

W. F. FRASER.
SPACING MECHANISM FOR LACING HOOK SETTING MACHINES.
APPLICATION FILED NOV. 6, 1908.

933,298.

Patented Sept. 7, 1909.
6 SHEETS—SHEET 1.

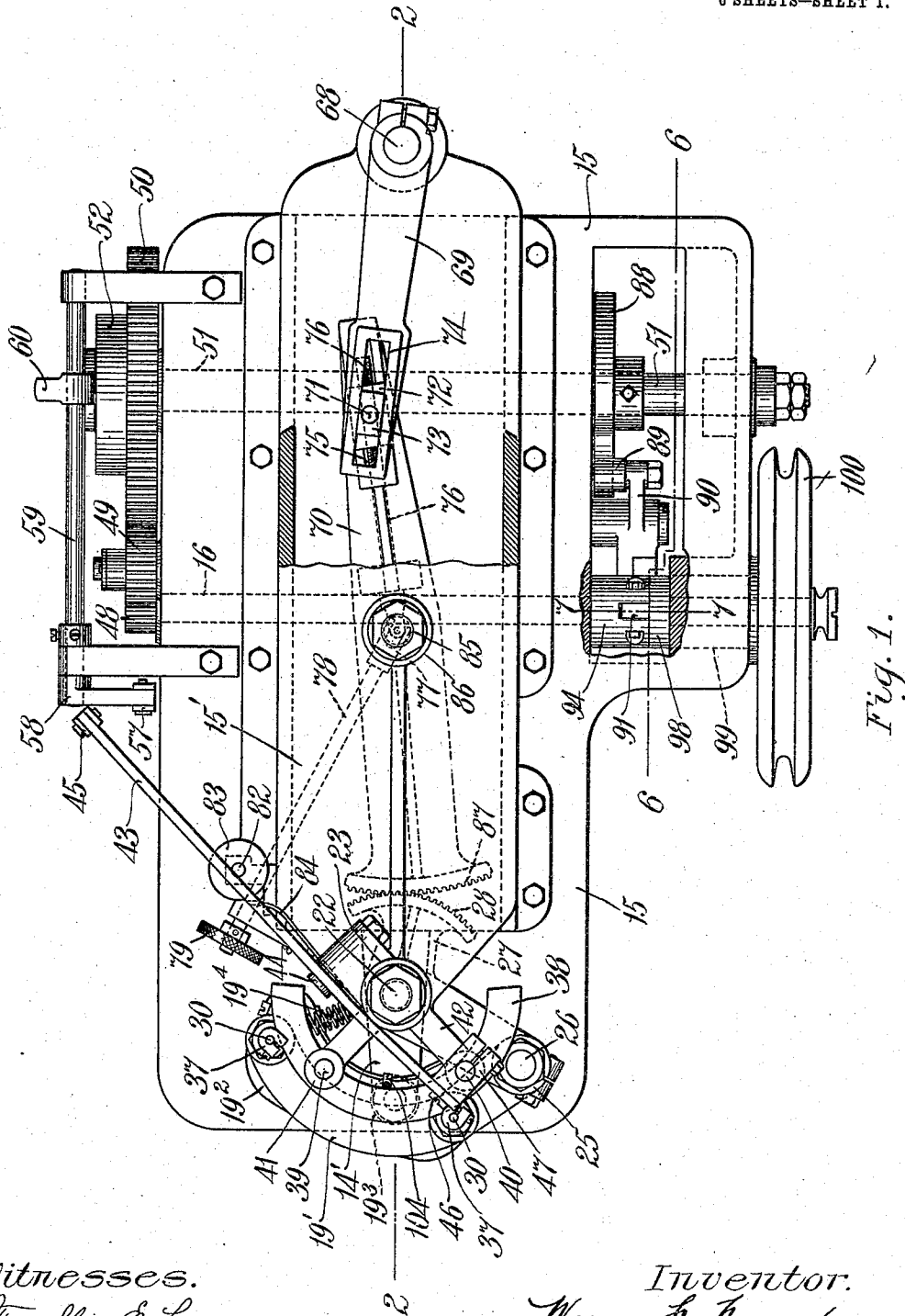


Fig. 1.

Witnesses.

Franklin E. Low.

Sydney E. Taft.

Inventor.

Warren F. Fraser,

by his attorney Charles S. Gooding.

