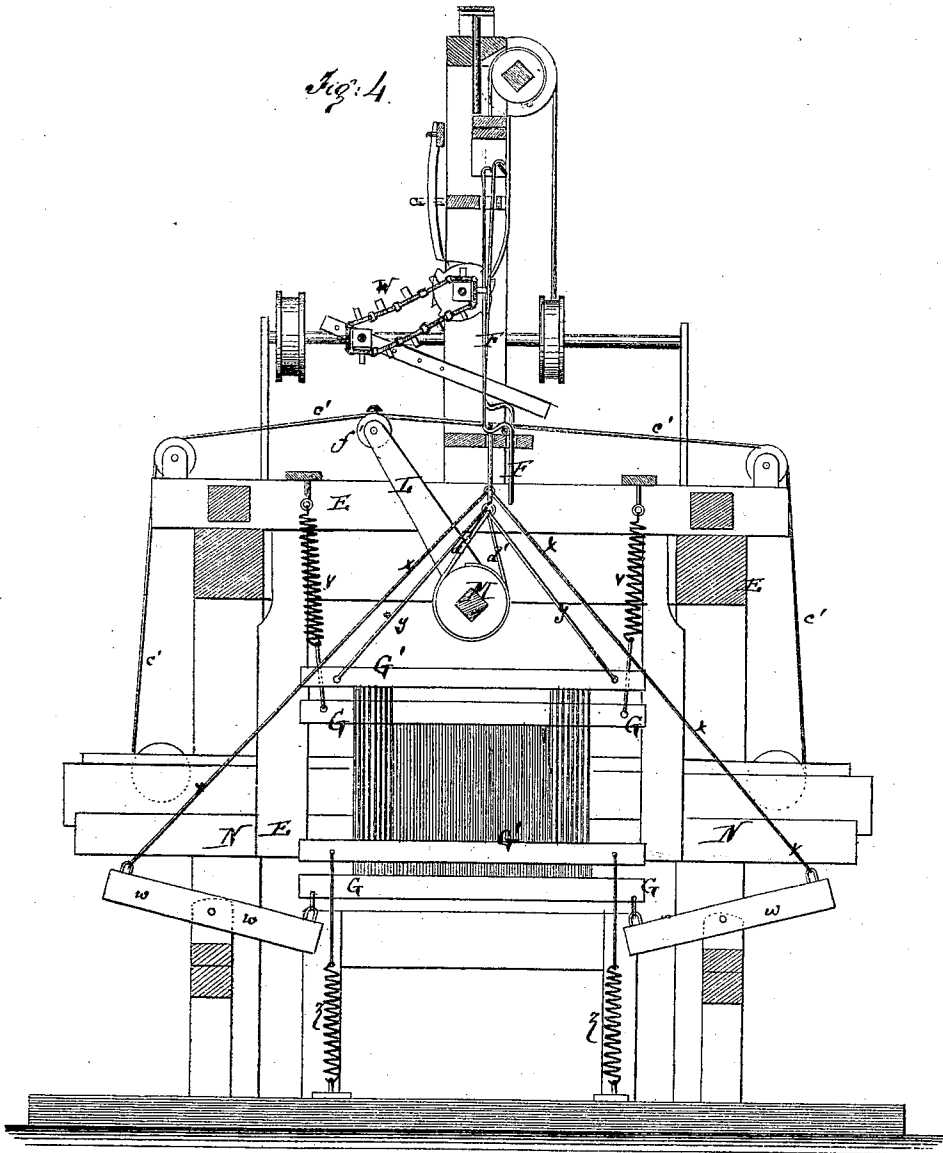
Ramel & Drogat,

4, Sheets, Sheet 4.

Loom.

No. 102,039.

Patented Apr. 19, 1870.



Witnesses:

Chas. Nida  
Jno. K. Brooks  
H

Inventor:

P. P. Ramel  
J. Drogat  
PER  
Munif  
Attorneys.

# United States Patent Office.

PIERRE FRANÇOIS RAMEL AND JEAN DROGAT, OF LYONS, FRANCE.

Letters Patent No. 102,039, dated April 19, 1870.

