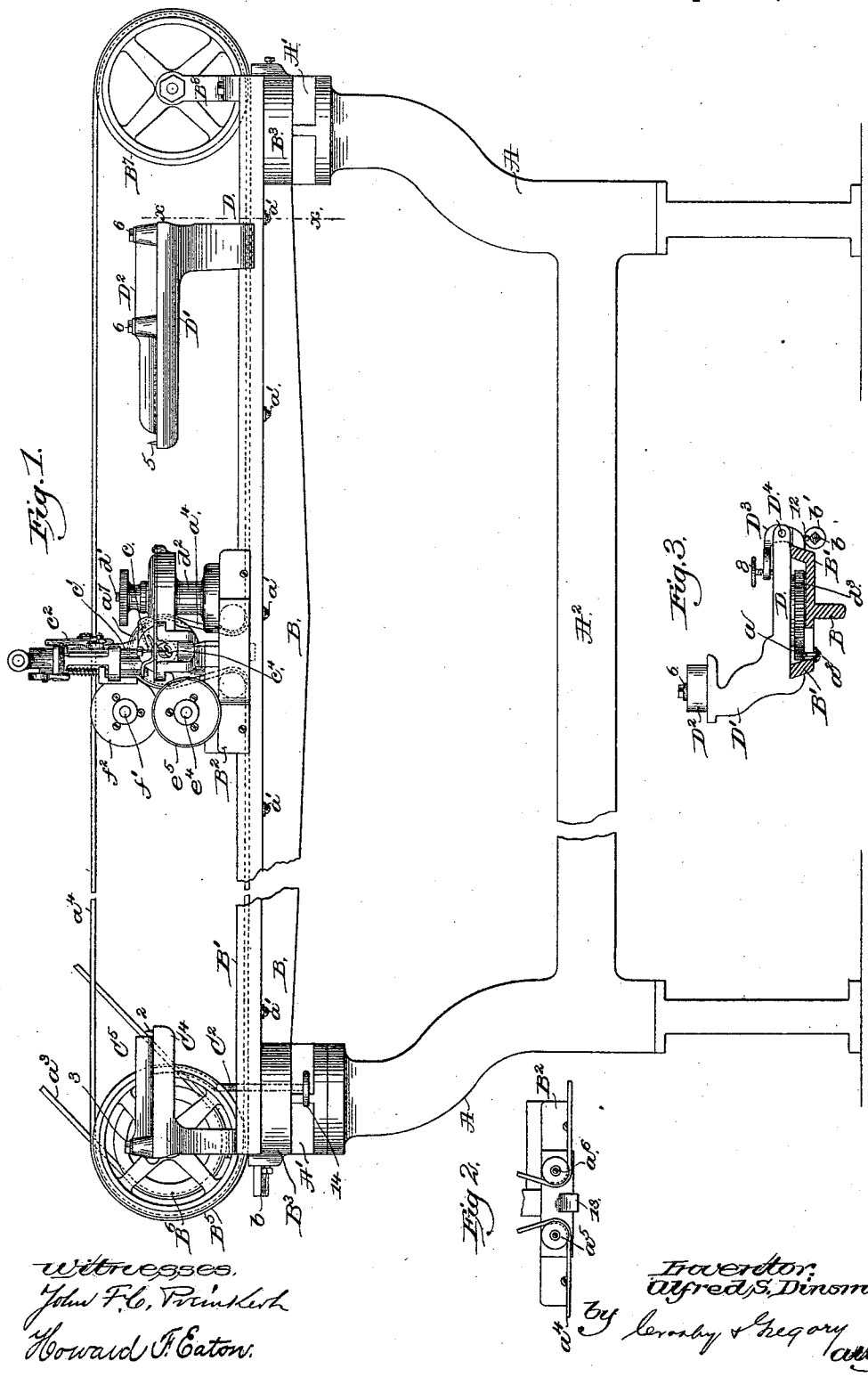
(No Model.) 2 Sheets—Sheet 1.

A. S. DINSMORE.

SEWING MACHINE.

No. 450,225. Patented Apr. 14, 1891.



Witnesses.
John F. C. Printiss
Howard F. Eaton.

