(No Model.) 4 Sheets—Sheet 1.

W. HALKYARD.

MACHINE FOR SETTING LACING HOOKS.

No. 509,734. Patented Nov. 28, 1893.

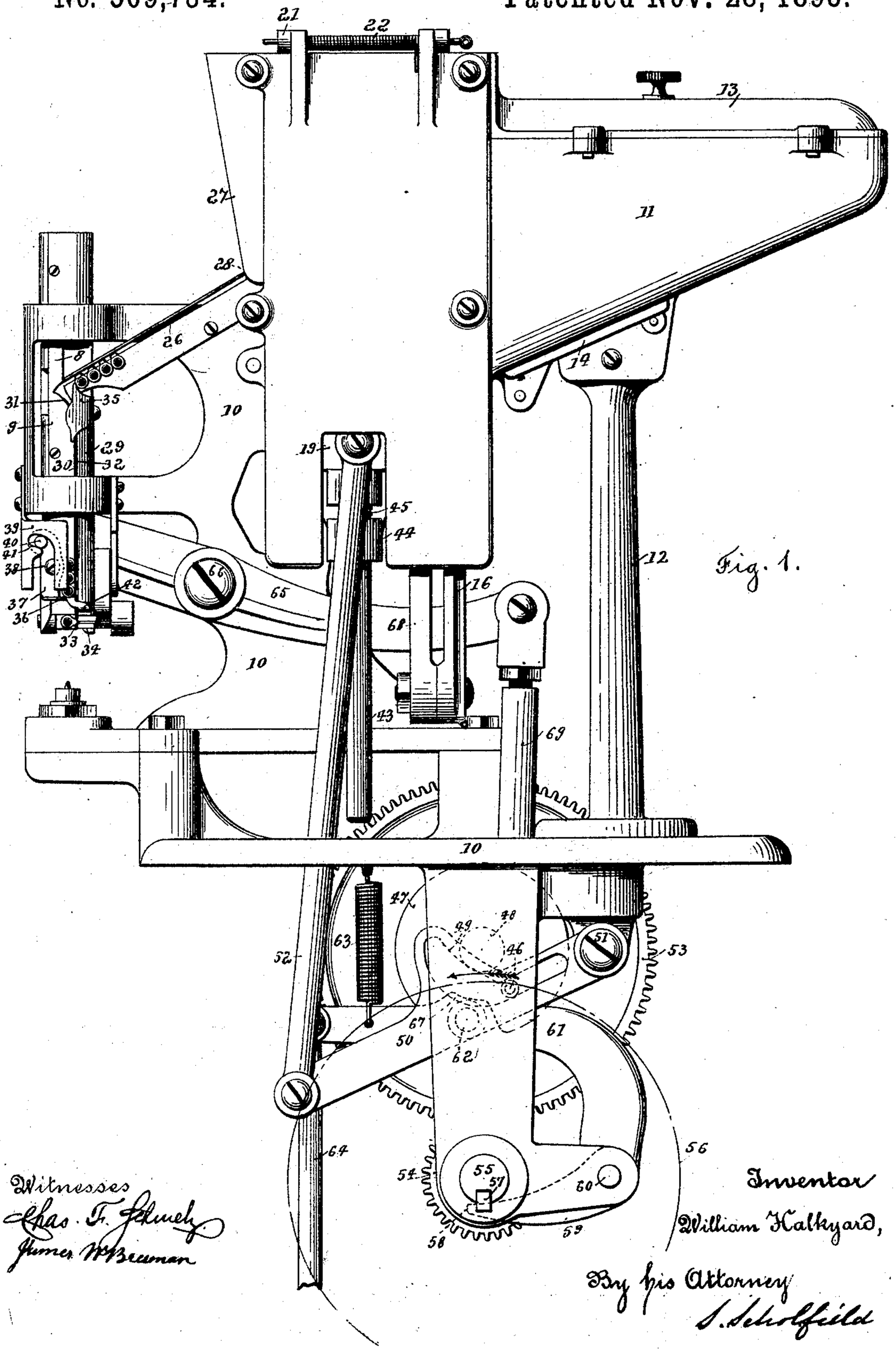

Fig. 1.

