

(No Model.)

2 Sheets—Sheet 1.

G. H. DIMOND.
SEWING MACHINE.

No. 317,749.

Patented May 12, 1885.

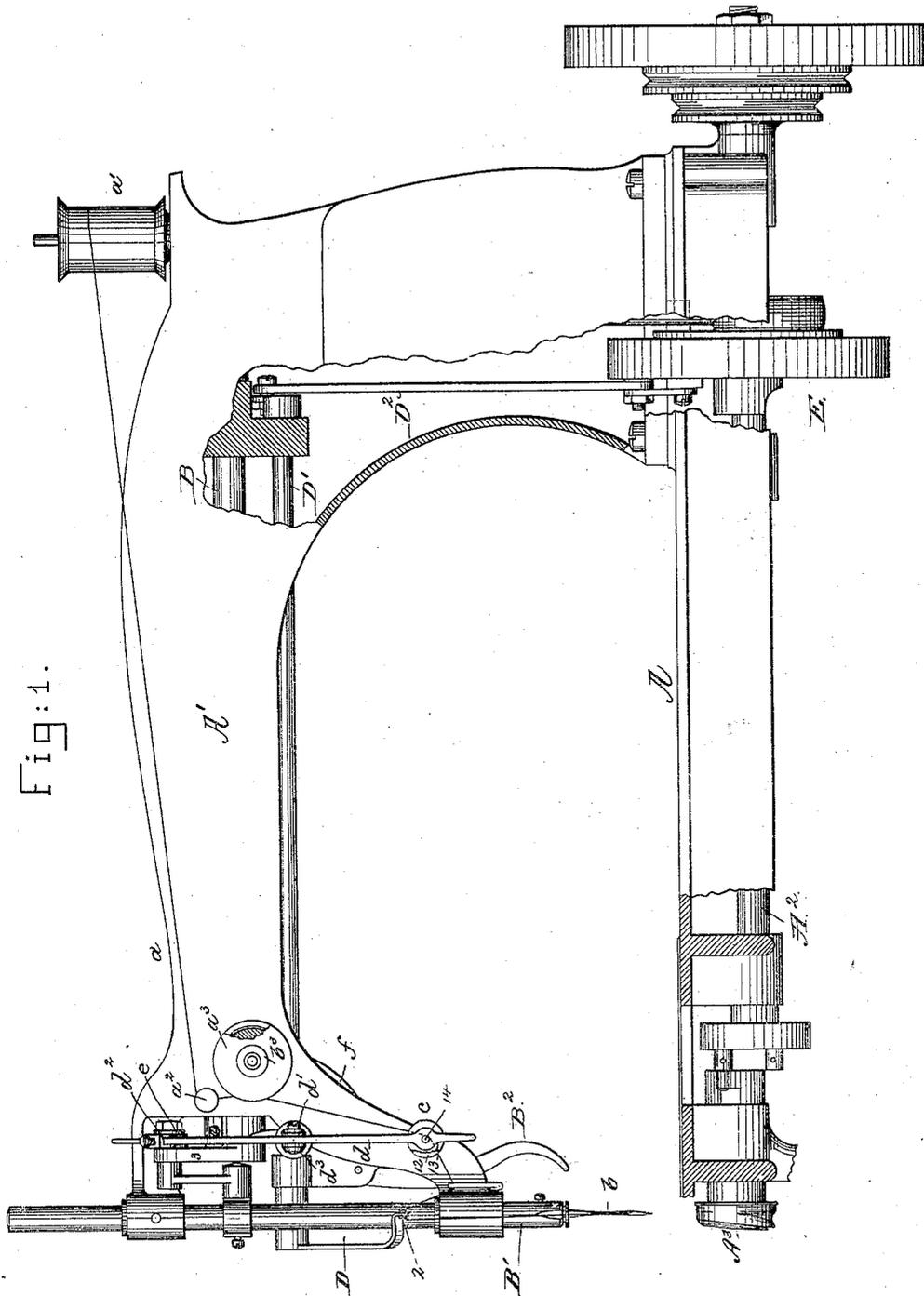


Fig. 1.

