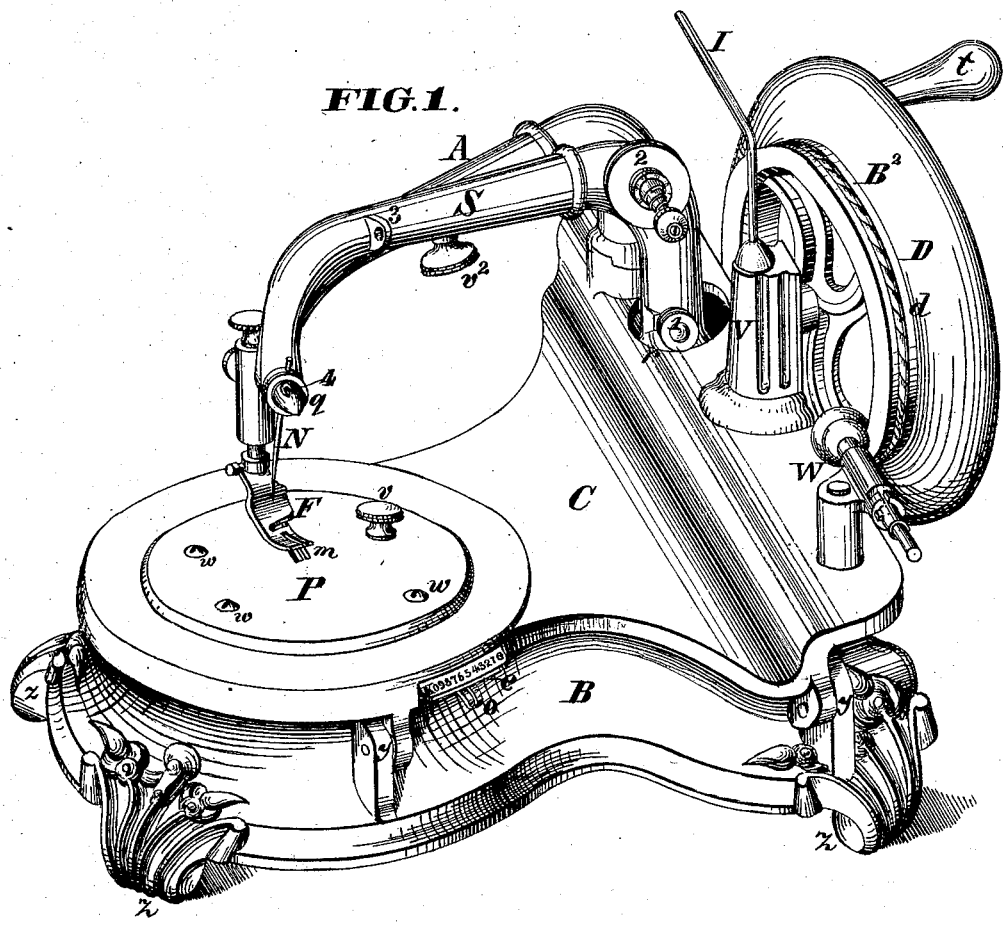
3 Sheets--Sheet 1.

A. E. SCHMIDT.
Sewing-Machine.

No. 162,697. Patented April 27, 1875.

FIG. 1.



WITNESSES

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FIG. 2.