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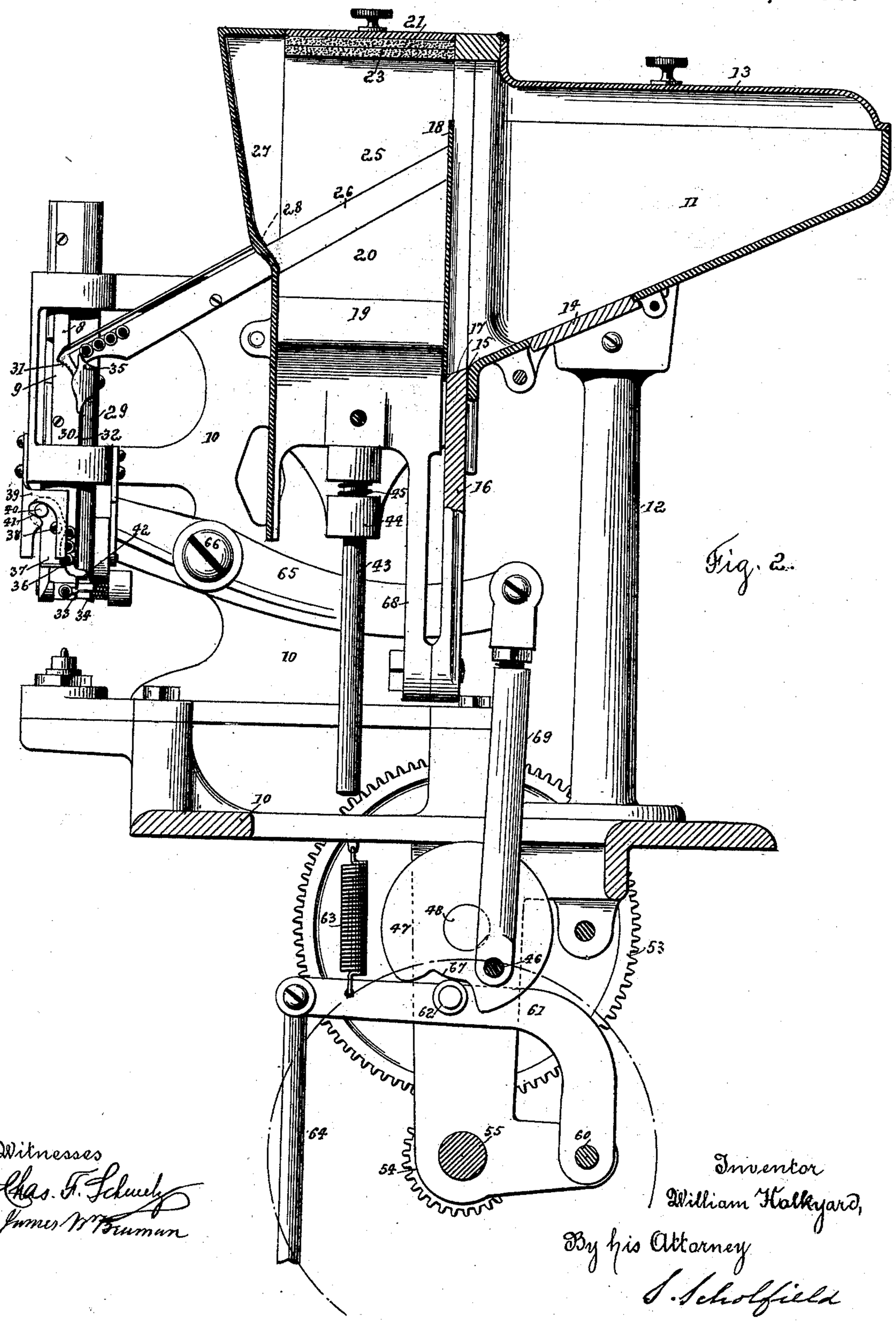

Fig. 2.

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Fig. 3.