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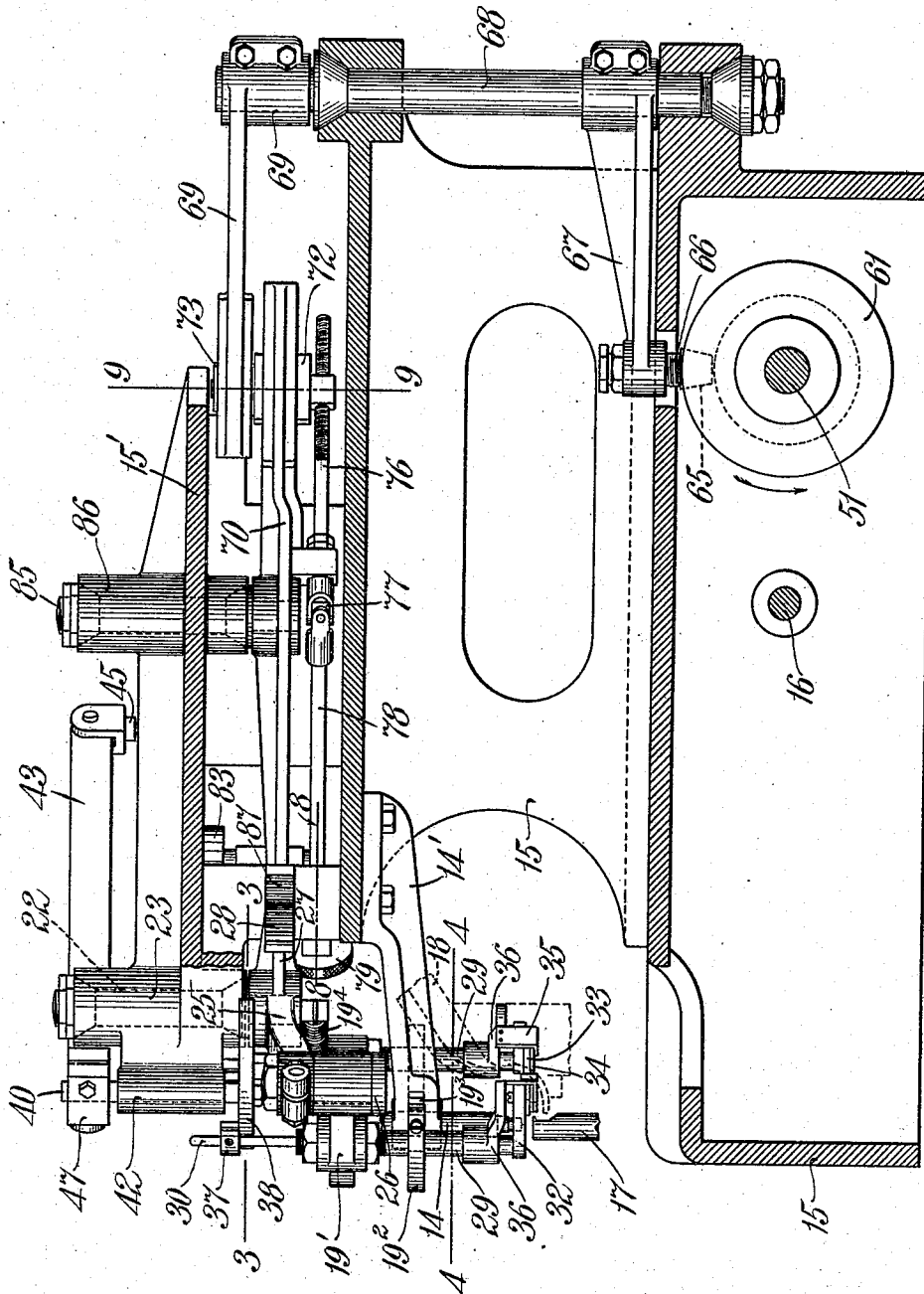


Fig. 2.

Witnesses.

Franklin E. Low.

Sydney E. Taft. by his attorney.

Inventor:

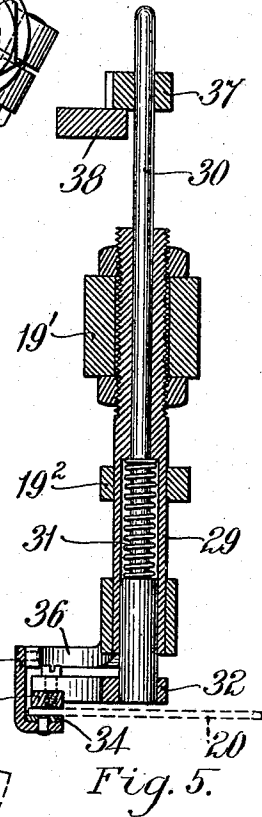
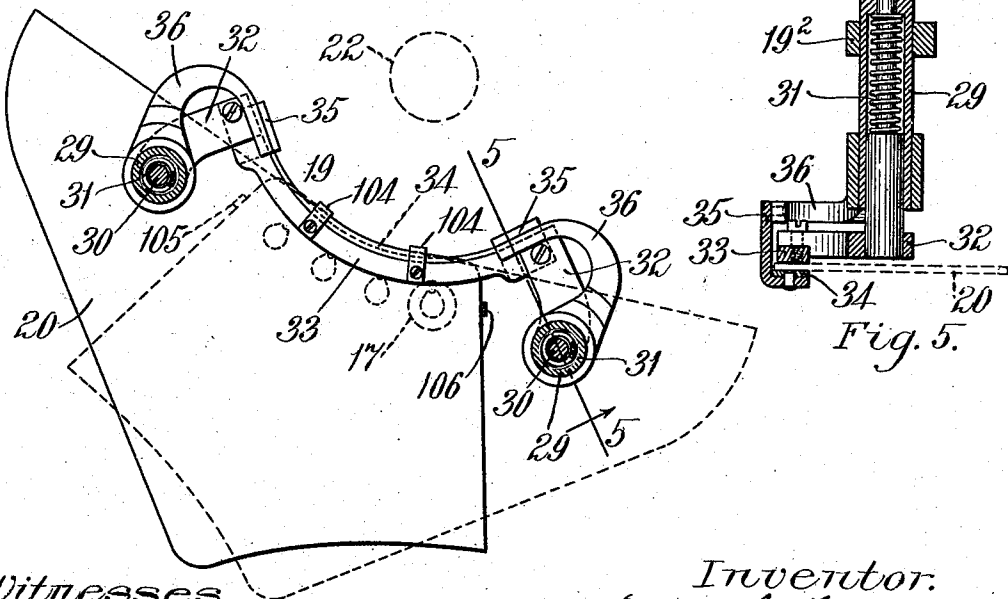
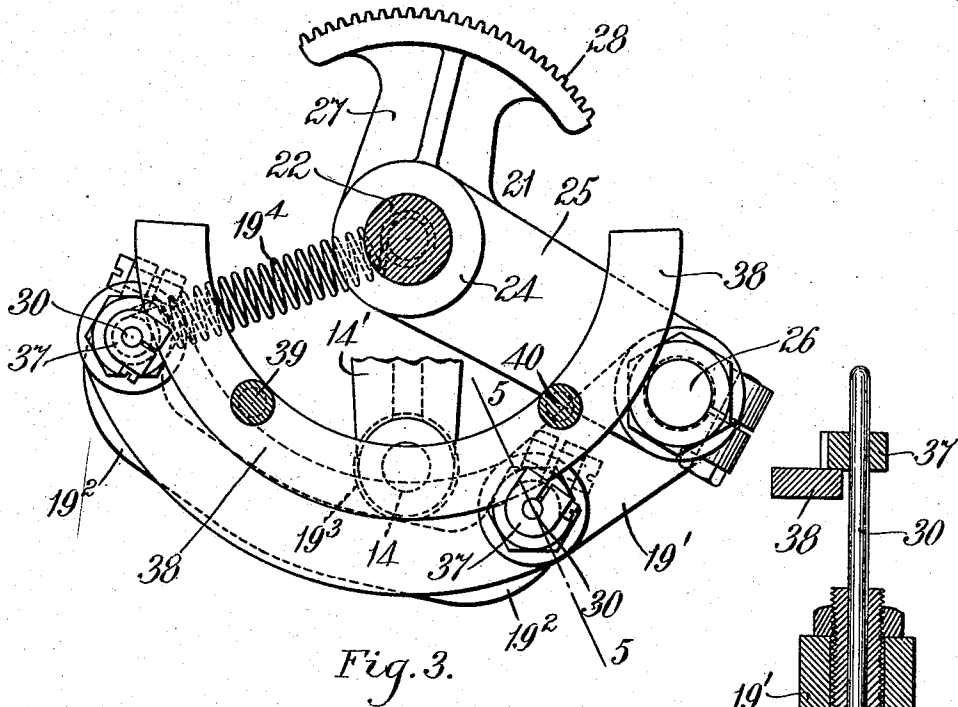
Wm. F. Fraser,

