

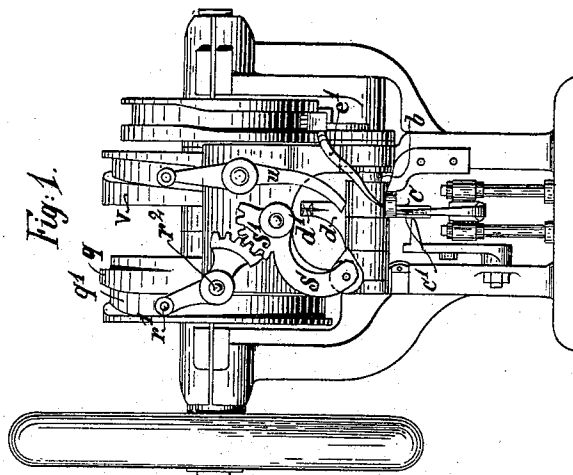
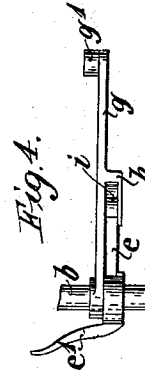
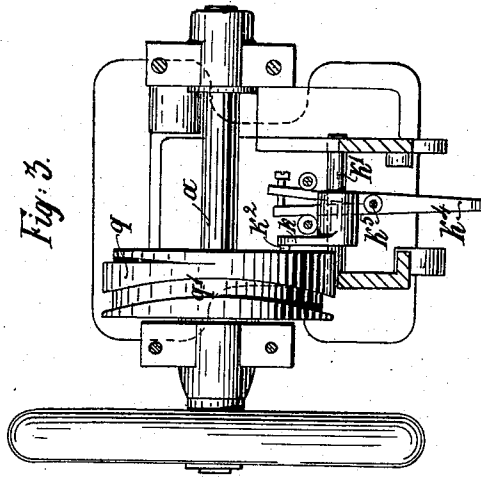
(No Model.)

2 Sheets—Sheet 1.

P. GÖHRING.
SEWING MACHINE.

No. 521,855.

Patented June 26, 1894.



Witnesses:
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E. Kaysen

Inventor:
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(No Model.)