## IMPROVEMENT IN LOOM.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern :

Be it known that we, PIERRE FRANÇOIS RAMEL and JEAN DROGAT, of Lyons, in the department of Rhone, France, have invented a new and Improved Power-Loom for the Fabrication of Plain Velvet Stuffs; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 represents a vertical longitudinal section of our improved power loom, the plan of section being indicated by the line  $x x$ , fig. 2.

Figure 2 is a horizontal of the same taken on the plane of the line  $x' x'$ , fig. 1.

Figure 3 is a vertical transverse section of the same taken on the plane of the line  $x'' x''$ , fig. 1.

Figure 4 is a vertical transverse section of the same, taken on the plane of the line  $y y$ , fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to a new power-loom for the fabrication of plain velvet stuffs, which is capable of weaving two pieces at the same time, and which is worked by hand or steam-power, and able to weave every quality of velvet, such as silk-velvet, cotton-velvet, and extra silks. The velvet stuff must not be confounded with plush, used for gentlemen's hats and other purposes, with which it has no connection.

We believe that, by our improvements, the manufacture of plain velvet stuffs is rendered much cheaper, while the article is fabricated in a better and more substantial manner.

The frame E of the loom supports four transverse horizontal rollers, A B C D, of which two, A B, are hung near one end, parallel to each other. These rollers A B are made rough by sand, and are provided with sharp steel points. The rollers A B are on the front end of the loom, and constitute the take-up drums. They are revolved in opposite directions, in order to separate the different pieces of fabric.

They are connected by gear-wheels  $a a$ , which receive intermittent rotary motion by a pawl,  $b$ , engaging a ratchet-wheel,  $c$ .

The pawl is pivoted to a lever,  $d$ , which is, by a cord,  $e$ , connected with a shaft,  $f$ , which is placed horizontally across the loom, under the pattern-mechanism.

One of the lifting-rods, F, is, by a cord,  $g$ , connected with the shaft  $f$ . When this lifting-rod is elevated it turns the shaft, and the latter moves the lever  $d$ , causing the pawl to turn the ratchet-wheel, and thereby to impart motion to the rollers A B.

The two rollers C D are placed near the back end of the loom. The roller C contains the warp-threads,

and has its bearings on the outside of the two hind legs of the loom.

Upon it is mounted, near one end, a pulley,  $h$ , somewhat larger in diameter than the roller.

Around the pulley is placed a cord,  $i$ , which is with one end fastened to a spring,  $j$ , and with the other end to a weighted lever,  $k$ , to produce the required tension.

The lever  $k$  carries around its pivot a ratchet-wheel,  $l$ , which has its motion regulated by pawls  $m m$ . The alternate motion of the spring and weighted lever produces the required friction and let-off of the warp, in the well-known manner.

The roller D contains the silk which forms the pile of the velvet. It is placed forward of the roller C, and turns on two screw-pivots  $n$ .

It is revolved by means of a friction roller,  $o$ , which is covered with leather or other material, and which is hung in a frame,  $p$ , that is, by means of springs  $r$ , drawn toward the roller D. The friction roller  $o$  is termed a regulator because it regulates the delivery of the silk to make the pile of the velvet.

The action of the roller  $o$  is controlled by a ratchet-wheel, which is fixed to its shaft, and by a pawl,  $s$ , which is pivoted to a lever,  $t$ , that is, by a cord,  $u$ , connected with the same shaft  $f$  which serves to move the rollers A B. Its mode of operation is simply to regulate the supply of silk by frictional contact therewith, and by causing a feed proportional to its own revolutions.

The heddles G G' are nearly, throughout, arranged alternately for weaving the upper and lower fabrics. In the drawings, the heddles for the upper fabric are marked G, those for the lower G'.

The heddles G are suspended from the frame of the loom by springs  $v$ , and are, at their lower ends, connected with levers  $w$ , that are, by cords  $x$ , connected with some of the lifting-rods F.

The heddles G' are suspended from their lifting-rods F by means of cords  $y$ , and are held down by springs  $z$ .

The loops in the heddles G are higher than those in G', but can, by lowering the heddles G, be drawn to a level with the same. By the manner of suspending and holding the two sets of heddles it is evident that, by elevating the lifting-rods of the jacquard, the heddles G will be lowered, and those, G', elevated.