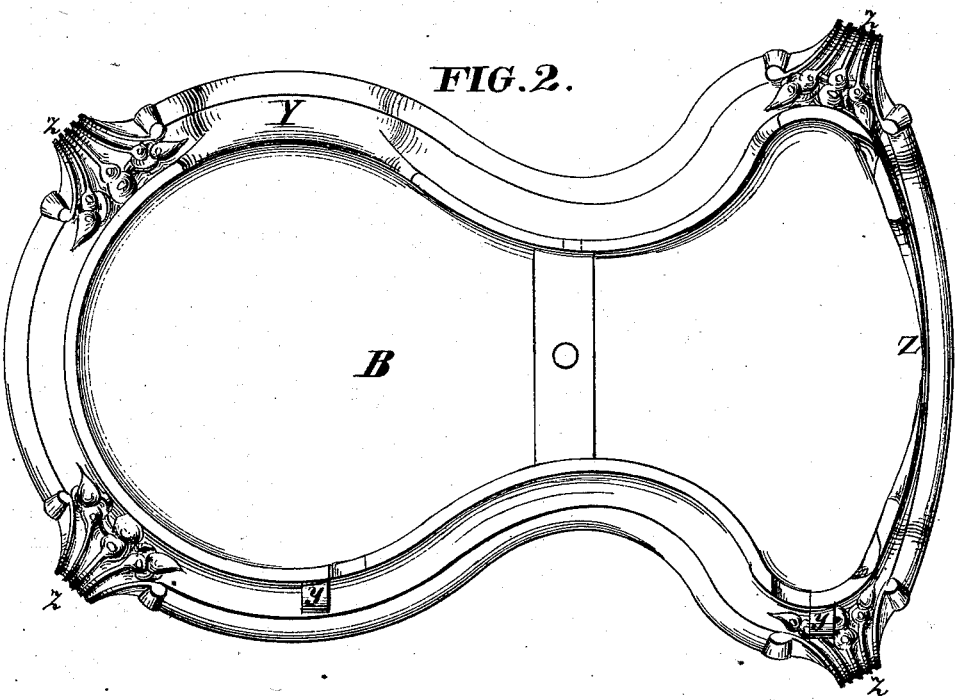

FIG. 3.

