

(No Model.)

4 Sheets—Sheet 1.

C. M. HINE.

MACHINE FOR SEWING BAGS AND OTHER ARTICLES.

No. 296,565.

Patented Apr. 8, 1884.

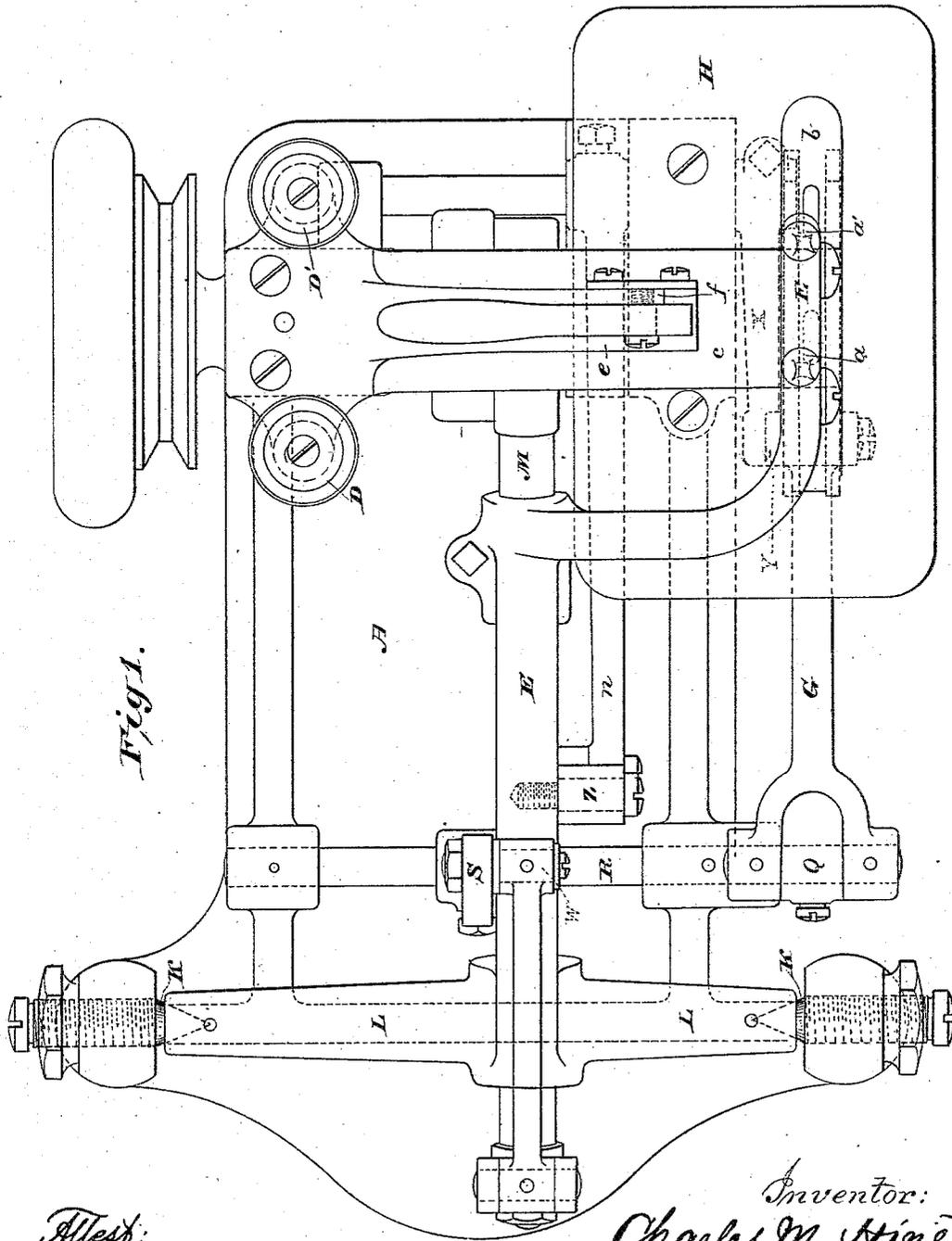


Fig. 1.

