No. 608,553. Patented Aug. 2, 1898.

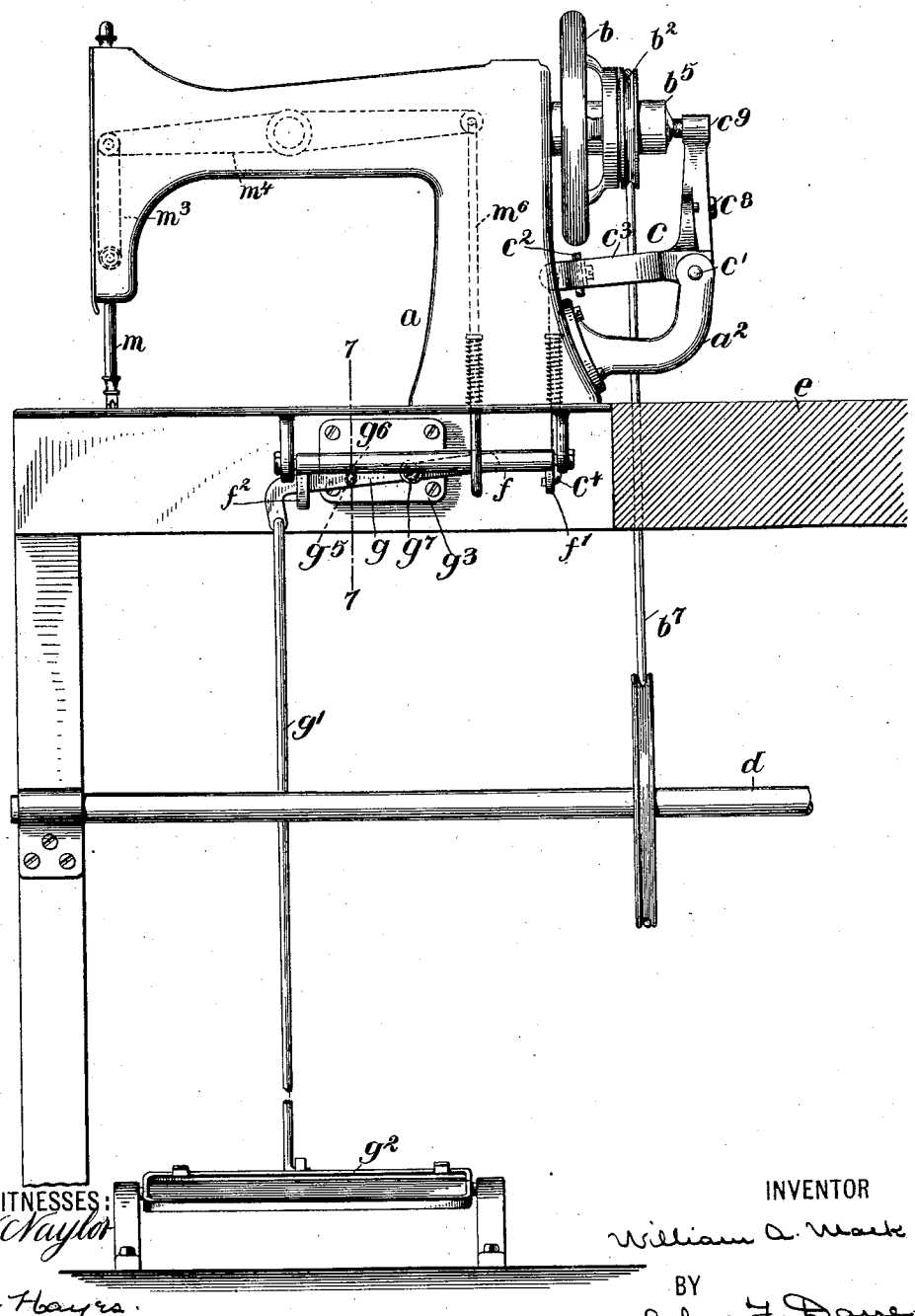
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SEWING MACHINE.

(Application filed Dec. 28, 1896.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.



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No. 608,553. Patented Aug. 2, 1898.

