

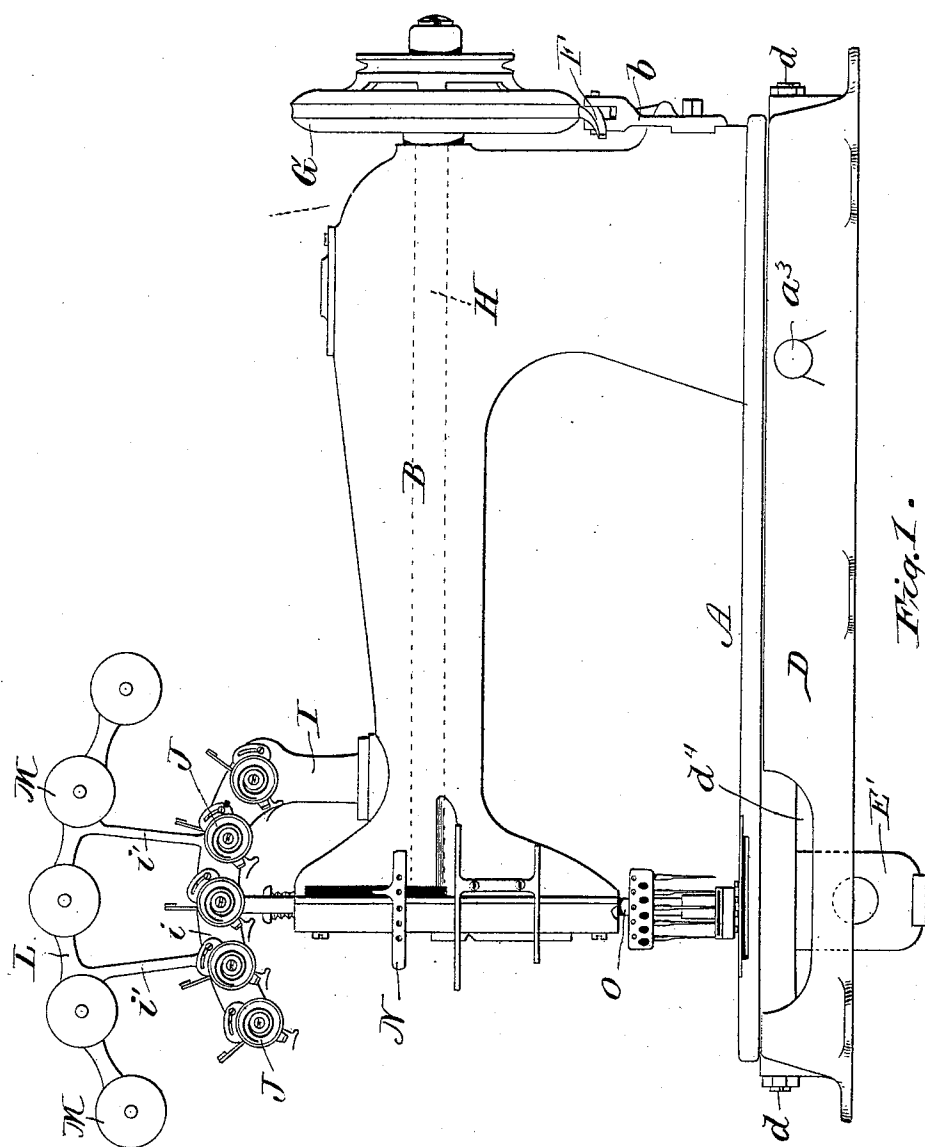
(No Model.)

4 Sheets—Sheet 1.

P. DIEHL.
SEWING MACHINE.

No. 538,664.

Patented May 7, 1895.



WITNESSES:

C. W. Benjamin.
A. Benjamin.

INVENTOR:

INVENTOR:
Philip Diell,
BY *Henry Calver*,
ATTORNEY.

