(No Model.) 2 Sheets—Sheet 1.

E. S. PARSONS.

NEEDLE GROOVING MACHINE.

No. 386,844. Patented July 31, 1888.

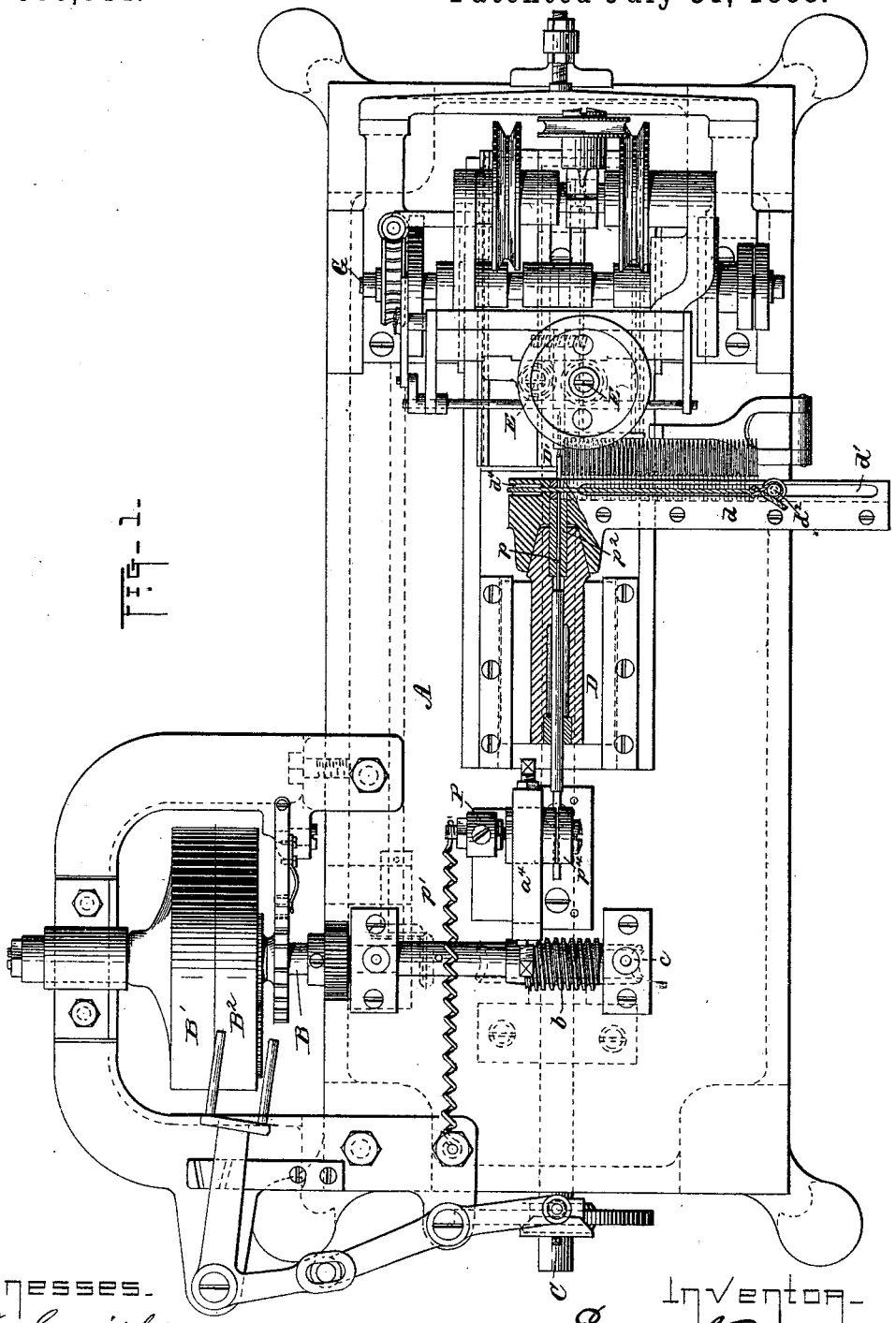

FIG. 1.

Witnesses.
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Inventor.
Emory S. Parsons.
by Henry Talbot
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(No Model.) 2 Sheets—Sheet 2.