Witnesses.

Arthur Lippert
John F. C. Printz

Inventor.

George H. Dimond
by Crosby & Gregory attys

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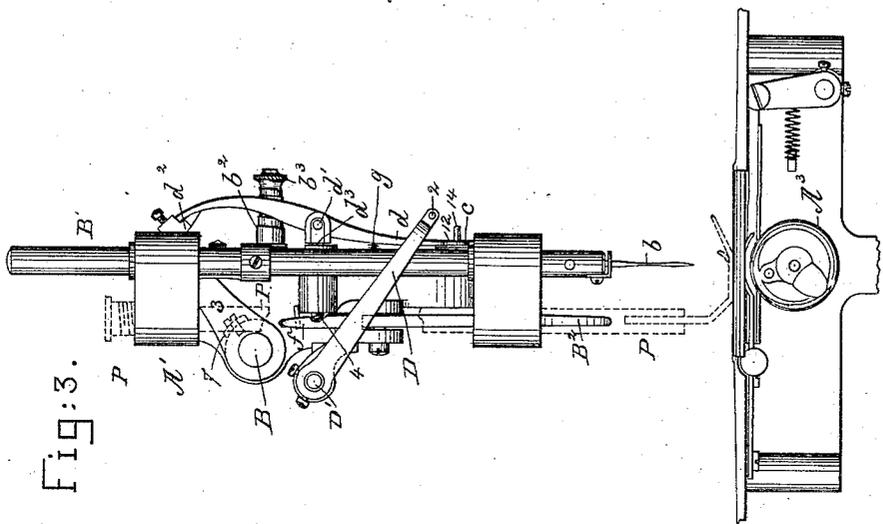


Fig: 3.

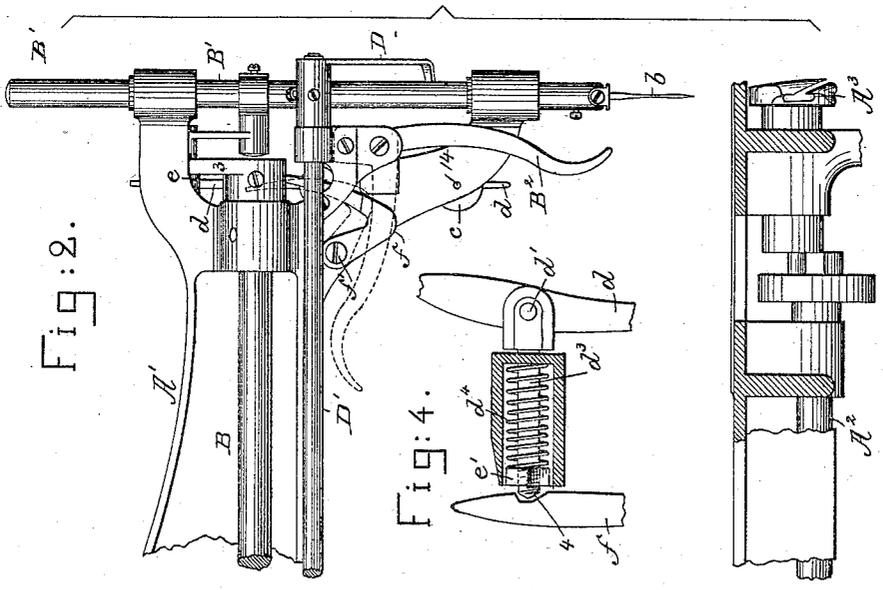


Fig: 2.

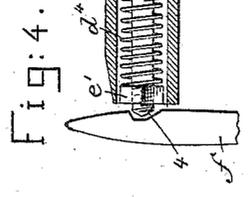


Fig: 4.

Witnesses.
Arthur Lippertson.
Henry Marsh.

Inventor.
George H. Dimond
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UNITED STATES PATENT OFFICE.