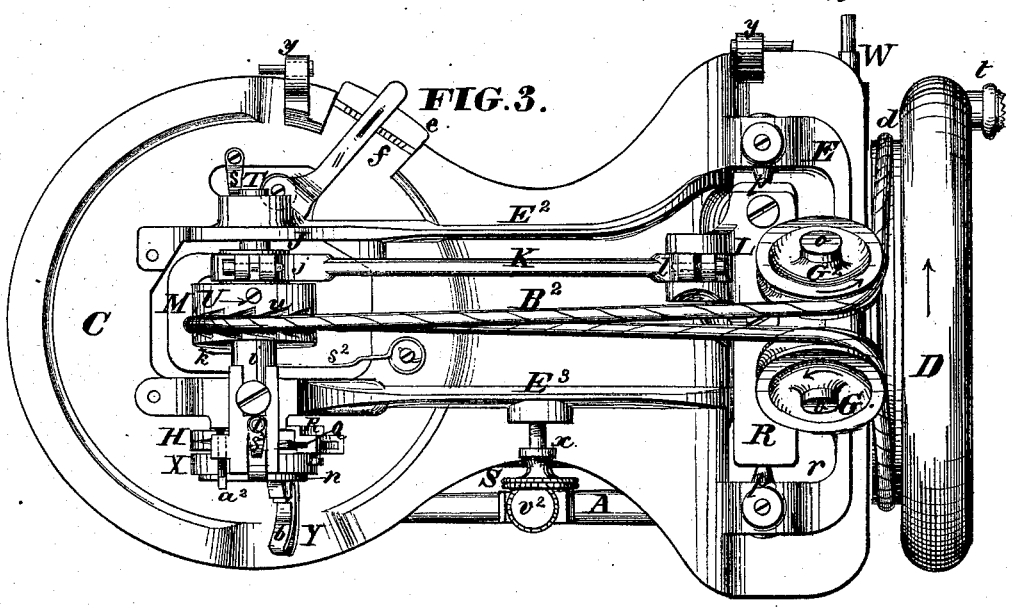

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FIG. 4

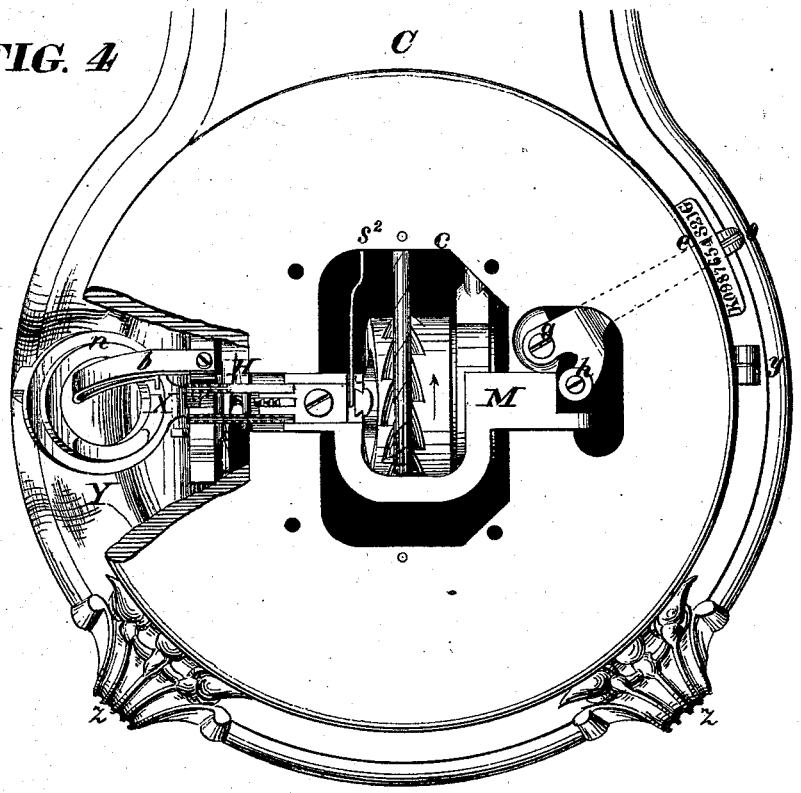
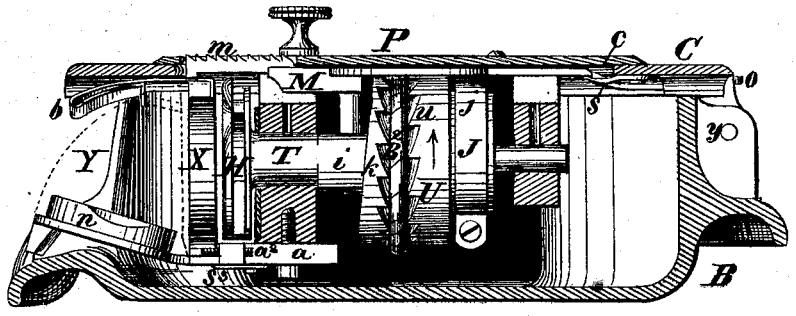


FIG. 5.



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UNITED STATES PATENT OFFICE.

ALBERT E. SCHMIDT, OF HAMBURG, ASSIGNOR TO THE HAMBURG AMERICAN SEWING-MACHINE MANUFACTURING COMPANY, LIMITED, OF BERLIN, GERMANY.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **162,697**, dated April 27, 1875; application filed September 21, 1874.

To all whom it may concern:

Be it known that I, ALBERT EDWIN SCHMIDT, of the city of Hamburg, in the Empire of Germany, have invented an Improved Sewing-Machine, of which the following is a specification:

This invention relates to rotary-hook sewing-machines, and is preferably embodied in a noiseless lock-stitch machine termed the "Germania System Silencieuse." The improved machine is adapted to stand on an ordinary table without fastenings, and is neat, compact, simple, and easy to operate.

The first part of this invention consists in a hollow metallic base of peculiar construction. This base has a close bottom and a hinged cap-plate, and serves, primarily, to support and inclose all the converting and transmitting mechanism with all the principal working joints and bearings. It serves also to constitute a drip-guard. The cap-plate is hinged at its front edge, and a locking-screw is provided at the rear edge for holding the same shut, so that the machine may be handled with facility. The arrangement of the hinges and a certain recess and post serve to accommodate a driving-wheel at the right-hand end of the machine in the most convenient position. The arrangement of the hinges serves also to preclude accidentally overturning the upper works of the machine by applying power to the driving-wheel when the base is unlocked.

The second part of the invention consists in a peculiar arrangement of pulleys, to provide for driving the rotary hook, shuttle-driving cams, and sewing-arm eccentrics beneath the cloth-plate at the left-hand end of the machine from a hand-wheel at the right-hand end of the machine, through the medium of a band or belt. The construction and arrangement of the pulleys are such as to give the greatest amount of tractional contact between the same and the band or belt, and at the same time to deflect the latter as required, and to render the arrangement, as a whole, simple and compact. The silent principle of the improved machine is chiefly embodied in this mechanism.

The third part of the invention consists in a bobbin-holder of peculiar construction arranged opposite an orifice in the hollow base, and having a hinged retaining-ring furnished with a fastening-catch and a spring, which throws the ring open when the catch is tripped, to facilitate removing and replacing the bobbin.

Figure 1 is a perspective view of this improved hand sewing-machine. Fig. 2 is a plan view of the base of the same. Fig. 3 is a plan view of the cap-plate and works, as removed and inverted. Fig. 4 is a plan view on a larger scale, representing a portion of the united base and cap-plate, with portions removed and broken away. Fig. 5 represents a vertical transverse section in the plane of the feed-bar.

