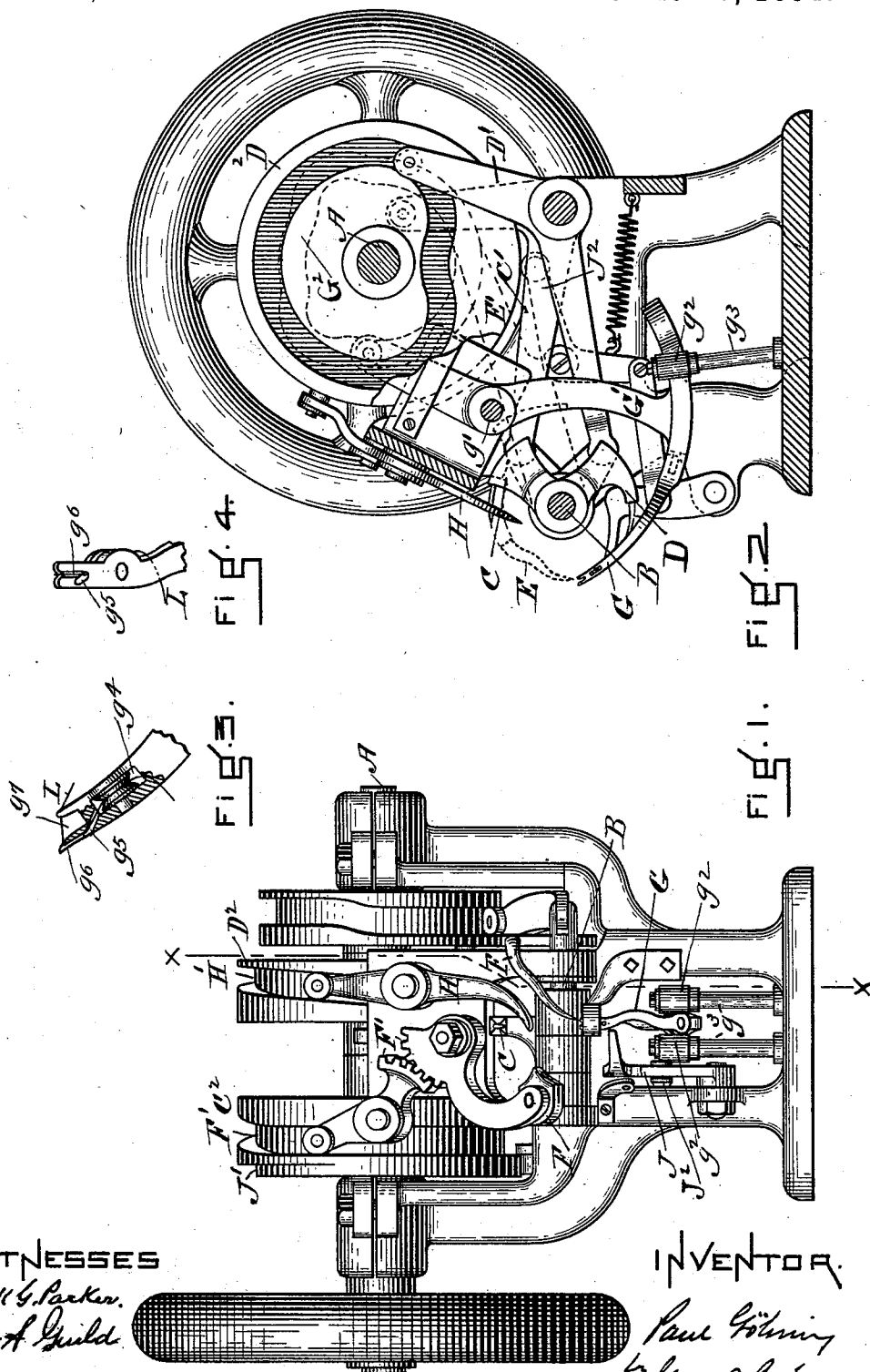


(No Model.)

P. GÖHRING.  
SEWING MACHINE.

No. 521,856.

Patented June 26, 1894.



WITNESSES  
Frank G. Parker.  
Ernest Guild.

INVENTOR.

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# UNITED STATES PATENT OFFICE.

PAUL GÖHRING, OF OBER-URSEL, ASSIGNOR TO THE DEUTSCH-AMERIKANISCHEN MASCHINEN-GESELLSCHAFT, OF FRANKFORT-ON-THE-MAIN, GERMANY.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 521,856, dated June 26, 1894.

Application filed October 19, 1893. Serial No. 488,568. (No model.) Patented in Germany July 20, 1892, No. 67,584; in France August 29, 1892, No. 223,994, and in England August 30, 1892, No. 15,528.

*To all whom it may concern:*

Be it known that I, PAUL GÖHRING, of Ober-Ursel, Kingdom of Prussia, Germany, have invented a new and useful Improvement in Machines for Sewing Boots and Shoes, (for which I have obtained Letters Patent in Great Britain, No. 15,528, dated August 30, 1892; in Germany, No. 67,584, dated July 20, 1892, and in France, No. 223,994, dated August 29, 1892,) of which the following is a specification.