GEORGE H. DIMOND, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE
WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 317,749, dated May 12, 1885.

Application filed December 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. DIMOND, of Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has especial reference to a novel thread-clamp or gripping device, it being independent of the usual tension device, which latter is constant in its operation, the said clamp operating in connection with a take-up to clamp and hold the needle-thread positively from substantially the time that the take-up lever commences to draw up the loop of needle-thread cast off by the hook, the said clamp holding the said thread until the loop of the stitch just being made is drawn into the goods and finished, the clamp, however, being released from the needle-thread just before the take-up lever completes its upward movement, thus enabling the take-up lever, at the termination of its upward movement, to draw thread from the tension device for the next stitch.

Figure 1 represents in side elevation a Wheeler & Wilson No. 10 sewing-machine, which I have selected upon which to illustrate my invention, parts thereof being broken away. Fig. 2 is a partial view of the opposite side of the said machine. Fig. 3 is a partial front elevation thereof; and Fig. 4 a detail of the slide-spindle which holds the fulcrum-pin of the lever of the thread-clamp.

The bed-plate A, overhanging arm A', main rotating shaft A², rotating hook A³, needle-bar rock-shaft B, needle-bar B', presser-foot-lifting lever B², and the means for connecting and operating the said parts are all as common in the Wheeler & Wilson sewing-machine style No. 10.

The take-up lever D, arranged at the front of the machine and connected with a rock-shaft, D', substantially parallel with the rock-shaft B, is adjustably attached to a connecting-rod, D², having a roller-stud, which is made to enter a groove in a cam-hub, E, attached to the main shaft A², the said cam oscillating the shaft D' at suitable times to cause

the take-up lever D to take up the needle-thread properly in the formation of a stitch, substantially as in application No. 101,735, filed July 24, 1883.

I prefer to use a take-up substantially such as described in the said application, as the same is capable of adjustment when necessary, irrespective of the needle-operating mechanism; but I do not herein lay claim to such take-up mechanism by itself.

The needle-thread *a*, taken from the spool *a'*, is passed forward about the usual thread-check, *a''*, and then around a tension-pulley, *a'''*, both common to the said Wheeler & Wilson machine; but herein the said thread-check and pulley are placed on the overhanging arm A' near the path of movement of the needle-bar B', instead of upon the said arm near the middle of its length, as heretofore, such change of position enabling me to do away with the long bight of thread between the said tension-pulley and the needle *b*. From this tension-pulley *a'''* (always subjected to friction, but which may be more or less, according to the pressure put upon the spring *b''* by the nut *b'''*) the needle-thread is led to the clamp or gripping device *c*, thence to and through the eye 2 of the take-up lever D, and to and through the eye of the needle *b*.

The thread clamp or gripping device *c*, as herein shown, is composed of a disk, 12, and a rest, 13, back of it, the disk being placed on a pin, 14, attached to the arm A', and placed between the said arm and the lever *d*, the latter having its fulcrum at *d'*, and provided at its lower end with a hole to pass over the pin 14, so that the said lever may act upon the disk 12 of the clamp or gripping device, and cause the thread between the disk 12 and the rest 13 to be held. The upper end of the lever *d* is preferably provided with an adjustable shoe, *d''*, and operated upon by a roller, *e*; or it might be a projection, deriving its motion from an arm, 3, of the needle-bar-actuating rock-shaft B.

The fulcrum *d'* of the lever *d* is arranged in ears of a horizontally-sliding spindle, *d'''*, provided with a screw-thread and extended through a spiral spring, *d''''*, in a chamber of an ear or projection of the frame-work, the

said spindle next the said spring being provided with an adjusting-nut, *e*.

The end 4 of the spindle d^3 is beveled, (see Fig. 4,) to be acted upon by an inclined surface made in an arm, *f*, having its fulcrum at f' , and adapted to be acted upon by the usual presser-foot-lifting lever B^2 , when the said lever has been moved into the dotted-line position, Fig. 2, to fully lift the presser-bar P, (partially shown in only Fig. 3 of the drawings,) for removal of the work or other purpose. The presser-bar (but partially shown) will be just the same as in the usual Wheeler & Wilson machine.

