

(No Model.)

J. H. FERGUSON.
HAND TACK DRIVER.

No. 602,068.

Patented Apr. 12, 1898.

Fig. 2.

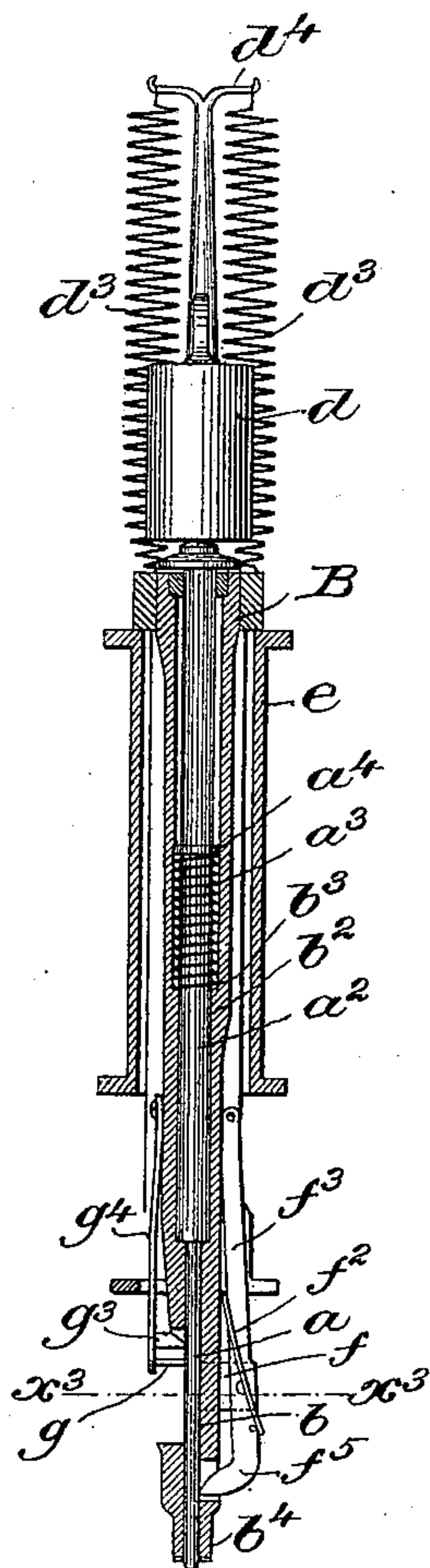


Fig. 1.

