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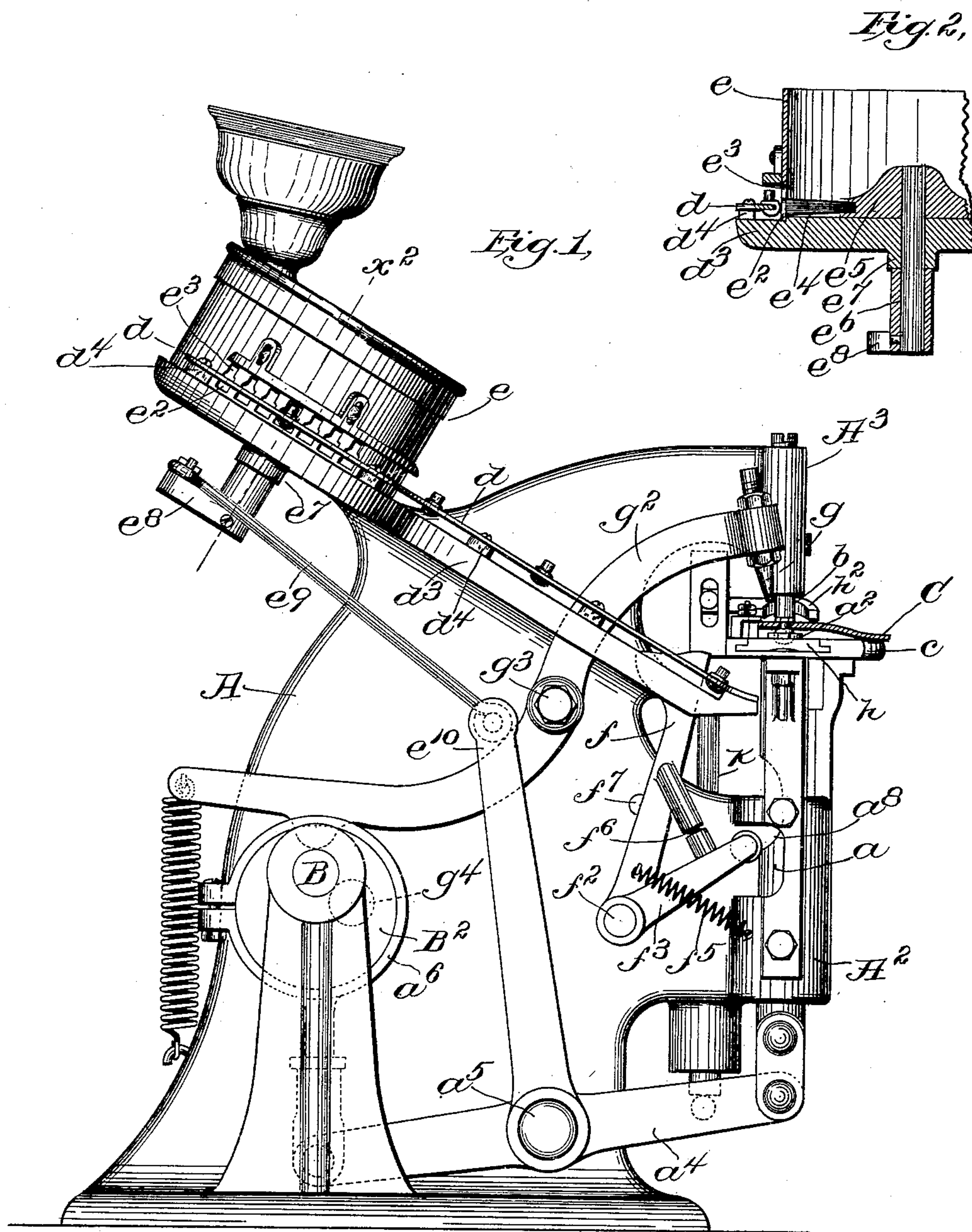
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P. R. GLASS.
MACHINE FOR SETTING LACING STUDS.