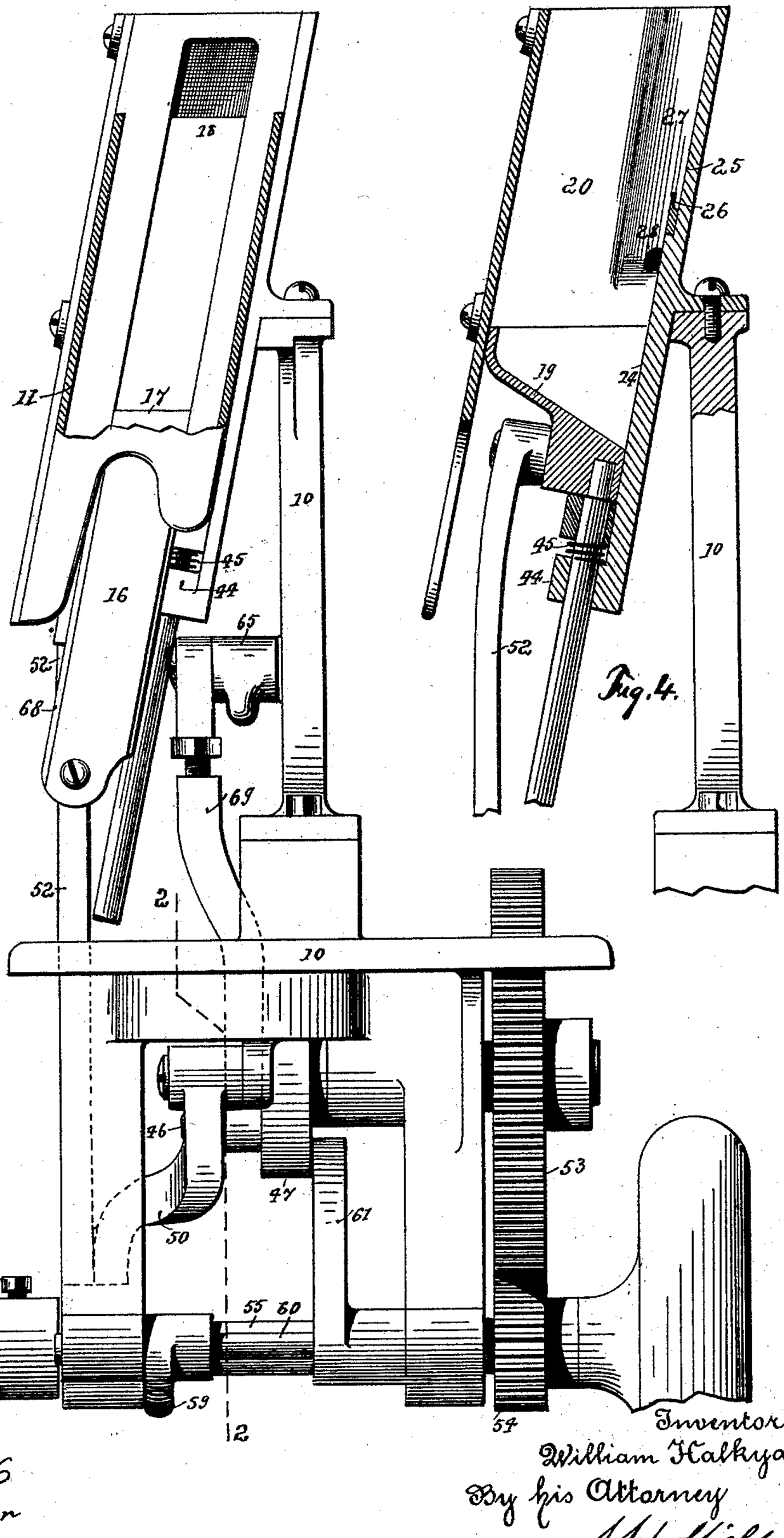

Fig. 4.

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W. HALKYARD.

