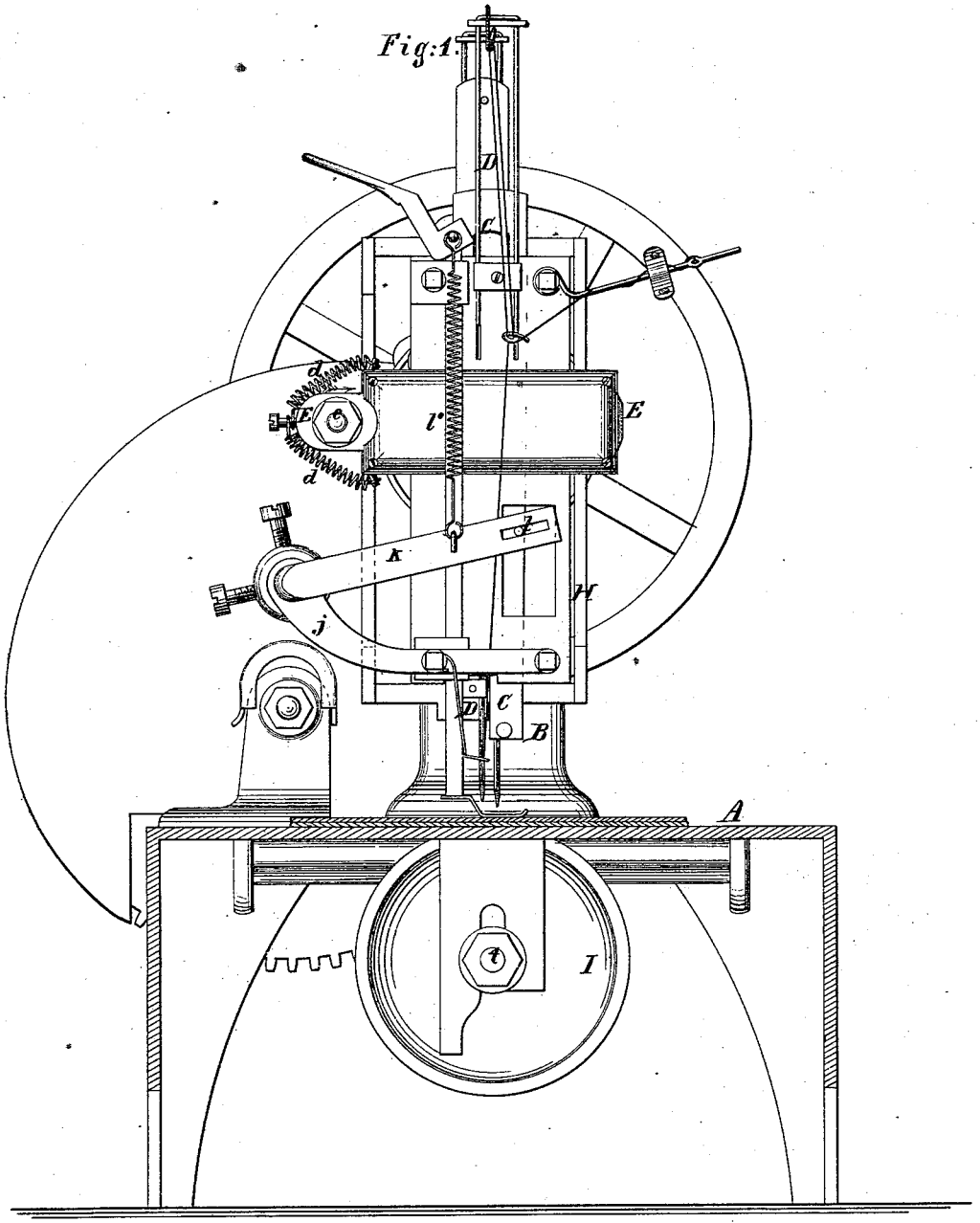
3 Sheets--Sheet 1.

L. CHEVALLIER.

Sewing-Machine.