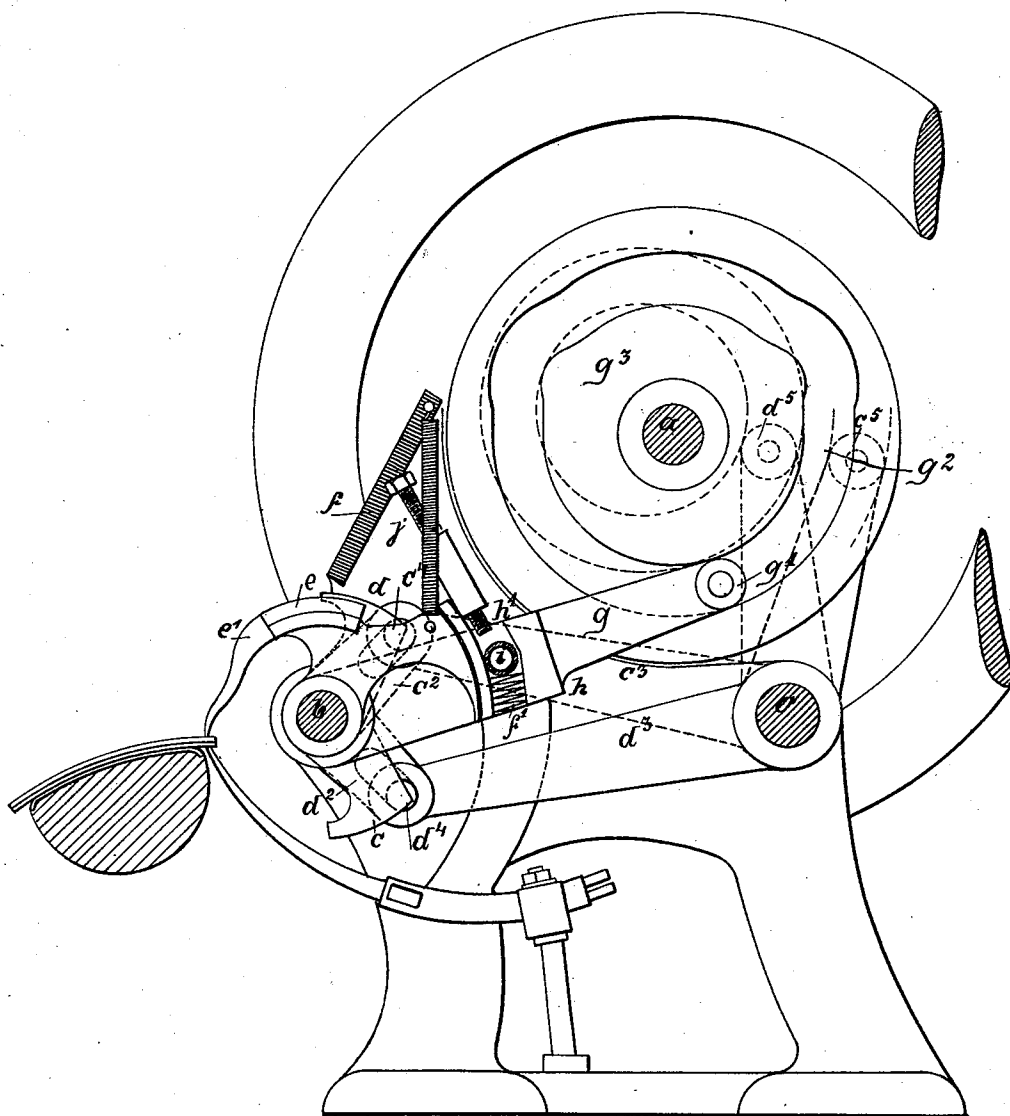
2 Sheets—Sheet 2.

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SEWING MACHINE.

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Fig. 2.



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UNITED STATES PATENT OFFICE.

PAUL GÖHRING, OF OBER-URSEL, ASSIGNOR TO EISENGIESSEREI AND MASCHINENFABRIK FÜR SCHUH AND LEDERINDUSTRIE, VORMALS MILLER & ANDREAE, OF BOCKENHEIM, NEAR FRANKFORT-ON-THE-MAIN, GERMANY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 521,855, dated June 26, 1894.

Application filed September 8, 1892. Serial No. 445,375. (No model.) Patented in Germany July 21, 1892, No. 69,735; in France August 29, 1892, No. 223,944, and in England August 30, 1892, No. 15,528.

To all whom it may concern:

Be it known that I, PAUL GÖHRING, a subject of the King of Württemberg, and a resident of Ober-Ursel, in the Province of Hesse-Nassau, Germany, have invented certain new and useful Improvements in Machines for Sewing Boots or Shoes, (for which Letters Patent of Great Britain, No. 15,528, dated August 30, 1892; Letters Patent of Germany, No. 69,735, dated July 21, 1892, and Letters Patent of France, No. 223,944, dated August 29, 1892, were issued to me,) of which the following is a full, clear, and exact 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 hooked needle above the same, so that the sole may be sewed on its whole circumference without removing the last; and my invention consists in several novel devices the conjoint object of which is to secure a steadier and more reliable working of the machine.

The general construction of the machine is the same as described in Letters Patent No. 375,244 and my present invention is an improvement of the said patented machine and its various details, when used together in the manner which I am about to describe, combine to make a machine much more practical and of much greater value than the machine described in said Letters Patent.

