Oct. 19, 1926. 1,603,328

A. DIETZ

THREAD LOOP STITCHING DEVICE

Filed May 21, 1924

Fig.1

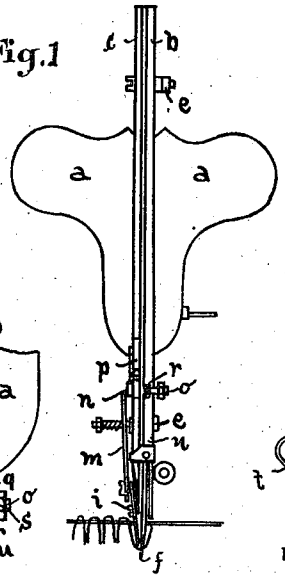


Fig.2

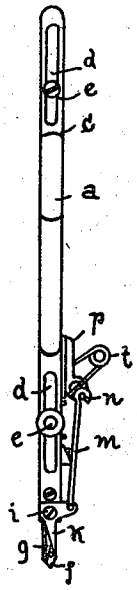


Fig.3

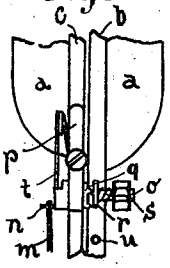


Fig.4

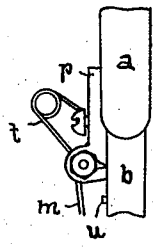


Fig.5

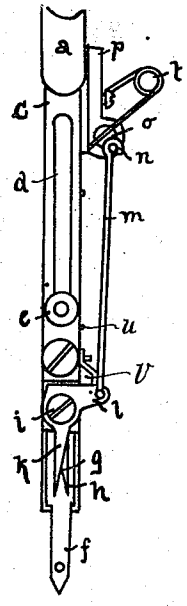


Fig.6

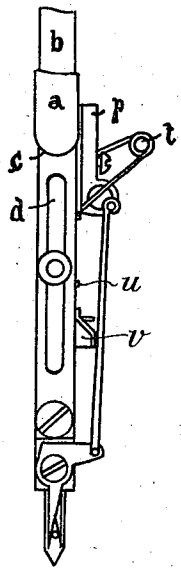


Fig.7

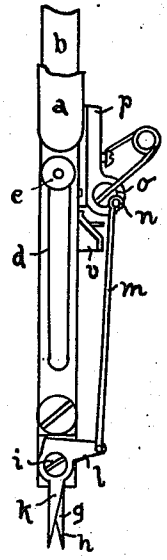
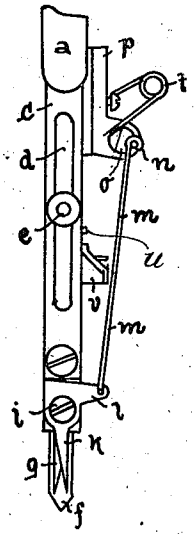


Fig.8



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UNITED STATES PATENT OFFICE.

ADOLF DIETZ, OF HAMBURG, GERMANY, ASSIGNOR TO TEPPICHFABRIC-ZENTRALE A.-G., OF LEIPZIG-MOCKAU, GERMANY.

THREAD-LOOP STITCHING DEVICE.

Application filed May 21, 1924, Serial No. 714,788, and in Germany August 25, 1923.

Thread loop stitching devices for stitching large surfaces of material are known wherein a loop holder is placed close to the needle which receives the thread, the loop holder being adapted to retain the loops when the needle is drawn out of the material and controls the forward movement of the needle.

The subject of the invention is a thread loop stitching device for the production of carpets, mats and the like of any suitable size wherein scissors are provided on the loop holder which are adapted to cut the loop formed by the needle at its lowest position. The device is preferably so arranged, that on the tightening limb of the scissors, formed by the loop holder, there is provided a rotatable limb which is operated by a rod actuated by a device provided on the guide rods.

An example of construction is shown by way of example wherein—

Figures 1 and 2 show a device in front and side elevation on a reduced scale.

Figures 3 and 4 show the operating device for the rod in front and side elevation in substantially normal size, and

Figures 5 to 8 show the scissors in various position in substantially normal size.

Two guide rods *b* and *c* provided with handles *a* are connected together at their slots *d* by adjustable screw bolts *e*. At the lower end of the rod *b* is secured a needle *f*, whilst the rod *c* carries at its lower end a loop holder of which one limb *h* is formed as one limb of a pair of scissors. To the loop holder there is rotatably secured by means of a screw *i* a second limb *k* of the scissors to the lever *l* of which is connected a rod *m*. The other end of this rod is connected to the crank pin *n* on a shaft *o* which is mounted in bearings *p* provided on the guide rod *c*.

