

(No Model.)

2 Sheets—Sheet 1.

G. D. MUNSING.
CROCHETING MACHINE.

No. 411,046.

Patented Sept. 17, 1889.

Fig. 1.

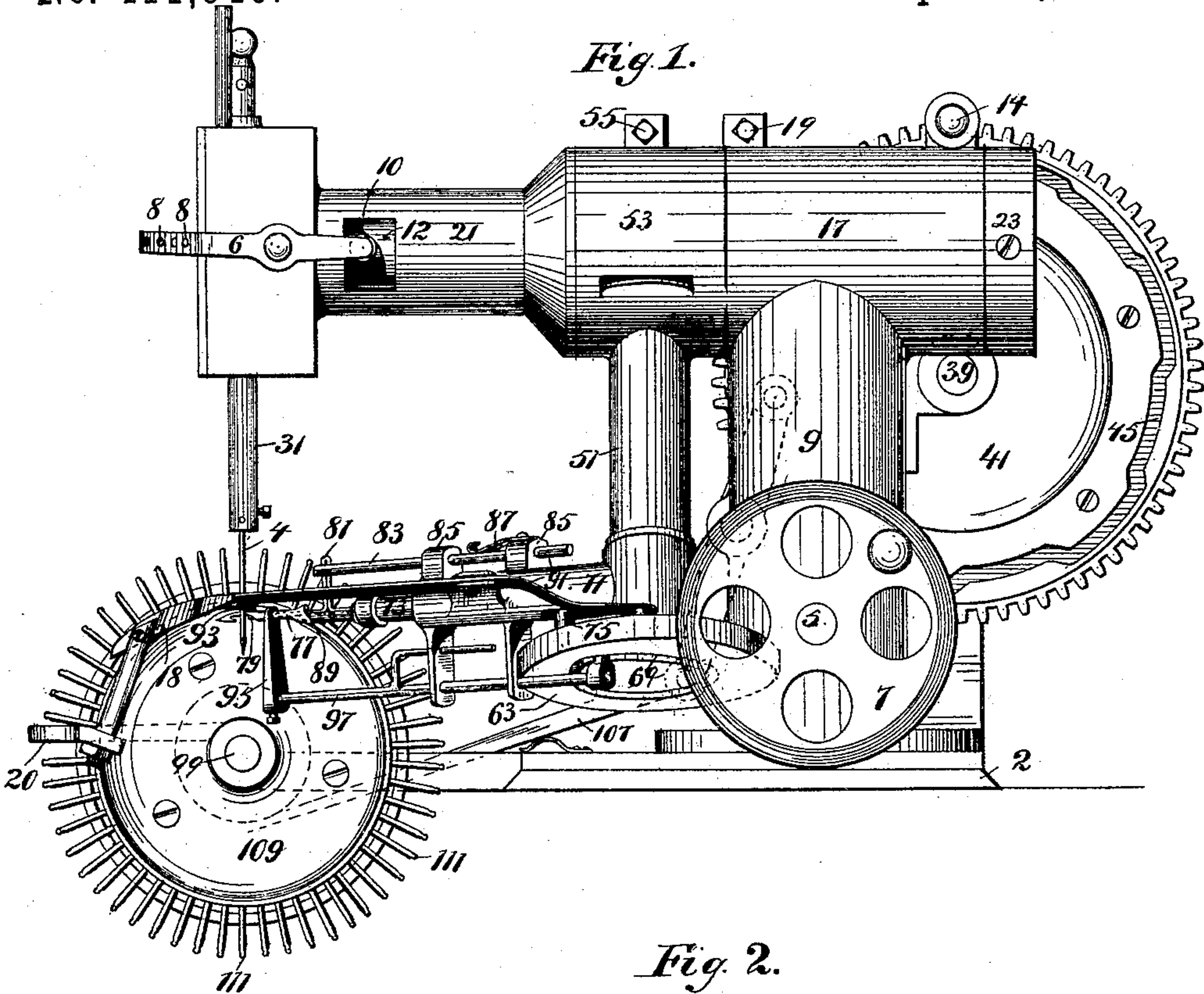
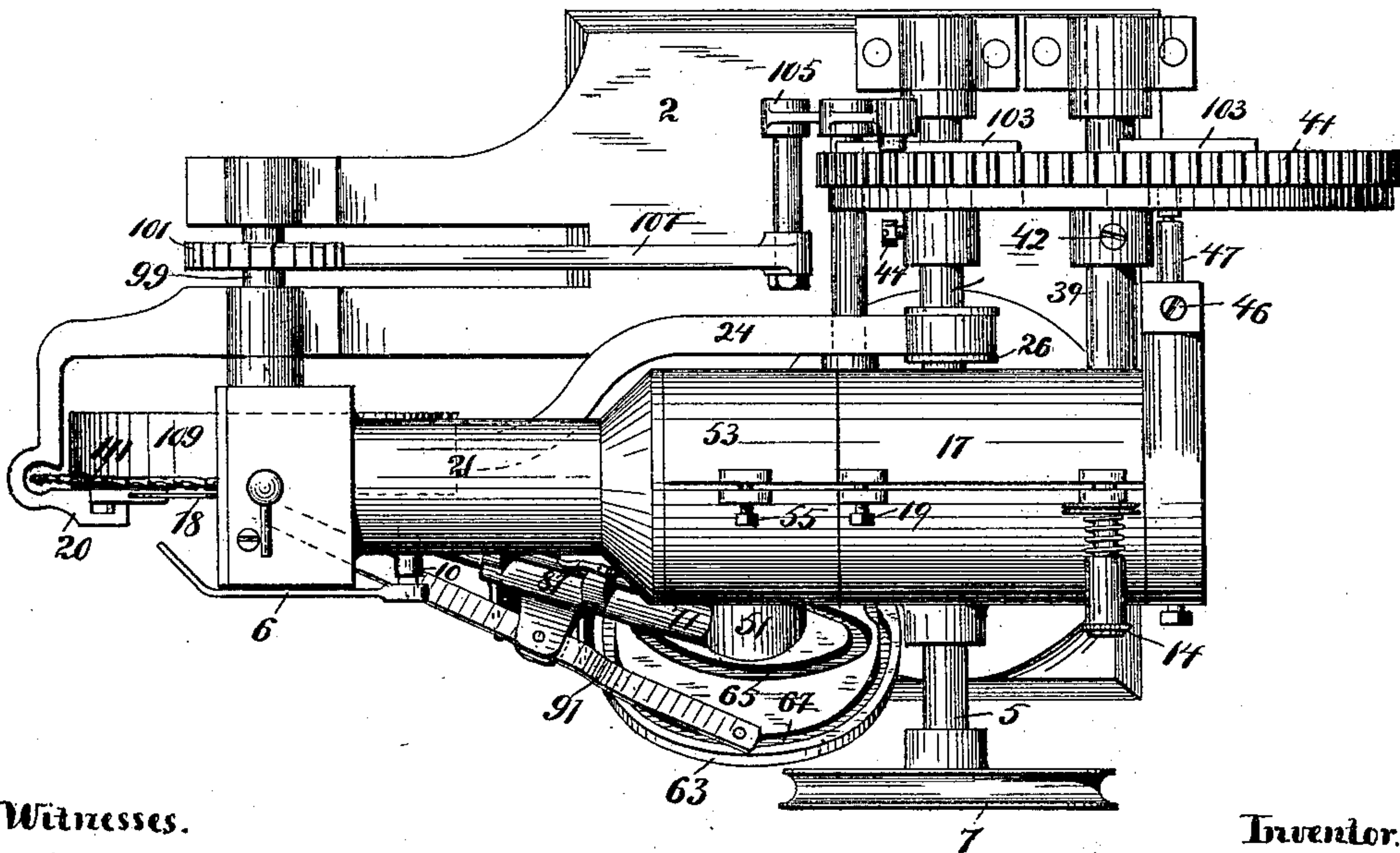


Fig. 2.