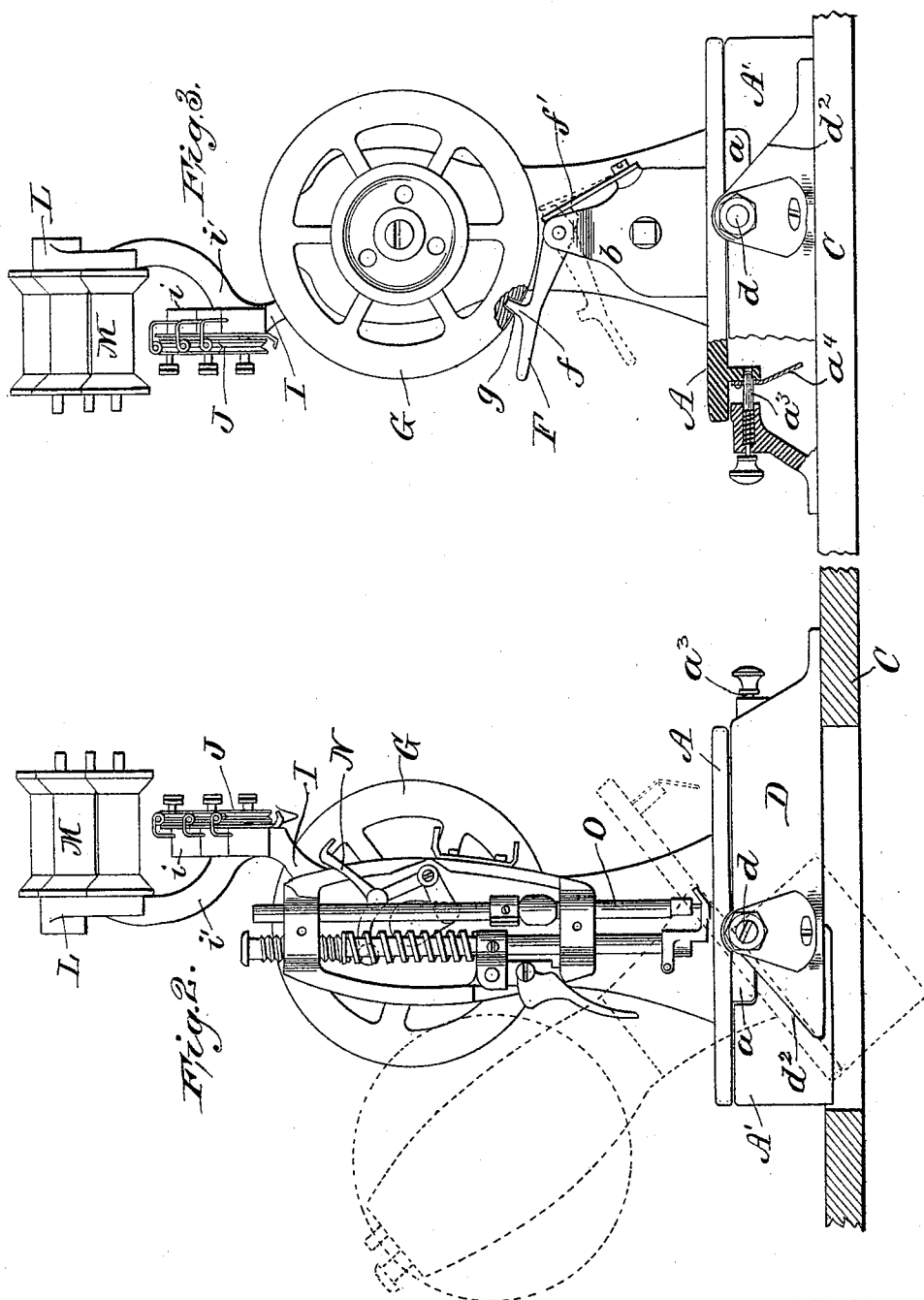
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4 Sheets—Sheet 2.

P. DIEHL.
SEWING MACHINE.

No. 538,664.

Patented May 7, 1895.