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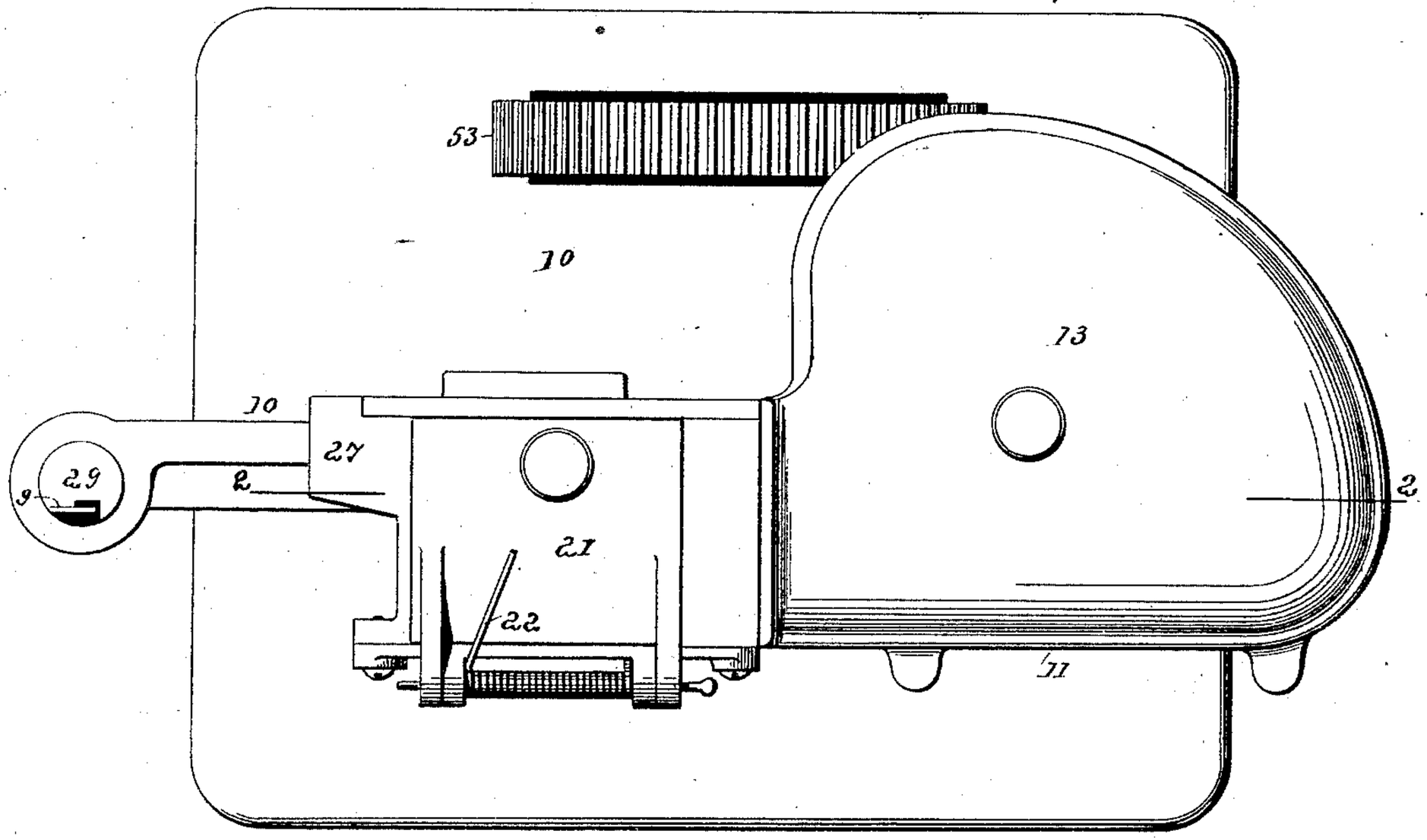
Fig. 5



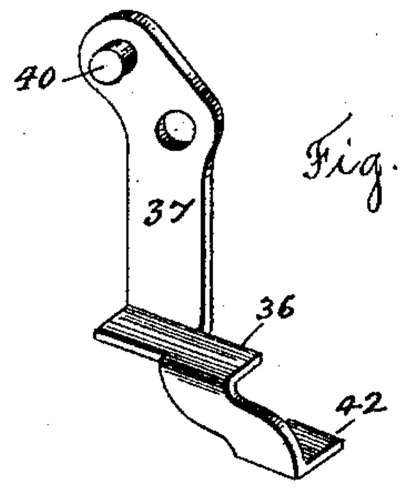


Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM HALKYARD, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR SETTING LACING-HOOKS.

SPECIFICATION forming part of Letters Patent No. 509,734, dated November 28, 1893.

Application filed March 11, 1892. Serial No. 424,549. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HALKYARD, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Machines for Setting Lacing-Hooks, of which the following is a specification.

My invention relates to machines for setting or fastening lacing hooks upon leather or other material, and it consists in the employment of a supplementary hopper and feeding device, for supplying a uniform quantity of hooks to the feeding receptacle from which the hooks are deposited upon the feed track, in improved means for feeding the lacing hooks from the raceway track to the swinging head of the setting plunger, and in improved mechanism for operating the machine, as hereinafter set forth.