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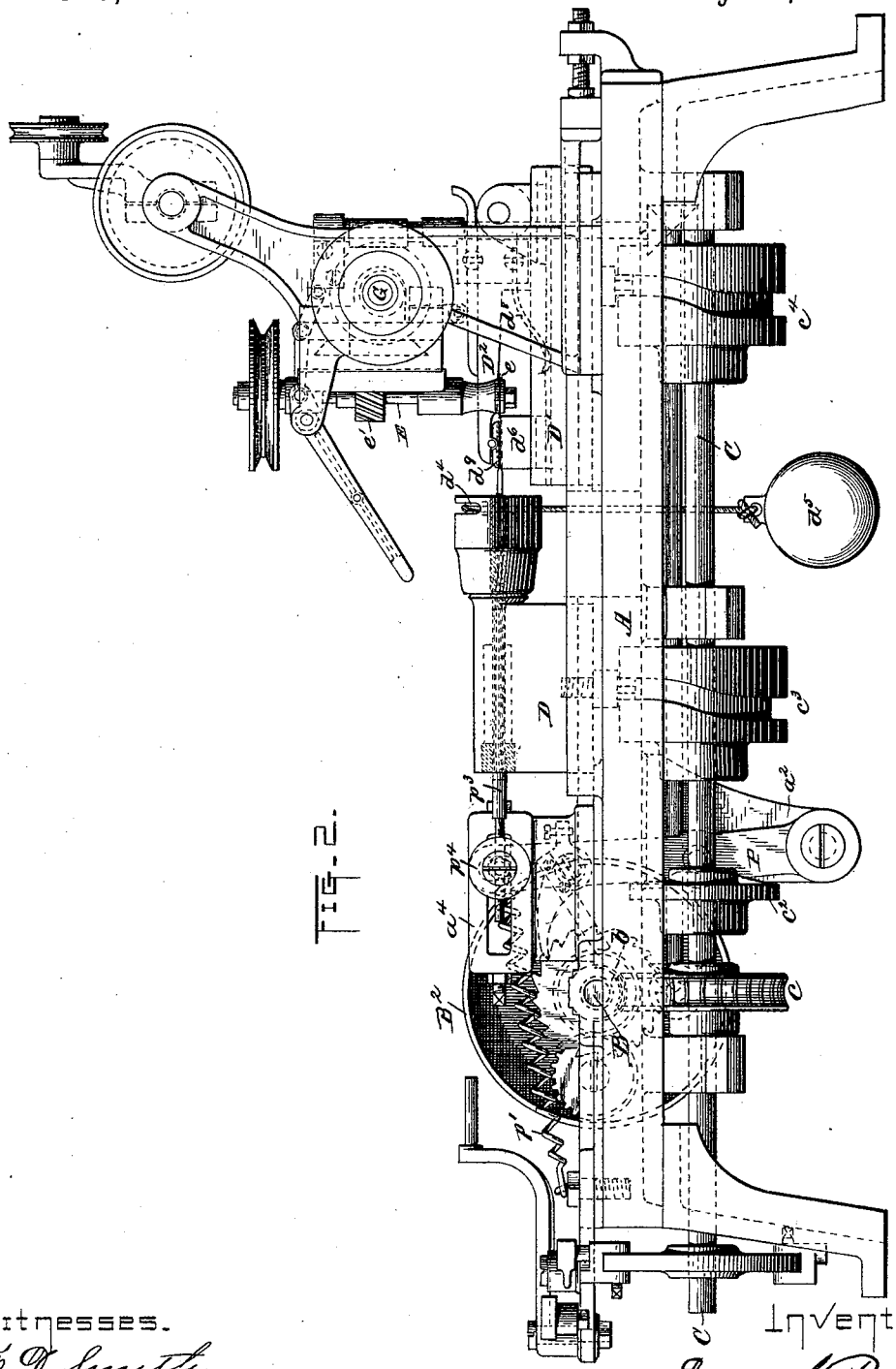

FIG. 2.

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UNITED STATES PATENT OFFICE.

EMORY S. PARSONS, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY OF NEW JERSEY.

NEEDLE-GROOVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 386,844, dated July 31, 1888.

Application filed January 24, 1888. Serial No. 261,790. (No model.)

To all whom it may concern:

Be it known that I, EMORY S. PARSONS, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Needle-Grooving Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide an improved mechanism for inserting the needles in the needle clamp of a needle grooving machine, so that they will be successively supplied to the said clamp with certainty and precision, and any danger of failure to place a needle in the clamp at each grooving operation will thereby be avoided. To this end I provide the needle-carriage, on which the needle holder or magazine is mounted, with a push-pin or plunger which follows the movements of the said carriage during the backward movement of the latter, and then retreats still farther to allow a needle to come in front of it. To force a needle from the magazine into the clamp, the pin moves quickly forward and pushes the needle before it into the clamp. The backward movement of the pin with the needle-carriage (the said pin remaining in a forward position relative to said carriage) prevents the needles in the holder or magazine on the said carriage from being pushed forward by the weight-operated follower until the point of the needle to be next placed in the clamp will clear the shank of the needle already in the clamp.

In the drawings, Figure 1 is a plan view, partly in horizontal section, of a needle-grooving machine embodying my invention; and Fig. 2 is a side elevation thereof.

