

No. 692,340

Patented Feb. 4, 1902.

J. PIERCE.

SEPARATOR AND STOP FOR LACING HOOK SETTING MACHINES.

(Application filed Sept. 19, 1900.)

(No Model.)

2 Sheets—Sheet 1.

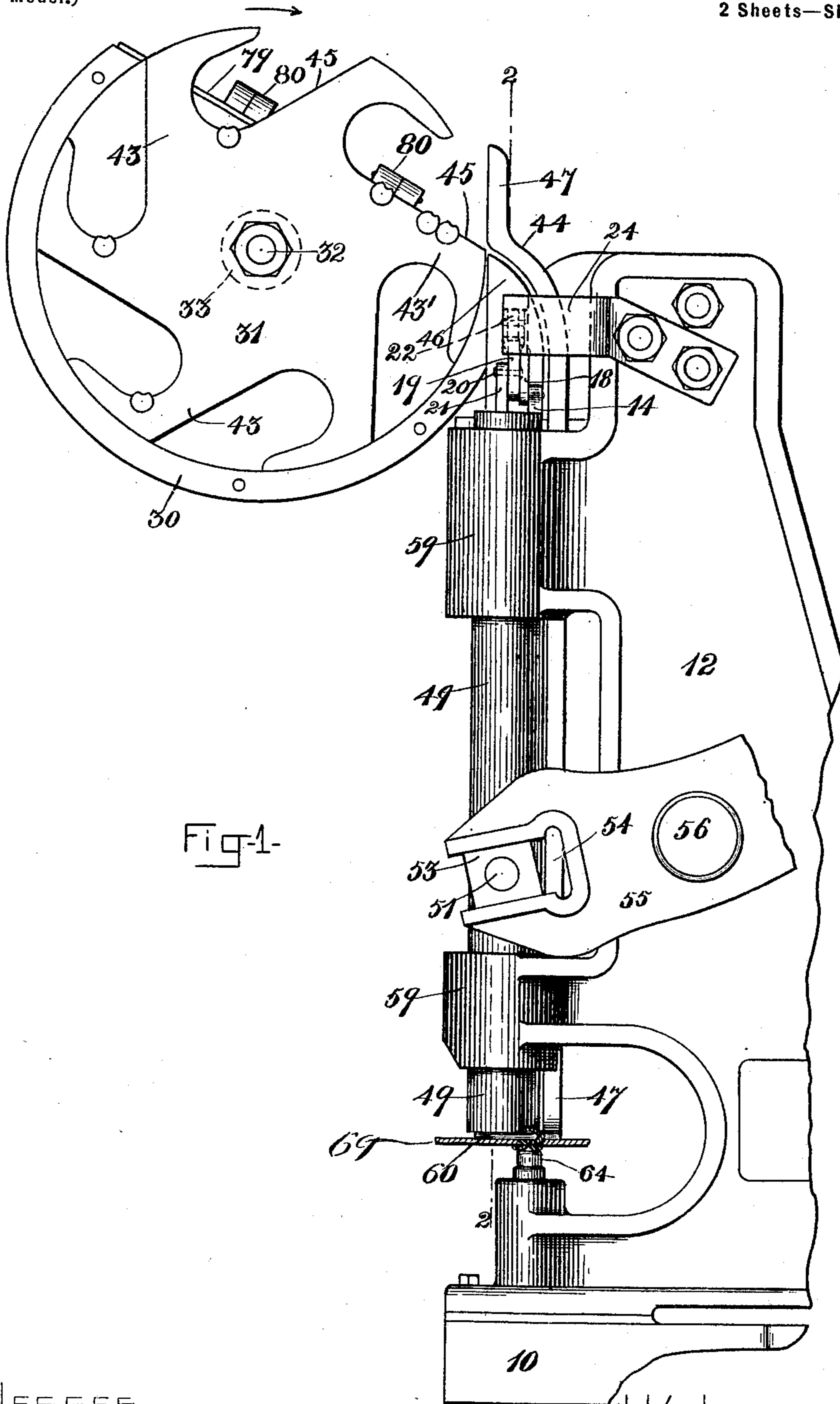


Fig. 1-

WITNESSES

Stanley E. Tapp.
Willard C. Barnes.