No. 161,482. Patented March 30, 1875.

Fig: 1.



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Henry Gentner.

Inventor:
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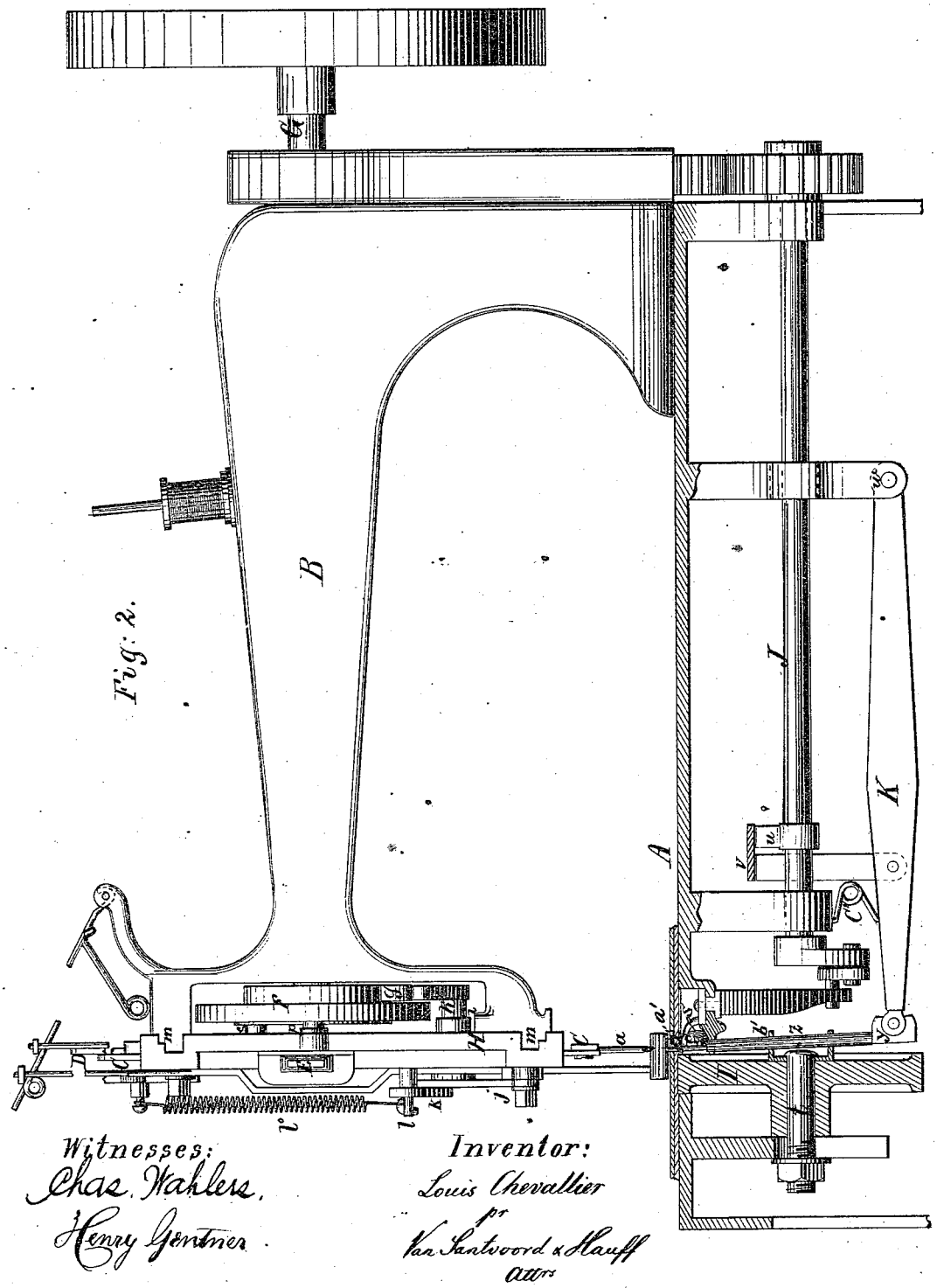
Attys

3 Sheets--Sheet 2.

L. CHEVALLIER.

Sewing-Machine.