Attest:
Geo. F. Smallwood,
C. J. Hedrick

Inventor:
Charles M. Hine
by A. Pollok
his attorney.

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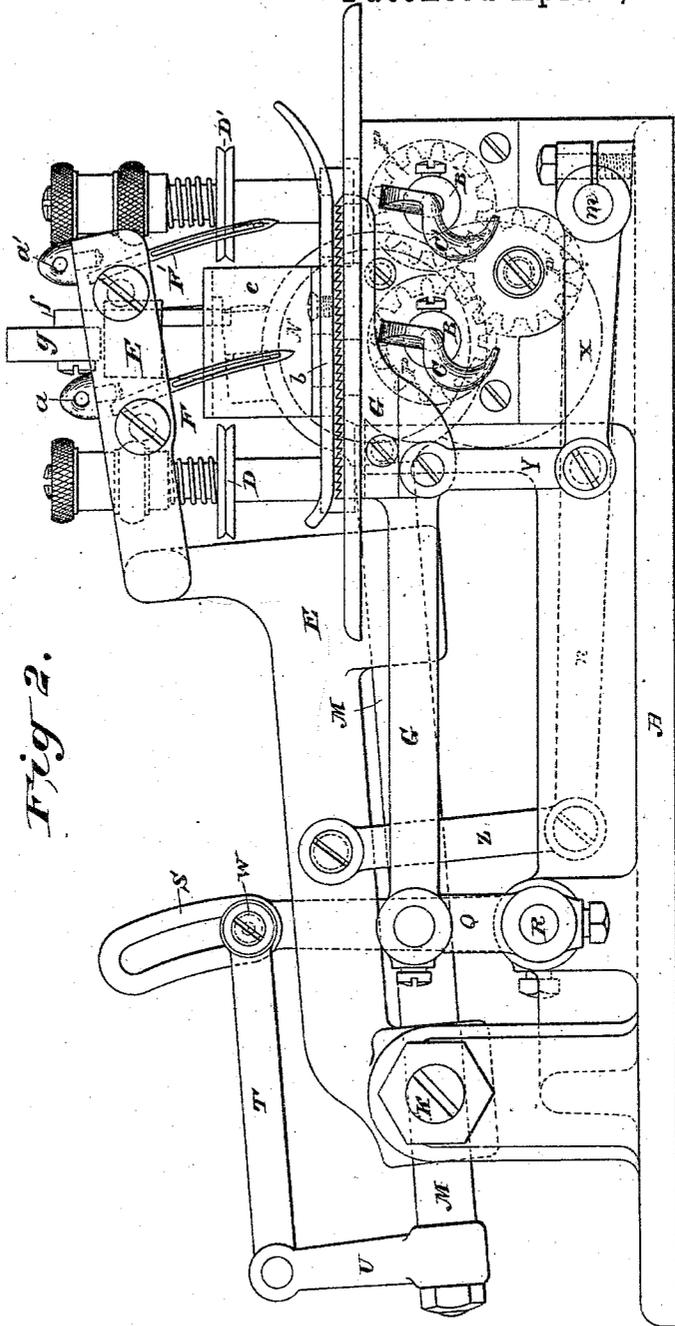


Fig 2.