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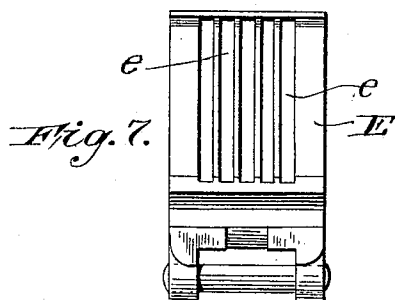
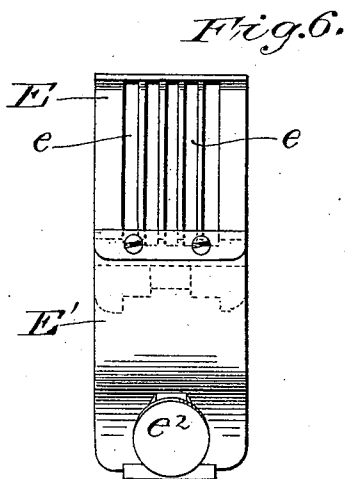
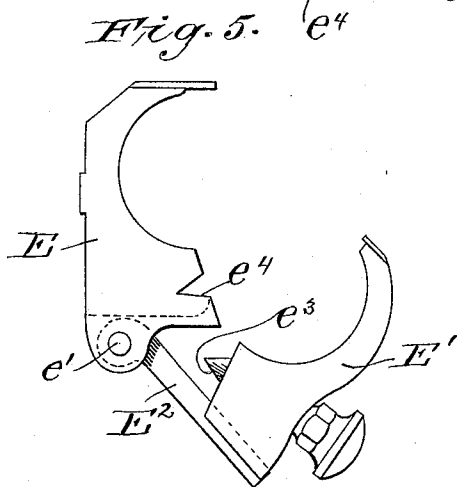
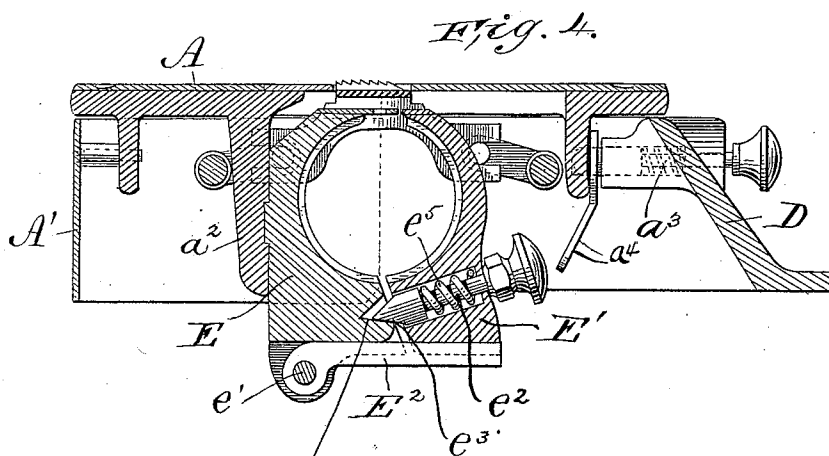
(No Model.)

4 Sheets—Sheet 3.

P. DIEHL.
SEWING MACHINE.

No. 538,664.

Patented May 7, 1895.



