

(No Model.)

C. M. HINE.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 454,043.

Patented June 16, 1891.

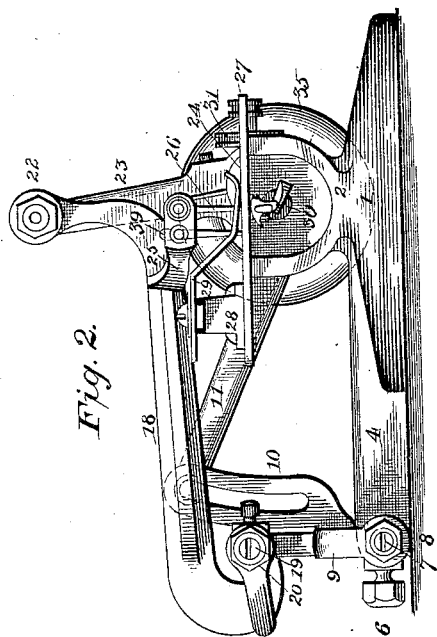


Fig. 2.

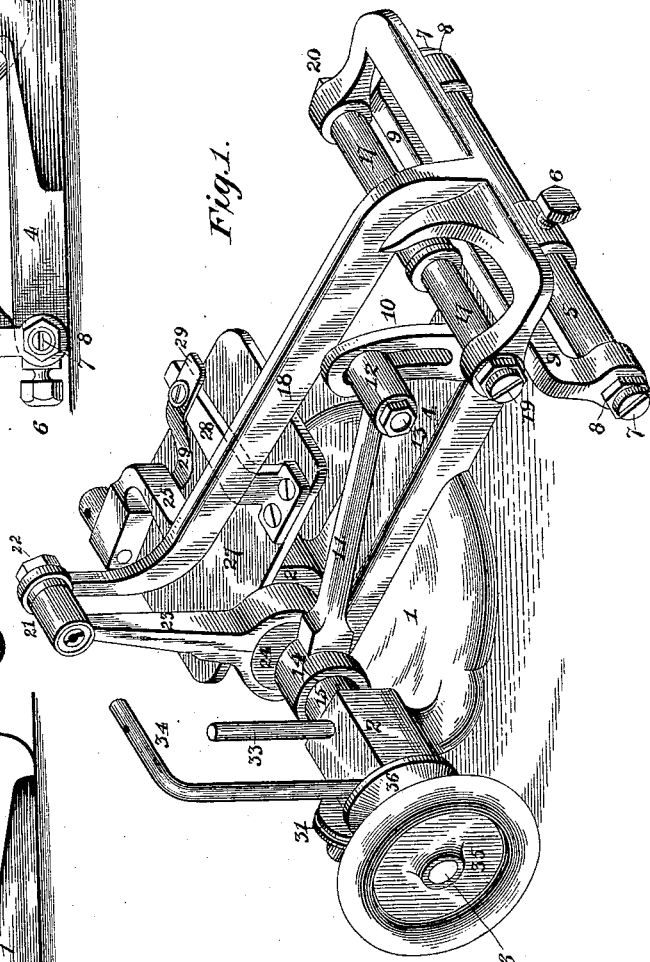


Fig. 1.

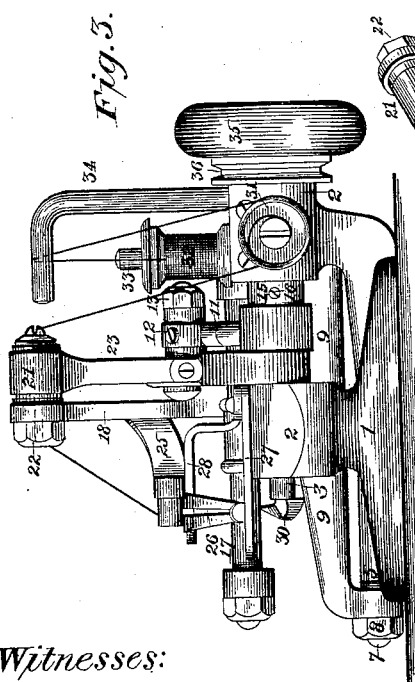


Fig. 3.

Witnesses:

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per
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UNITED STATES PATENT OFFICE.

CHARLES M. HINE, OF PITTSBURG, ASSIGNOR, BY MESNE ASSIGNMENTS, OF TWO-THIRDS TO THOMAS L. SHIELDS, OF ALLEGHENY, PENNSYLVANIA.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 454,043, dated June 16, 1891.