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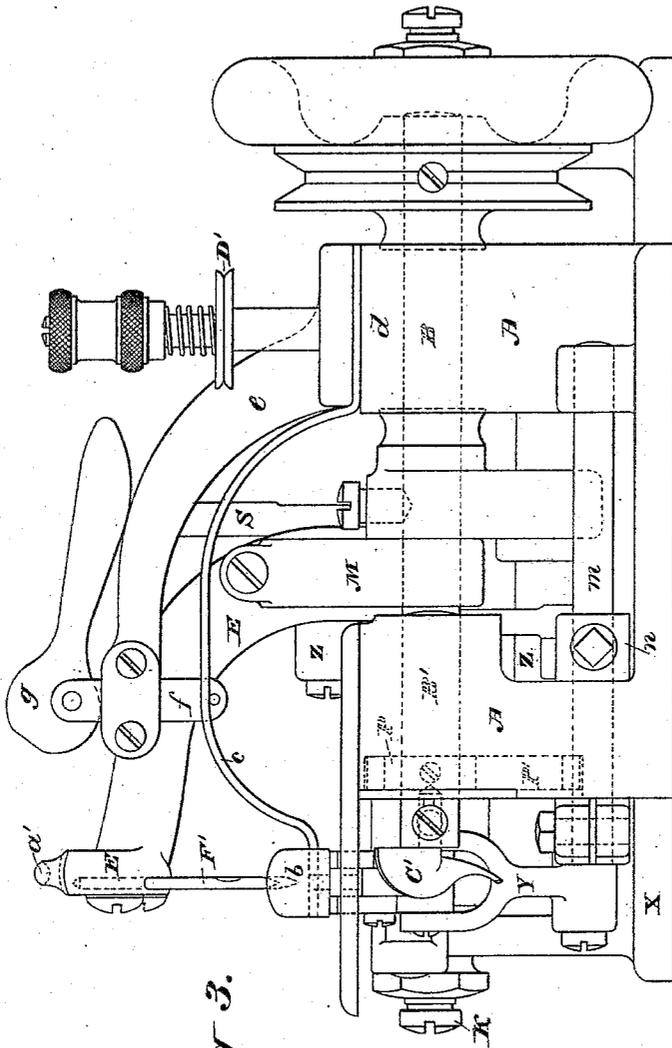


Fig. 3.

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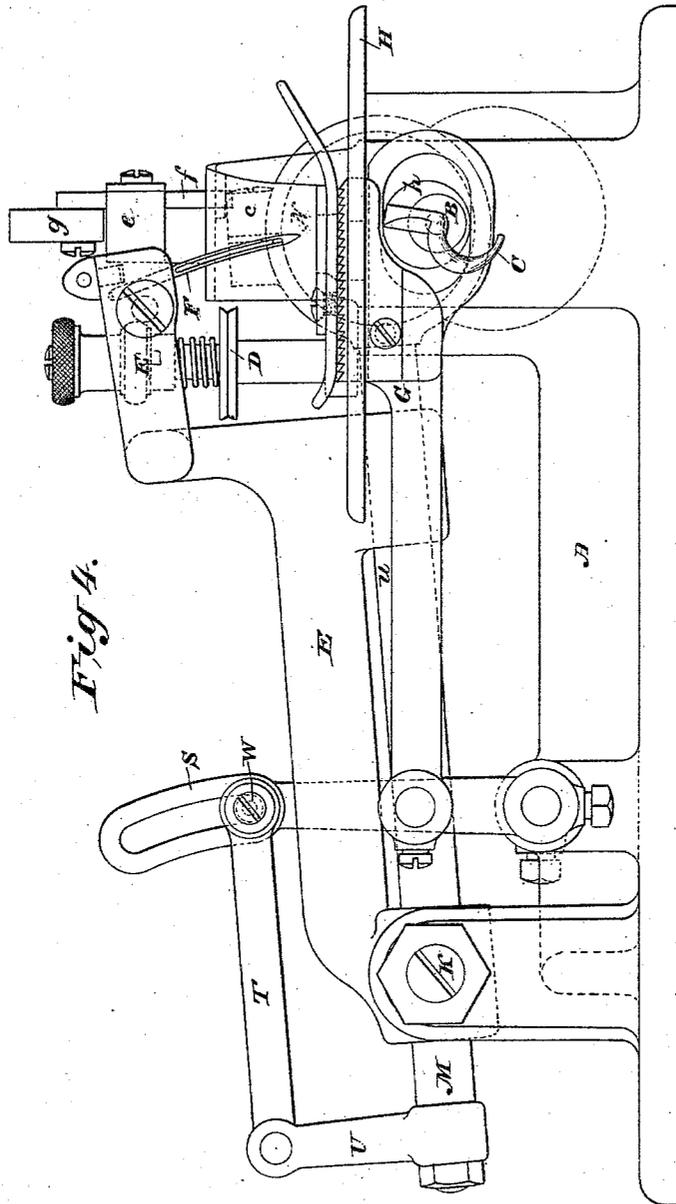