INVENTOR-

John Pierce
by his attorney,
Charles S. Gooding.

No. 692,340.

Patented Feb. 4, 1902.

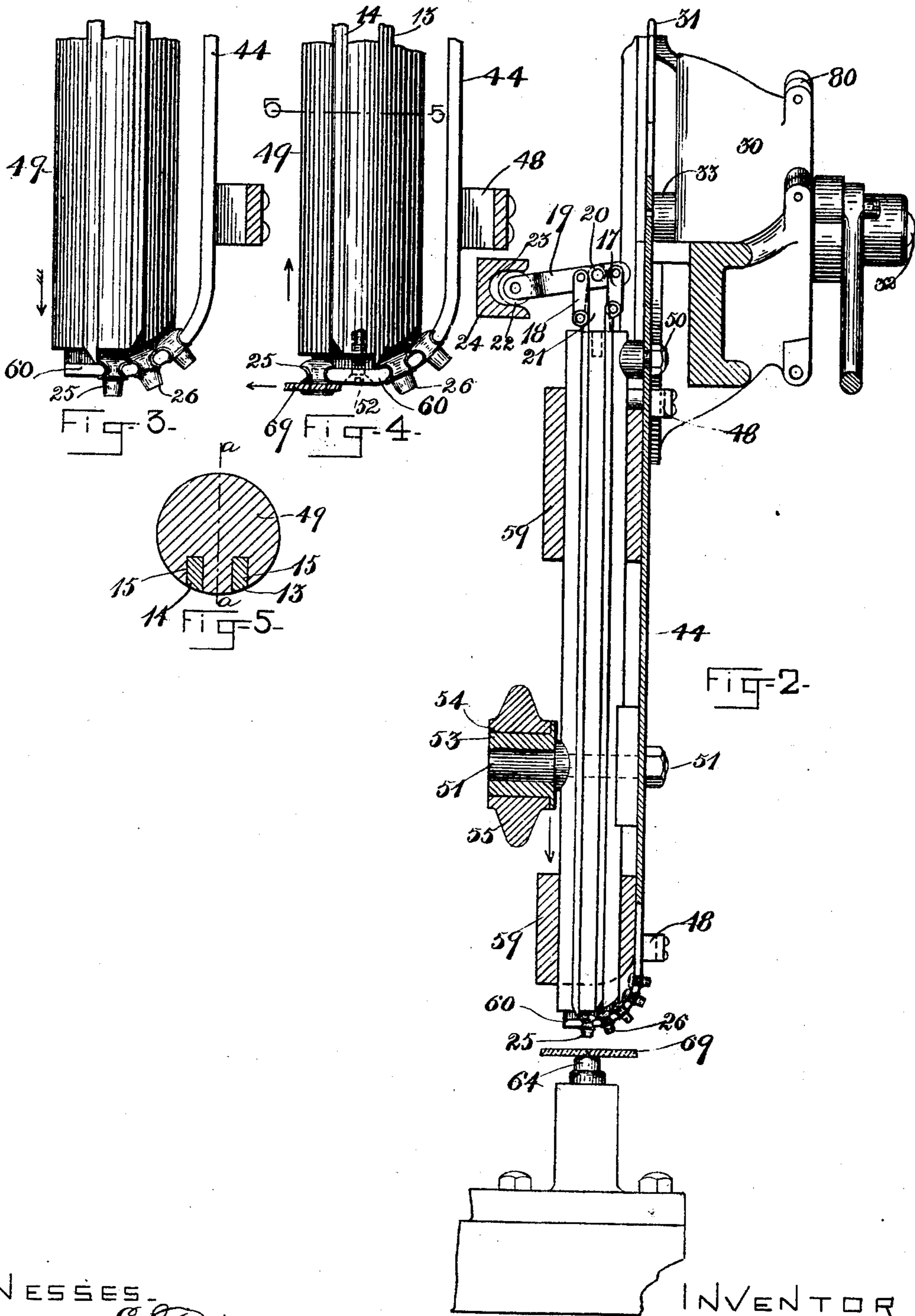
J. PIERCE.