It relates to the means hereinafter described whereby the presser foot is allowed to automatically adjust itself to the thickness of the sole and is then clamped so that whatever the thickness of the work, it will be securely held between the presser foot and the work supported while the work is being pierced by the awl and needle.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved sewing-machine. Fig. 2 is a side elevation of the same, partly in section; Fig. 3 a plane view of the same, showing chiefly the means for imparting motion to the thread-guide;

Fig. 4 a detail view of the presser-foot and its operating lever.

Similar letters denote similar parts throughout the several views.

a is the main shaft of the machine, and b the shaft around which the awl-carrying head c and the needle-carrying head d oscillate. On the shaft b there is loosely mounted the lever e , carrying at its front end the presser-foot e' , and having a spring f , secured to its rear end, the other end of said spring being fixed to the frame of the machine. I may of course substitute a weight for the spring f . The rear end of the lever e is arc-shaped, as shown. Close to the lever e , and laterally of the same, there is another lever g , likewise loosely mounted on shaft b , and carrying a roll g' at its end, said roll working in a cam-shaped groove g^2 , provided on a disk g^3 , which rotates together with the main shaft a . This lever g has a lateral extension, h , which partly overlaps the arc-shaped end of the lever e . The side of this extension facing the periphery of the said arc-shaped end is beveled in the form of a gable roof, as shown at h' h' . In the free space left between these beveled surfaces h' and the lever e I locate a roll i (or a ball) of such a diameter, that it has a slight play at the place where the two beveled surfaces meet each other, but is clamped between the parts e and h' when moving out of this position, as will be readily understood by a glance at Fig. 2 of the drawings. I also secure to the frame of the machine an adjustable set-screw j , the point of which lies in the path in which the roll i moves together with the lever g . A spring f' constantly tends to raise the roll i .

The head c carrying the awl c' (which is not shown in Fig. 2) and the head d carrying the needle d' (shown only in Fig. 1) are loosely pivoted on the shaft b and oscillate to and fro, being impelled by the slotted cranks c^2 and d^2 , and the levers c^3 and d^3 respectively, pivoted at o and having at one of their ends pins c^4 d^4 working in the slots of the cranks c^2 d^2 , and at the other end rolls c^5 and d^5 respectively working in cam-shaped grooves,

which are provided in disks rotated together with the main shaft *a*.

I will now describe the thread-guide and the means for imparting an oscillating motion to the same. The pivot of the lever *k* 5 carrying the thread-guide, according to my present invention, is located at *k'*, between the shafts *a* and *b*, and as near as possible to the latter. A rocking motion of the lever *k* 10 and the thread-guide is obtained by means of the roll *k*² secured at the end of the same, said roll working in a cam-shaped groove *k*³, similarly to the rolls *g'*, *c*⁵ and *d*⁵. The thread-guide proper *k*⁴ is pivoted at *k*⁵ to the lower 15 end of the lever *k* in such a manner that it may swing laterally. The remaining parts connected to the thread-guide are constructed and operated as described in Letters Patent No. 375,244. This thread guide, I believe to 20 be new and it forms the subject of application for Letters Patent of the United States, Serial No. 488,568, filed by me October 19, 1893.

The means for obtaining the lateral oscillation of the shuttle *p* are the following: The 25 cam-disk *q* has a groove *q'*, in which works a roll *r'*, secured to one end of the lever *r*, pivoted at *r*². The other end *r*³ of the lever *r* has the form of a toothed sector, and engages with a similar toothed sector *s'* forming one 30 end of the double-armed lever *s*, the other end of which is linked to the shuttle *p*.

u is a hook oscillating sidewise and operated by means of the cam-disk *v*, the function of this hook being the same as described 35 in the above-mentioned Letters Patent No. 375,244.