(Application filed June 25, 1897.)

(No Model.)

2 Sheets—Sheet 1.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR SETTING LACING-STUDS.

SPECIFICATION forming part of Letters Patent No. 631,038, dated August 15, 1899.

Application filed June 25, 1897. Serial No. 642,220. (No model.)

To all whom it may concern:

Be it known that I, PERLEY R. GLASS, of Quincy, county of Norfolk, and State of Massachusetts, have invented an Improvement in Machines for Setting Lacing-Studs, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a machine for setting lacing-studs in shoe-uppers and the like, the invention being mainly embodied in an improved construction and arrangement of the feeding device for the lacing-studs and in the setting devices which coöperate therewith, the object of the invention being to obtain a machine which will properly present and position the studs with relation to the stock, so as to set the same accurately and rapidly.

The machine is mainly intended to operate upon stock which has been previously punched or upon stock of that class in which the lacing-studs are capable of being forced through without punching, it being practicable, however, as will be shown, to provide the machine with a punch and feeding device for the stock, so that the operation of setting the lacing-studs may be rendered completely automatic when stock which has not been previously punched and which is not capable of receiving the lacing-studs without punching is presented thereto.

The punching and stock-feeding devices herein shown, in conjunction with the lacing-stud-setting machine which forms the subject of the present invention, are substantially the same in construction and arrangement as those shown and described in a prior patent granted to me May 4, 1897, No. 581,855, it being obvious, however, that other punching and feeding devices might be employed without departing from the invention.

The machine embodying the invention is provided with a hopper having lateral outlets, the said outlets being of such size as to allow a lacing-stud to pass through the same, and in conjunction with the hopper there is a guideway or track extending around the side thereof adjacent to the aforesaid openings, the said guideway being supported above the

floor of the hopper a sufficient distance to allow one of the hook portions of the stud to pass under the same when the said stud is inverted, and the said guide-strip is of such thickness as to enter the mouth of the hook between the hook portions thereof, so that a stud properly presented thereto will be supported on and guided by the strip. The edge of the said guide-strip is arranged at a distance from the outer wall of the hopper substantially less than the smallest diameter of either of the hook portions, but equal to or greater than the thickness of the throat portion, so that the stud when properly presented will be free to slide down the strip with the throat of the hook between the edge of the strip and the wall of the hopper. The said guide-strip is inclined downward and away from the hopper toward the setting devices and provided where it diverges from the wall of the hopper with an additional strip or guide extending parallel to it and adapted to engage the outside of the throat of the hook, so as to prevent the same from leaving the strip or turning thereon, but not to prevent it from sliding freely down. It is obvious, therefore, that if a hook emerging from one of the openings in the hopper is in any other than the right position some portion thereof other than the inner surface of the throat of the hook will engage the edge of the guide-strip and prevent the stud from wholly coming out of the hopper, so that it is impossible for any stud to leave the hopper unless it is properly presented to the strip. The said guide-strip, which in conjunction with the parallel member above named may be referred to as the "chute" or "raceway," is provided at its end with means for presenting the hooks as they travel down the same one at a time to the setting device, which is provided with means for engaging the hook and holding the same in proper position to be operated upon by the said setting devices, one of which is movable with relation to the other, so that when the stock is held between said setting devices the lacing-stud will be presented thereby to said stock and secured therein by upsetting the rivet portion.

Figure 1 is a side elevation of a machine embodying the invention; Fig. 2, a section

on line x^2 of Fig. 1; Fig. 3, a top plan view of the same; Fig. 4, a sectional elevation of a portion of the machine, the section being taken on the line x^4 of Fig. 3; Fig. 5, a horizontal sectional detail showing the end of the chute in plan and the top of the lower setting device also in plan; Fig. 6, a vertical section on the line x^6 of Fig. 5; Fig. 7, a detail showing the lower set in elevation; Fig. 8, a similar detail showing a vertical section of the lower set, with the jaws or engaging devices for the stud in a different position; and Fig. 9, a sectional detail showing a modification.