SEPARATOR AND STOP FOR LACING HOOK SETTING MACHINES.

(Application filed Sept. 19, 1900.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES.

Sydney E. Taft.
Willard C. Barnes.

INVENTOR

John Pierce
by his attorney,
Charles S. Gooding

UNITED STATES PATENT OFFICE.

JOHN PIERCE, OF MILTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO JOSEPH H. CHADBOURNE, OF WATERTOWN, MASSACHUSETTS, AND WALTER B. MOORE, OF SWAMPSCOTT, MASSACHUSETTS.

SEPARATOR AND STOP FOR LACING-HOOK-SETTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 692,340, dated February 4, 1902.

Application filed September 19, 1900. Serial No. 30,523. (No model.)

To all whom it may concern:

Be it known that I, JOHN PIERCE, a citizen of the United States, residing at Milton, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Separators and Stops for Lacing-Hook-Setting Machines, of which the following is a specification.

This invention relates to that class of machines in which articles such as lacing-hooks, buttons, rivets, and the like are fed from a hopper to a raceway and are taken from the raceway one by one after being set or attached to a piece of material.

I have illustrated and described my invention as adapted to a machine for setting lacing-hooks, and particularly as adapted to a machine for setting lacing-hooks for which I have obtained Letters Patent of the United States, dated September 11, 1900, No. 657,673. In machines of this class it is essential that the lacing-hooks shall, first, not leave the raceway until after they have been set in the upper of the boot or shoe; second, that the lowermost lacing-hook shall be correctly centered and held in position above the anvil upon which it is to be set, and, third, that after said lacing-hook is set in the shoe-upper the end of the raceway shall be free for the removal of said lacing-hook therefrom, while the next lacing-hook on the raceway descends to the proper position upon the raceway above the anvil and the other lacing-hooks in said raceway are held back. It is further essential that the lacing-hooks shall not be manipulated or handled more than is absolutely necessary from the time they leave the hopper until they are set in the shoe-upper.

The object of this invention is to provide a combined separator and stop positively operated which shall fulfil the requirements hereinbefore recited.

The invention consists in mechanism which separates the lowermost hook in a column of hooks from the main body thereof and also centers said hook above the anvil ready for the setting operation.

The invention further consists in a separator-slide and a stop-slide in combination with a plunger and raceway and mechanism for

imparting a simultaneous reciprocating motion to said slides in opposite directions.

The invention further consists in certain combinations and arrangements of parts, as set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a right-hand side elevation of a portion of a lacing-hook machine similar to that shown and described in my United States Letters Patent No. 657,673 with my improved separator and stop attached thereto. Fig. 2 is a vertical sectional elevation taken on line 2 2, Fig. 1, looking toward the left in said figure, the plunger and separator and stop with connections being shown in elevation. Fig. 3 is a rear elevation of a portion of the plunger, raceway, separator, and stop, with a number of lacing-studs on said raceway, the same being shown full size and starting to descend. Fig. 4 is a view similar to Fig. 3, with the parts shown in the relative positions assumed as the plunger is starting to ascend and the lowermost lacing-hook having been set in the material is being removed by the operator from the raceway. Fig. 5 is a transverse section on line 5 5, Fig. 4.

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

In the drawings, 10 is the base-plate of a machine for setting lacing-hooks similar in construction to that shown in my Letters Patent No. 657,673. 12 is the frame of the machine fast to said base-plate.

The lacing-hooks are placed in a hopper 30, from the bottom of which they are taken by an intermittently-rotated picker-plate 31, which is fast to a shaft 32, having a bearing 33 in the hopper 30.

The method of conveying lacing-hooks by a picker-plate such as that shown from a hopper to a raceway is old and well known to those skilled in the art.