Referring to the illustrative machine represented in the drawing, a hollow base, B, having a close bottom and close sides and top, except as hereinafter specified, supports the remainder of the machine, and incloses the converting and transmitting mechanism, and the working joints and bearings, with certain exceptions. The base is constructed with feet *z*, to rest on an ordinary table, and with a cap-plate, C, attached at one edge by hinges *y y* to the body of the base, and to the same, at its other edge, by a locking-screw, *x*, Fig. 3. A circular cloth-plate, P, is attached to the upper side of the cap-plate at its left-hand end by three flat-headed screws, *w*, and an ordinary attachment-screw, *v*, with milled head. A fixed arm, A, springs from the right-hand end of the cap-plate on its upper side, and is provided with a screw, v^2, for securing attachments thereto, and with a terminal presser-foot, F, of approved form, and its appurtenances. At the center of its right-hand end the cap-plate is provided with a strong standard or post, V, which supports a horizontal spindle-bearing for the driving-wheel D and a spindle-wire, I, on which the upper thread-spool is mounted.

The driving-wheel D consists of a heavy fly-wheel, provided on its inner side with a grooved pulley-flange, *d*, and on its outer side with a crank-handle, *t*. An ordinary bobbin-

winder and emery-wheel driver, W, completes the permanent attachments to the upper side of the cap-plate C. The left-hand end of the base is conformed to the circular cloth-plate, and is connected by a narrow waist to the right-hand end, which is made of increased hight, so as to accommodate a rocking bar, R, from which, at its rear end, an oscillating sewing-arm, S, projects. The latter extends through an open, *r*, in the cap-plate C, and by the side of the fixed arm to a point above the presser-foot, and is there provided with a transverse bolt, *q*, by which a curved needle, N, is attached. The sewing-arm carries also the thread-guides and tension devices 1 2 3 4. The cap-plate C is formed with depending ribs, flanges, or projections, E E^2 E^3, which serve as bearings and branch supports, as will now be described, and also to strengthen the plate. The first flange or projection E, at the right-hand end of the machine, is provided with a pair of center points, *p*, on which the rocking bar R oscillates. At the center of this end of the machine the same flange supports, at angles of about sixty degrees, a pair of spindles, *o*, on which grooved guide-pulleys G G^2 are mounted. The grooves of these pulleys, at their backs, are beneath the grooved pulley-flange *d* on the driving-wheel, and tangential thereto, or nearly so, so as to receive the driving band or belt B^2 from the latter, and to deliver it thereto, respectively. The loop of the driving-band or belt extends from the guide pulleys to a serrated groove, *u*, in a pulley, U, formed at the center of a short transverse shaft, T, which carries on its rear end a rotary hook, H. The teeth on the respective sides of the pulley-groove project alternately and form the frictional surface of the pulley. The left-hand ends of the longitudinal flanges E^2 E^3, suitably enlarged and recessed, support this shaft. An eccentric, J, between the pulley U and the front flange E^2, serves to drive the sewing-arm, being connected thereto by a rod, K, having straps *j l* at its respective ends, to embrace the said eccentric, and a crank-pin at the extremity of an arm, L, attached to the under side of the rocking bar R. A four-motion feed-bar, M, is arranged above the shaft T, and chiefly within an irregular orifice, *c*, in the cap-plate, exposed by removing the cloth-plate P, as illustrated in Fig. 4.