The operation of my improved machine, in so far as it differs from the above patented machine, is the following: The set-screw *j* is 40 adjusted in such a manner that it will stop the movement of the roll *i* as the lever *g* approaches its highest position, and thus force the said roll between the lever *e* and the inclined surface *h'*, so that it will be clamped 45 between these parts and thereby effect a firm coupling between the levers *e* and *g*. In consequence thereof, the presser-foot *e'* secured to the former lever will be kept strongly pressed upon the sole and hold the same 50 tightly till the awl *c'* has passed through it. In this moment, when the boot or shoe has to be advanced by the length of a stitch, the lever *g* is depressed by the cam-disk *g*³, the roll *i* comes out of contact with the set-screw *j*, 55 the levers *e* and *g* are momentarily uncoupled, and immediately thereafter the roll *i* is raised by the spring *f'* so as to become clamped between the lever *e* and the upper inclined surface *h'* of the lever *g*. The levers *e* and *g* are 60 thus again coupled with one another. Consequently the lever *e* moves in unison with the lever *g* while the latter continues being depressed by the cam-disk *g*³, and the presser-foot *e'* is lifted off the sole. The latter is 65 thus free to be moved laterally as required. When this lateral displacement has taken place, and before the awl *c'* is drawn out of

the sole, the lever *g* is again raised by the cam-disk *g*³, and the levers *e* and *g* are coupled by the roll *i* striking against the point 70 of the set-screw *j* and being thereby clamped between the arc-shaped end of lever *e* and the lower inclined face *h'* of lever *g*, as already described. It will be obvious that at each upward and each downward movement of the 75 lever *g* the latter is momentarily uncoupled from the lever *e*. This state is employed for automatically adjusting the presser-foot *e'* to the exact thickness of the sole. As soon as the lever *e* is uncoupled from the lever *g* the 80 spring *f* asserts its power to raise the rear end of lever *e* and consequently to press the presser-foot *e'* upon the sole. Thus an automatic adjustment of the presser-foot *e'* to the thickness of the sole is secured. As the levers *e* 85 and *g* are coupled immediately thereafter, the position to which the presser-foot *e'* has been adjusted is preserved invariable till the next adjustment takes place.

The operation of the thread-guide *k*⁴ and 90 its carrying lever *k* will be easily understood without further explanation. In consequence of the particular location of the pivot *k'*, between the shafts *a* and *b*, and as close as possible to the latter, the length of the lever *k* 95 is reduced to a minimum, and it is possible to impart motion to this lever simply by means of a cam-disk and a roll *k*² working in a groove *k*³ of said cam-disk. The machine, in consequence of this particular arrangement, may be driven at any speed, whereas the speed was limited in the machines of the same kind used hitherto, owing to the complication of the mechanism for operating the 100 thread-guide.

The mechanism for operating the shuttle *p* is also a considerable improvement on that described in Letters Patent No. 375,244, and avoids the unsteady movement and rapid wear which occurred when employing the old 110 mechanism. The movement of the shuttle is smooth even in its extreme positions.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is— 115

1. In a sewing machine of the kind described, a work support, a shaft, a lever pivotally mounted on said shaft and carrying a presser foot, a second or operating lever, one end of which is also pivotally mounted on 120 said shaft, operating mechanism whereby said operating lever is oscillated and a clamp mechanism, one member of said clamp being connected with said operating lever, the other with said presser foot lever, all as and for the 125 purposes set forth.

2. In a machine of the kind described: the combination, with the presser-foot *e'*, the lever *e* carrying the same, said lever having an arc-shaped end, and the lever *g* adapted to 130 be operated by a cam-disk *g*³, and having a lateral extension *k* provided with inclines *h'* arranged in the form of a gable roof, of the roll *i*, the spring *f'*, adapted to effect the au-

5 tomatic coupling of levers *e* and *g* at each downward movement of the latter, the set-screw *j*, adapted to couple the same parts automatically at each upward movement of lever *g*, and the spring *f* adapted to effect the automatic adjustment of the presser-foot *e'* to the thickness of the sole, substantially and for the purpose as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PAUL GÖHRING.

Witnesses:

HERMANN AUGENREICH,
FRANK H. MASON.