The picker-plate 31 has six fingers or arms 43. The lacing-hooks are taken by these arms from the bottom of the hopper, and as the picker-plate rotates in the direction of the arrow, Fig. 1, the lacing-hooks are picked up by said arms and carried from the bottom of the hopper, as shown, sliding around the

curved edge of each arm of the picker-plate until each arm in its turn arrives at the position of the arm 43', with the straight edge 45 of said arm in line with the opening of the raceway 44, whereupon the lacing-hooks will slide down the straight edge 45 of the arm 43' onto the raceway 44.

The hopper 30 is cut off on its upper side at an angle of thirty degrees, so that as the lacing-hooks slide off the arm 43 they will not be interfered with by said hopper, but will be perfectly free to slide off of the arm 43 and onto the raceway 44, as hereinbefore described. It will thus be seen that as the picker-plate 31 rotates in the direction of the arrow, Fig. 1, the different blades thereof will emerge from the hopper at the right-hand side thereof, and the lacing-hooks thereon will slide off of the back edge 43 of each arm before said arm enters the hopper again, thus leaving the way free for said lacing-hooks to slide off the picker-plate and onto the reciprocating raceway without danger of being stopped by the walls of the hopper.

In order to prevent dirt from falling into the hopper, I provide a cover 79, hinged at 80 to the hopper 30. The raceway 44 is made of two pieces of flat steel 46 47, the part 47 being fastened to the part 46 by blocks 48. The plate 46 is fastened rigidly to the vertically-reciprocating plunger 49 by a screw 50, stud 51, and screw 52. The stud passes through the plunger 49 and receives a sliding block 53, said sliding block entering a slot 54 in a lever 55. Said lever 55 is pivoted to a stud 56, fast to the frame 12, and is rocked upon said stud by a cam fast to the main shaft of the machine.

The plunger 49 slides in bearings 59 59 in the frame 12, motion being imparted thereto by the lever 55. The raceway 44 passes downwardly outside the bearings 59 59 from the hopper 30 to the lower end of the plunger 49, where it curves under said plunger 49, ending in a short horizontal portion 60.

My improved separator and stop consists of two slides 13 and 14, respectively. Said slides are fitted to slide in ways 15 16, formed in the vertically-reciprocating plunger 49, the distance between them being substantially equal to the width of the head of a lacing-hook, each slide being equidistant from a vertical plane *a a*, Fig. 5, passing through the center of the plunger 49. The slides 13 14 are beveled at their lower ends in opposite directions and away from the plane *a a*, forming chisel-shaped points, and the outer faces of said slides form a continuation of the periphery of the plunger 49. The upper ends of said slides 13 14 are connected by links 17 and 18, respectively, to a lever 19, pivoted at 20, between the points at which the links 17 18 are connected thereto, to an ear 21 on the plunger 49. To the left-hand end, Fig. 2, of the lever 19 is secured a friction-roll 22, which enters a slot 23 in the bracket 24, fast to the

frame 12. It will be seen that as the plunger 49 is reciprocated by the lever 55 the lever 19 will be tipped upon its pivot, (the roll 22 remaining stationary as to vertical movement,) and thus the separator-slide 13 and the stop-slide 14 will be alternately raised and lowered, one of said slides being raised when the other is lowered, and vice versa.