My invention relates to lock stitch sewing machines for sewing boots and shoes, and more particularly to the kind having an oscillating awl piercing the sole from below, and a hook needle passing through from above and adapted to sew the sole around its whole circumference without removing the last. As constructed heretofore, the thread guide in such machines has either been attached to a lever pivoted below and in rear of the main shaft, or hung from the main shaft itself and operated by a lever and a link, the lever in each case being operated by a cam. In neither case is the mechanism satisfactory, for in the first place in neither case is it possible to get as great speed from the thread guide as from the other parts of the machine which are more compact and hence capable of rapid movement, and in the second place in shoes having a narrow shank it was almost impossible to operate the thread guide without interfering with, and perhaps injuring the upper. Such machines are described in Letters Patent No. 375,244 to Albrecht and No. 453,472 to Gros, in neither of which is the thread guide capable of doing satisfactory work.

My invention consists in a new thread guide operating mechanism, whereby the thread guide is moved through a short arc of short radius, whereby both of the evils above referred to are remedied.

In the drawings is shown at Fig. 1 a front elevation and Fig. 2 a section on line  $x, x$  of Fig. 1. Figs. 3 and 4 show in detail the end of the thread guide.

The details of the machine to which I have applied my invention and which is shown in the drawings, are fully described in Letters Patent No. 375,244 to Albrecht above referred to.

The machine consists briefly of a cam shaft A carrying suitable cams for operating the various parts. B is a shaft on which are mounted the needle carrier C and the awl carrier D, the awl operating from below to pierce the work and the hook needle following the awl down to receive the thread and pull it up through the work. The awl and needle are operated by suitable levers marked respectively D', C', the needle mechanism being operated by a suitable cam in the face of the wheel C<sup>2</sup> and the awl mechanism by a suitable cam in the face of the wheel D<sup>2</sup>.

E is the presser foot also mounted on shaft B and operated in the manner described in an application filed by me September 8, 1892, Serial No. 445,375, the parts operating the presser foot being herein marked E'.

F is the shuttle operated by a segment, lever and cam groove marked F' on the periphery of the wheel C<sup>2</sup>.

The thread guide is shown at G. It is given a forward and back motion by means of the lever G', to which it is directly connected. This lever is pivoted on a stud  $g'$  suitably supported, as near to the shaft B as is practicable, in order to give the thread guide a motion through an arc having as short a radius as possible for the purpose above described. It carries a cam roll and is operated by a cam groove G<sup>2</sup> (shown in dotted lines in Fig. 2) on one face of the disk D<sup>2</sup>. The rear end of the thread guide moves between two vertical rolls  $g^2$  mounted on supports  $g^3$ , so arranged that the guide will be suitably directed and at the same time its extreme end will be given a slight throw on one side in order to hook the thread over the needle, which will be understood from the patents above referred to.

H is a looper to divide the loop which the needle has brought up through the work so that the shuttle may easily pass through it. It is operated from the cam groove H'.

J is the take-up which is operated from a peripheral cam J' on the surface of the wheel C<sup>2</sup>, being connected thereto by suitable levers J<sup>2</sup>, the purpose of this part being to take up all the slack and so render it possible to draw the stitch tight. The take-up has a slot which

serves as a passage for the thread so that the thread, which is marked L, passes up through this passage in its shank, and then up into and through an oblique passage in the thread guide G, which will be understood from Figs. 3 and 4, the thread passing in at the opening  $g^4$  in the side of the thread guide over a roll and out through the oblique opening  $g^5$  in front of the thread guide. The end of the thread guide is provided with a notch  $g^6$  (see Figs. 1 and 4) to hold the thread within reach of the needle, as well as with a deep cut  $g^7$  (see Fig. 3) adapted to receive the point of the needle when it comes down to hook the thread.

15 The operation of these parts is as follows:— The work being placed in the machine and held there by the presser foot, the awl first comes up, the thread guide following it very closely. The needle descends as the awl is drawn from the work, and is received in the cut  $g^7$  in the end of the thread guide. The thread guide moves down as the needle rises, and at the same time the divider begins to move to separate the loop as it comes up through the work. The shuttle passes through the loop so divided and the take-up pulls the stitch tight, after which the operations are repeated, the feeding operation having taken place in the manner described in the Albrecht

30 patent above referred to.

It will be seen that the thread guide mech-

anism hereinabove described is much simpler than any heretofore known in this class of sewing machines, and is capable of easy and accurate adjustment, and by its construction has not only simplified the construction of the machine materially, but also has enabled the machine to work more rapidly and do work of a class which heretofore it has been unfitted to do.

What I claim as my invention is—

In a sewing machine, in combination, a cam shaft, a needle carrying shaft, a needle carrier and an awl carrier, both being mounted and adapted to oscillate on said needle carrying shaft, as described, a thread guide located below the work, the stud  $g'$  located between said cam shaft and said needle carrying shaft and close to the path of said needle carrier, a lever G' adapted to oscillate on said stud, the upper end of said lever being operated by a cam on said cam shaft, and its lower end carrying said thread guide, all as and adapted for the purposes set forth.

In witness whereof I have hereunto subscribed my name this 12th day of October, 1893.

PAUL GÖHRING.

Witnesses:

GEORGE O. G. COALE,  
W. A. RUMPF.