Inventor:
Alfred S. Dinsmore.
by Crosby & Gregory
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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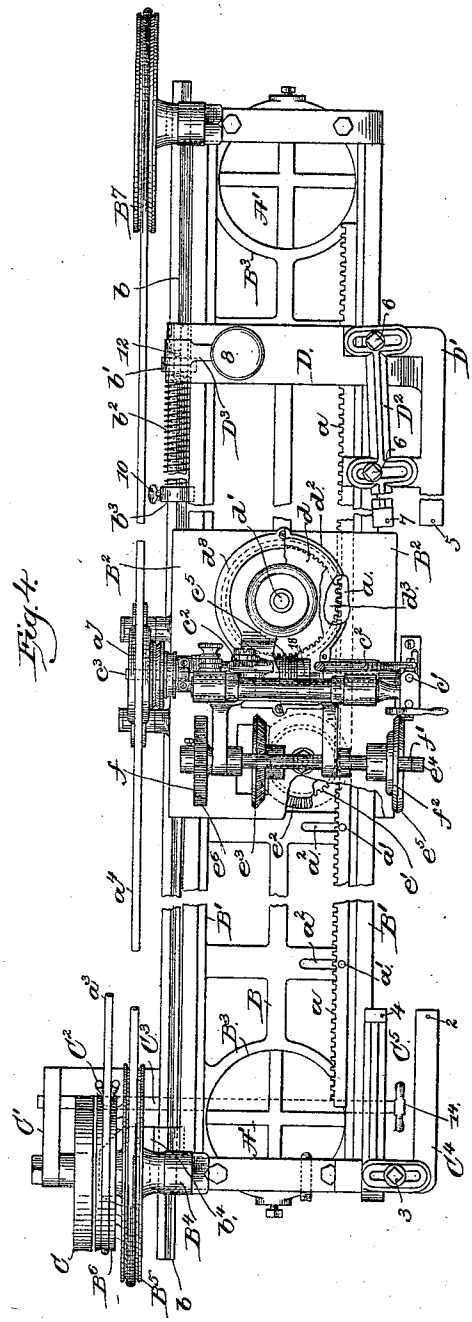


Fig. 4.

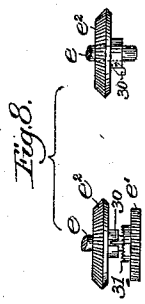


Fig. 8.

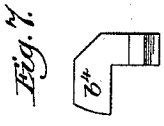


Fig. 7.

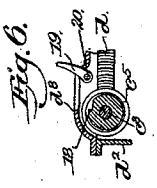


Fig. 6.

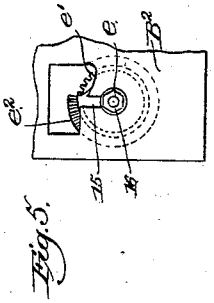


Fig. 5.

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UNITED STATES PATENT OFFICE.

ALFRED S. DINSMORE, OF BOSTON, MASSACHUSETTS.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 450,225, dated April 14, 1891.

Application filed September 20, 1889. Serial No. 324,515. (No model.)

To all whom it may concern:

Be it known that I, ALFRED S. DINSMORE, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to improve that class of sewing-machines used chiefly in factories for sewing together the ends of cloth more especially in the piece.

Prior to this invention it has been customary to place an end of two pieces of goods upon pins of a circular or on a straight baster-plate and move the said plate, with the goods attached to it, under or past the stitch-forming devices; but this is objectionable for many reasons, among which is the twisting of the goods.

In this my invention the cloth is distended between holders, and the stitch-forming mechanism is reciprocated across the cloth, and at the same time the cloth is trimmed parallel to the line of seam by a trimming mechanism which traverses the cloth with the stitch-forming mechanism.

In my invention means are provided by which to readily change from one to another width of cloth, the sewing mechanism being automatically stopped on the completion of the seam. The machine is fed continuously over the cloth by means of gearing engaging a rack-bar, and the said rack-bar is adjustable to enable its position to be changed to adapt it to a larger or smaller gear, deriving its rotation from the hook-shaft to thus vary the length of the stitch.

My invention consists, essentially, in the combination, with cloth-holding devices and a track, of a carriage to run on said track and a stitch-forming and a trimming mechanism mounted on or movable with the said carriage, as will be described.