Application filed May 7, 1890. Serial No. 350,873. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. HINE, a citizen of the United States, residing at Pittsburgh, county of Allegheny, and State of Pennsylvania, have invented or discovered a certain new and useful Improved Sewing-Machine, of which the following is a specification.

In the accompanying drawings, which make part of this application, Figure 1 is a perspective of the machine; Fig. 2, an elevation of the side opposite to the balance-wheel; Fig. 3, a view of the front end.

The general objects of my invention are to obtain enormously high rates of speed with but little cost of maintenance, ready adjustment and simplicity of repairs, direct connections with no multiplied motions, and to make the needle-carrying arm carrying a needle feed the goods being operated upon.

The machine is particularly adapted to sew edge seams.

In the construction shown, 1 is a round base carrying two bearings 2 2 of the main shaft 3, and an extended bearing 4, supporting at its outward end a rigid shaft 5, parallel to said main shaft 3, but in a lower plane. For convenience of construction the shaft 5 is secured to extension 4 by set-screw 6; but said parts may be made in one casting. Pivoted upon said shaft 5 by conical screws 7 7 and jam-nuts 8 8 is a yoke 9, having a slotted upward projection 10, to which is attached an eccentric-rod 11, by means of a stud 12 and nut 13. Said eccentric-rod embraces with its strap 14 a feed-eccentric on main shaft 3, for the purpose of vibrating backward and forward the feed-yoke 9. The feed-eccentric in the present instance is fastened to main shaft 3 by an extended collar 15 and screw 16; but numerous modifications of such attachment will readily occur to a skilled mechanic. Said feed-yoke 9 carries another shaft 17 parallel to and above shaft 5. Spanning said shaft 17 is the needle-carrying arm 18, pivoted by conical screws 19 19 and jam-nuts 20 20 to said shaft 17. Said needle-carrying arm 18 extends forward to the line of main shaft 3, and then takes an upward turn. Pivotaly fixed to the upper portion of said needle-carrying arm by stud 21 and nut 22 is a connect-

ing-rod 23, embracing an eccentric 24 on the main shaft 3, placed side by side with the feed-eccentric. These eccentrics may be made either separately or in one piece. At a point on said needle-carrying arm 18, slightly back of the line of the main shaft 3, is an outwardly-projecting L-shaped piece 25, to which the needle 26 is secured in any proper manner.

39 is a spur or false needle back of the sewing-needle secured in any suitable way to the needle-carrying arm. This false needle entering the cloth takes the strain off the needle by helping to advance the cloth.

27 is the cloth-plate fastened to the forward bearing of the main shaft 3. Fastened to said cloth-plate 27 is a bracket 28 to support a flat-leaved pressure-spring 29.

The loop-forming mechanism can be either such as shown in my patents, Nos. 256,215 and 240,414 of the United States, or the Willcox & Gibbs' looper, illustrated in the drawings at 30, which is too well known to need description and with which my invention is not concerned.

31 is the tension, which may be of any desired construction and with which my invention does not deal.

The spool 32 may be set on a spindle 33 on the rear bearing 2 of the main shaft 3, and to avoid snapping the thread it is led up through the perforated L-standard 34 on the same bearing. After passing the tension 31 the thread passes to the needle 26 through a perforation in the stud 21 and the needle-fastening.

The constructions set forth in the last paragraph may be infinitely varied and do not concern my invention. At the rear end of the main shaft 3 is a balance-wheel 35, with groove 36 to receive a driving-belt. By merely sliding the stud 12 up and down in the slotted projection 10 the length of the stitch can be regulated at will. The slot may be omitted, but in that case only one length of stitch can be used. The lateral adjustments of the needle are made with equal ease by means of the conical screws and jam-nuts on the ends of the shafts 5 and 17. Compensation for wear can also be effected in the same way.

In operation the eccentric 24, transmitting motion to the needle-carrying arm, raises and

lowers the needle. The feed-eccentric by means of its eccentric-rod transmits motion to slotted projection on yoke, to which yoke said needle-carrying arm is conically pivoted. 5 Since the feed-eccentric is set diametrically opposite to the eccentric 24, the following order of action takes place. The action of the large eccentric 24 draws the needle down through the cloth, and while the needle is still 10 in the cloth the action of the small eccentric draws the cloth forward. The action of the large eccentric now raises the needle, and while raised the action of the small eccentric moves back the needle into position for the 15 next stitch.

The machine is almost indestructible; but if injured is readily repaired by an ordinary mechanic without special tools. It is compact, cheap, direct-acting, and wonderfully 20 fast. Moreover, all bearings needing oil can be easily protected by oil-guards, so that the operator may have no fear of injuring his fabric. Since the feed operates while the needle is thrust through both pieces of cloth, 25 both upper and lower pieces will be advanced evenly and together.