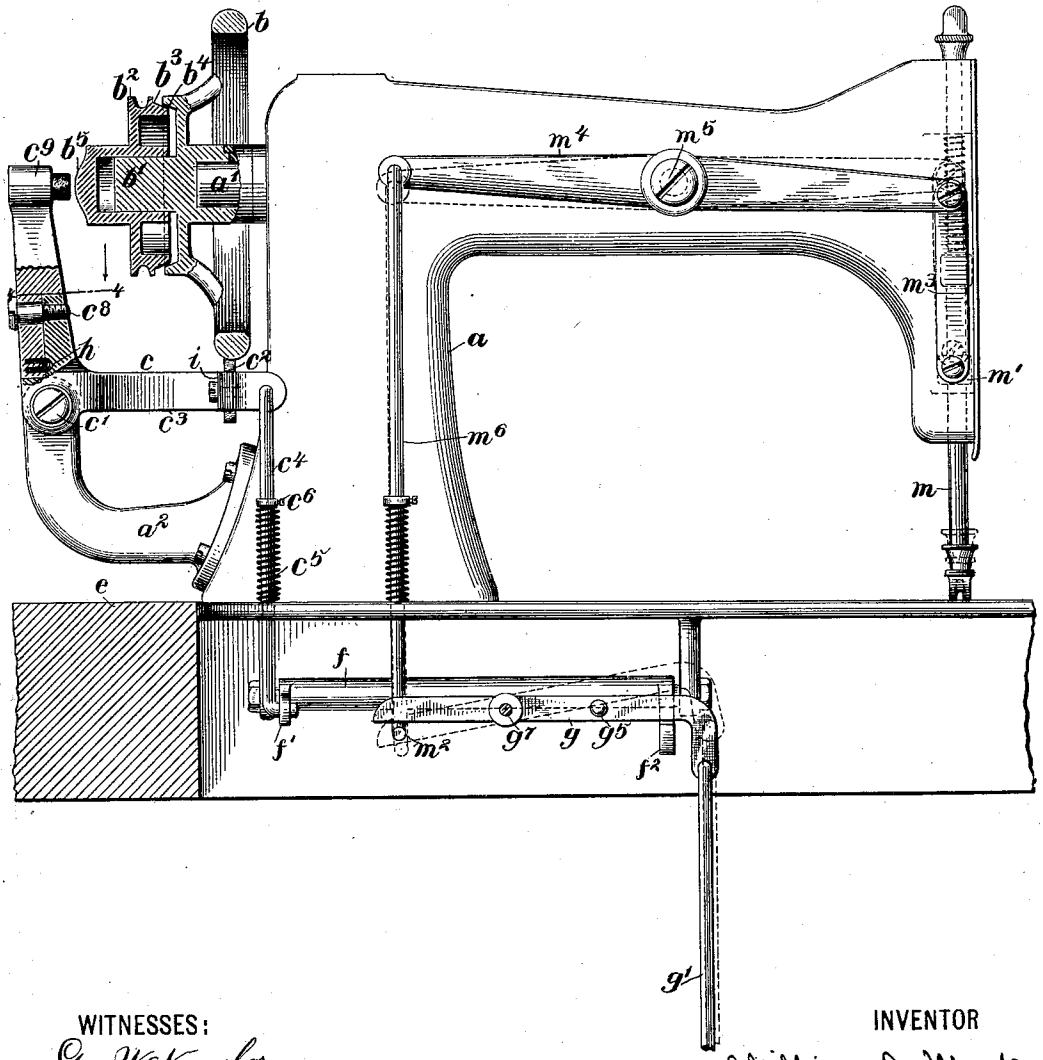
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Fig. 2.