No. 161,482. Patented March 30, 1875.



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3 Sheets--Sheet 3.

L. CHEVALLIER.

Sewing-Machine.

No. 161,482. Patented March 30, 1875.

Fig: 3.

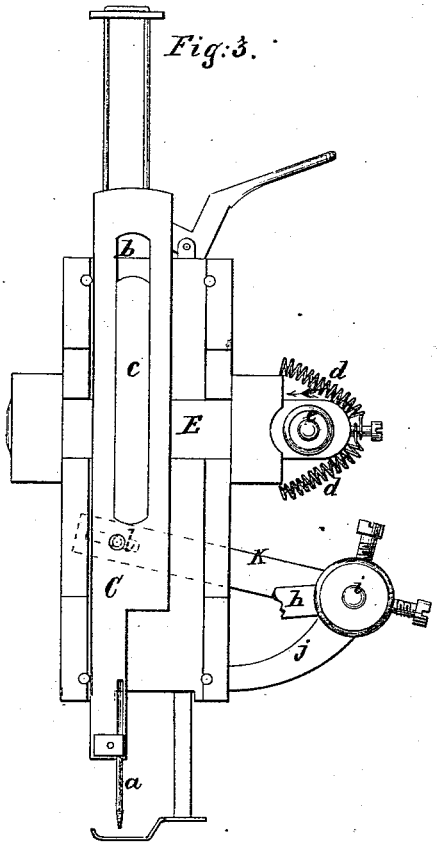


Fig: 4.

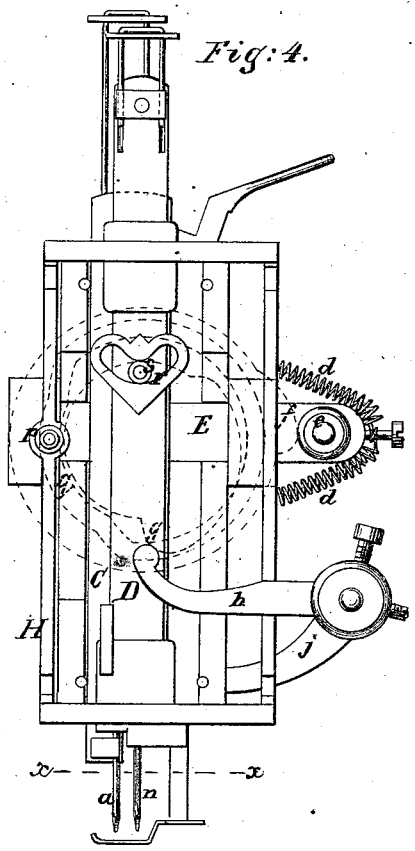


Fig: 5.

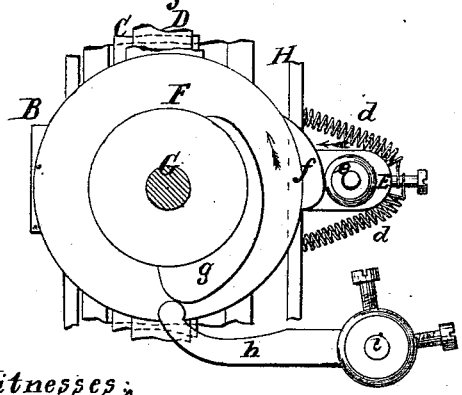


Fig: 6.

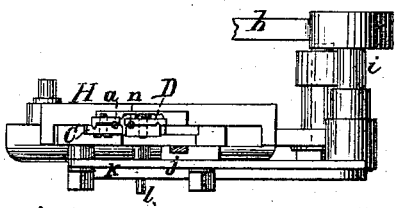
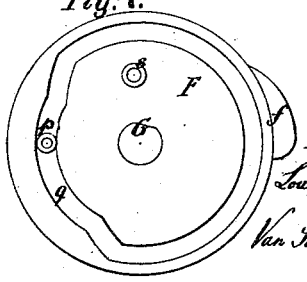


Fig: 7.



