

(No Model.)

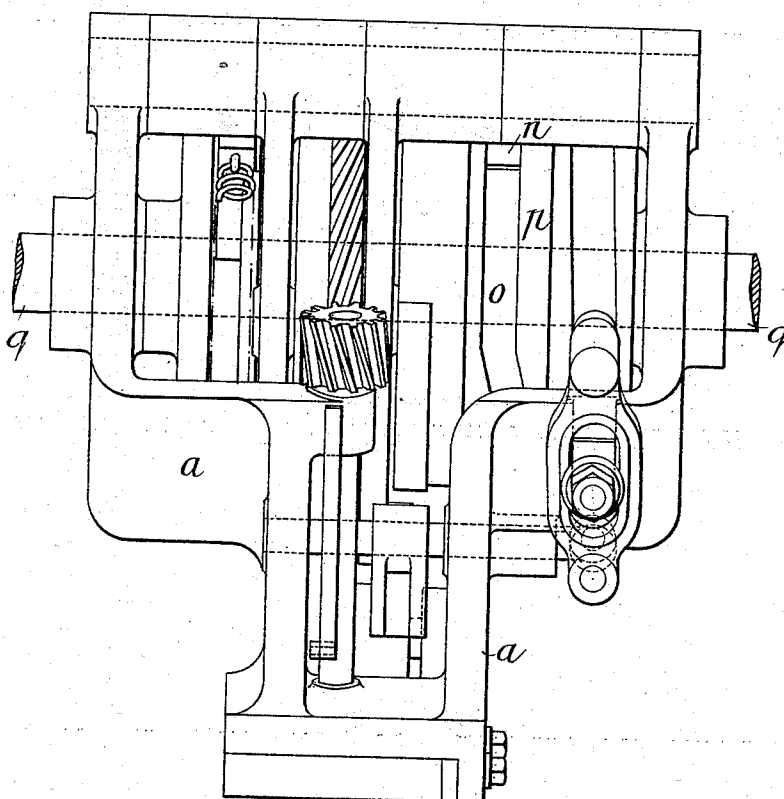
M. T. DENNE.
SEWING MACHINE.

4 Sheets—Sheet 2.

No. 505,034.

Patented Sept. 12, 1893.

Fig 2



Witnesses.

J. H. Redfern
J. W. Price

Inventor.

M. T. Denne

(No Model.)

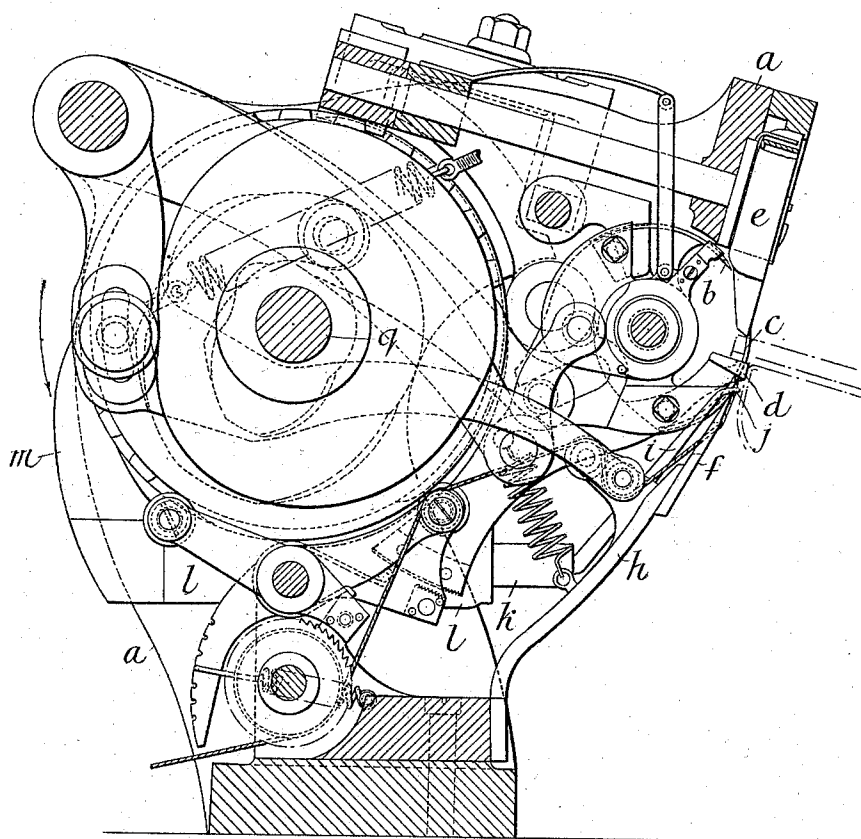
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Fig. 3.