The operation of my improved separator and stop as a whole, in conjunction with the vertically-reciprocating plunger and raceway, is as follows: The lacing-hooks are delivered to the raceway 44 from the picker-plate 31 and slide down said raceway to the position shown in Fig. 3, the lowermost hook 25 resting upon the short horizontal portion 60 of the raceway 44, with the left side of the head of said hook touching the right side of the stop-slide 14, the weight of the hook 26 and the column of hooks on the raceway pushing the hook 25 into position shown in Figs. 2 and 3 and bringing said hook into a vertical position directly above the center of the anvil 64. The plunger 49 is shown raised in Figs. 2 and 3 and just beginning to descend. The operator next places the upper of the shoe in the proper position over the anvil 64, Fig. 2, and the plunger descends. As the plunger descends the separator-slide 13 moves down toward the horizontal portion 60 of the raceway and the stop-slide 14 moves in the opposite direction with relation to the raceway until the lowermost ends of said slides are equidistant from said raceway, with the head of the hook 25 held between said ends. The machine is so timed and adjusted that when the shank of the hook 25 reaches the surface of the shoe-upper the head thereof is firmly held between the ends of the separator and stop slides, centering the hook above the anvil as the plunger continues its descent and holding the hook firmly in position, so that the shank of said hook may be forced through the leather of the shoe-upper without the necessity of previously punching a hole in said upper, and then bringing said hole into alinement with the center of the anvil and of the lacing-hook about to be set in said upper. The shank of the lacing-hook 25 is driven through the shoe-upper 69 and clenched upon the anvil 64. The separator-slide 13 then moves down and the stop-slide 14 up, leaving the portion 60 of the raceway 44 free, so that when the plunger 49 rises a sufficient distance for the upper to clear the anvil 64 the operator moves said upper to the left, Fig. 4, in position for another lacing-hook to be set therein upon the next descent of the plunger.

The separator-slide 13 holds back the lacing-hook 26 while the hook 25 is being set in the shoe-upper, and by the time that said separator-slide has moved up on the ascent of the plunger a distance relatively to the raceway sufficient to clear the top of the head of the lacing-hook 26 the stop-slide 14 will

have descended a sufficient distance to prevent said hook 26 from sliding off the horizontal portion 60 of the raceway 44.

It will be seen that the lacing-hooks in my improved machine are not manipulated or touched by any moving piece except the raceway from the moment they leave the hopper until they are separated, centered, and held in position above the anvil by my improved separator and stop.

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

1. In a machine for attaching lacing-hooks and the like to sheet material, a plunger, mechanism for imparting a reciprocating motion to said plunger, a raceway bearing a fixed relation thereto, a separator-slide, a stop-slide, said slides carried by said plunger, and mechanism for imparting a simultaneous reciprocating motion to said slides in opposite directions.

2. In a machine for attaching lacing-hooks and the like to sheet material, a plunger, mechanism for imparting a reciprocating motion to said plunger, a raceway bearing a fixed relation thereto, an anvil, a separator-slide, a stop-slide, said slides carried by said plunger and located upon opposite sides of a plane extending through the center of the anvil and intersecting the path of the hooks on the raceway as they approach the anvil, and mechanism for imparting a simultaneous reciprocating motion to said slides in opposite directions.

3. In a machine for attaching lacing-hooks and the like to sheet material, a plunger, mechanism for imparting a reciprocating motion to said plunger, a raceway bearing a fixed relation thereto, a separator-slide, a stop-

slide, said slides carried by said plunger, a lever pivoted to said plunger and connected to said slides at opposite sides of the pivot thereof, and mechanism for rocking said lever upon its pivot, and imparting a simultaneous reciprocating motion to said slides in opposite directions.

4. In a machine for attaching lacing-hooks and the like to sheet material, a plunger, mechanism for imparting a reciprocating motion to said plunger, a raceway bearing a fixed relation thereto, a separator-slide, a stop-slide, said slides carried by said plunger, a lever pivoted to said plunger, links connected to said slides and to said lever at opposite sides of the pivot thereof, and mechanism for rocking said lever upon its pivot and imparting a simultaneous reciprocating motion to said slides in opposite directions.

5. In a machine for attaching lacing-hooks and the like to sheet material, a plunger, mechanism for imparting a reciprocating motion to said plunger, a raceway bearing a fixed relation thereto, a separator-slide, a stop-slide, said slides carried by said plunger, a lever pivoted to said plunger, links connected to said slides and to said lever at opposite sides of the pivot thereof, and means connecting one end of said lever to a fixed point, whereby a rocking motion is imparted to said lever and a simultaneous reciprocating motion to said slides in opposite directions.

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

JOHN PIERCE.

Witnesses:

CHARLES S. GOODING,
LOUIS A. JONES.