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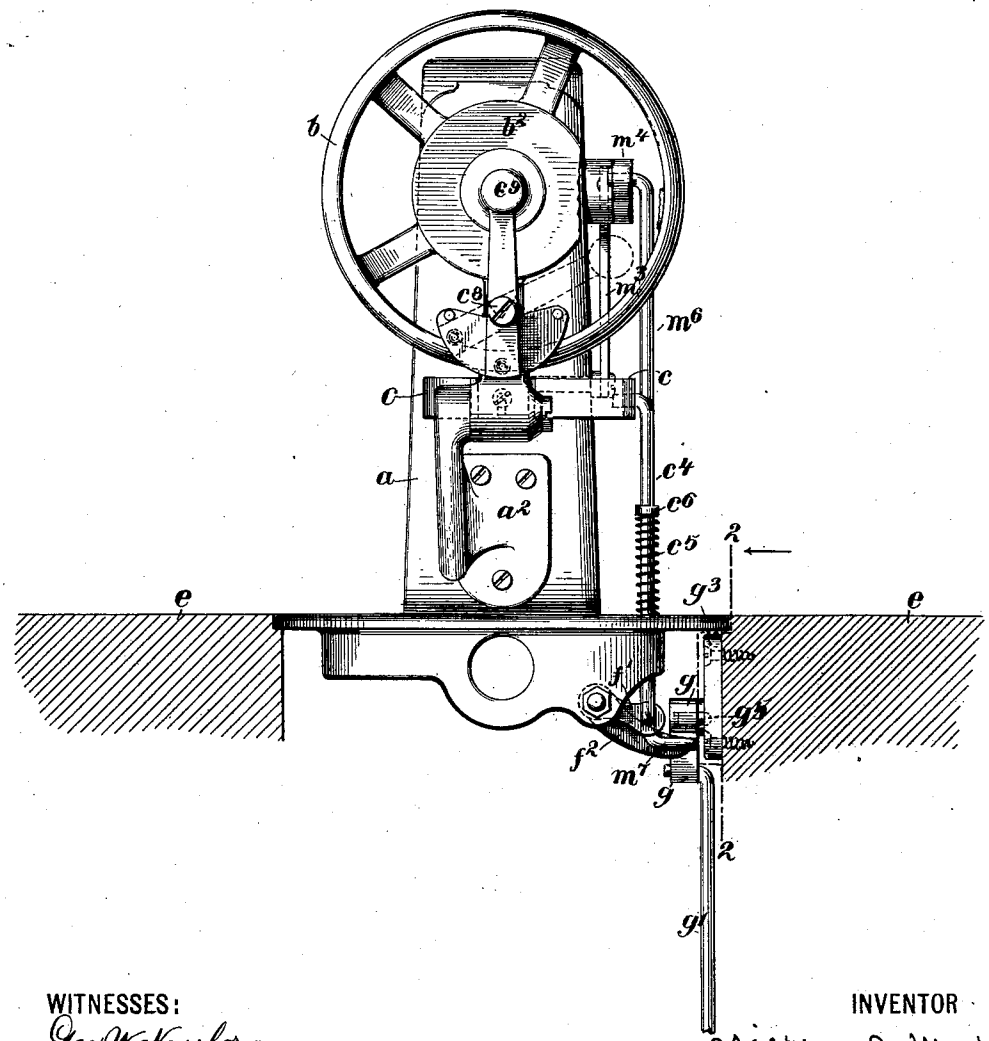
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Fig. 3.



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Fig. 4.

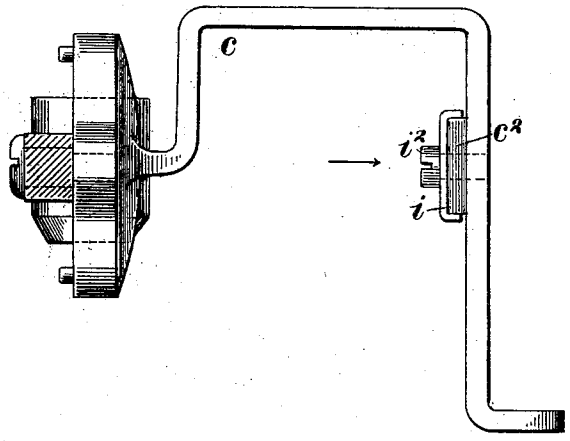


Fig. 6.

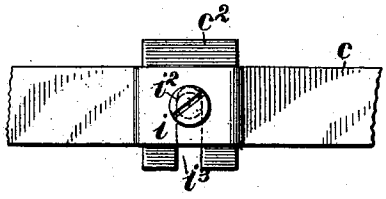


Fig. 5.

