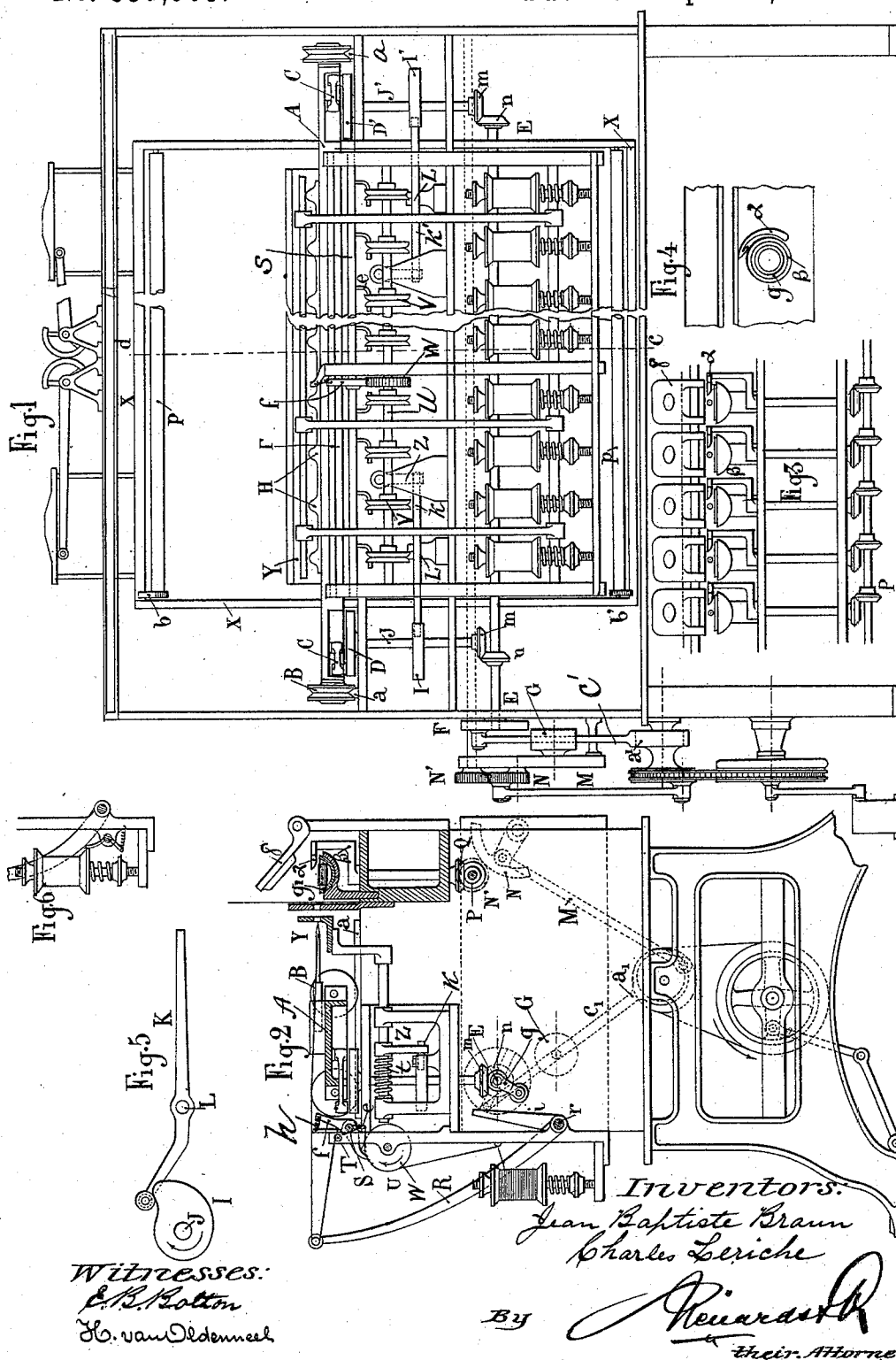


(No Model.)

J. B. BRAUN & C. LERICHE.
EMBROIDERING MACHINE.

No. 537,965.

Patented Apr. 23, 1895.



UNITED STATES PATENT OFFICE.

JEAN BAPTISTE BRAUN AND CHARLES LERICHE, OF PARIS, FRANCE,
ASSIGNORS TO CAMILLE CLERC, OF SAME PLACE.

EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 537,965, dated April 23, 1895.

Application filed August 17, 1894. Serial No. 520,546. (No model.) Patented in France September 30, 1893, No. 233,147.

To all whom it may concern:

Be it known that we, JEAN BAPTISTE BRAUN and CHARLES LERICHE, citizens of the Republic of France, residing at Paris, France, have
5 invented certain new and useful Improvements in Embroidering-Machines; and we do declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

10 A patent has been granted for this invention in France September 30, 1893, No. 233,147.

Our invention relates to embroidering machines of the kind known as machines with continuous threads; and the objects of the invention are to provide for the distribution of the thread automatically allowing constantly the same tightening of the stitches no matter what may be the variations of the length of the same, and, second, an improved manner in
15 which the stitch is made by the means of a hook actuated by an alternating motion, the shuttle remaining stationary. Hence no wearing out of the thread of the shuttle; a shorter course to be traveled by the needle, and consequently a greater rapidity and less danger
20 for the thread to break.

This machine is represented in the annexed drawings, wherein—

Figure 1, is a front elevation. Fig. 2, is a
30 transverse sectional view on the line *c d* of Fig. 1. Fig. 3, shows in elevation how, at the rear of the machine and in front of each needle the hooks are mounted which have a circular alternating motion. Fig. 4, is a plan
35 view of those hooked devices, the plate which keeps the shuttle in place being removed. Figs. 5 and 6 are detail views.