Witnesses.

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Fig 4

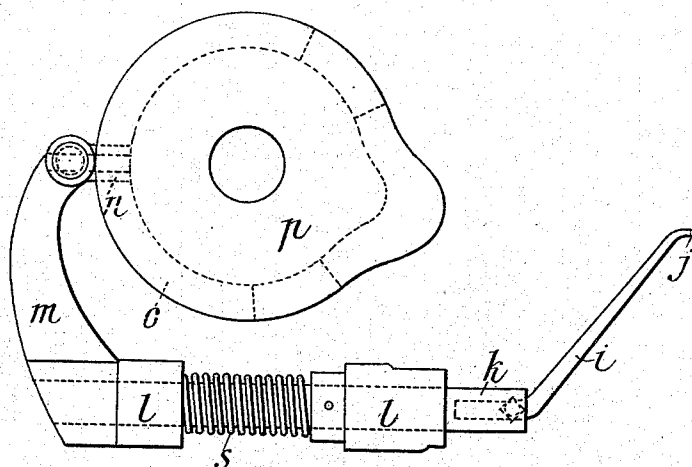


Fig 5

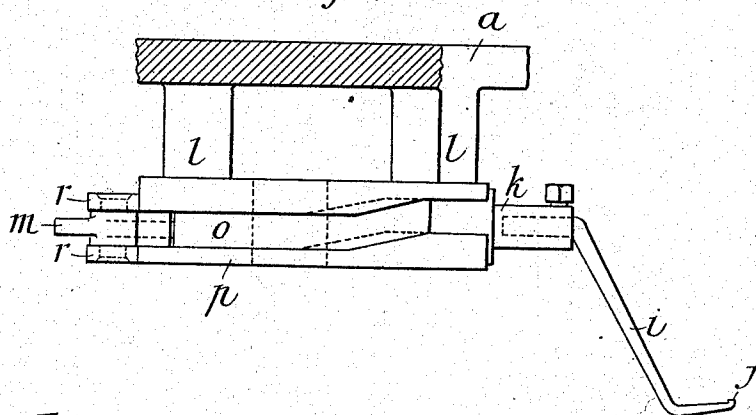
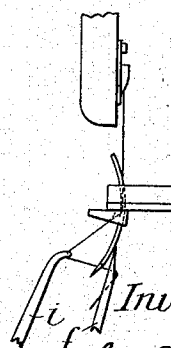
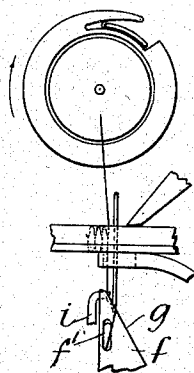
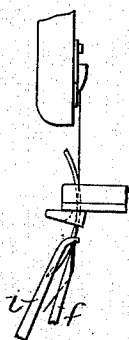
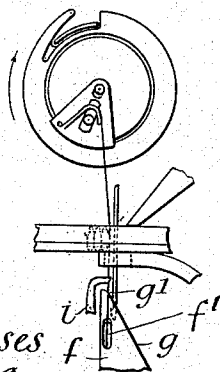


Fig 6

Fig 7

Fig 8

Fig 9



Witnesses
f
g
g'
f'

Inventor
M. T. Denne

UNITED STATES PATENT OFFICE.

MARK THOMAS DENNE, OF EASTBOURNE, ENGLAND.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,031, dated September 12, 1893.

Application filed September 27, 1892. Serial No. 447,045. (No model.)

To all whom it may concern:

Be it known that I, MARK THOMAS DENNE, a subject of the Queen of Great Britain, residing at Eastbourne, Sussex, England, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to sewing machines and especially to that class of such machines known as lock-stitch fair-stitching machines and in which barbed needles are employed.

The object of my present invention is to provide improved means for introducing the thread into the barb of the needle of such a machine.