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UNITED STATES PATENT OFFICE.

LOUIS CHEVALLIER, OF BROOKLYN, E. D., NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **161,482**, dated March 30, 1875; application filed October 9, 1874.

To all whom it may concern:

Be it known that I, LOUIS CHEVALLIER, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a certain new and useful Improvement in Sewing-Machines, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 represents a front view, partly in section. Fig. 2 is a longitudinal vertical section. Fig. 3 is a rear view of the awl-slide. Fig. 4 is a rear view of the mechanism for operating the awl and needle slides. Fig. 5 is a transverse section of the main shaft, showing the cam-disk which imparts motion to the principal working parts of the sewing mechanism. Fig. 6 is a horizontal section in the plane *x x*, Fig. 4, looking upward. Fig. 7 is a face view of the driving-cam.

Similar letters indicate corresponding parts.

This invention relates to a sewing-machine which is intended particularly for leather work, and in which an awl and needle are used, which are situated in the same plane, both having a motion in the direction of the feed, so that the awl opens a hole in the work, and then it makes room for the needle to pass through the same hole.

This invention consists in the combination of an eye-pointed needle and its needle-bar, a feeding-awl and its bar, with a shuttle, the needle and awl being situated on the same side of the sewing-platform, and made to operate vertically and laterally, alternately and independently of each other, as will appear hereinafter.

The invention further consists in the combination of an awl-bar and needle-bar with each other, and on the same side of the work-plate, in such a manner that they are made to move vertically and laterally independent of each other, substantially as hereinafter specified.

The invention further consists in the combination, with the main awl and the needle of an organized sewing-machine, of a secondary awl, in such a manner that it will force back and compress the beard and ragged edges produced by the penetration of the main awl.

In the drawing, the letter A designates the work-plate of my sewing-machine, from which rises the arm B, to the front end or face of which are attached the awl-slide C and the needle-slide D, the awl-slide being in front of the needle-slide close behind it. The awl-slide is provided with a groove in its inner surface for the reception of the awl *a*, while the needle-slide has a similar groove in its outer surface for the reception of the needle *n*. These grooves are of such a depth that the awl and the needle, when secured in position, will be situated precisely in the same line, or in one and the same vertical plane, which also passes through the line of the feed-motion.

The awl-slide (see Fig. 3) is provided with a slot, *b*, which straddles a rib, *c*, that is secured to the inner surface of a transverse slide, E, and forms the guide for said awl-slide. The transverse slide E is subjected to the action of springs *d*, which have a tendency to force the same in the direction of the arrow marked thereon in Figs. 1, 3, and 5. From one end of said slide projects a pin, *e*, which carries a friction-roller, and this friction-roller is forced, by means of the springs *d*, toward a cam, *f*, formed on the circumference of a disk, F, which is mounted on the outer end of the main shaft G of the machine. (See Fig. 5.) On this disk is also formed another cam, *g*, which acts on a lever, *h*, mounted on the rear end of a rock-shaft, *i*, that has its bearing in a bracket, *j*, secured to the face-plate of the arm B. On the front end of said rock-shaft is mounted a lever, *k*, Figs. 1 and 3, which has a slot that straddles a pin, *l*, projecting from the awl-slide. A spring, l^o, which is hitched to the lever *k*, has a tendency to force the awl-slide upward, and it also serves to carry the end of the inner lever *h* toward the cam *g*. As the disk F revolves in the direction of the arrow marked thereon in Fig. 5, the awl is depressed through the work by the action of the cam *g*, on the lever *h*, and while the awl is kept down the cam *f* takes effect on the transverse slide E, and the awl, together with the work, is carried forward. Before the cam *f* releases the transverse slide, the cam *g* passes the end of the lever *h*, and the awl-slide is carried up by the action of the spring *l*, thereby withdrawing the awl from the work, and when the cam *f*

passes the pin *e* of the transverse slide, the awl is carried back to its original position by the action of the springs *d d*.