The cooperating setting devices a and b , which are adapted to be separated, so that the stock can be placed between them and the stud picked up, and then to be brought together to insert the stud in the stock and fasten the same therein, are shown as mounted, respectively, in projections A^2 and A^3 from the frame A , the said frame being shown as substantially the same in design as that of the eyeleting-machine described in my prior patent above referred to. Between the said sets there is a work-support or table c , upon which is supported the stock C during the operation of setting the studs, the work-support having, as best shown in Fig. 4, an opening to permit the setting devices to come together. The lower set, which in this instance is shown as the movable setting member, comprises a longitudinally-movable rod provided at its top with an anvil portion comprising the upper surface of a pair of jaws a^2 and a^3 , adapted to receive and support the inverted stud, as shown in Fig. 7, the lower hook member of the stud lying upon the upper surface of the said jaws, so that when the lower set rises the shank or rivet portion of the stud, which then projects upward, will be inserted in the stock lying on the table c and then pressed against the surface of the upper set b , which is of such shape as to upset the said rivet portion and secure the stud in the stock, as shown in Fig. 8. The said lower set is shown as operated by means of a lever a^4 , pivoted at a^5 and connected at the other end with an eccentric-strap a^6 upon an eccentric B^2 on the driving-shaft B , the construction and operation being shown as substantially the same as that of my prior patent above referred to.

To receive the upper hook member of the stud and properly position the stud with relation to the stock, the jaws a^2 and a^3 are shown as undercut, while the top of the set a is preferably cut away, as shown, to make room for the hook member below the jaws. The said jaws, as shown in Fig. 5, are cut away where the stud enters, the throat of the stud being pushed in the feed operation against the end of said cut portion, which maintains the stud in the necessary position.

To allow the stud to become disengaged from the lower set in the downward or return movement thereof, the retaining-jaws a^2 and a^3 are pivotally supported, as shown at a^{20} and a^{30} ,

being normally held in the position shown in Fig. 7 by means of a spring a^{40} , the said spring being shown as a spiral spring interposed between the lower ends of the pivoted jaw-arms. The under surfaces of the jaws are beveled, as shown, so that as the lower set moves down after the stud is fixed in the material the jaws will spread apart with a latching action, as shown in Fig. 8, leaving the stud in the material, which material is then free to be moved along the table by hand or otherwise to properly position it to receive the next stud.

To present the studs to the lower set, the machine is provided with a chute or race-way d d^2 , the member d of which consists of a guide strip or bar of such thickness as to enter the space between the hook members of the stud, so that when the said stud is pushed laterally toward the said guideway the hook members thereof will embrace the same and can be moved along the same toward the setting device. The said guide-strip d is inclined toward the setting devices, being shown as secured to an inclined bracket or support d^3 , formed integral with the frame A , and is mounted on studs or projections d^4 , so that it is separated from the surface of the said support d^3 to leave space for the hook member which lies along the under side of the said strip. To properly present the lacing-studs to the said guide-strip in accordance with the present invention, the said strip at its upper end is shaped to lie adjacent to the outer wall of a hopper e , said wall being provided near the bottom thereof with openings e^2 , the width of said openings being shown as substantially equal to the shorter diameter of the hook members of the stud, so that the said studs are free to pass through the same, with the jaws of the hook pointed toward the guide-strip, which is so positioned that the hook thus coming out will engage the same, as shown in Fig. 2. To insure the proper presentation to the said guide-strip of all studs which escape from the hopper and to prevent any studs which are not properly presented from leaving the hopper, the said strip is so arranged that the distance between it and the wall of the hopper is substantially less than the diameter of the stud and about equal to the thickness of the throat portion of the stud, so that it is impossible for any stud to pass out through the openings in the hopper unless the said stud is so presented to the strip that the front ends of the hook members are toward the strip as the stud comes out, so that said members can straddle the strip, as best shown in Fig. 2. The throat portion of the stud, moreover, is usually of greater width than its thickness, and the distance between the strip and the wall of the hopper is therefore less than the width of the throat, so that after the stud is properly positioned, while it is free to slide down the strip, it will be prevented from turning with relation thereto, so that the studs all slide down the

chute in the same position relative thereto, as is necessary in order that they may be finally properly presented to the material into which they are to be set.