According to my invention I provide a fixed blade or guide having an inclined edge which forms with the needle a V-shaped notch and, in conjunction with this blade, I employ a thread-puller designed to engage with the thread by means of a hook and to be operated to pull the same into a V-shaped notch and so into the barb of the needle. The said thread-puller also serves to provide sufficient slack to prevent the thread from being chafed as the needle draws back, at the same time that it is pulling the thread down the incline into the barb.

To enable my invention to be fully understood I will describe the same as applied to the machine forming the subject matter of my application filed September 27, 1892, Serial No. 447,046.

In the accompanying drawings,—Figure 1 is a front elevation of such a machine having my improvements applied thereto. Fig. 2 is a plan of the same; and, Fig. 3 is a section on the line 3 3, Fig. 1. Fig. 4 is an elevation of my thread-puller and its operating mechanism; and Fig. 5 is a plan of the same. Figs. 6 and 7 are views at right angles to each other illustrating one stage of the operation; and Figs. 8 and 9 are similar views illustrating another stage.

Similar letters of reference indicate corresponding parts in the several figures.

a indicates the frame of the machine, *b* the barbed needle, *c* the awl, *d* the work-support or welt-guide, and *e* the shuttle, all of which parts are fully described in my application above referred to.

f is my thread-guide, which consists of a plate having an inclined edge *g* so arranged that when the needle is in its lowermost position it will form with the said inclined edge a V-shaped notch, as indicated at *g'*, Fig. 6. The said thread-guide is attached to a bracket *h* below the work-support or welt-guide *d*, as shown, and has a vertical slot or eye *f'* through which the thread is passed.

i is my thread-puller which consists of an arm having a hooked end *j* and is secured to a bar *k* sliding in bearings *l* in the frame *a*, as shown in Figs. 1 and 4. The said bar *k* has also connected to it an arm *m* carrying a roller *n* running in a groove *o* of a cam *p*, the said cam being secured to the driving-shaft *q* of the machine. The said arm *m* also carries rollers *r r* running on the periphery of the cam.

It will be noticed by reference to Figs. 4 and 5 that the periphery of the cam is so shaped as to impart a forward and backward movement to the hook in addition to the lateral movement imparted thereto by the groove *o*. Normally the hook *j* occupies a position at one side of the path of the needle and its first movement is laterally in order to cause it to engage with the thread, then rearwardly to pull the thread into contact with the needle so that, when the needle rises, the barb will take the thread, then forwardly to slacken the thread as it is pulled by the needle through the work and then laterally to disengage itself from the thread. In order that the hook *j* may partake of these different movements, the bar *k* to which the puller is attached is adapted to slide and also partially rotate in its bearings *l* under the action of the cam *p*.

s is a spring which serves to keep the rollers *r, r* in contact with the periphery of the cam.

The operation of the apparatus hereinbefore described is as follows:—Assume the needle to be at the lowest point of its stroke, as shown in Figs. 6 and 7 and the hook of the thread-puller *i* in front of the thread as shown in Fig. 6, the said hook now engages with the thread from the last stitch and pulls it backward and down the inclined edge *g* of the thread-guide because of the backward and downward pull, causing the thread to be drawn into the V-shaped notch formed at *g'* by the needle and thread-guide *f* as shown in Fig. 8

so that the thread lies against the needle and a loop of thread (because such thread is thus pulled down such incline and consequently across the vertical path of the needle, and laterally away from the eye in the thread guide) is formed between where it crosses the barb of the needle and the last stitch, as shown in Figs. 8 and 9. The needle now moves upward and in doing so takes the thread with its barb, at the same time the thread-puller *i* comes forward until it reaches the front when the thread-puller is disengaged from the thread.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a sewing-machine having a barbed needle, the combination with the needle of a thread guide having an edge inclined to the line or plane of reciprocation of the needle thereby forming with the needle when the lat-

ter is in its lowest position, a V-shaped notch, and a thread puller, means for giving said thread puller movement in a downward and outward direction, thereby operating to draw the thread into such notch so that it will lie against the needle and so that in the upward movement of the needle its barb will take the thread, all substantially as described.

2. In combination the barbed needle, the fixed thread guide *f*. consisting of a plate having the inclined edge *g*. and slot *f'*, the thread puller *i*. having a hooked end *j*. and secured to a slide bar *k*., arm *m*. on said bar, and a grooved cam *p*. serving to give the forward and backward and also a lateral movement to the hook, all substantially as set forth.

MARK THOMAS DENNE.

Witnesses:

G. F. REDFERN,
T. W. PRICE.