In front of the heddles is supported, on the frame of the loom, a horizontal bar, H, which is made of polished iron, and which is supported by two legs fitted to the loom. This bar supports the double fabric before it is separated.

Near each end of this bar is arranged a movable stone  $a'$ , which is supported on springs  $b'$ , and serves to sharpen the knife that cuts the pile.

The knife I is secured to a slide that travels on a transverse shaft, J.

The slide is secured to the ends of a cord, *c*, that is fastened to a vibrating arm, L, which is fixed to a longitudinal horizontal shaft, M, placed under the pattern mechanism.

The shaft M is, by cords *d*, connected with two lifting-rods F, and receives, by the same, an oscillating motion, causing thereby a reciprocating motion to be imparted to the knife. The vibrating arm is weighted, to give momentum to the action of the knife.

The bar H carries two adjustable fixed knives *e e*, which serve to keep the fabric stretched, and to cut the woof which ties the different pieces at the selvage.

The vibrating arm carries, at its upper end, a pulley, *f*, to whose periphery is fastened a pin. To this pin the cord is fixedly attached, and by which (the pulley being loose) the tension on either side of the lever-arm is equalized. By this means the pulley regulates the tension of the cord *c*, prevents a shock, and moderates the speed of the pattern-mechanism.

The batten N has boxes to receive the shuttle and facilitate its passage.

The batten receives its motion from a shaft, P, which moves it backward, and it is swung forward by means of two springs *g*, which are secured to its ends and to the legs of the loom.

The shaft P is hung in two supports *h*. At one end of this shaft there is a sliding clutch-pulley, *i*, which receives the driving-belt.

The pulley is connected with a clutch-lever, *j*, that can be reached by the hand of the operator, in order to make the loom go or stop, as he wishes.

On the same shaft P are mounted four cams R, S, T, and U, which perform the movements of the loom.

The cam R works the pattern mechanism, alternately depressing and elevating a spring-treadle, *v*. The third cam T works the batten. The pattern mechanism is of ordinary construction, and is especially adapted to the above kind of fabric.

The number of lifting-rods F can be varied at will, to conform to the heddles. The pattern-card W regulates the action of the lifting-rods in the ordinary manner.

The warp-threads for the borders of the fabric are on bobbins A', which are hung on a transverse bar B', and receive tension by springs *n* and cords *o*.

The operation is as follows:

The warp-threads in the two sets of heddles, and coming from the beam C, are, in the woven fabric, held together by the pile. The shuttle, when moving in one direction, passes between the shed formed in the warp for the upper fabric, while, in the opposite direction, it passes through the shed for the lower fabric. Thus a double fabric is produced, consisting of two layers of warp and woof-threads that are joined together by the pile. These two fabrics are, by the reciprocating knife, cut in two. Thus the operation of the loom is not made more complicated, and two complete fabrics are produced in about the same time, and with no more difficulty than the single fabric ordinarily made. The shearing of velvet, being a separate process, is, in our loom, performed at once on both fabrics by separating the same.

Having thus described our invention,

We claim as new and desire to secure by Letters Patent—

1. The combination, with two parallel roughened take-up rolls A B, of gear-wheels *a a*, pawls *b*, ratchet C, lever *d*, cords *e g*, shaft *f*, and lifting-rod F, all constructed and arranged in a loom as set forth.

2. The combination, with roller D, of leather-covered friction roll O, adjustable tension springs *r*, ratchet-pawl *s*, lever *t*, cord *u*, shaft *f*, and lifting-rod F, all constructed and arranged as and for the purpose set forth.

3. The transverse horizontal shaft *f* and lifting-rod F, combined with take-up rolls A B, roll D, and their intermediate connecting mechanism, all being constructed, arranged, and operated as set forth.

4. A knife I, sliding on the transverse rod J, in combination with two fixed knives *e e*, located upon the bar H, as and for the purpose set forth.

PIERRE FRANÇOIS RAMEL.  
JEAN DROGAT.

Witnesses:

ALBERT J. DE ZEYK,  
United States Deputy Consul,  
JOHN JONES.