Paul S. Gooding.

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6 SHEETS—SHEET 3.



Witnesses.

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Fig. 4.

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6 SHEETS—SHEET 4.

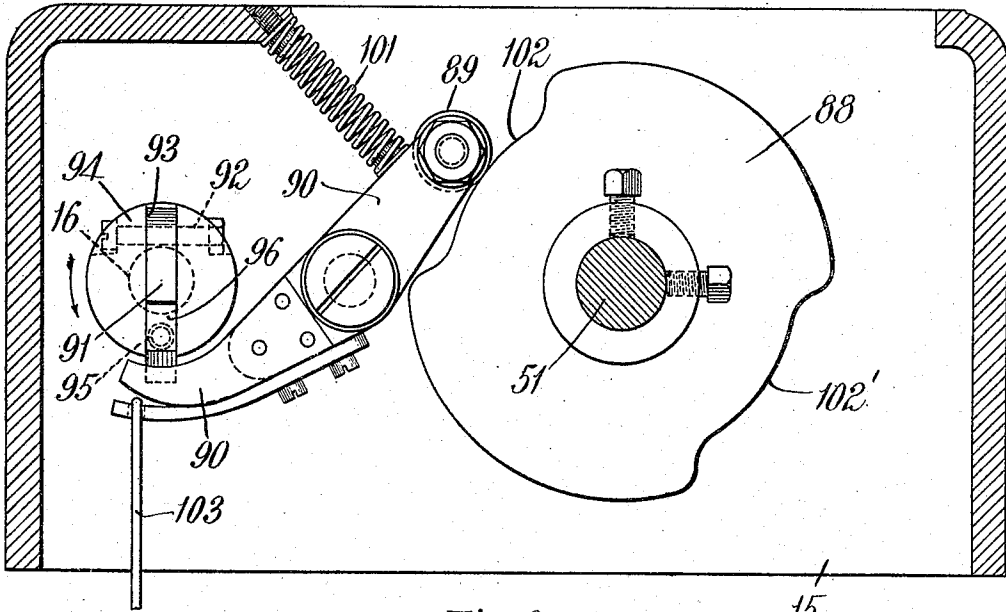


Fig. 6.

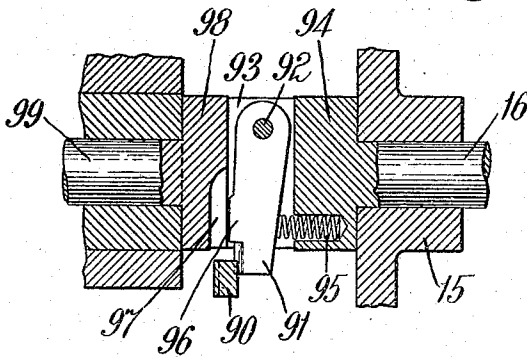


Fig. 7.

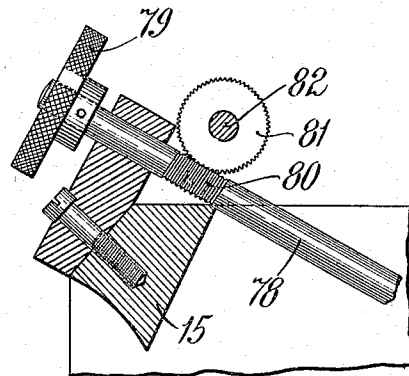


Fig. 8.