Figure 1, represents a side elevation of a machine embodying my improvements. Fig. 2, represents a vertical section taken in the line 2, 2, of Fig 3. and in the line 2, 2, of Fig. 5. Fig. 3, represents an end elevation with a portion of the hopper broken away. Fig. 4, represents a vertical section of the chamber for the feeding receptacle. Fig. 5, represents a top view. Fig. 6, represents a perspective view of the escapement lever, for feeding the hooks one at a time to the swinging head of the plunger.

In the accompanying drawings, 10 represents the frame of the machine which may be supported at the proper height upon a suitable standard. The hopper 11 is supported by means of a standard 12, and is provided with a cover 13 and with a lower door 14, for the complete withdrawal of the lacing hooks from the hopper, when desired. The bottom of the hopper 11 is also provided with the opening 15, within which is placed the vertically reciprocating feeding bar 16, the upper end 17 of which, forms a carrier for carrying the lacing hooks from the hopper 11, to the top of the partition 18, from whence they will pass into the receiving chamber 20, in which is placed the reciprocating feeding receptacle 19, the said chamber being provided with a hinged cover 21, held in its closed condition by means of the spring 22, the said cover being provided at its under side, with a lining of felt 23, or similar material, which serves to prevent bruising the hooks when the machine is being run so rapidly as to throw them against the cover. The reciprocating feeding receptacle 19, is open at the side 24, adjacent to the slightly inclined guiding wall 25, and has an up and down reciprocating movement along the said wall. To the guiding wall 25 is attached by suitable means the inclined feed track 26, which is adapted to catch and retain a number of lacing hooks from the feeding receptacle 19, while the mass of the said hooks are making their downward movement along the side of the guiding wall, the space between the track and the said guiding wall being made of sufficient width, to loosely hold the heads of the hooks, so that only those hooks which are properly presented will be caught and retained upon the track. The wall of the receiving chamber 20, is provided with a recess 27, into the lower end of which the feed track 26 enters, so that the upward movement of the feeding receptacle 19, past the opening 28, through which the lacing hooks are made to pass will not be obstructed. At the side of the plunger 29, is secured a flat plate 9 constituting the raceway track 30, which extends for nearly the whole length of the plunger, and is recessed at 31, to provide for the passage of a lacing hook from the feed track 26, to the edge of the raceway track 30, which forms one side of the raceway 32, through which the lacing hooks are dropped by gravity one at a time to engagement with the lips of the escapement lever 37. The upper extension 8 of the plate 9 is arranged in line with the lower end of the feed track, and will form a stop against which the lacing hooks on the feed track will rest at the downward position of the plunger. To the plunger 29, is attached a separating stop 35, so arranged that as the plunger ascends, the said stop will be caused to pass between the first and second lacing hooks on the feed track, and thus allow only the first lacing hooks to pass into the recess 31, and thence drop through the raceway 32, to engagement with the upper lip 36, of the escapement lever 37; the said escapement lever being pivoted to the side of the plunger 29, by means of the pivot screw 38, and operated at the up and down movement of the plunger by means of the fixed cam 39, attached to the frame 10; the

said escapement lever being also provided with the pin 40, adapted to enter the recess 41 of the cam 39, by means of which the said lever is operated. The escapement lever 37 is also provided with a lower lip 42, which is offset from the upper lip 36, so that upon the rocking movement of the said lever by engagement with the cam 39, a single lacing hook will be fed from the lower end of the raceway 32, to the holding rest 33, for setting the lacing hook in the leather, upon the downward movement of the plunger 29 and the consequent turning of the swinging head 34, as fully described in my Letters Patent of the United States No. 454,114.

The feeding receptacle 19, is provided with a guide rod 43, which passes through the guide bearing 44, and the downward movement of the feeding receptacle is checked by the spiral spring 45, upon the guide rod, and the said feeding receptacle is operated in its up and down movement, by means of the pin 46, at the side of the cam 47, on the shaft 48, the said pin being arranged to enter the curved slot 49, in the lever 50, which is pivoted at the screw 51, and is connected at its outer end with the side of the feeding receptacle, by means of the connecting rod 52. Upon one end of the shaft 48, is placed the gear 53, which engages with the pinion 54, on the driving shaft 55, and to the outer end of the driving shaft, is secured the clutch pulley 56, which is normally loose upon the shaft, but is connected with the shaft at the will of the operator, by means of the spring actuated sliding key 57, which is caused to move backward to release the pulley by means of the engagement of the end 58, of the arm 59, therewith, the said arm being secured to the rock-shaft 60, to which is also secured the bent lever 61, provided at its side with the roller 62, which engages with the periphery of the cam 47, the said lever being held in its raised position, by means of the spiral spring 63, and to the outer end of the lever 61, is attached the rod 64, which connects with a pedal, the engaging movement of which is controlled by the operator of the machine. The plunger 29 is operated in its up and down movement, by means of the lever 65, which is pivoted at the screw 66, and is connected for operation with the crank pin 46 on the side of the cam 47 by means of the connecting rod 69, and the feeding bar 16, is attached to the downwardly extending arm 68 of the feeding receptacle 19, so as to be reciprocated therewith.