Fig 4.

Attest:
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UNITED STATES PATENT OFFICE.

CHARLES M. HINE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE WILLCOX & GIBBS SEWING MACHINE COMPANY, OF NEW YORK, N. Y.

MACHINE FOR SEWING BAGS AND OTHER ARTICLES.

SPECIFICATION forming part of Letters Patent No. 296,565, dated April 8, 1884.

Application filed August 4, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. HINE, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful
5 Improvement in Machines for Sewing Bags and other Articles, which improvement is fully set forth in the following specification.

This invention, although applicable in whole or in part to sewing-machines for other purposes, has reference more particularly to what
10 are known as "bag-machines" for sewing the edges of bags for exporting grain and for other purposes. It has for its object to produce a high-speed machine—that is, a machine having the parts so constructed and arranged that they are enabled to resist the strain and the liability to wear, incident to running at high speeds. To this end the following new dispositions are adopted:

20 First. In connection with a rotary hook or looper carried at the end of a rotating shaft, a needle-lever is used, which serves also as the needle-carrier, the eye-pointed needle being fastened to it near the end, and the said
25 needle-lever is fulcrumed behind the needle, with its axis of oscillation transverse to the line of feed, and parallel with the shaft, which carries the operating-eccentric and the aforesaid hook or looper.

30 Second. The needle-lever is operated by an eccentric-rod, which slides in bearings in the said lever, and which embraces the eccentric at the front end. Ordinarily the eccentric-rod is hinged to the needle-lever, and forms a link for conveying the power. In the present
35 invention it may be considered as practically a sliding extension of the needle-lever.

40 Third. The needle-lever is provided with duplicate fastening devices, so that it serves as the carrier as well as the operating device for two needles, and is combined with duplicate rotary hooks or loopers, the needle-lever being supported with its axis of oscillation parallel with the axes of the hooks or loopers,
45 so that the needles are properly presented to said hooks or loopers.

50 There are also certain other particular combinations of parts, hereinafter indicated, which form a part of the invention. The dispositions indicated are intended to be combined all in one machine, and they will be so shown;

but one or more of them can be used without the others.

In the accompanying drawings, which form a part of this specification, Figure 1 is a plan
55 view of a sewing-machine constructed in accordance with the invention. Figs. 2 and 3 are respectively a side elevation and a front view of the same, and Fig. 4 is a side elevation of a modified form.

60 Referring to Figs. 1, 2, and 3, A is the machine-frame; B, the main shaft supported and turning in bearings in said frame; C C', the rotary hooks or loopers of any ordinary or suitable form, such, for example, as customary
65 in the Willcox & Gibbs sewing-machine; D D', the tensions of ordinary or suitable form; E, the needle-lever, the same serving also as the needle-carrier, being provided for that purpose with duplicate fastening devices for at-
70 taching the needles F F' directly thereto; and G, the feed-bar arranged under the work-plate H.