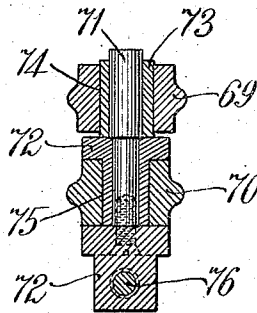


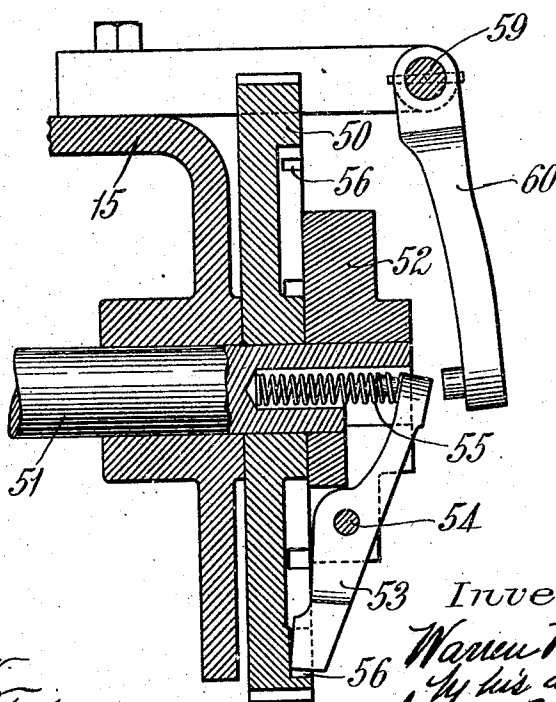
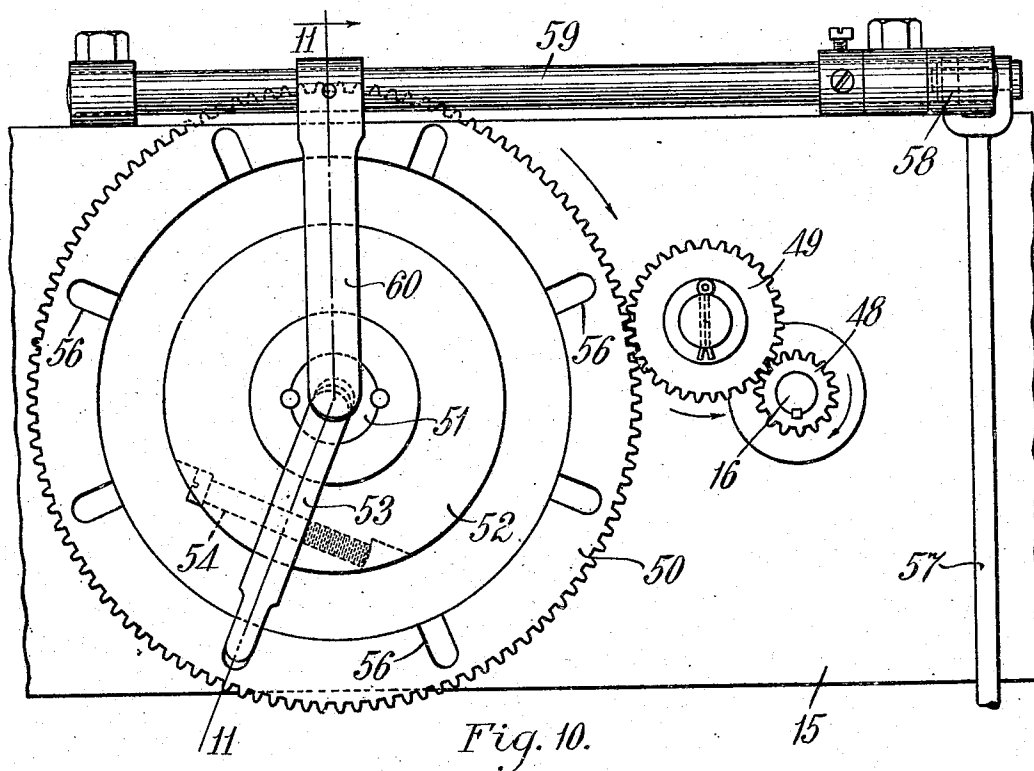
Fig. 9.

Witnesses:
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6 SHEETS—SHEET 5.



Witnesses.

Franklin E. Low.

Sydney C. Taft.

Inventor:

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Fig. 11.

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6 SHEETS—SHEET 6.

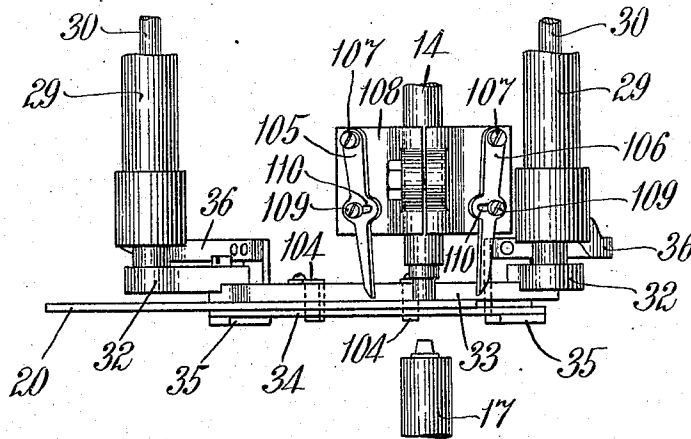


Fig. 12.

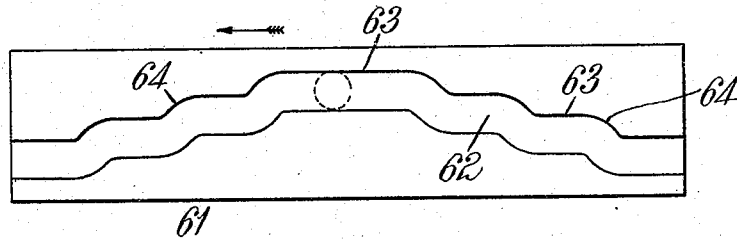


Fig. 13.