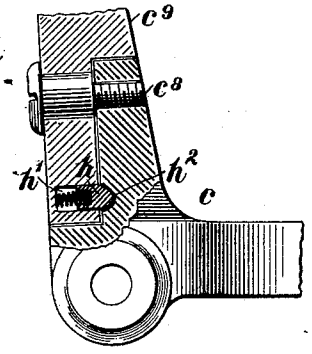
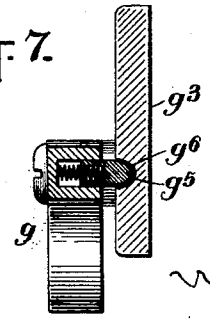


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM A. MACK, OF CLEVELAND, OHIO, ASSIGNOR TO THE STANDARD SEWING MACHINE COMPANY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 608,553, dated August 2, 1898.

Application filed December 28, 1896. Serial No. 617,170. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MACK, a citizen of the United States, and a resident of the city of Cleveland, Cuyahoga county, State of Ohio, have invented new and useful Improvements in Sewing-Machines, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

This invention relates in part to motion-transmitting and stopping mechanism for sewing-machines by which power may be transmitted from a continuously-rotating shaft to a machine in such a manner that the latter may be stopped or started at the will of the operator; and the invention further relates to mechanism for operating or raising or lowering the presser-bar, whereby the latter may be operated in combination with the said motion-transmitting and stopping mechanism.

The invention consists in the novel construction and combination of parts, as hereinafter set forth in detail and pointed out in the claims.

Referring to the drawings, Figure 1 represents a front elevation of a sewing-machine and a portion of its supporting-table, partly broken away, illustrating a construction embodying my invention applied thereto. Fig. 2 is a back view of the same, with the machine partly in section and the rear side of the table broken away through line 2 2 of Fig. 3. Fig. 3 is an end view of the machine, looking toward the left in Fig. 1, with a portion of the table in section. Fig. 4 is an enlarged plan view of the transmitter-lever through line 4 4 of Fig. 2. Fig. 5 is an enlarged view of a portion of the transmitter-lever, partly in section, showing the hinged joint in one of its arms. Fig. 6 is a view of that portion of the transmitter-lever provided with the friction-brake, looking in the direction as indicated by the arrow in Fig. 4; and Fig. 7 is a vertical cross-section, taken through line 7 7 of Fig. 1, of a plate secured upon the sewing-machine table and a lever pivotally supported thereby.

To explain in detail, a represents a sewing-machine head, which may be of any ordinary construction, and b the fly-wheel or pulley, which is made fast upon the upper driving-shaft a' of the machine in the usual manner. This fly-wheel or pulley b, as herein shown, is provided with a hub b', upon which is loosely mounted a driving-pulley b^2, which latter is adapted to be continuously rotated, through the medium of a belt b^7, from a suitable driving-shaft d, which, as shown in Fig. 1, is mounted in suitable bearings beneath the table e, upon which the machine is supported. The said driving-pulley is supported to have a longitudinal movement upon the hub b', whereby it may be moved at the will of the operator, by means as will hereinafter be described, to and from a position to clutch with the pulley b and communicate motion to the machine. Any suitable form of clutch connection may be had between said pulleys, the connection, as illustrated, being secured by means of a cone-faced hub b^3 on the driving-pulley, which is adapted to enter an interiorly-cone-faced hub-sleeve b^4 on the pulley b and when forced therein frictionally hold the pulleys together.

As a means for moving or forcing the driving-pulley into engagement with the driven pulley b I have provided an elbow-lever c, which is pivotally supported at c' upon a bracket a^2, secured upon the frame or arm of the machine and forming a part thereof. This lever c is arranged with one arm extending into a position to engage with the hub b^5 of the driving-pulley and with its other arm extending into a position beneath the pulley b and provided with a friction-brake c^2 thereon for engaging with the latter. The lower arm c^3 of this lever is connected through the medium of a rod or link c^4, passing through an opening in the bed-plate of the machine, with an arm f' of a rock-shaft f, which is mounted on the under side of the said bed-plate. This said rock-shaft, which is arranged lengthwise of the machine, is provided with a second arm f^2 adjacent to its opposite end, with which latter a lever g, pivotally supported upon the table e and having connection by a pitman g' with the treadle g^2, is adapted to engage to rock the said shaft f, and thereby operate the connected elbow-lever c to force the driving-pulley into engagement with

the pulley b when it is desired to set the machine in motion.