A is a carriage mounted in the ordinary manner, upon wheels B which roll over small
40 guiding rails *a*. This carriage is actuated by the connecting rods C. C. which are guided by the plates D D' mounted upon the extremity of the vertical shafts J. J'. These shafts J. J'. have a continuous rotary motion imparted to them by the shaft E through the intermediary of the bevel gears *m n*.

The circular continuous motions of the shaft E is produced by an arrangement consisting of an eccentric *a'* the rod *c'* of which can
50 glide freely in the piece G that can freely os-

cillate under the actions of the movements of the rod C' of the eccentric *a'*. The extremity of the rod *c'* actuates the plate F which by that mechanism has a continuous rotary motion.

H are the needle carriers.

I, I' are two cams mounted respectively upon the shafts J, J' which carry the plates D and D' fixed upon their upper extremities. These two cams I, I' actuate the levers K and K' 60 which pivot respectively at the points L actuating the cloth presser Y by acting upon the finger Z; springs *t, t*, Fig. 2 holding the cloth presser normally forward.

M, is a connecting rod that actuates the sector N which makes the pinion N' move in such a manner that the latter makes alternately only three quarters of a turn.

P, are toothed wheels which are mounted upon the shaft of the pinion N' and engage 70 with the wheels Q fixed upon the axle of each hook 2. The wheels P and Q having the same diameter and the hooks will receive an alternating circular motion of three quarters of a turn.

R, are tighteners or take up arms which the tension of the thread carry forward without effort.

g is a cam which carries the tighteners R backward, by working upon a finger *i* mounted 80 upon the shaft *r* of the tighteners.

S is the shaft regulating the distribution and the tension in our machine.

e are small curved rods or supports fixed to the shaft S. It is upon those supports that 85 the tension of the thread is exercised, which tension is produced when the thread must be fed.

h Fig. 2 is a spring which actuates the shaft S in order that the small supports *e* resume 90 always the position indicated in the drawings, when they have been compelled to abandon the same by the too strong tension of the thread and which can be regulated so that those little supports can be lifted by the thread 95 only after the latter has attained the desired degree of tension.

f is a pawl mounted upon the shaft S which oscillates with the latter. This pawl *f* engages with a ratchet wheel W which is fixed upon 100

the shaft U upon which the disks V are arranged one in front of each spool, in the groove of which disks the thread of each of these spools passes. The thread as shown in Fig. 2 passes through the spools over the grooved disks or pulleys V around the guide arms or supports *e* thence to the take up arms R and to the needles. Thus, when the thread will have the desired tension, its action will work upon the supports *e*, and the shaft S notwithstanding its antagonistic spring will be compelled to turn slightly and the pawl *f* that is fixed upon the same will follow the same motion and will be disengaged from wheel W. Then the disks V can turn freely and the necessary quantity of thread will be fed.

X, X is a frame in which the cylinders *p, p* are mounted upon which the cloth to be embroidered is stretched. This frame X, X is moved with relation to the needles by the usual pantograph.

Y, Y is the cloth tightener which springs *t, t* push always upon the cloth. It is brought backward by levers K K' which work upon the fingers Z, Z'.

d is the hook which is put in motion by means of the wheels P and Q. It makes thus only three quarters of a turn.

B is the channel into which the shuttle *g'* is placed, which here has only a light vertical play to let the thread pass underneath it.

S is the door which consists in this case of a simple plate the object of the door being simply to keep the shuttle in its place.

Being thus constructed our embroidering machine furnishes much better work, for, the adoption of the hook with alternating circular motion, provides that the thread is put upon the cloth without being distorted and it is possible to work faster as the thread is fed automatically and in the required quantity.

When the needle pierces the cloth the thread attracts the stretcher R which comes freely. Then, when the needle goes back the stretcher

R is also carried backward by the cam *g* which presses upon the finger *z*. The fabric carrying frame when moved by the pantograph draws upon the thread. This draft upon the thread oscillates the shaft S by means of the supports *e* the pawl *f* is disengaged from the ratchet wheel W, the disks V can turn freely

and the thread can be drawn from the supply in the quantity required by the displacement of the pantograph.

It would be hard to imagine a more simple mechanism that works so well, in which each spool is kept in place directly by a spring that prevents it from turning as long as the thread has not attained the desired tension for equilibrating that of the spring but allowing the thread to be fed as soon as the tension has become sufficient as shown in Fig. 6.

We claim as our invention—

1. An automatic tension device for embroidering machines comprising a shaft carrying a series of rollers over which the threads pass, and pawl and ratchet means for holding the shaft normally against rotation, said means being operated by the increase of tension on the thread to release the shaft and allow the thread to be fed, and said means being common to the whole series of rollers substantially as described.

2. A tension device for embroidery machines comprising the shaft carrying a series of rollers over which the threads pass a ratchet wheel thereon, a rocking shaft having a pawl engaging said ratchet wheel, and a series of arms also carried by said shaft and over which the threads pass whereby increase of tension rocks the shaft and releases the ratchet wheel permitting the thread to be drawn freely over the rollers, substantially as described.

3. A tension device for embroidery machines comprising the shaft carrying a series of rollers over which the thread passes a ratchet wheel mounted on the shaft, a rock shaft having a pawl engaging said ratchet wheel, a series of fingers on said rock shaft over which the thread passes, swinging arms carrying a shaft over which the threads pass, said shaft being permitted at times a free inward movement, and means for swinging the arms outward to draw out the thread, substantially as described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

JEAN BAPTISTE BRAUN.
CHARLES LERICHE.

Witnesses:

CAMILLE CLERC,
CHARLES CASALONGA.