Witnesses:
Franklin E. Low.
Sydney C. Taft. by his attorney.

Inventor:
Warren F. Fraser,
Charles J. Gooding.

UNITED STATES PATENT OFFICE.

WARREN FLETCHER FRASER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO FRASER MACHINE & MANUFACTURING CO., A CORPORATION OF MASSACHUSETTS.

SPACING MECHANISM FOR LACING-HOOK-SETTING MACHINES.

933,298.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed November 6, 1908. Serial No. 461,342.

To all whom it may concern:

Be it known that I, WARREN F. FRASER, a subject of King Edward VII, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Spacing Mechanism for Lacing-Hook-Setting Machines, of which the following is a specification.

This invention relates to machines for setting lacing hooks in the uppers of boots and shoes and is of that particular class of lacing hook setting machines known as "automatic" lacing hook setting machines—that is, in which the lacing hooks are fed to a setting mechanism which sets the lacing hooks in the upper of a boot or shoe, and said upper is fed automatically the desired distance to properly space the lacing hooks which are set therein.

The object of this invention is to provide a lacing hook setting machine of the class hereinbefore set forth in which the upper is placed in a holder therefor and the holder is automatically operated to move intermittently in one direction, longitudinally of the upper, and said holder is also operated to move laterally of the upper while the lacing hooks are set in said upper by the setting mechanism. The holder thus being moved longitudinally of the upper and laterally of the upper to any desired distance in either direction makes it possible to set the lacing hooks upon any desired predetermined curve, such curve being preferably parallel to the front edge of the upper in which the lacing hooks are set. At the end of the movement of the holder longitudinally of the upper in one direction the lacing hook feeding mechanism and mechanism for moving the holder, together with the upper held thereon, are thrown out of action automatically and the machine stops, whereupon the operator opens the clamp members of the holder, removes the left hand upper therefrom, inserts a right hand upper in the clamp and starts the machine which thereupon feeds lacing hooks, sets them in the upper and feeds the upper intermittently until a series of lacing hooks have been set therein in a predetermined curve, preferably parallel to the front edge of the upper, whereupon the lacing hook feeding mechanism, the setting mechanism, and the mechanism for intermittently moving the holder, with the upper thereon, rel-

atively to the setting mechanism are thrown out of action and the machine is again automatically stopped. The operator then removes the right hand upper and inserts a left hand upper, thus alternately setting lacing hooks in the right and left hand uppers of the boots without loss of time and in predetermined curves, which curves are preferably parallel to the front edge of the upper.

In the machine of this invention instrumentalities are provided to adjust the mechanism by which the holder for the upper and the upper held thereon are intermittently fed, so that the distance between the lacing hooks may be increased or diminished, as desired. The mechanism is also so constructed that after a series of lacing hooks have been set in the upper, a single lacing hook may be set by the operator in the upper in any desired position, so that if a lacing hook is poorly set or if a lacing hook is damaged in any way, the same may be removed from the upper after the series of lacing hooks have been set therein and a new lacing hook set to take the place of the damaged one, the machine being so constructed that the operator can, at will, throw the mechanism for feeding the upper out of action, thus leaving the lacing hook setting and the lacing hook feeding mechanisms in action, in order that a single lacing hook may be set in the upper, as hereinbefore described.

One of the chief advantages derived from an automatic lacing hook setting machine, constructed as hereinbefore set forth, is that the lacing hooks can be set in the upper longitudinally thereof in one direction and at the desired distance from the front edge of the upper in a curve parallel therewith, and then said machine will set lacing hooks in another upper which is moved in the opposite direction, so that no time is lost by the mechanism which feeds the upper upon its return movement, as a series of lacing hooks are set parallel to the front edge of the upper while the upper feeding mechanism is moving in one direction and another series of lacing hooks may be set in another upper parallel to the front edge thereof while said upper feeding mechanism moves the holder and the upper thereon in the opposite direction.

The invention consists in the combination and arrangement of parts set forth in

the following specification and particularly pointed out in the claims thereof.

The drawings particularly illustrate the holder for the upper and the mechanism by which an intermittent movement is given to said holder in one direction longitudinally of the upper, and also whereby the holder is moved laterally of the upper relatively to the setting mechanism, said mechanism then being thrown out of action and subsequently returning to its starting point in a series of intermittent movements and feeding an upper in the opposite direction, at the same time moving the holder laterally of the upper to secure the desired curve upon which the lacing hooks are set, the mechanism then being again thrown out of action.

The lacing hook feeding and setting mechanisms are only slightly indicated in the drawings, they being well known to those skilled in the art and involving no new or patentable matter in themselves.

Referring to the drawings: Figure 1 is a plan view of my improved lacing hook setting machine, the same being broken away and partly shown in section for the sake of clearness in illustration. Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1. Fig. 3 is a sectional plan taken on line 3—3 of Fig. 2. Fig. 4 is a sectional plan taken on line 4—4 of Fig. 2, illustrating a right hand upper in position to have a lacing hook set therein in full lines and a left hand upper in dotted lines, the lacing hooks being dotted in the position they will assume when driven in the upper. Fig. 5 is a sectional elevation taken on line 5—5 of Figs. 3 and 4. Fig. 6 is a sectional elevation taken on line 6—6 of Fig. 1, illustrating the clutch mechanism. Fig. 7 is a sectional elevation taken on line 7—7 of Fig. 1. Fig. 8 is a sectional plan taken on line 8—8 of Fig. 2. Fig. 9 is a sectional elevation taken on line 9—9 of Fig. 2. Fig. 10 is a left hand side elevation of the mechanism for throwing out of action the mechanism which imparts an intermittent feeding movement to the holder and the upper held thereon. Fig. 11 is a sectional elevation taken on line 11—11 of Fig. 10. Fig. 12 is a front elevation of the holder for the upper, the gages for said upper which determine the position of the same in the machine when the upper is first placed therein, together with a portion of the lacing hook carrier, and the anvil against which the lacing hook is set. Fig. 13 is a development of the cam by which an intermittent movement is imparted to the holder for the upper and the upper held thereon.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 15 is the frame of the machine; 16 is the main driving shaft journaled to rotate in suitable bearings in said frame and by means of which the mechan-

isms for setting the lacing hook, for feeding the lacing hook, and for feeding the holder for the upper are actuated.