5 As herein shown, the studs are adapted to be presented to the strip in an inverted position, with the rivet portion of each projecting upward, and as the said rivet portion is commonly smaller than the hook portions the
10 upper portions of the openings e^2 are shown as contracted, as indicated by the letter e^3 , so that no portion of a stud which is standing on its rivet portion in the hopper can pass through the said openings at all. It is obvious, however, that by properly positioning
15 the strip with relation to the floor of the hopper and the wall thereof the feeding device may be adapted for use with hooks or studs of various kinds, it being essential only that
20 the openings should be of such size that only one hook can pass out through any one opening at a time.

To agitate the studs in the hopper and clear away from the feed-openings the studs which
25 are prevented from passing through the same because they are improperly presented, the said hopper is shown as provided with brushes or stirrers e^4 , which may be secured to a hub e^5 on the spindle e^6 , having a bearing e^7 in the
30 support d^3 , the said spindle e^6 being provided with a crank-arm e^8 , connected by a link e^9 with a lever-arm e^{10} , connected to the lever-arm a^4 , so that the said arm will swing at
35 each movement of the lever a^4 to produce the operation of the setting devices.

The support d^3 for the chute member d is also shown as constituting a floor for the hopper, which is supported upon an enlargement thereof at the upper end of said support. In
40 the operation of the device, therefore, there will continually be a column of studs along the chute d , (there being but one or two studs shown in the drawings for the sake of simplicity,) and the said column will constantly
45 tend to gravitate downward toward the setting device, which is situated at the end of the chute. It is essential, however, that a single stud at each operation of the device should be separated from the remainder of the column and alone presented to the setting device, while the movement of the remainder of the column must be prevented, so that it
50 will be impossible for more than one stud to be presented at a time. To this end the said chute is provided with a separator and feeding device f , arranged to cooperate with the movable eyelet-setting device, so that prior to the operation of said setting device the separator and feeding device will present a single stud
60 thereto, at the same time supporting the remainder of the column of studs, and in the return movement of the setting device will permit one of the studs to become separated from the rest and at the next movement will insert the same into the jaws of the set. To
65 this end the chute d d^2 is shown as provided at its lower end with a supplemental chute d^5 ,

the said supplemental chute terminating at a point adjacent to the lower set a , as best shown in Fig. 5.

70 The separator and feeding device f comprises a flat blade at the end of a movable arm, shown as pivoted at f^2 on the frame and movable, as it swings on its pivot, longitudinally through the opening in the supplemental chute d^5 to and from the eyelet-set a . The
75 chute d d^2 is shown as opening laterally into the supplemental chute d^5 , so that as the said separator moves forward to feed the stud to the setting device it will cover the outlet from
80 the said main chute to the supplemental chute and support the column of studs in the former. Assuming, therefore, that the separator is moved forward toward the set a , as shown in Fig. 4, it will be seen that the
85 said separator lies across the mouth of the chute d d^2 , so as to prevent the stud from entering the supplemental chute d^5 . When, however, the said separator has moved back to the position shown in Figs. 1 and 5, it will
90 be seen that the mouth of the main chute is open, so that a stud is free to move into the supplemental chute d^5 . The said supplemental chute d^5 , moreover, is provided with means for preventing more than one stud
95 from entering it at a time, and to this end is shown as provided with a gate d^6 , pivoted at d^7 and normally held closed across the chute d^5 , adjacent to the mouth of the main chute, by means of a spring d^8 . When, therefore, the
100 stud enters the said chute d^5 , it will be stopped by said gate directly in front of the mouth of the main chute, and thus prevent any other stud from following into the supplemental chute.