Other features of my invention will be hereinafter described, and specially set forth in the claims at the end of this specification.

Figure 1 in front elevation represents a sewing mechanism embodying my invention, the same being mounted on a stand, both partially broken out to save space on the drawing; Fig. 2, a detail of the rear side of the carriage alone; Fig. 3, a section to the left of the line x, Fig. 1; Fig. 4, a top or plan view of Fig. 1, partially broken out to both save space on the drawing and to show parts which would otherwise be concealed; Fig. 5, a detail of the carriage to show the adjustable gear and pinion instrumental in actuating the cutting or trimming mechanism. Fig. 6 is a detail showing part of the cover-plate and pawl covered by it and the worm-gear on the hook-shaft; Fig. 7, a detail to be referred to; Fig. 8, a detail of the gears e' e^2.

The stand consists, essentially, of end pieces A A, having at their tops skeleton hubs A′ and connected by a cross-girt A^2. In practice the stand may, if desired, be mounted on casters or wheels, so that it may be easily rolled from place to place.

The bed B, having suitable track B′, on which may slide or travel the carriage B^2, has near its opposite ends sockets B^3 to fit the hubs A′, the bed being free to be lifted from or to be applied to the stand, as desired. The bed has a rack a, which is secured thereto at suitable intervals in an adjustable manner by set-screws a', extended through slots a^2 in the rack-bar. The bed has an upright B^4, which receives and holds a stud on which is mounted loosely two belt-pulleys B^5 B^6, preferably connected together side by side or made in one piece, the pulley B^6 being considered as the fast pulley, so that when the driving-belt a^3, driven from any usual counter or mill shaft, is on the said pulley B^6 the pulley B^5 will be rotated, thus rotating the sewing-machine driving-belt a^4, which is extended over a directing-pulley B^7, free to rotate on a stud in a standard B^8 at the opposite end of the bed-plate, one run of the said belt a^4 (herein shown as the lower run) being extended in the form of a loop, as shown by dotted lines, Fig. 1, up between the idle-wheels a^5 a^6 and over the usual driving-pulley a^7 of the stitch-forming mechanism to be described. The loose pulley C, of the same diameter as the pulley B^6, close alongside of which it rests when the bed-plate is in place on the stand, is supported on a stud of a bracket C′, connected to the said stand. A belt-shipper C^2, shown as a forked arm extended from a shipper-slide C^3, may be moved at the proper time

to shift the belt a^3 from one to the other pulley B^6 or C, and vice versa, as it is desired to start or stop the machine. The bed-plate has attached to it at one end a bracket C^4, provided with a pin or point 2, the said bracket having an arm C^5 attached to it in an adjustable manner by a set-screw 3, the said arm having a point or pin 4. The bed-plate has applied to its track an auxiliary holding-carriage D, having a bracket D′, provided with a point 5, the said bracket having adjustably attached to it by screws 6 6 a holding-arm D^2, provided with a pin 7. By adjusting the arms C^5 and D^2 with relation to the bracket C^4 and D′ the ends of two pieces of cloth applied to all the said pins may be held distended at each side the line of seam.

The auxiliary holding-carriage D has a dog D^3 (shown as a lever pivoted at D^4) the lower end of the lever being made to grasp the track B′ next to it more or less closely by the thumb-screw 8, rotation of the said thumb-screw in the direction to cause the dog to release the bed-plate, leaving the said holding-carriage free to be moved by hand in the said bed-plate, to adapt the apparatus to cloth of any desired width, which may be done by adjusting the carriage D on the track toward or from the arm B^4.

The traverse of the sewing mechanism on the track must be stopped automatically at the proper time, according to the width of cloth to be stitched, and to do this, no matter what is the position of the carriage D, I have provided the stand with suitable bearings, in which I have mounted loosely a shipper-actuating rod b, of irregular shape in cross-section. This rod receives upon it loosely a stop-collar b', (shown best in Fig. 3,) a spiral spring b^2, and a collar b^3, having a set-screw 10, by which to fix it to the said rod b. The rod b near its end has fast on it a cam projection b^4. (Shown in Fig. 1 by dotted lines, and separately in Fig. 7.)