17 is a portion of the lacing hook carrier to which a vertical and horizontal movement are imparted to set the lacing hook and to release the carrier from the same, respectively, by mechanism not shown in the drawings, but well known to those skilled in this art.

The raceway 18 (Fig. 2) is indicated in dotted lines, the same leading from a suitable hopper in which the lacing hooks are placed and separated to pass down said raceway, and from said raceway to be fed to the lacing hook carrier 17 by suitable mechanism not shown in the drawings, but well known to those skilled in this art.

19 is the holder for the upper of the boot or shoe in which lacing hooks are to be set.

Referring to Figs. 1, 2, 3, 4, 5 and 12, a rocker-frame 21 is fastened to a vertical rock-shaft 22 journaled to rock in a bearing 23 in the frame of the machine and consisting of a hub 24 with two arms 25 and 27 thereon (Fig. 3). The arm 27 has a segmental gear 28 thereon. The arm 25 has a stud 26 clamped thereto upon which is journaled to rock the holder 19. Said holder consists of an arm 19' which has sleeves 29, 29 clamped thereto and in each of said sleeves is a plunger 30 adapted to slide therein and pressed downwardly by means of a spring 31, Fig. 5. Said plungers have arms 32, 32 fast thereto and to these arms is fastened the upper or movable clamp 33. A relatively stationary clamp plate 34 is supported by brackets 35 which extend downwardly from brackets 36 fast to the sleeves 29, so that normally the clamp plate 33 is pressed downwardly by the spring 31 to clamp the upper 20 between the clamp plates 33 and 34. The plungers 30 have clamped to their upper ends collars 37, 37 and these collars bear against the upper face of a segmental plate 38. The segmental plate 38 has two studs 39 and 40 fast thereto extending upwardly therefrom and adapted to slide in bearings formed in the arms 41 and 42, respectively, said arms extending outwardly from the upper portion 15' of the frame. A vertical reciprocatory motion is imparted to the studs 39 and 40 and to the segmental plate 38 fast thereto by means of a lever 43, pivoted at 44 to the frame and connected by a rod 45 to a suitable treadle. The lever 43 is operatively connected to the stud 40 by a screw 46 and block 47, which block is clamped to the stud 40. It will thus be seen that by depressing the treadle connected to the lever 43, said lever will be rocked upon its pivot and will raise the studs 39 and 40 and the plate 38 fast thereto, thus raising the collars 37, 37 and elevating the plungers 30, 30 to which they are attached, thus moving the clamp-plate 33 upwardly, away from

the stationary clamp-plate 34, and allowing the upper 20 to be inserted or removed from between the clamp-plates. A cam plate 19² is rigidly fastened to the sleeves 29, 29 and is held against a roll 19³ by a spring 19⁴, one end of said spring being fastened to one of the sleeves 29, the other to the lower end of the rock-shaft 22. The roll 19³ is journaled upon the anvil 14 which is fastened to a bracket 14' fast to the frame of the machine. An intermittent reciprocatory motion is imparted to the holder 19 and to the upper 20 held thereon and a movement laterally of the upper is also imparted to said holder by the mechanism which I will now proceed to describe.

The main driving shaft 16 has fastened thereto, at the left hand side of the machine, a pinion 48 (Fig. 10) which meshes into an intermediate gear 49, said intermediate gear meshing into a gear 50 loosely mounted upon the shaft 51. A clutch block 52 is fastened to the shaft 51, outside and adjacent to the gear 50. This clutch block has a locking lever 53 pivoted thereto at 54. A spiral spring 55 is located within the recess formed in the end of the shaft 51 and bears against one end of the locking lever 53, thus forcing the free end of said locking lever into any one of the radial slots 56 formed in the adjacent face of the gear 50. This lever 53 and the clutch block 54 thus lock the gear 50 to the shaft 51 when the parts are in the position illustrated in Fig. 11. When it is desired to disconnect the gear 50 from the shaft 51, so that it will rotate freely thereon without rotating the shaft, the operator depresses a treadle (not shown in the drawings) to which is connected a treadle rod 57, the upper end of said treadle rod being connected to a rocker-arm 58 fast to a rock-shaft 59 having an arm 60 fast thereto, with its free end adapted to engage the upper end of the locking lever 53, (Fig. 11). As shown in the drawings, the arm 60 is out of engagement with the locking lever 53, but when the operator rocks said arm 60 toward the left (Fig. 11) by means of the treadle, through the treadle rod 57 and rock-shaft 59, the locking lever 53 will be rocked upon its pivot 54 to disengage the lower end (Fig. 11) of said locking lever from the gear 50 and allow said gear to rotate freely, whereupon the shaft 51 will remain stationary, while the driving shaft will continue its rotations without in any way operating the shaft 51, which shaft, as will now be described, operates the intermittent feeding mechanism for the holder for the upper of the boot. The shaft 51 has a cam 61 fast thereto, said cam having a path 62 cut in its periphery, which consists of a series of rests 63, 63 and throws 64, 64. A cam roll 65 projects into said cam path 62 (Fig. 2) and is journaled to rotate upon a stud 66 fast to