105 The means for preventing more than one stud from entering the supplemental chute at a time may obviously be modified, it being practicable, for example, as shown in Fig. 9, to provide the separator f with a hook or projection f^{60} corresponding to the gate d^6 , the
110 said hook when the separator is in its rearward position, so that the supplemental chute is uncovered, lying below the mouth of the said supplemental chute, the space between
115 the hook and the body of the separator being in front of the mouth of the chute, so that the stud is free to enter the supplemental chute, but is prevented from traveling along the same by its engagement with said hook,
120 as shown. As the separator and feeding device moves forward, pushing the stud with it, the swinging movement thereof will cause the hook f^{60} to become disengaged from the stud before it reaches the setting device, to
125 which it is transferred by said separator and feeding device, as already described.

To cause the proper cooperation of the separator f with the reciprocating set, the said separator is shown as acted upon by a lever-arm f^3 , pivoted coaxially therewith, the said
130 lever-arm f^3 in turn cooperating with an inclined surface a^8 , shown as formed in the body of the lower set a . The said inclined sur-

face is preferably arranged as shown, so that it will move back the lever-arm f^3 and the separator connected thereto at the first upward movement of the lower set, the upper portion of the separator also extending into the path of the set, as shown in Fig. 4, so as to positively engage the lacing-stud during such first upward movement, thus insuring the proper retention of the stud by the lower set. The separator f is arranged to have a rapid forward movement as the lower set moves downward, such forward movement of the separator being accomplished, for example, through the action of a spring f^5 , connected, respectively, with the frame of the machine and with the separator-arm, so that the stud which is then in front of the separator is carried forward into engagement with the side of the lower set and pushed into the space between the jaws a^2 and a^3 as soon as the top of the lower set comes in line with the end of the chute, as shown in Fig. 4. When the separator is back, the gate a^6 will close behind it, while the mouth of the chute d d^2 is opened, so that a stud will drop into the space between the separator and the gate ready to be moved forward or kicked in at the next forward movement of the separator, which takes place as above described.

To insure the proper positioning of the separator and take up any lost motion caused by wear, the arm f^3 is shown as connected with the separator-arm f through a spring f^6 , while the limit of rearward movement of said separator is shown as determined by a stop f^7 . The proper positioning of the stud is determined as follows: It will be seen that as the stud passes down the chute members d d^2 it will be maintained in the position shown, owing to the fact that the distance between the member d and the member d^2 is substantially equal to the thickness of the throat portion of the stud and much less than the width of said portion, so that the said stud cannot turn in the chute or guideway. As the said stud passes into the supplemental chute it will for the same reason follow around until it is presented to the chute d^5 in a position at right angles to that which it has assumed in its travel down the main chute and will have the hook portion pointed forward toward the jaws of the setting device, so as to properly enter the same. To prevent the stud from turning from this position as it travels through the supplemental chute d^5 , the said supplemental chute, which consists of two bars adapted to engage the under side of the flange which surrounds the shank or rivet portion, is provided below the stud-bars with vertical shoulders d^{50} , the distance between which is substantially equal to the width of the upper hook member of the stud, the studs being usually oval in shape, so that the stud is still held from turning and will be properly presented to the feed-jaws, in which it is held, as hereinbefore described.