When the carriage D is to be adjusted to correspond to the width of the cloth to be sewed together at the ends of the piece, the collar b^3 will be loosened, and after the carriage D has been secured in adjusted position the loose collar b' is pushed against the projection 12 of the lever D^3, one end of the spring b^2 is pushed up against the said loose collar, and the collar b^3 is then pushed against the opposite end of the said spring and fastened by set-screw 10, the cam projection b^4 standing close to the shipper-fork C^2. In this way when the carriage B^2 is moved from left to right a lug 13 on the carriage (see Fig. 2) meets the collar b^3 and moves it and the rod b far enough to cause the cam b^4 to act on the shipper-fork C^2 and move the belt a^3 from the pulley B^6 upon the loose pulley C to stop the machine, the spring returning the cam b^4 into its normal position whenever the carriage is started back, as it is by hand, to its starting-point, thus leaving the fork C^2 free to be moved by the hand on the handle 14 of rod C^3 when it is again desired to put the belt a^3 on the pulley B^6 to start the carriage B^2. The same stop-motion device without the adjustment described operates for cloth of any width, stopping the carriage and the movement of the stitch-forming mechanism at the end of the transverse seam.

The stitch-forming mechanism herein shown as mounted upon the carriage B^2 consists, essentially, of an eye-pointed needle c, a needle-bar c', a vibrating needle-bar-actuating lever c^2, actuated by a strap or link embracing an eccentric in a hook-shaft c^3, carrying at one end the belt-pulley a^7, and at its opposite end a hook c^4, the said stitch-forming mechanism being that commonly known as a "Willcox & Gibbs" and making a chain-stitch with a single thread carried by the needle.

The stitch-forming devices are not of my invention, and I do not desire to limit my invention to only such mechanism, as I may use any other well-known stitch-forming device.

The hook-shaft has fast on it a worm c^5, which engages and rotates a worm-toothed gear d, fast on a wheel-shaft d', having bearings in a suitable casing d^2, partially broken out in Fig. 4 to show the gearing. The shaft d' at its lower end has removably attached to it a feeding-gear d^3, (partially shown in Fig. 4 by breaking away part of the gear d,) the said gear d^3 engaging the rack a and in its rotation causing the carriage B^2 to be moved on the track, the carriage carrying with it the stitch-forming mechanism, it being actuated by the moving belt a^4, no matter what the position of the said carriage, and as it travels over the cloth held stretched between the pins 2, 4, 5, and 7 stitches the same together. If it is desired to alter the length of stitch, the gear d^3 will be removed and a gear of larger or smaller diameter will be applied in its place and the rack a will be adjusted to engage the teeth of the said wheel. The carriage B^2 has a slot 15 to receive a stud-screw e, (see Fig. 5,) which is adjustable therein by a nut 16. The stud-screw e receives on it loosely a bevel-gear e^2, having a dog 30, (see Fig. 8,) and just below the said gear e^2 the said stud-screw e has loose on it a gear e', the hub of which next the said bevel-gear has ratchet or other teeth 31. The gear e^2 engages the gear e^3, fast on the shaft e^4, carrying the cutter e^5 and rotating the said shaft and cutter. The shaft e^4 at its opposite end has fast on it a gear e^6, shown partially in Fig. 4, by breaking away a part of gear f, of like size above it, but on the shaft f', to which is attached, as shown, the upper cutter member f^2, the two shafts e^4 and f', as shown, rotating in unison and rotating the cutters e^5 f^2 to trim the cloth, being stitched parallel to the line of stitching, the cloth being severed transversely or trimmed by the traveling of the cutter over or across the cloth with the stitch-forming mechanism.

When the rack a is adjusted to adapt it to

the size of the gear d^3 which is to be used, the stud-screw e will also be loosened to enable the gears e' e^2 to be adjusted, and the gear e^3 being at the same time loosened from the shaft e^4 to permit it to follow the gear e^2. The dog 30 normally engages the ratchet-teeth of the gear e', which engages the rack a, and the said teeth point in such direction that when the carriage is being moved over the bed in the direction to stitch a seam the ratchet engages the dog and rotates the bevel-gear e^2; but when the carriage B^2 is moved back on the track by hand the ratchet-teeth check or stop under the dog and the cutters are not rotated.