When the lever B^2 is lifted, as shown in dotted lines, Fig. 2, it will raise the arm *f*, and the latter will act upon the spindle d^3 and force it toward the operator or to the right, viewing Fig. 3, and the fulcrum d' of the lever d will be moved in that direction far enough to unclamp the thread. It will be noticed that the arm *f* is provided with a notch or recess at its inner side to receive the end of the spindle d^3 (see Figs. 3 and 4) when the presser-bar is down, the said notch or recess being of sufficient depth to receive the end of the spindle d^3 and permit the spring d^4 thereon to assume control of the lever d .

If the lever d were rigid and its fulcrum were upon a pin fixed in a non-yielding part of the machine rather than on the sliding spindle d^3 , the action of the roll *e* upon the shoe d^2 at the upper end of the said lever would force the lower end thereof in an unyielding manner against the clamping disks or plates, which would be objectionable, as such pressure would be apt to crush the needle-thread between the said disks or plates. To obviate this difficulty the fulcrum of the lever d has been placed upon a yielding or spring-held spindle, d^3 , thus enabling the clamp to be self-adapting to the requirements of the needle-thread.

A light spring, *g*, has been interposed between the lever d and the frame of the machine, as shown in Fig. 3, the normal tendency of the said spring being to keep the lower end of the lever close to, but so as not to press against, the disks or plates so long as the upper end of the said lever is not acted upon by the roll *e*.

When the machine is started, the projection 7 (see dotted lines, Fig. 3,) on the hub of the arm 3 of the rock-shaft B' will strike the upper end of and drive the arm *f* down into the position indicated in Figs. 3 and 4, and so that it will release the spring-held spindle d^3 and throw the clamping or gripping devices into action.

In this present invention the take-up lever D, constructed as shown, the clamp or grip-

ping device, and the tension-wheel a^3 are all arranged quite near the path of movement of the needle-bar, thus enabling the quantity of needle-thread between the tension-wheel and eye of the needle to be materially shortened, and enabling those evils which flow from elasticity of the needle-thread commonly experienced when the thread between the tension-wheel and eye of the needle is unnecessarily long to be entirely overcome.

I am aware that a rotating tension-wheel has been acted upon by a brake and prevented from rotation, thus limiting the amount of thread which may be drawn off by a take-up lever.

I claim—

1. In a sewing-machine, the tension device a^3 and take-up D, combined with a thread-gripping device, *c*, arranged between the tension device and take-up, the lever d , carrying said gripping device and having a sliding fulcrum, the needle-bar-actuating rock-shaft and connections between said levers, fulcrum and rock-shaft to operate said thread-gripping device, substantially as and for the purpose specified.

2. The needle-bar-actuating rock-shaft, the thread-clamp, and the lever d , having its fulcrum on a sliding spring-held spindle, d^3 , combined with a roll or projection deriving its movement from the said rock-shaft, longitudinal movement of the said spindle obviating crushing the thread when acted upon by the clamping-disk, substantially as described.

3. The needle-bar-actuating rock-shaft, thread-clamping disk or plate, and the lever d , having its fulcrum on a sliding spring-held spindle, combined with a roll or projection deriving its movement from the said rock-shaft, and with an arm to act upon the spring-held spindle to move it in the direction to remove the pressure of the clamping or gripping mechanism from the needle-thread, substantially as described.

4. The spring-held spindle, the lever d , mounted thereon, the thread clamping and gripping device, the arm *f*, having the notch or recess, and the needle-bar-actuating rock-shaft, combined with the projection 7, made movable therewith to actuate the said arm and permit the spring on the said spindle to assume control of the said lever, substantially as described.

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

GEORGE H. DIMOND.

Witnesses:

F. HURD,

A. R. LACEY.