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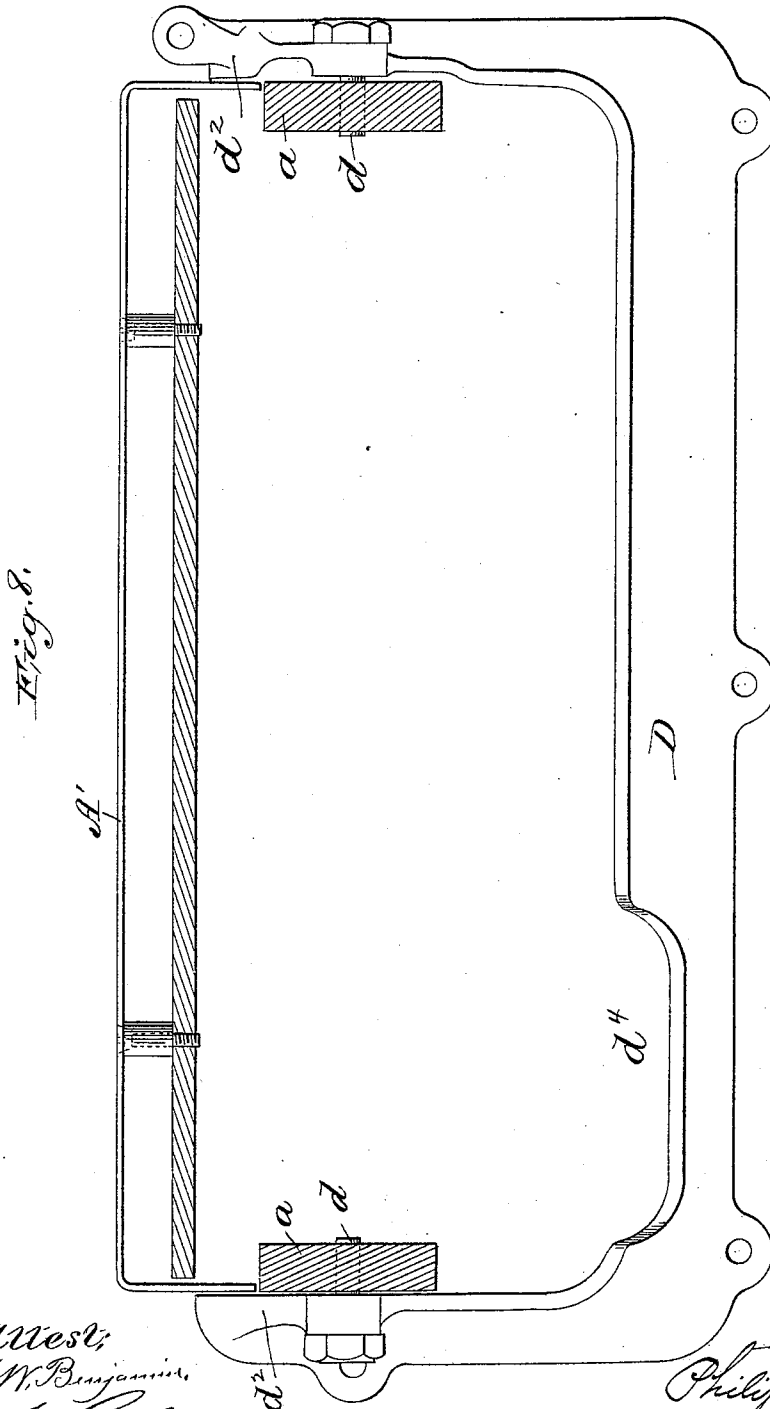
(No Model.)

4 Sheets—Sheet 4.

P. DIEHL.
SEWING MACHINE.

No. 538,664.

Patented May 7, 1895.



Attest:
C. W. Bergmann
Notary Public

Inventor:
Philip Diehl
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UNITED STATES PATENT OFFICE.

PHILIP DIEHL, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER
MANUFACTURING COMPANY OF NEW JERSEY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 538,664, dated May 7, 1895.

Application filed July 19, 1894. Serial No. 518,039. (No model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Multiple Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of multiple sewing machines in which a plurality of oscillating shuttles are employed in connection with a plurality of needles for simultaneously producing several independent parallel seams, and my invention has for its object to provide a machine, of the class referred to, which will combine the greatest possible convenience for the operator with the highest possible efficiency and durability.

In my improved machine the bed-plate thereof is pivotally mounted on a base-piece fixed to the table or work-bench and serving partly as a housing to inclose and protect the works beneath the bed-plate, the housing being completed at the rear side of the machine by a depending flange fixed to the pivoted bed-plate, the hinged bed-plate being secured in working position by a locking pin which attaches it to said base-piece.

The shuttle-race consists of two parts one of which is fixed relative to the bed-plate of the machine and the other of which is hinged to the rear portion of the said fixed part in such a manner as to easily clear the shuttles when it is let down, the point of division of the two part shuttle race being at or near the center of the race and directly or nearly beneath the needles, and the machine being turned up or over on its hinged or pivoted bed-plate when the shuttles are to be inserted or removed so that the shuttles will rest securely in the fixed portion of the race when placed in position and will not fall out when the hinged part of the race is turned down, thus providing means for the convenient insertion or removal of the shuttles from beneath the work-plate when the pivoted machine is turned over, and avoiding the inconvenience of inserting or removing the shuttles through an opening in the work-plate.

The hinged part of the shuttle race is held in working position by a spring-pressed, wedge-shaped locking pin which firmly locks said hinged part in place so that there is no looseness or play thereto. To avoid danger of spilling the shuttles from the fixed portion of the race, by turning the driving shaft of the machine, when the hinged part of said race is open, I provide a locking latch which engages the fly wheel, the recess in said wheel entered by said latch being so arranged as to lock the driving shaft with the needles raised and with the shuttle driver in such position as to permit the shuttles to be inserted into or removed from the race.