Witnesses.

J. Jensen.
A. C. Finney.

Inventor.

George D. Munsing.

By Paul Munsing
Att'y

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2 Sheets—Sheet 2.

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Fig 3.

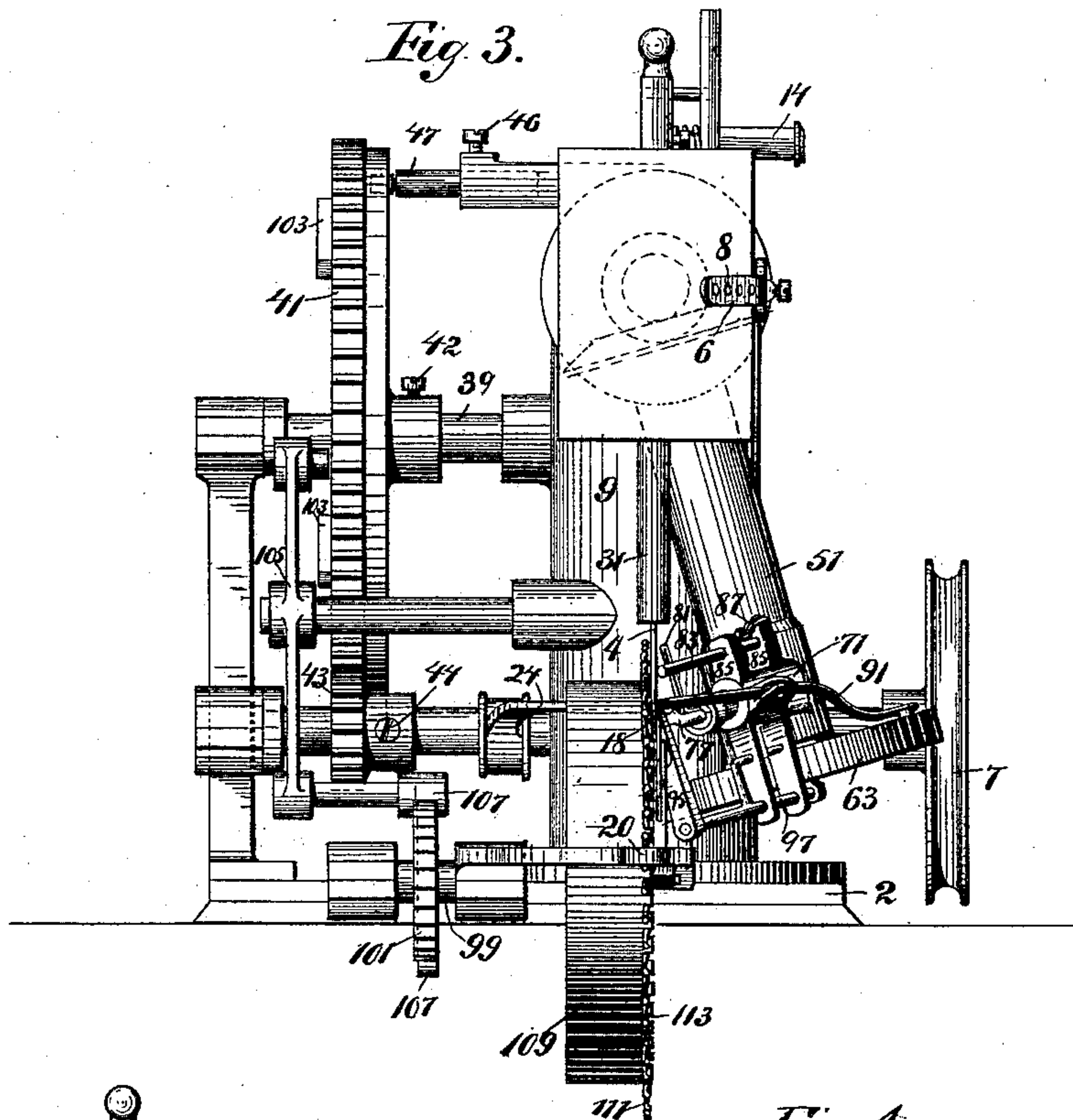
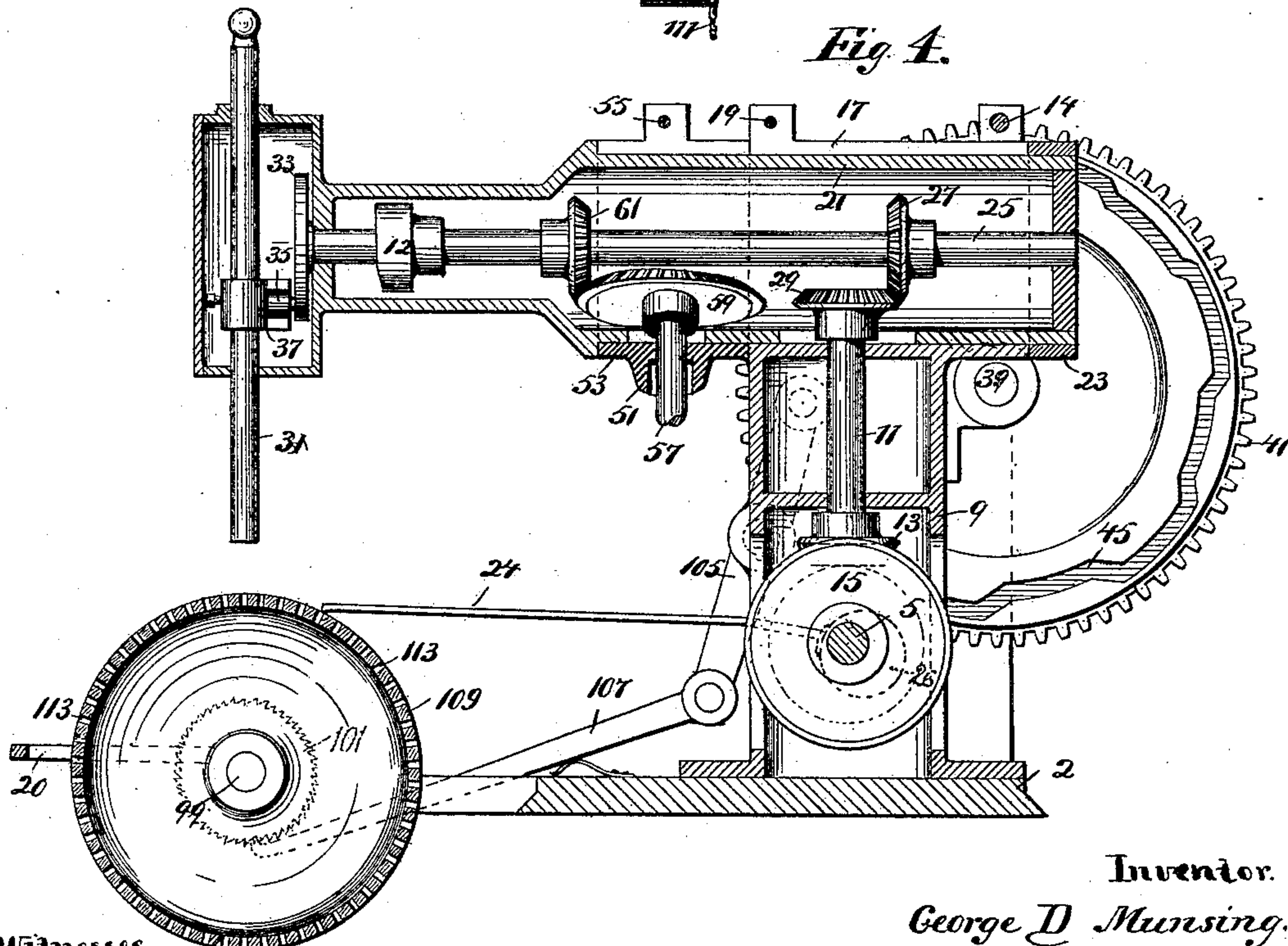