The lever c is adapted to be held in a normal position, as shown in Fig. 2, to release the driving-pulley from engagement with the driven pulley and with the brake c^2 thereon in contact with the periphery of the said driven pulley b by means of a suitable spring which, as herein illustrated, is in the form of a coiled spring c^5, located upon the connecting-rod c^4, with one end having a bearing upon the bed-plate of the machine and its opposite end bearing upon an adjustable collar c^6, secured upon said rod c^4, so as to exert an upward pressure on the latter. By this means as soon as the pressure is removed from the treadle the lever c is automatically returned or moved to release the driving-pulley from the driven pulley and apply the brake c^2 to the latter pulley, thus bringing the machine to an immediate stop.

It has been found in practice that by providing the hub of the driving-pulley b^2 with openings through which to lubricate or oil the hub of the pulley b or other bearing on which it operates the oil will be rapidly drawn off through such openings and the supporting-hub become quickly dried. For this reason I prefer to dispense with such openings, and, when it is necessary to lubricate the hub, to remove the pulley therefrom. In order to provide for the ready removal of the said pulley b^2 from its supporting-hub, I have provided a hinged joint c^8 in the pulley-engaging arm c^9 of the lever c, whereby the said arm may be moved backward or forward to a position, as shown by dotted lines in Fig. 3, out of the path of the said pulley when being removed from or replaced on its supporting-hub.

As a simple and convenient means for movably holding the arm c^9 in its normal position for engaging with the driving-pulley I have located a spring-pressed pin or plunger h within a suitable seat or opening h' in the inner wall of the said arm, as more clearly shown in Fig. 5, the end of which plunger yieldingly projects the face of the latter and is adapted to extend within a centrally-located recess h^2 in the adjacent face of the lever c and movably hold the arm c^9 in its said normal position and stationary relative to the lever c. The end of the plunger h and the wall of the recess h^2 in which it is received both being tapering, it will be readily understood that the said plunger will be forced back into its seat and from the recess h^2 to allow movement of the arm c^9 when the operator applies sufficient force upon the same in moving it to allow for the removal of the driving-pulley. When the arm is moved back to its normal position, it is automatically secured by the plunger slipping into the said recess. Other suitable means might be employed for holding the arm c^9 stationary relative to the lever c, of which it forms part, but I consider the means illustrated preferable for the reason that the locking and unlocking means are both automatic.

The friction-brake c^2, which is preferably formed of leather or other suitable material, is secured upon the lever c in an adjustable position relative to the pulley b, by means of a clamp-plate i, which embraces the said brake, and a set-screw i^2, the latter being passed through an elongated slot i^3 in the brake, with its threaded end tapped into the lever c and its head engaging the clamping-plate, as more clearly shown in Fig. 4. The brake can thus be adjusted to allow for any wear to the same and also regulate the position of the lever-arm c^9 relative to the engaging pulley b^2, whereby the lengthwise movement of the driving-pulley relative to the driven pulley may be regulated. Other suitable means may be employed for adjustably supporting the brake, if so desired, without departure from my invention.

The treadle-connected lever g for operating the rock-shaft f on the under side of the bed-plate, as hereinbefore described, is pivotally supported at g^7 upon a plate g^3, which is secured upon the sewing-machine table e at the rear side or wall of the opening within which the machine is adapted to be seated and is thus, with the connecting-treadle and pitman, made a permanent part of the said table and independent of the sewing-machine head. When the latter is placed in position upon the table e, within the seat or opening therein, the arm f^2 of the rock-shaft f extends beneath one end of the said pivoted lever g and in position to be engaged thereby when pressure is applied upon the treadle g^2, as more clearly shown in Fig. 3.