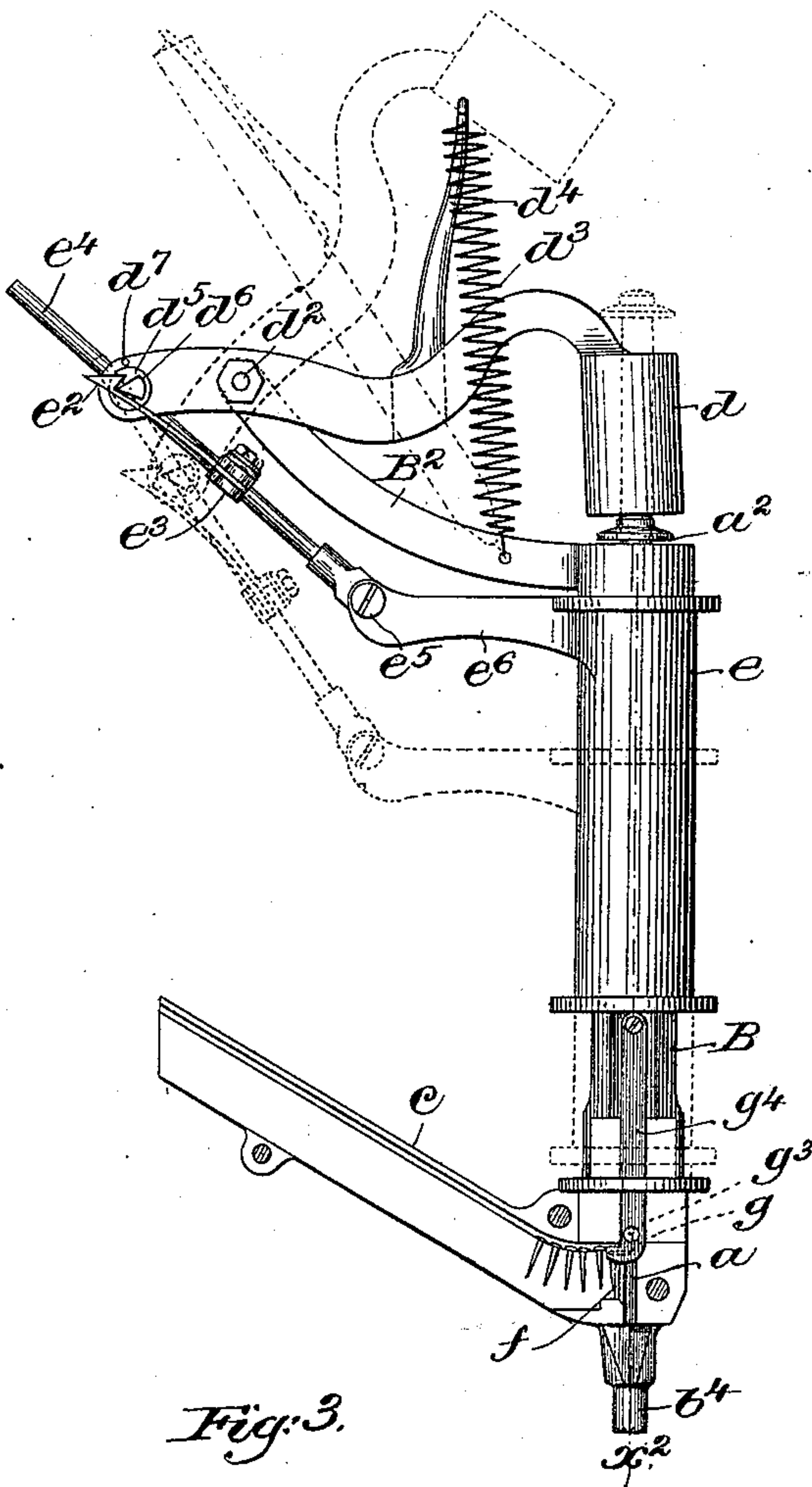
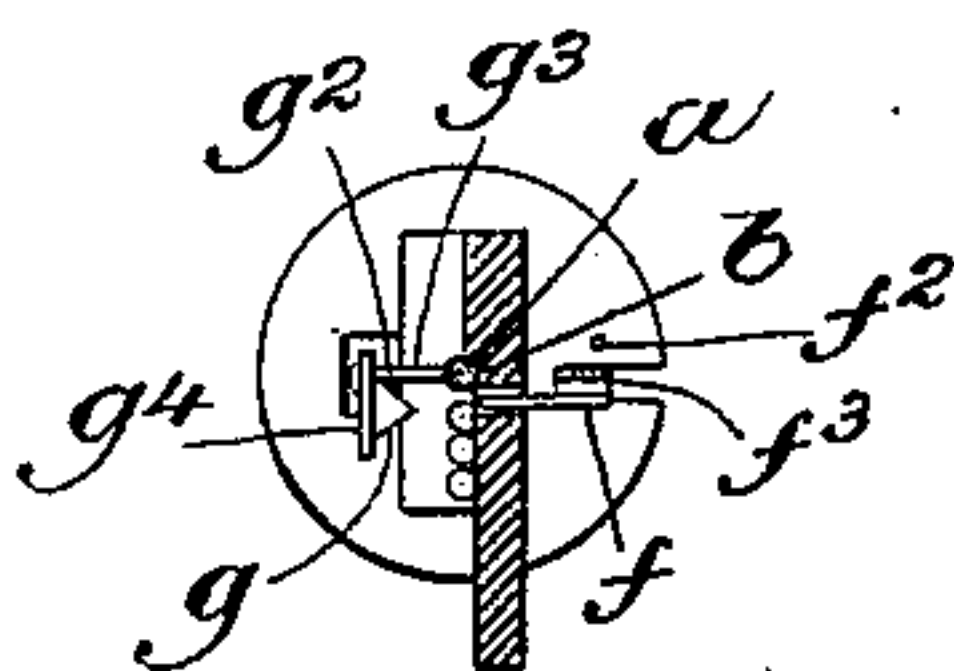


Fig. 3.



Witnesses.

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JAMES H. FERGUSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO GEORGE FERGUSON, OF SAME PLACE.

HAND TACK-DRIVER.

SPECIFICATION forming part of Letters Patent No. 602,068, dated April 12, 1898.

Application filed March 29, 1897. Serial No. 629,651. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. FERGUSON, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Hand Tack-Drivers, 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 hand tack-driver of that class in which the tacks are fed from a suitable reservoir or raceway to a proper position to be operated upon by a driver-rod or plunger, such devices being specially useful in lasting shoes and similar operations.