The needle-lever E is fulcrumed behind the
75 needle upon the pins K, which are tapped into uprights on the machine-frame, and of which the inner ends fit into holes or recesses in the extended bosses L at the sides of the needle-lever. These uprights are widely separated,
80 so as to give a bearing adapted to resist torsional strains. The front end of the needle-lever is bent laterally, so that the needles will be at the side, instead of directly in line with the body of said lever. The axis of oscillation of the needle-lever being parallel with
85 the shaft B, and transverse to the direction of the feed-movement, the needle-lever would, if straight, lie in the line of sewing; but with the bend as shown the line of sewing is a sufficient distance to the side of the lever to allow the
90 work to clear it. It is mainly on account of this bend that the long bearing is given to the needle-lever. Power is applied to the needle-lever on the needle side of the fulcrum by means of the eccentric-rod M, which slides in
95 bearings in the needle-lever, and at its front end encircles the eccentric N on the shaft B. The throw of the eccentric is about equal to the stroke of the needle, so that a slight wear produces only a slight variation in the stroke
100 of the needle instead of a large variation, as in the ordinary sewing-machines, which multi-

ply the throw of the eccentric. The sliding connection between the eccentric-rod and the needle is not only a very strong one, but there is little opportunity for wear, and the little wear which takes place will not disarrange the operation.

The two needles *F F'* are placed one in front of the other, so that the two rows of stitches coincide; but they may be placed more or less out of line, so as to make two separate rows.

The fastening devices may be of any suitable construction. As shown, the shanks of the needles are clamped beneath the heads of binding-screws.

The rotary hooks or loopers *C C'* are fixed, the one on the shaft *B*, the other on a short parallel shaft, *B'*, which is geared to the former by the spur-gear wheels *P*, fixed one on each shaft, and the intermediate, *P'*, which turns on a stud fixed in the shaft-bearing. The hooks or loopers *C C'* are set as close together as possible, and the gears are made as large as the space will allow. The hooks or loopers revolve at equal speeds in the same direction, and the eccentric is so set on the shaft that the stroke of the needles is properly timed.

The feed-bar *G* is hinged at the rear end to an upright arm, *Q*, on the rock-shaft *R*, journaled in bearings on the machine-frame. The upright arm *S*, fixed to the opposite end of the rock-shaft, is connected by means of a link, *T*, with the arm *U*, fixed to the rear end of the eccentric-rod *M*. The front end of the link *T* is adjustably connected with arm *S* by means of a stud, *W*, which passes through a curved slot in the end of said arm, and is clamped by a set-nut in the position to which it may be adjusted. The arms *Q S* are or may be held in place by set-screws to admit of adjustment; or they may be otherwise secured. The arm connected with the link *T* being longer than that connected with the feed-bar, the back-and-forth movement of the bar is less than that of the eccentric-rod. This reduction of stroke is very advantageous for high speeds. The front end of the feed-bar is supported by the horizontal arm *X*, fixed at its front end to the rock-shaft *m*, and at its rear end is connected with and supports the feed-bar *G* by the upright link *Y*. The rock-shaft *m* is vibrated by means of the horizontal arm *n* and link *Z*, which latter is connected with the needle-lever. The lever-arms are of such relative length that the up-and-down motion communicated to the feed-bar is less than that of the needle-lever or than the throw of the eccentric which operates it. The motions of the needle-lever and feed-bar are thus all communicated from a single eccentric through the eccentric-rod, and since the power must be applied alternately to the needle-lever and feed-bar (they coming successively into active operation) the drag upon the eccentric is made as near as may be the same at all times. The thread is led from the tensions through the eyes *a a'* in the end of the needle-lever, and thence to the eyes of the needles *F F'*.

The presser-foot *b* is carried at the outer end of the leaf-spring *c*, which is fixed at its other end to the shaft-bearing *d*, being clamped between the base of arm *e* and the top of said bearing. The usual presser-bar is dispensed with. A pin, *f*, fixed to the leaf-spring, slides in an opening in said arm, and is connected with the cam *g*, by turning which the presser-foot can be raised or lowered.

In Fig. 4 the machine has only one needle and one hook or looper, and the feed-bar is supported at the front end by a yoke fitting over an eccentric, *h*, on the shaft *B*. In this case the up-and-down motions of the feed-bar are not communicated from the eccentric *N*. The machine does not therefore embody the whole of the invention. The other parts are the same as in Figs. 1, 2, and 3.