As a further feature of my present invention I have provided a simple and convenient means whereby the presser-bar may also be operated by the treadle through the medium of the said pivoted lever g. In securing such connection I have provided the presser-bar (represented at m) with a collar or block m', secured thereon and having a part thereof extending through an elongated opening in the rear side of the machine-arm. This block m' is connected through the medium of a link m^3 with one end of a lever m^4, which latter is centrally pivoted at m^5 upon the rear side of the machine-arm, and at that end opposite its connection with the said link m^3 is connected with a vertical rod m^6, which extends downward through an opening in the bed-plate to a point beneath the latter, where it is provided with a short arm m^7, which projects beneath one end of the said lever g. The operation of the several parts when thus arranged is as follows: When the operator presses down the forward end of the treadle, the lever g is operated thereby to engage with the arm f^2 of the rock-shaft f and move the latter so as to cause the lever c to force the driving-pulley b^2 into engagement with the driven pulley b

and so put the machine in motion. When the lever g is thus moved and held with one end in engagement with the arm of the rock-shaft, its opposite end, beneath which the arm m^7 of the rod m^6 extends, is raised upward from the latter and has no action upon the same. When the machine is to be stopped, however, the operator then raises the forward end of the treadle, so as to move the lever g from engagement with the arm f^2 of the rock-shaft, so that the spring c^5 may operate the lever c to release the driving-pulley from engagement with the driven pulley b and force the brake c^2 into contact with the latter to bring the machine to an immediate stop. By continuing the upward movement of the forward end of the treadle, and thereby the upward movement of the connected end of the lever g, the opposite end of the latter is lowered into engagement with the arm m^7 of the rod m^6, so as to depress the latter, and thereby raise the connected presser-bar, whereby the goods may be readily moved or turned beneath the same. The operator is thus enabled by one continued movement of the treadle to bring the machine to a stop and raise the presser-bar, thus allowing the free use of both hands in handling the work, the advantage of which is obvious.

In some instances it may be desirable to stop the machine without raising the presser-bar, and as the arrangement of the several parts is such that there is but little lost motion to the lever g after it disengages from the arm of the rock-shaft before it engages with the arm of the rod m^6 it has been found to be desirable that some means be provided by which the operator will know when the lever has been brought to a position intermediate of its action upon either the rock-shaft f or rod m^6. To provide for this, I have provided the lever g with a spring-pressed plunger g^5, as more clearly shown in Fig. 7, which is seated within an opening therein with one end yieldingly projecting the inner face of the same, which end is adapted to extend within a tapering recess g^6, located in the wall of the plate g^3 in a position to movably hold the said lever g in a normal horizontal position, as shown in Fig. 2, in which position it is independent of engagement or connection with either of the said arms f^2 or m^7. When one end of the said lever g is drawn downward to engage with the said arm f^2 of the rock-shaft, the plunger g^5 is forced back into its seat by reason of its tapering end or the tapering wall of the recess g^6; but when the lever is moved upward from engagement with the said arm f^2 the plunger is again projected into the recess g^6 when brought opposite the same, and will cause such stoppage to the lever as will be felt by the operator and thereby prevent such further movement of the same as would act upon the presser unless desired by the operator, in which latter case a slightly-increased pressure upon the treadle will again force the plunger from its position within the recess g^6 and allow a further movement of the lever.

Another function secured by the plunger g^5 in movably holding the lever g in a normal horizontal position is that the machine may be removed from its table for cleaning, oiling, or any other desired purpose, and when it is again replaced the said lever is in proper operative position relative to the arm f^2 of the rock-shaft and the arm m^7 of the presser-bar connections. By this described arrangement of parts—viz., the treadle connections and machine being independent of any direct connection—the trouble and inconvenience usually attendant in making the treadle connections or disconnections with the machine whenever the treadle is placed upon or removed from the table are avoided. This I consider an important feature of my invention.

Having thus set forth my invention, it will be obvious that the construction and arrangement of the several parts may be more or less modified. For instance, in lieu of the pulley b being provided with a hub upon which the driving-pulley is mounted, as illustrated, the end of the driving-shaft a' might be extended through the said hub of the pulley b and the driving-pulley be mounted thereon. Again, the plate g^3 might be dispensed with and the lever g be secured directly to the table. Such and various other changes might be made without departure from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a sewing-machine, having driving and driven pulleys supported thereby, a lever supported by the frame of the machine for moving one of said pulleys into operative engagement with the other, and connections, for operating said lever, extending below the bed-plate of the machine, of a table or support upon which the said machine is adapted to be removably supported, provided with a lever supported thereby in a position for engaging with the said lever connections of the machine but being independent of connection therewith, and means for operating the said lever on the table, substantially as and for the purpose set forth.