Fig 4.



Witnesses.

J. Jensen.
a.c. Finney

Inventor.

George D. Munsing.
By Paul Munsing,
Atty.

UNITED STATES PATENT OFFICE.

GEORGE D. MUNSING, OF MINNEAPOLIS, MINNESOTA.

CROCHETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,046, dated September 17, 1889.

Application filed February 18, 1889. Serial No. 300,234. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. MUNSING, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new
5 and useful Improvements in Crocheting-Machines, of which the following is a specification.

The object of this invention is to provide a machine for the manufacture of crocheted
10 fabric either in the form of an edging or trimming for another fabric or as a complete web.

I design this machine for doing substantially the same work as the machine described in my application for patent filed October 10,
15 1888, Serial No. 288,301.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of a machine constructed in accordance with my invention. Fig. 2 is a plan
20 view of the same. Fig. 3 is a front elevation. Fig. 4 is a longitudinal vertical section.

In the drawings, 2 represents the base of the machine, which may be of any suitable size and shape.

25 Mounted in suitable bearings upon the base of the machine is the main driving-shaft 5, which is preferably provided with a suitable pulley 7, by means of which power may be applied to the shaft.

30 Secured to or formed upon the base-plate 2 is a standard or column 9, which supports the main portion of the operating parts of the machine. The standard 9 is preferably hollow, and the driving-shaft 5 passes through the lower portion thereof. A vertical shaft 11
35 is arranged within the standard 9 and is provided with a bevel-gear 13, which meshes with a similar gear 15 upon the shaft 5.

Formed upon or secured to the top of the
40 standard 9 is a cylindrical shell 17, which is preferably open at both ends and may be longitudinally slotted and provided with screws 19 for taking up wear. The inner surface of the shell 17 forms the bearing for a hollow
45 arm 21, which is mounted in said shell. A collar 23, secured to the rear end of the arm 21, retains it in position.

Mounted in bearings in the arm 21 is a shaft 25, that is provided with a bevel-gear 27,
50 that engages with a gear 29 upon the shaft 11. The forward end of the arm 21 is provided

with bearings for the reciprocating needle-bar 31, which is driven from the shaft 25 by any suitable means. I have here shown the shaft 25 provided with a disk 33, having a
55 crank-pin 35. This pin engages a block 37, that is secured to the needle-bar.

A shaft 39 is mounted in bearings upon the plate 2, and is provided with a gear-wheel 41, that is engaged by a pinion 43 upon the shaft
60 5. The wheel 41 is provided with a pattern-groove 45, which is engaged by a stud 47, that is adjustably secured to the hollow arm 21. The arm 21 is free to turn within the shell 17, and as the pattern-wheel 41 is turned the arm
65 21 is oscillated in its bearing, its movements being governed by the groove 45 in the pattern-wheel 41.

A depending hollow arm 51 is secured upon the arm 21, preferably directly in front of the
70 standard 9. The arm 51 may be secured to the arm 21 by any suitable means. I prefer to provide the upper end of the arm 51 with a cylindrical shell 53, that fits upon the outer surface of the arm 21. This shell may be
75 slotted and provided with an adjusting-screw 55. The shell may be clamped firmly upon the arm 21 or it may be free to turn thereon.