From this description it will be seen that my awl has four motions, first down, then forward, then up, and finally back to its first position.

The needle-slide D is guided in a frame, H, Figs. 1, 2, 4, and 6, which has a transverse sliding motion on rails *m*, Fig. 2, formed on the face end of the arm B. From the back of said frame projects a pin, *p*, which catches in a cam-groove, *q*, in the face of the disk F. (Shown in dotted lines in Fig. 4 and in full lines in Fig. 7.) This cam-groove is of such a shape that it imparts to the frame H a transverse sliding motion on its guide-rails. On the inner surface of the needle-slide is secured a heart-shaped cam-groove, *r*, Fig. 4, which engages with a pin, *s*, secured eccentrically on the outer face of the disk F, so that, by the revolution of said disk, a rising-and-falling motion is imparted to the needle-slide. The motions of the needle-slide are so timed that when the cam *f* moves the awl forward to produce the feed-motion, the needle is moved in the same direction, so as to make room for the awl, and when the awl has returned to its original position the needle-frame moves back and the needle descends, passing through the hole previously opened in the work by the awl.

In order to facilitate the feed-motion a smooth roller, I, is placed beneath the work-plate A. This roller revolves freely on a pin, *t*, Fig. 2, and its face projects up to a level with or slightly above the surface of the work-plate, so that it forms the support for the work. When the awl moves forward the roller I revolves and carries the work along.

The stitch is produced by the combined action of the needle and of a shuttle, S, the motion of which is so timed that it does not conflict with the motions of the awl. A crank-shaft, J, which is situated beneath the work-plate, transmits the required motion to the shuttle by any suitable mechanism. On this shaft is mounted an eccentric, *u*, which acts on a strap, *v*, that extends from a lever, K, Fig. 2. This lever has its fulcrum on a pivot, *w*, secured in a lug that projects from the under surface of the work-plate, and its front end connects by a pivot, *y*, with a slide, *z*, that moves up and down in a bracket, *b'*, which is secured to the inner end of the pin *t*, or which may be secured to any other part which is fixed to the work-table. In the upper end of the slide *z* is fastened an awl, *a'*, the object of which is to enter from below the hole opened by the upper awl *a*, so as to force back the beard produced by the upper awl, particularly in enameled leather. This secondary awl is constructed with a blunt entering or projecting end, and is seated in such connection with the cloth-plate that its projecting point will extend but a short distance above the same, preferably of a length less than the thickness of the material to be sewed, so that it will not pass entirely through the material, for if it be not of a determinate length there might be a tendency of the same to interfere with the free operation of the needle.

The motion of the lower awl must be so timed that it rises immediately as the upper awl rises, and that it descends so as to make room for the needle. A spring, *c'*, forces the lever K, together with the lower awl, down, so that said lower awl descends as soon as the cam *u* will permit such motion.

By placing the awl and the needle on one and the same side of the work-plate the work-plate forms the resistance for the thrust of the awl as well as for that of the needle, and the operation of this machine is rendered comparatively simple. If, instead of an eye-pointed needle, a hook-needle is used, the needle and the awl can be placed beneath the work-table, their motion being the same as above described. In this case the presser-foot must be so arranged that it is capable of resisting the thrust of the awl and needle.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of an eye-pointed needle and its needle-bar, a feeding-awl and its bar, with a shuttle, the needle and awl being situated on the same side of the sewing-platform, and each adapted to move vertically and laterally, alternately and independently of the other, substantially as described.

2. The combination of an awl-bar and needle-bar, both located on the same side of the work-plate, and each adapted to move vertically and laterally independent of the other, substantially as described, for the object specified.

3. In combination with the piercing or feeding awl and the needle, a secondary awl, having its projecting point extending above the cloth-plate, for forcing back the beard or ragged edges produced by the penetration of the main awl, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 5th day of October, 1874.

LOUIS CHEVALLIER. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.