In the drawings, Figure 1 is a front elevation of my improved machine. Fig. 2 is a front end view thereof with the face-plate removed, and Fig. 3 is a rear end view. Fig. 4 is a cross-section through the two-part shuttle-race. Figs. 5, 6, and 7 are detail views of the shuttle-race. Fig. 8 is a plan view to show the housing base-piece and flange.

A denotes the bed-plate and B the bracket arm of my improved machine.

Fixed to the work-bench or table C is a base-piece D in which are mounted pins *d* engaging lugs *a* depending from the bed-plate A, said pins thus serving as pivots by means of which the said bed plate is hinged to said base-piece between the front and rear sides of said bed-plate, and the machine is thus nearly balanced on its pivots so that it may be easily turned over when access to the shuttles beneath the work-plate is desired. The base-piece D extends along the front of the bed-plate A and partly across both ends thereof and overlaps a housing flange-piece *A'* fixed to or formed integral with said bed plate and which housing flange extends along the rear side of said bed-plate and partly across both ends thereof, said flange and base-piece together forming a housing to inclose the mechanism beneath the bed-plate and protect the same from dust and dirt. The hinged or pivoted bed-plate A is locked to the base piece D by a spring-pressed locking-pin *a'* which is forced outward, as the bed-plate is turned down, by an inclined guard plate *a''*.

The shuttle race, which is provided with a

series of grooves *e* for the reception of a series of shuttles, consists of a fixed part E, rigidly attached to a lug or hanger *a*² depending from the bed-plate A, and a movable part E' which is hinged or pivoted at *e'* to the lower rear portion of the said fixed part of the said race so that as the said hinged or movable part E' is turned down on its pivot *e'* it will readily clear the shuttles which will be held by gravity in the fixed portion of the race when the machine is turned over on its pivots in the position denoted by dotted lines in Fig. 2. The part E' is carried by the bar E² which may or may not be integral with the said part E'.

The hinged part E' of the shuttle-race is held in working position by a spring-pressed locking pin *e*² mounted in said hinged part, the inner or locking end of said pin having an inclined face *e*³ to engage a similarly inclined face *e*⁴ of a recess or groove formed in the fixed part E, and thus as said pin is forced into locking position by its spring *e*⁵ it will have a wedging action to hold said hinged part in rigid working position and thereby avoid any looseness or rattle thereof.

The two-part shuttle race is divided centrally, or directly or nearly beneath the needles, at its inner or concave portion, and this construction, which is preferred, is permitted owing to the fact that the fixed portion of said race is carried by a bed-plate which is hinged or pivoted between its front and rear sides to the base-piece D so that when the machine is turned up or inclined, as denoted in dotted lines, Fig. 2, the shuttles will rest by gravity on the fixed part of the shuttle race.

The bed plate hinge pivots *d* are arranged longitudinally of the bed plate, so that the machine may be turned over sidewise, and the pivot *e'* of the hinged part of the shuttle race is also arranged longitudinally of the bed plate, or parallel with the bed plate pivots, so that convenient access to the shuttles will be afforded when the bed plate is turned up or inclined, and the hinged part of the shuttle race is turned down.

When access to the shuttles is necessary and when the hinged part of the race is open, it is desirable that the driving shaft of the machine should be locked so that it cannot be turned to allow the shuttle driver to disturb the shuttles, and to this end I provide a locking dog or latch F which is pivotally mounted on a lug or bracket *b* at the rear end of the arm B, the tooth *f* of said locking dog being arranged to engage a hole or recess *g* formed for its reception in the balance wheel G fixed to the driving shaft H journaled in the upper part of the arm B. A spring *f'* serves to hold the said locking dog F either in or out of locking position. The hole or recess *g* is so arranged on the wheel G that when the tooth *f* of the locking dog is engaged there-with the needles will be raised and the shuttle driver will be in proper position for the insertion or removal of the shuttles.

Attached to the forward part of the arm B is a bracket I having a curved bar *i* on which are mounted the tension devices J, and extending upward from said bar *i* are two arms *i'* which support a curved bar L having a series of spool pins which support the spools M, the said bracket I thus serving as a support for a series of tension devices and spools for a multiple sewing machine.