Arranged preferably within the arm 51 is
80 a shaft 57, provided at its upper end with a bevel-gear 59, that meshes with a similar gear 61 on the shaft, whereby the motion is imparted to the shaft 57.

Upon the lower end of the shaft 57 is a
85 disk-wheel 63, which is preferably provided with three cam-grooves 65, 67, and 69, the grooves 65 and 67 being preferably located in the top of the disk and the groove 69 in its under surface.

90 An arm 71 projects horizontally from the lower end of the depending arm 51. This arm is hollow and forms the bearing for a reciprocating looper-bar 73. A stud 75 on the looper-bar 73 projects through a slot in the
95 arm 71, and engages the groove 65 in the disk 63. A looper 77, consisting of a hook-shaped needle, is carried by the looper-bar 73. The looper 77 is provided with a sliding latch 79, having a projection 81, that engages a rod 83.
100 The rod 83 passes through bearings 85 on the arm 71, and a spring 87 bears on the rod.

The friction between the spring and the rod 83 is sufficient to overcome the friction between the looper and the latch. A shoulder 89 on the body of the looper strikes the projection 81 on the latch after the looper has moved a certain distance, and the latch and looper then move together. When the looper moves in the other direction, the hook on the looper strikes the end of the latch after the looper has moved a certain distance, and thereafter the looper and latch will move together.

A loop-holder is also preferably arranged in connection with the looper 77. This loop-holder consists of a rod 91, pivotally mounted on the arm 71 and engaging the groove 67 in the disk 63. By means of the groove 67 the forward end of the rod 91 is swung toward and from the looper. The forward end of the rod 91 is provided with an intumed finger 93, that extends close to the looper when the forward end of the rod is swung toward the looper.

A stitch-caster 95 is also preferably arranged in connection with the looper 77. This stitch-caster consists, preferably, of an arm through which the looper passes. This arm is mounted upon a rod 97, that is supported in bearings upon the arm 71. The rear end of the rod is provided with a lug that engages the groove 69 in the disk 63.

A shaft 99 is mounted in bearings on the plate 2, and is provided with a ratchet-wheel 101, that is operated by cam projections 103 on the wheel 41 through a pivoted lever 105 and connecting-rod 107.

A cup-shaped feed-wheel 109 is mounted upon the shaft 99. This wheel is preferably provided with a series of spurs 111 and a series of notches 113.

The needle-bar 31 is provided with an ordinary eye-pointed sewing-needle 4, which is arranged to pass through one of the notches 113 in the feed-wheel when the needle-bar is directly over the wheel.

A swinging take-up bar 6 is mounted on the forward end of the arm 21. This take-up bar is provided with openings 8, through one of which the thread or yarn passes. Its opposite end is provided with a stud 10, which engages a cam 12 on the shaft 25. By this means the take-up bar is swung upon its pivot, its forward end moving up and down as the cam engages its opposite end.

An ordinary spring-tension device 14 is preferably provided, over which the thread or yarn passes. I prefer also to provide a horn 18, which is secured upon a support 20 in front of the feed-wheel 109. The threads are drawn over this horn as the needle is swung outward, and slips off from the horn as the feed-wheel is turned.

I also prefer to provide a work-releaser, consisting, preferably, of a bar 24, having its end resting upon the top of the feed-wheel 109. The opposite end of this bar is engaged by an eccentric 26 upon the driving-shaft 5. As the

shaft is rotated this eccentric causes the bar 24 to be alternately raised and depressed, and thereby to lift the work from the spurs upon the feed-wheel as the feed-wheel is rotated.

In order to regulate the oscillation of the arm 21, I prefer to make the stud 47 adjustable, securing it in position by means of the set-screw 46, and to make the cam-wheel 41 adjustable upon its shaft 39, securing it in position by means of a set-screw 42. I also make the wheel 43 adjustable upon the shaft 5, securing it by means of the set-screw 44. By adjusting the cam-wheel 41 nearer to or farther from the standard 9, upon which the arm 21 is mounted, this arm may be given a greater or less oscillation, and thereby the lateral movement of the needle and looper be regulated.