an arm 67, which, in turn, is fastened to a vertical rock-shaft 68, the upper end of which has fastened thereto a lever 69, which is operatively connected to a lever 70 by a stud 71 fast to a slide 72 and projecting upwardly therefrom into a sliding block 73 arranged to slide in a slot 74 formed in the lever 69. The slide 72 is adjustable longitudinally of a slot 75 formed in the lever 70 and is adjusted in said slot by means of a screw 76 having screw-threaded engagement with said slide and rotatably mounted upon the lever 70. At its inner end said screw is connected by a suitable joint 77 to a rotary shaft 78, said rotary shaft having a knob or handle 79 fast thereto, by means of which it may be conveniently rotated, Fig. 1. A worm 80 is formed upon the periphery of the shaft 78 and meshes into a worm gear 81 fast to a vertical shaft 82 (Fig. 8) to the upper end of which is fastened a disk 83, which is graduated by lines upon the periphery thereof which are indicated by means of an index finger 84 fast to the frame of the machine, with its free end bearing against the periphery of the graduated disk 83. The lever 70 is fast to a stud 85 journaled to rock in a bearing 86 upon the upper portion 15' of the machine, and said lever has a segment gear 87 formed upon one end thereof and meshing into the segment gear 28. Thus it will be seen that when the shaft 51 is rotated by means of the gearing hereinbefore described and illustrated in Figs. 10 and 11, the cam 61 will be rotated and because of the rests and throws in the path 62 thereof, an intermittent rocking movement will be imparted to the arm 67, rock-shaft 68, lever 69 and lever 70, which rocking movement will be imparted by the lever 70, through the segmental gears 87 and 28, to the rocker-arm 27 and to the arm 25, thus imparting an intermittent movement to the holder 19 and to the upper which is held by the clamp-plates 33 and 34 upon said holder, and longitudinally of said upper.

The shaft 51 has a cam 88 fast thereto and against the periphery of said cam a roll 89 bears, said roll being rotatably mounted upon a lever 90, the end of said lever opposite to that to which the roll is attached being adapted to engage a locking arm 91 pivoted at 92 in the slot 93 formed in the enlarged end 94 of the main driving shaft 16, (see Figs. 1, 6 and 7). When the locking arm 91 is freed by the lever 90 moving downwardly, the spring 95 forces said locking arm forward until the tooth 96 thereon drops into a recess 97 formed in the enlarged end 98 of the pulley shaft 99, to which the driving pulley 100 is fastened. When this happens, the pulley 100, by means of the shaft 99 and the locking arm 91, causes the shaft 16 to be rotated until such time as the

lever 90 is moved by the spring 101 into the recess 102 in the periphery of the cam 88 and thus moves the free end of said lever upwardly to engage the locking arm 91.

5 It will be seen that when the intermittent movement longitudinally of the upper is being imparted to the holder 19 by the mechanism hereinbefore described to carry said upper holder from the left toward the
10 right (Fig. 3), the cam plate 19² will rock the arm 19' laterally as the inner edge of said cam plate travels along the roll 19³ which is journaled upon the anvil 14, the inner face of said cam plate being of the
15 proper outline to move the holder and the upper held thereon laterally the desired amount, so that the different lacing hooks will be set in a curve parallel to the front edge of the upper. Of course, the curve
20 upon which the lacing hooks may be set may be varied as desired to suit different outlines of uppers, the combined movements longitudinally of the upper and laterally thereof making it possible to obtain the de-
25 sired curve. The lever 90 may also be rocked independently of the cam 88, when the parts are in the position illustrated in Fig. 6, by means of a treadle rod 103 which leads to a treadle (not shown in the draw-
30 ings) conveniently set to be operated by the operator of the machine when it is desired to rotate the main driving shaft of the machine independently of the automatic mechanism illustrated in Fig. 6.

35 To assist the operator in placing the upper in the machine correctly to set the lacing hooks therein, two front edge gages 104, 104 are supplied which are fastened to the upper clamp-plate 33, and further two top
40 edge gages 105 and 106 are supplied, each of which is pivoted, respectively, to a screw 107 fast to a collar 108, which collar is clamped to the anvil 14. These top edge gages 105 and 106 can be adjusted laterally
45 thereof and then locked in position by means of screws 109, 109 which project through slots 110, 110.

The general operation of the machine hereinbefore specifically and to some extent
50 in general described is as follows: Assuming that the operator desires to set lacing hooks in a right hand upper, he raises the clamp-plate 33, as hereinbefore described, inserts the upper 20 between said clamp-plates 33
55 and 34, with the upper edge of the upper bent slightly upward to engage the top gage 106 and with the front edge of the upper bearing against the front edge gages 104, 104. He then releases the clamping treadle
60 which allows the plate 33 to descend and clamp the upper between itself and the clamp-plate 34. The operator then depresses the treadle which is connected to the rod 103 (Fig. 6), thus rocking the lever 90, releasing
65 the locking arm 91, which is immediately