The machine as thus far described is adapt-

ed to be used in conjunction with stock which has been previously prepared to receive the lacing-studs or which is capable of receiving studs without being separately punched, the stock in this instance being held in position upon the table by the operator and moved along at the end of each setting operation to properly position the stock to receive the next stud. It is practicable, however, as has been stated, to arrange the machine so that it will operate automatically to first punch the stock and then move the same forward until the hole which has been made is in the proper position to receive the lacing-stud, the punch, the setting devices, and the stock-feeding device all operating continuously and automatically to set a line of studs in the stock. To this end the machine may be provided with a punch g , shown as secured to a punch-lever g^2 , pivoted at g^3 and adapted to be operated by a cam projection g^4 , carried by the main shaft, the said cam projection being shown as extending from the face of the eccentric B^2 , which carries the eccentric-strap a^6 to operate the reciprocating setting device. In conjunction with the punch the machine is provided with the stock-feeding device, shown as consisting of a sliding member h , longitudinally movable in a guideway in the table c , and the gripper member h^2 , which is adapted to move to and from the face of the stock to grip the said stock between it and the slide h aforesaid. The slide h is shown as connected to a lever i , (see Fig. 3,) pivoted at i^2 and adapted to be operated by means of a crown-cam i^3 , carried by the main shaft B , so that in the operation of the machine the said feed-slide h will be reciprocated along the feed-table. In the return movement of said feed-slide, which takes place immediately after the stud has been set in the stock, the gripper member h^2 is lifted away from the surface of the stock, so that the same is no longer engaged thereby, the said gripper member being shown as operated by means of a vertical rod k , adapted to be engaged at its lower end by the lever a^4 or a projection therefrom, so that the gripper member is separated from the other member just as the stud is being inserted in the stock and upset.

The crown-cam which operates the feed-slide has a steep incline, while the rearward movement of the feed is accomplished by means of a spring i^4 , so that the return movement of the feed members takes place rapidly and while the stock is held between the cooperating setting devices. As soon as the lower set begins to descend the gripper member also descends, so as to catch the stock and feed it forward at the next forward movement of the feed-slide.

The construction and operation of the punch and feeding devices herein shown are substantially the same as shown in my prior patent above referred to, and consequently need no further detailed description. It is

obvious, moreover, that a punch and stock-feeding device of any suitable construction might be employed in conjunction with the machine without departing from the invention, or the machine might be provided with a punch alone or a feeding device alone, as might be desirable in some instances.

In order that the projecting hooks of the studs may not interfere with the movement of the stock as it is fed along through the machine and may not interfere with the return movement of the feeding device, the member *h* is shown as provided with a longitudinal channel *h*³, extending along to the end thereof where the stock leaves the machine, so that the hook portion of the studs will travel along in said channel without interfering with the proper operation of the machine.

I claim—

1. A stud supplying or feeding device for lacing-stud machines, comprising a hopper to contain a mass of studs, one or more openings in a wall of said hopper at or near the bottom thereof so as to be below the surface of the mass when the hopper is charged, said openings being of such size as to permit a single stud to pass freely through; a guide-strip extending along adjacent and parallel to the wall of the hopper where the openings are, and separated therefrom by a distance less than the diameter of the hook but sufficiently great to contain the throat portion thereof, said guide-strip having a space at each side for the hook members of the stud; and a chute or guideway for the studs received by the strip, leading toward the setting devices, substantially as described.

2. In a machine for setting lacing-studs, a stud supplying or feeding device comprising a hopper to contain a mass of studs; a series of openings in the side wall of the hopper adjacent to the floor or bottom thereof, said openings each being of such size as to permit one stud only to pass freely through; a guide-strip supported above the level of the floor of the hopper so as to afford a space below the same for the upper hook member of the stud when the stud is inverted, said guide-strip extending along adjacent and parallel to the wall of the hopper where the openings are, and the thickness of said strip being less than the distance between the hook members of the stud, and the distance between the strip and the hopper being greater than the thickness of the throat of the hook but less than the diameter of the hook itself, the said strip being turned away from the hopper at a point beyond the openings and leading toward the setting devices; and a supplemental strip parallel thereto to retain the studs thereon, substantially as described.