The operation of this machine is as follows: Power is applied to the shaft 5 and thereby all of the mechanism is operated. The needle 4 and the looper 77 are each given a reciprocating movement, the line of reciprocation of the looper being across the line of reciprocation of the needle. The work which is done by this machine is substantially the same as that which is done by the machine described in my former application for patent, hereinbefore referred to. When the needle is over the feed-wheel, it passes down through one of the notches therein to the position shown in Fig. 1. The looper then advances and passes between the needle and the thread or yarn. The needle then begins to ascend and the looper to recede, the thread being engaged by the hook of the looper. The take-up bar 6 swings upward, drawing the thread closely into the hook of the looper. The looper recedes until its hook is closed by the latch 79. By this time the needle has passed above the flange of the feed-wheel and then the needle and looper both move laterally away from the face of the feed-wheel. The needle again descends, the looper advances opening the latch, and the loop which is in the hook of the needle slides out of the hook and onto the body of the looper, where it is held by the stitch-holder 91. The needle again ascends and the looper recedes with another loop in its hook, the latch closes, and the stitch-caster now advances, casting the loop on the body of the looper and forming a stitch. One or more stitches, as desired, may be formed at this point. The needle and looper then swing back in unison to their original position and the operations are repeated.

The pattern of the shell or work will be governed by the form of the groove 45 in the wheel 41.

I claim as my invention—

1. In a machine of the class described, the combination, with a longitudinally-reciprocating and laterally-movable needle, of a longitudinally-reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said

needle, and means for moving said needle and looper laterally in the same direction in unison with each other, substantially as described.

5 2. The combination, with a feed-wheel having a step-by-step movement, of a longitudinally-reciprocating and laterally-movable needle, and a longitudinally-reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said needle, substantially as described.

10 3. The combination, with a notched and spurred feed-wheel, of a longitudinally-reciprocating and laterally-movable needle, and a longitudinally-reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said needle, substantially as described.

15 4. The combination, with a reciprocating and laterally-movable needle, of a reciprocating and laterally-movable looper arranged to reciprocate transversely to the line of reciprocation of said needle, and provided with a sliding latch, substantially as described.

20 5. The combination, with a reciprocating needle, of a reciprocating looper arranged to reciprocate transversely to the line of reciprocation of said needle, and provided with a sliding latch and a reciprocating stitch-caster engaging said looper, substantially as described.

25 6. The combination, with a reciprocating needle, of a reciprocating looper arranged to reciprocate transversely to the line of reciprocation of said needle, and provided with a

sliding latch, a reciprocating stitch-caster, and a swinging loop-holder, substantially as described.

7. The combination, with an oscillating arm 21 and a reciprocating needle supported upon said arm, of a depending arm secured upon said oscillating arm and moving therewith, and a longitudinally-reciprocating looper supported upon said depending arm and arranged to reciprocate transversely to the line of reciprocation of said needle, substantially as described.

8. The combination, with the oscillating arm 21 and the reciprocating needle supported upon said arm, of the adjustable wheel 41, provided with the cam-groove 45, and the adjustable stud 47, engaging said groove and connected to the arm 21, substantially as described, and for the purpose set forth.

9. The combination, with the hollow oscillating arm 21 and the hollow depending arm 51, supported thereon, of the shaft 25, arranged in said arm 21, the shaft 57, arranged in said depending arm, the needle-bar connected with said shaft 25, the cam-disk 63, secured to said shaft 57, and the reciprocating looper supported upon said arm 51 and arranged to be operated by said cam-disk, substantially as described.

In testimony whereof I have hereunto set my hand this 14th day of February, 1889.

GEORGE D. MUNSING.

In presence of—

A. C. PAUL,

J. JESSEN.