The front end of the feed-bar is supported from beneath by a spring, *s*, and its rear end carries the teeth *m*, which project through the cloth-plate. The feed-bar receives its motions from cam-surfaces *k i* on the pulley U and shaft T, and a wire spring, s^2. The feed is regulated by an adjustable stop, *h*, in the form of a roller, carried by a finger-lever, O. This is attached by a pivot-screw, *g*, to the top of the rib E^2 of the cap-plate, within the opening beneath the cloth-plate, and is elastic, and projects from beneath the front edge of the cap-plate, which is provided with a rack, *f*, to engage therewith, and with a scale-flange, *e*, above the same, bearing the numbers of the several lengths of stitch for which the feed may be adjusted. The lever is simply moved to the number representing the desired stitch, or it is moved toward K for a shorter stitch, or toward G for a longer one. A hook-brush, Q, is supported in an adjustable holder, R^2, which is attached to the back of the rear flange E^3 of the cloth-plate. The improved bobbin-holder X, having an annular hinged lid or retaining-ring, *n*, a spring-catch, *b*, for holding this closed, and a spring, s^3, for throwing the lid open when it is released, is attached to the rear flange E^3 of the cap-plate, and adjusted relatively to the hook by screws *a* a^2. An orifice, Y, formed partly in the back of the base B and partly in the cap plate C, opposite the bobbin-holder X, permits the same to operate, as illustrated in Figs. 4 and 5. The outer end of the catch *b* projects through this orifice to the rear edge of the cap-plate. By tripping this catch with the forefinger of the left hand, and turning the hook by a slight movement of the driving-wheel, the bobbin is discharged. To replace the bobbin, it is laid in the retaining-ring, so that the thread shall unwind in a direction opposite to the rotation of the hook, and the ring is then closed by the fingers and automatically secured by the catch *b*. Owing to the arrangement of the pulley-flange *u* on the driving-wheel, and the guide-pulleys G G^2 and pulley U, with serrated groove, and to the construction of the latter, the employment of a driving band or belt, B^2, is not simply permitted in the described compact machine, but the band is caused to embrace an unusually large extent of the peripheries of the driver and driven pulley, and a positive mesh with the driven pulley is afforded, so as to preclude slip. Consequently, a band or belt of small size and comparatively slight tension may be employed, it being understood that the lateral projections of the groove-walls do not penetrate the surface of the band or belt to any appreciable extent. The hollow base B, with its cap-plate C, as above described, consists of two light castings, and is consequently adapted to be cheaply made. It gives the machine sufficient weight to stand firmly without fastenings, and it is neat and strong. Its principal object, however, is to inclose the working joints and bearings, as also all the working parts, except the sewing-arm and driving-wheel. The inclosed parts are protected from dust, and thus from much wear. The hands, clothing, and work are kept from accidental contact therewith, and any drip of oil is caught by the bottom of the base. The hollow base thus greatly facilitates the use of the improved hand-machine. The driving-wheel D, located at the right-hand end of the machine, is in the most convenient position to be operated by hand, and is accommodated in this position by the standard or post V, already described, and a recess, Z, in the upper edge of the lower member of the base A. The

wheel is turned away from the operator in usual manner, and the arrangement of the hinges *y* on the base at its front edge prevents lifting the cap-plate and overturning the upper works accidentally should the locking-screw be left out. The wheel may, in some forms, have a groove, so as to be driven from a treadle.

The details of construction not above specified, as also some details which are described, form no part of the present invention, and are not essential thereto.

A hollow base adapted to rest on an ordinary table, and to support and inclose or partially inclose the working parts of a sewing-machine, is not broadly claimed as new. A bobbin-holder with a hinged cap, broadly considered, is also disclaimed, as are also other individual features of this machine not hereinafter specified as new.

Having thus described my improved hand-machine, the "Germania System Silenceuse," I claim as new—

1. The hollow base, having longitudinal hinges *y*, the standard or post V, and the recess Z, to accommodate a hand driving-wheel at the right-hand end of the machine, substantially as herein described.

2. The combination, in a hand sewing-machine, of the close-bottomed hollow metallic base B, having a recess or orifice, Z, at its right-hand end, and a cap-plate, C, hinged at its front edge, the post or standard F on the cap-plate at its right-hand end, and the vertical transverse driving-wheel D, supported by the latter, substantially as herein shown and described, for inclosing, protecting, and conveniently operating the converting and transmitting mechanism, in the manner set forth.

3. The combination, in a hand sewing-machine, of the oblique guide-pulleys G G^2, the pulley U, having a serrated groove, *u*, and the grooved pulley-flange *d*, arranged immediately above the guide-pulleys, to provide for rotating a transverse horizontal shaft beneath the cloth-plate at the left-hand end of the machine by a driving-wheel, D, on a longitudinal shaft at the right-hand end of the machine, through the medium of a band or belt, B^2, in the manner set forth.

4. A bobbin-holder, X, having a hinged retaining-ring, *n*, a spring locking-catch, *b*, and an opening-spring, s^3, operating automatically when the catch is tripped, said parts being constructed and combined substantially as herein shown and described.

ALBERT EDWIN SCHMIDT.

Witnesses:

ALO. BAUNIER,

JAMES GRAY.