3. In a lacing-stud machine, the combination with a stud-supplying device comprising a hopper provided with one or more openings in a wall thereof adjacent to the bottom, the lower portion of said openings being substantially equal in width to the hook portion of

the stud and the upper portion thereof substantially equal in width to the rivet portion thereof, of a guide-strip adjacent and parallel to the wall of the hopper and extending along by the said openings, the distance between the said strip and the wall of the hopper being less than the diameter of the hook; a supplemental guide-strip parallel to the said main guide-strip after it leaves the wall of the hopper; a supplemental chute at right angles to the said guide-strips, a separator and feeding device in said supplemental chute arranged to feed forward one stud at a time, and the setting devices arranged to receive and set the said stud, substantially as described.

4. The combination with the main chute consisting of a main guide-strip adapted to receive the stud from the hopper and a supplemental strip adapted to retain the stud on said guide-strip and prevent the same from turning with relation thereto, of a supplemental chute consisting of two supporting-bars having shoulders, the distance between which is substantially equal to the lesser diameter of the oval hook portion of the stud, said chute being adapted to receive the stud from said main chute, the setting devices adjacent to said supplemental chute and adapted to receive the stud therefrom, and a feeding device and separator cooperating with said setting devices and adapted to move in said supplemental chute to feed the stud to the said setting devices and at the same time to cut off communication between the supplemental chute and the main chute, substantially as described.

5. In a machine for setting lacing-studs, the combination with the feed chute or raceway for said studs, of a supplemental chute into which said main chute opens laterally, setting devices adjacent to the end of said supplemental chute, a retaining device normally extending across said supplemental chute between the mouth of the main chute and the setting devices, to prevent more than one stud from entering the supplemental chute at a time, and common means for removing the said retaining device from the path of the stud, feeding the said stud toward the setting devices, and cutting off communication between the main and supplemental chutes, substantially as described.

6. The combination with a raceway for the studs, consisting of a guide-strip adapted to enter the jaws of the hook portion of the stud to support and guide the same; of a supplemental chute or raceway arranged substantially at a right angle to the mouth of the said main chute; a spring-actuated retaining device or gate across said supplemental chute to arrest a stud entering the same, a separator and feeding device consisting of a blade movable longitudinally along said supplemental chute and normally standing at one side of the opening of the main chute but adapted as it moves to pass in front of the mouth of said main chute to prevent the column of studs

therein from entering the supplemental chute, and to positively move the stud then in said supplemental chute toward, and feed the same to, the setting device; the said setting device
 5 at the mouth of said supplemental chute adapted to receive the stud from said separator and feeding device, and means for operating the said separator, substantially as described.

10 7. In a machine for setting lacing-studs, the combination with a work-support provided with an opening, of cooperating setting devices adapted to insert and set the studs in the stock on said work-support, one of said
 15 setting devices being movable toward and from the said opening and consisting of a pair of jaws pivotally supported and together adapted to form an anvil or support for the rivet portion of the stud, the said jaws being
 20 undercut on the side opposite the supporting side to afford a space for the hook portion of the stud, and beveled or inclined toward their meeting-point to permit the said hook portion to engage and spread the jaws by a latching
 25 action, means for moving said member to set the stud in the operation of the machine, and devices for properly presenting the stud to the said member prior to the setting operation, substantially as described.

30 8. The combination with the main feed-chute comprising two portions, one of which is adapted to support the hook portion of the stud and the other of which is adapted to engage the throat portion and prevent the said
 35 stud from turning, of the supplemental chute consisting of two members adapted to support the shank or rivet portion of the stud and having shoulders separated by a space substantially equal to the shorter diameter
 40 of the oval hook portion of the stud whereby the said oval hook portion engages the said walls and is prevented from turning, and the setting device comprising an anvil adjacent to the end of said supplemental chute, the
 45 said anvil having a space below it for the hook portion of the stud, substantially as described.