Having fully described my invention, I claim—

1. In an organized sewing-machine, the 30 combination of the following parts: a driving-shaft, an eccentric upon said shaft, an eccentric-rod whose lower end embraces said eccentric, a needle-carrying arm whose forward end is pivotally secured to the upper 35 end of said eccentric-rod, a feed mechanism suitably connected with the rear end of said needle-carrying arm, and a needle, substantially as set forth.

2. In a sewing-machine, a driving-shaft, 40 two eccentrics secured to the said shaft and extending in substantially diametrically-opposite directions, a needle-carrying arm, a needle, and connections between the needle-carrying arm and the said eccentric, whereby 45 the said arm is given an up-and-down and a back-and-forth motion, for the purpose substantially as described.

3. In an organized sewing-machine, the 50 combination of the following parts: a driving-shaft, a feed-eccentric upon said shaft, an eccentric-rod, one end of which embraces said feed-eccentric, the other end being secured to a vibrating yoke suitably pivoted, a shaft suitably mounted on said yoke, a needle-car- 55 rying arm spanning and suitably mounted upon said last shaft, an eccentric-rod embracing an eccentric upon the driving-shaft, said eccentric-rod being pivotally fastened to the forward end of said needle-carrying arm, and 60 a needle, substantially as set forth.

4. In an organized sewing-machine, the combination of the following parts: a driving-shaft, an eccentric upon said shaft, an eccentric-rod whose lower end embraces said 65 eccentric, a needle-carrying arm whose forward end is pivotally secured to the upper end of said eccentric-rod and whose rear end

spans and is pivoted to a rigid shaft by conical screws and jam-nuts, said rigid shaft being carried by a vibrating yoke, suitable feed- 70 motion mechanism connected with the above-described stitching mechanism, and a needle, substantially as set forth.

5. In a sewing-machine, a driving-shaft, two eccentrics placed thereon, a needle-carry- 75 ing arm, a needle, a connection between the forward end of the said arm and one of said eccentrics for raising and lowering the said arm at its forward end, and a connection between the other eccentric and the rear end of 80 the said arm for moving it horizontally and feeding the material, substantially as specified.

6. In a sewing-machine, a driving-shaft, two eccentrics placed thereon, which extend 85 in diametrically-opposite directions, a needle-carrying arm supported transverse the said shaft, a needle, a connection between the forward end of the arm and one of the eccen- 90 trics for moving it vertically, and a connection between the other eccentric and the opposite end of the said arm for moving it horizontally and feeding the goods, substantially as set forth.

7. In a sewing-machine, a base, a driving- 95 shaft journaled thereon, a needle-carrying arm, a connection pivotally connected to the rear end of the said arm and the base, a needle at the opposite end of the said arm, a re- 100 ciprocating mechanism connected to the forward end of the said arm, and a reciprocating mechanism connected to the said pivoted connection for feeding the goods, for the purpose substantially as set forth.

8. In a sewing-machine, a driving-shaft, a 105 needle-carrying arm extending at an angle thereto, the forward end of the said arm extending substantially over the said driving-shaft, a needle connected thereto, a reciprocating mechanism connecting the forward end 110 of the arm and the shaft, and a feeding mechanism connecting the opposite end of the said arm and the shaft, substantially as shown.

9. In a sewing-machine, a driving-shaft, a 115 needle-carrying arm having one end extending over the said shaft, two eccentrics upon the shaft, a bar connecting one eccentric and the forward end of the arm for reciprocating it vertically, a rearwardly-extending eccentric rod connecting the other eccentric and 120 the rear end of the said needle-carrying arm, and a needle connected to the forward end of the said arm, substantially as described.

10. In a sewing-machine, a driving-shaft, a 125 needle-carrying arm extending at right angles thereto, a needle, a reciprocating mechanism connecting the forward end of the arm for moving it vertically, and a reciprocating mechanism connecting the shaft and the arm for moving it longitudinally toward and away 130 from the shaft, the parts combined to operate in the manner substantially as shown and described.

11. In a sewing-machine, a base, a driving-

shaft, two eccentrics thereon, a needle-carry-
ing arm extending at an angle thereto, a needle,
a connection between one of the eccen-
trics and the inner or forward end of the arm,
5 a connection pivotally connecting the rear
end of the arm and the base and having an
upwardly-extending arm, and an eccentric-
rod connected at one end with the other ec-
centric and adjustably connected at its op-

posite end with the said upwardly-extending
arm, substantially as specified.

In testimony whereof I have hereunto set
my hand.

CHARLES M. HINE.

Witnesses:

C. C. LEE,
WM. L. PIERCE.