The machine first described could be converted into a single-seam machine by shortening the needle-lever, omitting the extra needle, the extra hook or looper, and the gears for operating the latter, and that shown in Fig. 4 could be altered into a double-seam machine by lengthening the needle-lever, lengthening also the yoke or the feed-bar, and adding the extra needle, extra tension, extra looper or hook, and the gears for operating the latter.

Although the invention has been described as embodied in a chain-stitch machine, yet it can be applied in part, if not wholly, to other forms of machines, such as lock-stitch machines.

The needle-lever, as shown, serves also as the needle-carrier; but it is obvious that a needle-lever connected with a needle-bar could be arranged and operated substantially as before described. The needle-lever provided with needle-fastening devices, so that it serves as the needle-carrier, is more advantageous for high speeds, and is specially claimed.

Various other modifications could be made and the invention in whole or in part still be employed.

Having now fully described my said invention and the manner of carrying the same into effect, what I claim is—

1. The combination of a shaft, a rotary hook or looper carried thereby, a needle-lever provided at its end with means for holding a needle or needles, and fulcrumed behind the needle, with its axis of oscillation transverse to the line of feed, and mechanism for operating said lever, substantially as described.

2. The combination, with a needle-lever, of an eccentric-rod supported and sliding in bearings in said lever, and an eccentric for operating said parts, substantially as described.

3. The combination of the needle-lever provided with means for attaching a needle or needles directly thereto, the sliding eccentric-rod and the eccentric, substantially as described.

4. The combination, with duplicate hooks or loopers and the needle-lever provided with devices for attaching the needles directly there-

to, of the bearings for supporting the said lever, with its axis of oscillation parallel with the axis of rotation of said hooks or loopers, and the duplicate needles for co-operating with
 5 said hooks or loopers, said needles being attached to said lever and moving in curved paths, substantially as described.

10 5. The combination, with the work-plate and machine-frame, of the presser-foot carried by a leaf-spring, the sliding pin, the cam connected with said pin for raising and lowering said foot, and the bearing for said cam, the elasticity of the spring tending to press said
 15 presser-foot toward the said work-plate, substantially as described.

20 6. The combination, with the needle-lever and feed-bar of a sewing-machine, of an eccentric, eccentric-rod, and connections for rocking said lever and for imparting back-and-forth movements to said feed-bar from the said
 25 eccentric through the strap which encircles the same, substantially as described.

30 7. The combination, with the needle-lever, the eccentric, and the sliding eccentric-rod, of the feed-bar, the rock-shaft, and the link, the latter connected with the said eccentric-rod, substantially as described.

8. The combination, with the needle-lever of a sewing-machine and the feed-bar arranged
 30 under the work-plate of said machine, of con-

nections for imparting the rising and falling motions to the feed-bar from the needle-lever, substantially as described.

9. The combination, with the needle-lever and feed-bar, of an eccentric and eccentric-rod and connections for imparting a rocking
 35 motion to the needle, and the rising and falling and back and forth motions to the feed-bar, all from said eccentric through the strap which encircles the same, substantially as de-
 40 scribed.

10. The combination, in a sewing-machine, of the revolving shaft, one or more hooks or loopers operated thereby, the eccentric on said
 45 shaft, the bent needle-lever fulcrumed behind the needle, and provided with fastening devices for attaching one or more needles directly thereto, the eccentric-rod sliding in
 50 bearings in said needle-lever; the feed-bar, the rock-shaft, the connections between the needle-lever and feed-bar, and connections between the eccentric-rod and rock-shaft, sub-
 55 stantially as described.

In testimony whereof I have signed this specification in the presence of two subscrib-
 55 ing witnesses.

C. M. HINE.

Witnesses:

PHILIP MAURO,
 C. J. HEDRICK.