The take-up N, needle-bar O and their operating mechanism, as well as other parts of the machine not herein described, are, or may be, of any ordinary or well-known construction, and need not therefore be herein described.

In the use of my machine, when access to the shuttle race is desired, for the purpose of placing shuttles therein or removing them therefrom, the locking dog F is turned up to bring its tooth *f* against the balance wheel G, and when the hole or recess *g* in said wheel comes into register with the said tooth the latter is forced by the spring *f'* into said hole or recess, thus locking the driving shaft of the machine with the needles raised and with the shuttle-driver in such position as to permit of the insertion or removal of the shuttles. The machine is now turned over on its pivots or hinges to the position shown by dotted lines in Fig. 2, and after the spring-pressed locking pin *e*² has been withdrawn the hinged part E' of the shuttle-race is turned down as denoted by Figs. 5 and 6, and the shuttles may then be inserted into or removed from the fixed part E of the shuttle race which now lies over in such a position that the shuttles will securely rest therein by gravity until the shuttle race is again closed. The turned-up position of the machine when the shuttles are to be inserted or removed insures convenient access to the shuttle race when the latter is opened and avoids the inconvenience of getting access to the shuttles through an opening in the work-plate. When the machine is turned over for access to the shuttle-race the inclined parts *d*² of the base piece D and which are extended inward slightly beneath the extreme ends of the bed-plate A serve as stops for said bed-plate to limit the tilting movement of the machine on its hinges or pivots. To facilitate access to the shuttles the base-piece D is recessed or cut away at *d*⁴ in front of the shuttle race.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a multiple sewing machine, the combination with a suitable base or support, of a bed plate hinged thereto by pivots extending longitudinally of said bed plate so that the latter is adapted to be turned over sidewise, a two-part shuttle race adapted to receive a series of shuttles, one part of said shuttle race being fixed relative to said bed plate and the other part of said shuttle race being hinged to the fixed part thereof by a pivot which is also arranged longitudinally of the bed plate,

and means for locking said hinged part in working position.

2. In a multiple sewing machine, the combination with a suitable base or support, of a bed plate hinged thereto by pivots extending longitudinally of said bed plate so that the latter is adapted to be turned over sidewise, said pivots being between the front and rear sides of said bed plate, a two-part shuttle race adapted to receive a series of shuttles, one part of said shuttle race being fixed relative to said bed plate and the other part of said shuttle race being hinged to the fixed part thereof by a pivot which is also arranged longitudinally of the bed plate, and means for locking said hinged part in working position.

3. In a multiple sewing machine, the combination with the base-piece D to be fixed to the work-bench or table and the bed-plate A hinged between its front and rear sides to said base-piece by longitudinal pivots and provided with the housing flange piece A' overlapped at the ends of the said bed-plate by said base-piece, of the shuttle race consisting of the part E fixed relative to said bed-plate and the part E' hinged to said part E, and the spring-pressed locking pin e² mounted in said part E' and engaging a suitable recess in the said part E.

4. In a multiple sewing machine, the combination with the base-piece D to be fixed to a work-bench or table and having the inclined inwardly extending stop portions or parts d², of the bed-plate A pivoted between its front

and rear sides to said base-piece and having its extreme ends extended over said parts d², a two-part shuttle race one part of which is fixed relative to said bed-plate and the other part of which is pivoted to said fixed part, and a locking device for holding said hinged part in working position.

5. In a sewing machine, the combination with a base piece, as D, to be fixed to a work bench or table, of a sewing machine bed plate pivoted to said base piece between its front and rear sides and provided at its rear side with the housing flange piece A', said housing flange piece being overlapped at the ends of said bed plate by said base piece, thereby constituting, with the latter, a housing to inclose the mechanism below the work-plate of the machine and protect the same from dust.

6. In a sewing machine, the combination with a base piece, as D, to be fixed to a work bench or table and having the inclined stop portions or parts d², of the bed plate A pivoted between its front and rear sides to said base piece, and having its extreme ends extended over said parts d² so as to rest against the same when the machine is turned over on its pivots for access to the parts beneath the work-plate of the machine.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP DIEHL.

Witnesses:

J. G. GREENE,
L. L. BURRITT.