2. The combination with a sewing-machine, having driving and driven pulleys supported thereby, an elbow-lever supported by the framework of the machine with one arm thereof extending into a position whereby it may be operated to force one of said pulleys into operative engagement with the other, and its other arm being provided with a brake for contact with the driven pulley, means for movably holding said lever in a normal position to release the said pulleys from contact with each other and with the brake in contact with the driven pulley, and connections for operating the said lever extending below

the bed-plate of the machine, of a table or support for the machine, provided with a treadle-connected lever pivotally supported thereon for operating the said lever connections of the machine, but being independent of connection therewith, substantially as and for the purpose set forth.

3. The combination with a sewing-machine, of a driving-pulley for transmitting motion to said machine, supported upon a hub or bearing carried by the latter, a lever pivotally supported upon the frame of the machine for forcing the said driving-pulley into operative position to transmit motion to the machine, the said lever being provided with a hinged joint therein whereby its pulley-engaging end may be moved relative to the driving-pulley to permit of the latter being removed from its supporting-hub, and means for movably holding the said pulley-engaging end of the lever in a normal position for engaging with the pulley, substantially as and for the purpose set forth.

4. The combination with a sewing-machine having driving and driven pulleys supported thereby, the said driving-pulley being loosely supported upon a hub or bearing carried by the machine, of a lever pivotally supported upon the frame of the machine in a position for engaging with the said driving-pulley to hold the same in position upon its supporting-hub and adapted for forcing the same into operative contact with the driven pulley, the said lever being provided with a hinged joint therein whereby its pulley-engaging end may be moved relative to the driving-pulley to permit of the latter being removed from its bearing, one section of said hinged lever having a part thereof extended over the other and provided with a spring-pressed plunger seated therein, the yielding projecting end of which is adapted to extend within a recess in the other section to movably hold the pulley-engaging section in its normal position for engaging with the driving-pulley, substantially as and for the purpose set forth.

5. The combination with a sewing-machine having driving and driven pulleys supported thereby, an elbow-lever pivotally supported upon the frame of the machine, with one arm thereof extending into a position for engaging with the driving-pulley to force the same into contact with the driven pulley, and its other arm being provided with a brake for engaging with the said driven pulley, means for movably holding said lever in a normal position to release the driving-pulley from contact with the driven pulley and with the brake in contact with said driven pulley, and means for supporting said brake in an adjustable position relative to the driven pulley whereby wear of the brake may be taken up and the position of the pulley-engaging end or arm of the lever be regulated relative to the driving-pulley, substantially as and for the purpose set forth.

6. The combination with a sewing-machine provided with driving and driven pulleys supported thereby, a lever supported by the frame of the machine adapted for forcing the driving-pulley into operative contact with the driven pulley, and connections extending from said lever to a point below the bed-plate of the machine, of a supporting stand or table for said machine, provided with a lever pivotally supported thereby for engaging with an arm or part of said lever connections, means for movably holding said pivoted lever in a normal operative position, relative to said connections, and means for operating said lever on the table, substantially as and for the purpose set forth.

7. The combination with a sewing-machine, provided with driving and driven pulleys, a lever pivotally supported upon the frame of the machine for forcing said driving-pulley into operative engagement with the driven pulley, connections extending from said lever to a point below the bed-plate of the machine, a presser-bar, and connections extending from said presser-bar to a point below the bed-plate of the machine, of a stand or table for said machine, provided with a pivotally-supported rocking lever for engaging with said lever connections and presser-bar connections, the said rocking lever being provided with a spring-pressed pin carried thereby with one end yieldingly projecting the surface of the same, which end is adapted to movably extend into a recess in a stationary part and movably hold the lever in a normal operative position relative to the said lever and presser-bar connections, substantially as and for the purpose set forth.

8. The combination with a sewing-machine table or stand having the usual machine-opening therein, a centrally-pivoted rocking lever supported upon said table at one edge of the opening therein, and a treadle having connection with said lever, of a sewing-machine provided with driving and driven pulleys supported thereby, a lever supported upon the frame of the machine for forcing the driving-pulley into operative engagement with the driven pulley, a presser-bar, and connections extending from said pulley-engaging lever and said presser-bar respectively, to a point below the bed-plate and in position to be engaged by the opposite ends of the said pivoted rocking lever on the table, substantially as and for the purpose set forth.

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