forced by the spring 95 into the recess 97, thus locking the pulley shaft 99 to the main driving shaft 16 and causing said driving shaft to be rotated. The rotation of said shaft sets in motion the lacing hook feeding
70 and setting mechanisms, which mechanisms are driven by the main driving shaft 16, and also sets in motion the shaft 51 which gives the intermittent feeding movement to the holder 19, as hereinbefore described, through
75 the cam 61 and other connecting parts (see Fig. 2). When the predetermined number of lacing hooks have been set in the upper 20 (in this case four) the cam 88 will have made a half turn and the roll 89 upon the so
80 lever 90 will then drop into the depressed portion 102 upon the periphery of said cam, thus rocking the lever 90, which will then engage the locking arm 91 to disconnect the same from the enlarged portion 98 of the 85
85 shaft 99 and thus disconnecting the driving pulley shaft 99 from the main driving shaft 16, whereupon the machine will stop. During this last mentioned operation it will be understood that the holder 19 moves not only 90
90 longitudinally of the upper in a series of intermittent steps, but laterally of the upper, as hereinbefore described, by reason of the inner face of the cam plate 19² moving along in contact with the roll 19³ and being held 95
95 thereagainst by the spring 19⁴. The operator now opens the upper clamp, takes the right hand upper out and puts a left hand upper into the holder in the position illustrated in dotted lines (Fig. 4), then releas- 100
100 ing the clamp the operation hereinbefore described is repeated, the clamp holder moving toward the left instead of toward the right, and when the requisite number of lacing
105 hooks have been set therein (in this case four) the machine is again thrown out and stopped, as hereinbefore described. It will be understood that in its return motion the holder also moves laterally for the purpose
110 hereinbefore described.

If it is desired to increase the distance between the lacing hooks in the upper, the operator rotates the handle 79 (Fig. 1) toward the right, thus rotating the shaft 78 and the screw 76 toward the right and moving the
115 slide 72 toward the left (Fig. 1) and thus moving the stud 71 and the block 73 away from the median axial line of the lever 69 and toward the median axial line of the lever 70, thus increasing the throw of the lever 70 and in-
120 creasing the angle through which the holder 19 will be rocked at each intermittent movement thereof and, therefore, increasing the distance which the upper is moved and hence increasing the distance between the lacing
125 hooks as they are set in the upper.

If the operator desires to set the lacing hooks nearer together, he rotates the handle 79 toward the left, he being guided as to the proper distance to rotate the handle 79 by 130

the index finger 84 which rests against the graduated periphery of the disk 83.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. A machine for setting lacing hooks and the like in the upper of a boot or shoe, having, in combination, setting devices, a workholder, and mechanism acting to actuate said holder relatively to said setting devices to set a series of hooks or the like in a curve other than the arc of a circle.

2. A machine for setting lacing hooks and the like in the upper of a boot or shoe, having, in combination, setting devices, a holder for said upper, and mechanism adapted to move said holder relatively to said setting devices, longitudinally and laterally of said upper, whereby lacing hooks may be set in said upper in a curve other than the arc of a circle.

3. In a lacing hook setting machine, a holder for the upper of a boot or shoe, and means to move said holder and the upper held thereon to such an extent both longitudinally and laterally of said upper that said upper will be moved in a curved path other than the arc of a circle.

4. In a lacing hook setting machine, a rocker frame, a holder for the upper of a boot or shoe pivotally mounted on said rocker-frame, means to rock said holder and the upper held thereon laterally of said upper, and mechanism to impart an intermittent rocking movement to said rocker-frame, whereby said holder and the upper held thereon may be moved both laterally and longitudinally of said upper, in a curve other than the arc of a circle.

5. In a lacing hook setting machine, a holder for the upper of a boot or shoe, consisting of a pivotally mounted member, a clamp member movable on said pivotally mounted member and adapted to clamp an upper thereto, and means to move said holder and the upper held thereon both laterally and longitudinally relatively of said upper, in a curve other than the arc of a circle.

6. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart an intermittent movement to said holder and the upper held thereon longitudinally of said upper, and means to move said holder laterally of said upper.

7. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart an intermittent movement to said holder and the upper held thereon longitudinally of said

upper, means to move said holder laterally of said upper, and means to automatically throw said setting and spacing mechanisms out of action at the end of said intermittent movement in one direction longitudinally of said upper.

8. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart an intermittent movement to said holder and the upper held thereon longitudinally of said upper, means to move said holder laterally of said upper, and means to throw said spacing mechanism out of action while said setting mechanism remains in action.

9. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart an intermittent movement to said holder and the upper held thereon longitudinally of said upper, means to adjust said spacing mechanism, to vary the distance which said holder and the upper held thereon shall move at each step of the intermittent movement thereof, means to move said holder laterally of said upper, and means to automatically throw said setting and spacing mechanism out of action, at the end of said intermittent movement in one direction.

10. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart to said holder alternately an intermittent movement longitudinally of said upper in one direction and an intermittent movement in the opposite direction, and means to move said holder laterally of said upper.

11. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart to said holder alternately an intermittent movement longitudinally of said upper in one direction and an intermittent movement in the opposite direction, means to move said holder laterally of said upper, and means to throw said setting and spacing mechanisms out of action after a predetermined number of lacing hooks have been set in said upper.

12. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart to said holder alternately an intermittent movement longitudinally of said upper in one direction and an intermittent movement in the opposite direction, means to move said holder

laterally of said upper, and means to throw said spacing mechanism out of action while said setting mechanism remains in action.

13. In a machine for setting lacing hooks 5 in the upper of a boot or shoe, a holder for said upper, mechanism adapted to set lacing hooks in an upper held in said holder, spacing mechanism adapted to impart to said holder alternately, an intermittent movement 10 longitudinally of said upper in one direction and an intermittent movement in the opposite direction, means to move said holder laterally of said upper, and means to adjust said spacing mechanism to vary the distance 15 which said holder and the upper held thereon shall move at each step of the intermittent movement longitudinally thereof.

14. In a machine for setting lacing hooks in the upper of a boot or shoe, a holder for said upper, a rocker-frame to which said 20 holder is pivoted, means to impart an intermittent motion to said rocker frame, whereby said holder and the upper held thereon may be moved longitudinally of said upper, and a cam adapted to move said holder laterally 25 of said upper.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WARREN FLETCHER FRASER.

Witnesses:

CHARLES S. GOODING,
LOUIS A. JONES.