Prior to my invention I am not aware that a machine has ever been devised in which the stitch forming and trimming or cutting mechanism has traveled simultaneously over the cloth while the latter is held stretched, so I do not desire to limit my invention to the exact form of stitch forming mechanism, or to the exact form of cutting or trimming mechanism, nor to the exact form of actuating device for the stitch-forming mechanism, but desire to include as within the scope of my invention any well-known equivalent devices.

The worm c^5, as shown best in Fig. 6, is provided at the end with a notch 18, which is engaged by a pawl 19, pivoted at 20 on the cap-plate d^8 of the frame or case d^2, the said pawl acting when the hook-shaft is reversed to stop the stitch-forming mechanism with the needle.

The track herein shown is composed of the beveled edges of the bed-plate, the two carriages B^2 and D being provided with dovetailed grooves to embrace the same, as best shown in Fig. 3.

I have shown herein the hook-shaft as driven by a belt; but I do not limit my invention to such manner of driving, for the said shaft might be, if desired, rotated by hand.

I claim—

1. In a sewing-machine, a track and a carriage movable thereon, combined with a stitch-forming mechanism and cloth-cutting mechanism carried by and movable with the said carriage, the longitudinal movement of the carriage actuating the cloth-cutting mechanism, and connecting means, substantially as described, intermediate the track and cloth-cutting mechanism, substantially as described.

2. A bed-plate having pulleys B^5 B^7, the carriage B^2, stitch-forming mechanism mounted thereon, and the sheaves a^5 a^6, combined with the belt a^4, extended over the said pulleys and sheaves and over the belt-pulley of the stitch-forming mechanism, and independent cloth-cutting mechanism carried by said carriage and actuated by the longitudinal movement of the carriage, substantially as described.

3. The bed-plate, the carriage B^2 thereon, the sewing mechanism, the hook-shaft thereof having the worm, the shaft d', worm-toothed gear d, and the toothed gear d^3, combined with the rack, and means for driving the hook-shaft, the rotation of the hook-shaft effecting the longitudinal or feeding motion of the carriage along the track, substantially as described.

4. In a sewing-machine, the bed-plate and the adjustable rack-bar, combined with the carriage having the shaft d' and the gear d^3, and means to rotate the said shaft, substantially as described.

5. In a sewing-machine, the bed-plate, the rack, the carriage, the shafts e^4 and f', and gears e^6 f, carried by the carriage, and rotating cutters e^5 f^2, combined with the gear e^3, and gearing between it and the said rack comprising loose gears, a dog carried by one and ratchet-teeth on the other of said loose gears to actuate the said cutter-shafts when the carriage is moved in one direction, substantially as described.

6. The stand having the hubs A′ and the bed-plate having the sockets, and the carriage B^2, combined with stitch-forming mechanism mounted on the said carriage, substantially as described.

7. The stand provided with the loose pulley C, combined with the detachable bed-plate having pulleys B^5 B^6 B^7, the carriage B^2, stitch-forming mechanism thereon, and the belts a^3 a^4, to operate substantially as described.

8. In a sewing-machine, the bed-plate, the carriage B^2, having a projection 13, the carriage D, adjustable on the said bed-plate, and the belt-shipper, combined with the rod b, having a cam projection to move the belt-shipper, the loose collar b', the spring, and the adjustable collar b^3 to enable the movement of the carriage B^2 to be stopped automatically, substantially as described.

9. In a sewing-machine, the bed-plate, its attached cloth-holding arm C^4 and adjustable holding-arm C^5, the adjustable carriage D, its attached cloth-holding arm B′, and the adjustable holding-arm D^2, combined with the movable carriage B^2 and stitch-forming mechanism carried thereby, substantially as described.

10. In a sewing-machine, the bed-plate, its attached cloth-holding arm C^4 and adjustable holding-arm C^5, the adjustable carriage D, its attached cloth-holding arm B′, and the adjustable holding-arm D^2, combined with the movable carriage B^2 and stitch-forming mechanism and cutting mechanism, substantially as described.

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

ALFRED S. DINSMORE.

Witnesses:
GEO. W. GREGORY,
E. J. BENNETT.