9. In a machine for setting lacing-studs, the combination with a main chute for the studs, of
 50 a supplemental chute extending transversely across the mouth of the said main chute, a separator and feeding device comprising a blade movable longitudinally through said supplemental chute across the mouth of the
 55 main chute, a setting device to receive the stud from said supplemental chute when pushed forward by said blade, means for vertically reciprocating the said setting device to set the lacing-stud, an engaging projection from said
 60 separating device, and a cam or inclined surface on said lower set cooperating with said engaging projection to move the separator in response to the movement of the setting device, substantially as described.

65 10. In a machine for setting lacing-studs, the combination with a setting device, of a feed-

chute for the studs and a separator controlling the feed of the studs from said chute to said setting device, the said separator consisting of a lever-arm having a blade or enlargement at one end, an actuating device
 70 such as a spring adapted to move the said arm in one direction, an engaging projection adapted to cooperate with a cam to move the said separator-arm in the opposite direction, 75
 and a yielding connection between said projection and said arm, substantially as and for the purpose described.

11. In a machine for setting lacing-studs, the combination with a work-support; of cooperating setting devices adapted to set the studs
 80 in the stock upon said support, one of the said setting devices comprising an anvil or support for the rivet portion of the stud, said support having two separable members held
 85 together by a yielding force as that of a spring and provided with undercut lower surfaces inclined toward their meeting edge to afford a space for the hook portion of the stud which is adapted to separate the same when the said
 90 setting device is removed from the stock; a punch for the stock, a stock-feeding device for advancing the stock which has been punched to a position to receive the stud, and connecting mechanism whereby the said punch, the 95
 said stock-feeding device and said setting devices are all operated to produce a continuous automatic operation of the machine to set a line of studs, substantially as described.

12. In a machine for setting lacing-studs, a
 100 work-support, setting devices one at each side of said work-support, one of said setting devices being movable toward the other to cooperate therewith in setting the stud in the material upon said work-support, an anvil for
 105 the stud connected with said movable setting device, and itself laterally movable with relation to the direction of movement of said setting device, a space below said anvil for the hook portion of the stud, and an inclined
 110 surface at the underside of said anvil to cause a lateral movement thereof in the movement of the setting device away from the stud which has been set in the material, the material being held by the work-support, substantially
 115 as described.

13. In a machine for setting lacing-studs, a work-support, cooperating setting devices one at each side of said work-support, one of said
 120 setting devices being adapted to reciprocate toward and from said work-support and the material thereon, and consisting of separable jaws normally held together by means of a yielding force as that of a spring, said jaws constituting an anvil or support for the rivet
 125 portion of the stud; and an undercut portion formed in each jaw to afford a space for the hook member of the stud, each of said undercut portions being beveled so that they may be forced apart by the said hook member with
 130 a latching action when the setting device is moved away from the said work-support and

the material supported thereon, substantially as described.

14. In a machine for setting lacing-studs provided with a table or work-support, the combination with coöperating setting devices adapted to set the studs in the material upon said support, one of the said setting devices comprising an anvil or support for the rivet portion of the stud, said support having two separable members held together by yielding force as that of a spring and provided with undercut lower surfaces inclined toward their meeting edge to afford a space for the hook portion of the stud, which portion is adapted to engage the inclined surfaces and separate the members when the setting device and stud are pulled apart, of a stock-feeding device for advancing the stock after a stud has been set therein and separated from the setting device, and connecting mechanism whereby the said stock-feeding device and setting devices are operated to produce a continuous automatic operation of the ma-

chine to set a line of studs, substantially as described.

15. The herein-described setting device which consists of a pair of separable pivotally-supported jaws normally held together by means of a yielding force, as that of a spring, the surface of said jaws being adapted to afford a support for the shank or rivet portion of the stud, the said jaws being cut away opposite the supporting-surface thereof so as to afford a space for the hook member of the stud, and beveled so as to be forced apart with a latching action when the stud is withdrawn, and a lateral recess in said jaws adapted to receive and position the throat portion of the stud, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PERLEY R. GLASS.

Witnesses:

H. J. LIVERMORE,
NANCY P. FORD.