The operation of the machine will be as follows: The feeding receptacle 19, and the hopper 11, being first filled with lacing hooks, the operator presses down the pedal with his foot, thus drawing down the bent lever 61 to rock the shaft 60, and throw the end 58 of the arm 59 out of engagement with the spring actuated key 57, which then springs into engagement with the clutch pulley 56, to cause the rotation of the driving shaft 55, and such rotation will continue, as long as the foot of the operator rests upon the pedal; but upon the release of the pedal, the action of the spring 63, will cause the roller 62, to enter the recess 67, of the cam 47, thus causing the engagement of the end 58, of the arm 59, with the sliding key 57, to withdraw the same from engagement with the pulley 56, thus stopping the machine. Upon setting the machine in motion, the lacing hooks in the feeding receptacle 19, will be passed upward over the inclined feed track 26, and upon the downward movement of the same, some of the said hooks will be deposited in a proper position upon the said feed track, and will slide to the lower end of the same. In the meantime, the feeding bar 16, will have raised a number of lacing hooks upon its upper end 17, to the top of the partition 18, from whence they will slide into the simultaneously elevated feeding receptacle 19, so as to keep the said receptacle properly filled with lacing hooks, the hooks raised by the feeding bar 16, not being able to pass over the partition 18, into the feeding receptacle, when the said feeding receptacle is completely filled with hooks. Thus the feeding receptacle will be automatically kept even full, under all circumstances, whereby a sufficient number of hooks will be caused to pass over the inclined track, so that a constant supply of hooks will be provided for the setting plunger; and upon each up and down movement of the setting plunger, a single lacing hook will be fed from the feed track, to the raceway track, by the conjoint action of the stop 35, and the upward extension 8 of the plate 9. The first lacing hook which is fed from the feed track to the raceway track, will pass by gravity to contact with the upper lip 36, of the escapement lever 37, which hook, upon the downward movement of the plunger, and the resulting backward movement of the escapement lever, will drop from the upper lip 36, to the lower lip 42, and thereafter, upon every up and down movement of the setting plunger, a single lacing hook will be fed to the holding rest 33, of the swinging head 34; and by the employment of the escapement lever 37, the escape of lacing hooks from the raceway track onto the floor of the room to be trodden under foot and lost, as heretofore, will be avoided.

I claim as my invention—

1. In a machine for setting lacing-hooks, the combination with the hopper, and the receiving chamber, of a device for feeding the lacing hooks from the hopper loosely into the receiving chamber, the feed track, and the feeding receptacle located in the receiving chamber and adapted to deposit the lacing hooks upon the feed track, substantially as described.

2. In a machine for setting lacing-hooks, the combination with the inclined feed-track, the reciprocating plunger provided with the raceway-track, the swinging head provided with a holding rest, and means for feeding the lacing hooks one at a time from the feed-track

to the raceway-track, of the escapement lever pivoted to the side of the plunger, and provided with the offset holding lips, one below the other, and the fixed cam for operating the said escapement lever upon the upward movement of the plunger, whereby with a number of lacing hooks retained at the lower end of the raceway track, a single hook will be fed therefrom to the holding rest, and a single hook to supply its place will be fed from the feed track, at each upward movement of the plunger, and a uniform number of hooks will be maintained upon the raceway-track, substantially as described.

3. In a machine for setting lacing hooks, the combination with the setting plunger, and its attachments, the operating lever, connecting rod, and crank pin, of the inclined feed-track, the reciprocating feeding receptacle adapted to deposit the lacing hooks upon the feed-track the connecting rod, and the operating lever, provided with a curved slot adapted to receive the crank pin which operates the setting plunger, substantially as described.

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Witnesses:
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SOCRATES SCHOLFIELD.