This needle-grooving machine is, in its general features, of well-known form, and is familiar to those skilled in the art to which my invention relates, and need not therefore be herein particularly described, excepting so far as is necessary to an understanding of the operation of my invention. Moreover, the general construction and operation of this machine are fully described in the application of L. B. Miller, filed simultaneously herewith, and to which reference may be had, if desired.

A denotes the frame of the machine; B, the driving-shaft; B′ and B^2, fast and loose driving-pulleys thereon; C, the cam-shaft having a worm-wheel, *c*, meshing with a worm, *b*, on the shaft B, said shaft C also carrying the cams c^2, c^3, and c^4.

D and D′ are the needle-carriages sliding in ways on the frame A, and having pins or roller studs extending downward into the grooves of the cams c^3 and c^4, the said cams thus serving to impart positive back and forth feeding movements to the said carriages.

Secured to the needle-carriage D is a laterally-extending arm, *d*, which is adapted to serve as a needle holder or magazine by being provided with a suitable groove (denoted by the dotted line, Fig. 1) to receive the shanks of a row of needles to be arranged therein, as shown. The said arm has another groove, *d′*, which intersects the needle holding groove, and in which is placed a follower, d^2, running over a pulley, d^4, and provided with a weight, d^5, to hold the follower against the needles, so that they will be fed up automatically to be brought successively into line with a feeding-pin, *p*, to be forced into the clamp of the needle-carriage D′.

The needle-grooving cutters *e* are carried by suitably-operated vertical shafts E, connected together by the gears *e′*. The clamp to hold the needles while being grooved consists of a block or anvil, d^6, on the carriage D′, and a lever, D^2, having a clamping-foot, d^9, the said lever being hinged at its rear end to a block or standard on said carriage. The clamping-lever is forced downward in the usual manner by a roller-carrying follower (see dotted lines, Fig. 2) operated by a cam on the transverse shaft G, and is lifted, when the said cam permits, to allow a needle to be removed or inserted by a spring, d^8.

The shank or spindle p^3 of the needle-feeding push-pin *p* is guided in suitable bearings in the carriage D′, and the pin itself is guided in a sleeve or block, p^2, extending from said carriage into the needle-holder *d*. The spindle carrying the pin *p* is attached at its rear end to a slide, p^4, guided in the block a^4 and connected to a lever, P, pivoted at its lower end to a bracket, a^2, depending from the frame A, the said lever being operated by the cam

c^2 on the shaft C and a retracting-spring, p', and the said spring serving to hold a pin or roller (see dotted lines, Fig. 2) on the said lever in contact with the face of the said cam.

The upper end of the lever P will have a much greater throw than the cam by which it is operated, owing to the fact that the said lever is pivoted at its lower end, and the cam acts thereon between its fulcrum and its upper or free end.

In the operation of the machine the clamp-carriage D′ approaches to within the length of the shank of a needle of the needle-holder carriage D, and the push-pin p is then quickly advanced to force a needle into the clamp of the said carriage D′, the clamping-foot d^3 being momentarily held raised for this purpose after the removal of the needle just grooved, but being again quickly forced into clamping position to hold the needle inserted beneath it. The carriage D′ now advances, presenting the needle to the grooving-cutters e in the usual manner, and the carriage D retreats. During the backward movement of the carriage D the pin p follows the movements thereof, and thus remains in a forward position, as shown in Fig. 1, relative to the needle-holder, so as to prevent the needles in the said holder from being moved up by the follower d^2 until the point of the needle next to be grooved will clear the shank of the needle already in the clamp. The pin p then retreats to permit the follower to force up the needles, one of which will then be in front of the said pin, and when the needle-carriages have again approached to within the proper distance of each other (the carriage D moving forward and the carriage D′ backward) the pin is operated, as before, to force another needle into the clamp of the carriage D′. Thus the operation continues, the pin p forcing the needles into the clamp at the proper times and at other times preventing them from interfering with the needles in the clamp, which would be liable to cause a displacement or confusion of the needles in the holder or magazine.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a needle-grooving machine, the combination, with the needle carriage D and the needle holder or magazine carried thereby, of a needle-feeding push-pin arranged to slide longitudinally in said carriage, and actuating mechanism for said pin, to operate substantially as set forth.

2. In a needle-grooving machine, the combination, with the needle-carriage D and the needle holder or magazine d, carried thereby, of the needle-feeding push-pin p, sliding longitudinally in said carriage, the shank or spindle p^3, by which the said pin is carried, the slide p^4, the lever P, the cam c^2, and the spring p', substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EMORY S. PARSONS.

Witnesses:
L. B. MILLER,
L. L. BURRITT.