The shaft *o* is provided with a toothed clutch member *q* the form of which can be seen from Fig. 3. A second toothed clutch member *r* is loosely rotatable on said shaft and is capable of movement into and out of engagement with the member *u*. The member *r*, by the agency of a spring *s*, is pressed into engagement with the member *q* on shaft *o*, so that said shaft will rotate when the member *r* is revolved. The member *r* is, upon guide rod *b* being reciprocated, actuated by means of a lug or projection *u* provided thereon. When the rod *b* moves downwardly the member *r* operates to rotate the shaft *o*, but upon the upstroke of said rod the member *r* rides over the teeth of the member *q* without rotating said shaft. Upon the guide rod *b*, below the lug *u*, a stop *v* is provided, which, at the time when the needle *f* and the guide rod *b* occupies its lowermost position, and the loop holder is in its topmost position, strikes against the lever *l* of the shear-limb *k*, so as to depress said lever and cause the shears to assume the open position. A spring *t* has one end attached to the support *p* and its other end engaged in a notch of the shaft *o*, said spring being operable to yieldably retain the shear limbs *h* and *k* in open position.

The operation of the device is as follows: The guide rod *b* with needle *f*, by means of the handle *a*, is thrust into the material from the reverse side thereof (Fig. 5). As soon as the needle has reached the lowermost position, the guide rod *c* with the loop holder is likewise projected through the cloth (Fig. 6). The needle is then pulled out of the material again, while the loop formed is held fast by the loop holder (Fig. 7). If the needle is then again thrust through the material to form the next loop at a certain distance, the projection *u* arranged on the guide rod of the needle engages with the clutch member *r*, and causes the same to be turned a certain distance. Owing to the fact that the member *r* engages with the member *q* of the shaft *o* the latter will be rotated, with the result that, by way of the crank *n*, pull rod *m*, lever *l*, and shear-limb *k* the shears will be closed, and the thread cut (Fig. 8). The shears, for the time being, remain in closed position, owing to the fact that the shaft *o* and the member *r* also remain in their positions since the spring *s* is not tensioned by rotation of the member *r* and has, as a consequence, no tendency to turn the shaft *o* or the member *r* back into its previous position. The loop holder is then withdrawn from the fabric and as a result the shear-limb *k* with its lever *l* is caused to abut against the stop *v* on the guide bar *b*, being thus pressed back into the open position (Fig. 5). As a consequence, the shaft *o* and the member *r* are also returned into their pre-

vious positions. Next the loop holder is thrust into the following hole contiguous to the needle. If, then, the needle is withdrawn while the loop is held fast by the loop holder, the lug *u* striking from below against the member *r* causes the latter to be rotated back, this return movement having no effect upon the member *q*. This cycle of events is repeated over and over again.

Instead of the hand drive shown in the drawing, it will be understood that the drive can be effected also by the application of motor power.

It will thus be seen that the device combines into one process the previously distinct operations of forming and cutting the loop. This means a considerable saving of time since a special shearing or smoothing treatment may be dispensed with, the loops being cut open in a perfectly uniform manner immediately after being formed. This does away with all waste, and allows of a considerable saving of thread material.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A thread loop stitching device including, in combination, guide rods, a needle carried by one rod, a loop holder carried by the other rod, cooperating cutting members one of which forms a part of said loop holder and the other of which is pivoted thereto, a rod connected to the last named cutting member, and means on one of the guide rods and connected to the last named rod for actuating said last named cutting member to cut a loop.

2. A thread loop stitching device including, in combination, guide rods, a needle carried by one rod, a loop holder carried by the other rod, cooperating cutting members one of which forms a part of said loop holder and the other of which is pivoted thereto, a rod connected to the last named cutting member, a rotatable shaft mounted on the second named guide rod and having a crank pin and to which the rod connected to said cutting member is attached, clutch members on said shaft, and a projection on the first named guide rod and engageable with one of said clutch members to effect the rotation of said shaft and consequent operation of said cutting members.

3. A thread loop stitching device including, in combination, guide rods, a needle carried by one rod, a loop holder carried by the other rod, cooperating cutting members one of which forms a part of said loop holder and the other of which is pivoted thereto, a rod connected to the last named cutting member, means on one of the guide rods and connected to the last named rod for actuating said last named cutting member to cut a loop, and a stop on said first named guide rod engageable with said pivoted cutting member to restore it to open position.

In testimony whereof I have signed my name to this specification.

ADOLF DIETZ.