The object of the present invention is to provide improved means whereby the tack-driver may be operated with one hand and with greater efficiency than that of hand tack-drivers heretofore constructed, the device being provided, in accordance with the invention, with an external hammer (preferably spring-actuated) adapted to strike the driver-rod, which is guided in a suitable frame, the said hammer being first automatically set in position to strike a blow by means of a suitable actuating device, which also constitutes the handle of the tool, and then released, so as to strike the blow and drive the tack, the setting and releasing of the hammer being accomplished by a single movement of the actuating device in one direction.

The driver-rod in accordance with the invention is supported in a guideway in communication with the raceway or feed-chute, which contains the tacks, the said driver-rod normally extending completely through said guideway to the end thereof, in which position it is held by the engagement of the hammer therewith, the last tack of the column of tacks therefore lying in engagement with the said driver-rod.

In the operation of the device, as has been stated, the hammer, which may be pivotally supported, is first set in a position to operate and then released, and means are provided whereby the driver-rod moves upward along the guideway as the hammer is lifted, so that the tack which was in engagement with the driver-rod is free to move into the guideway and be struck by the driver-rod when the

hammer operates and driven thereby along the said guideway and into the article in which it is to be inserted, the tool being held with the end of the guideway in contact with the said article at the point where the tack is to be inserted. By this construction great efficiency is obtained, the nature of the blow being the same as that of the ordinary hammer in the hand of the operator.

It is obviously essential that only one tack should be allowed to enter the guideway at each operation; and a further feature of the present invention consists in a novel construction and arrangement of the tack-controlling devices which coöperate with the driver-rod.

In accordance with the invention the raceway is provided with a gate extending transversely across the same, the said gate being adjacent to the driver-rod guideway, the distance between the said parts being such as to admit a single tack and no more, and when the parts are in their normal position above stated—viz., with the end of the driver-rod at the end of the guideway—the said gate stands open, so that the whole column of tacks is supported by the engagement of the last tack with the side of the driver-rod. To separate the last tack from the others and prevent more than one tack from entering the guideway, the said gate is caused to close in response to the rise of the driver-rod, such closure taking place before the end of the said driver-rod has reached the chute, so that the tack, which, as stated, is supported against the side of the driver-rod, cannot move forward until the gate has moved across the chute to cut off the remaining tacks. As soon, however, as the driver-rod has risen so that the end thereof is completely above the chute the tack which was previously contained in the space between the gate and driver-rod is free to move forward into the guideway to be operated upon in the descent of the driver-rod, the remainder of the tacks being separated from the guideway and supported by the gate until the end of the driver-rod has again descended below the chute, closing the guideway and preventing the entry therein of another tack. After the driver-rod has risen and the gate has become closed

the proper positioning of the tack which is left outside of the gate is assured by means of a device which may be called the "kicker-in," which is adapted to engage and move the said tack into the guideway, the said kicker-in also cooperating with the driver-rod and being adapted to operate upon the tack just after the end of the said driver-rod has passed the chute in its upward movement and has left the guideway open for the reception of the tack. Conversely, the said kicker-in is moved out of the path of the driver-rod as the latter descends.

It is to be understood that the terms "above," "below," "upward," "downward," &c., are used with a view to the vertical position of the tack-driver shown in the drawings, which is the usual position in which the tool is operated, it being obvious, however, that the tool may be caused to operate in any position desired, it being practicable, for example, to drive a tack horizontally or even upward.

Figure 1 is a side elevation of a hand tack-driver embodying the invention, one of the side members of the tack-feed chute being removed. Fig. 2 is a vertical section of the same on the line x^2 of Fig. 1, looking toward the left; and Fig. 3, a sectional detail on the x^3 of Fig. 2.

The driver-rod a is vertically movable in a guideway b , adapted to receive tacks one at a time from a chute or raceway c , which may be previously loaded by means of any suitable or usual tack-loading device. (Not herein shown.) The said driver-rod a is shown as connected with an enlarged plunger a^2 , contained in a similar guideway b^2 , the said guideways being formed in the frame B , and the plunger a^2 is normally pressed upward to the position shown in dotted lines, Fig. 1, by means of a light spring a^3 , interposed between a shoulder b^3 in the guideway b^2 and a head or enlargement a^4 , formed on the said plunger a^2 , which is extended upward through the frame to be operated upon by the external hammer d . The said hammer d is shown as pivoted at d^2 upon an arm or projection B^2 from the frame B , and in order to increase the force of the blow or to render the hammer operative while the device is in any position, it is shown as provided with springs d^3 , connected at one end to the arm B^2 or any suitable portion of the frame and at the other end to the said hammer, the said springs being shown as connected to an arm d^4 , extending upward above the hammer, for the purpose of obtaining the best spring action. To automatically operate the said hammer, the frame B is provided with a handle portion e , shown as a vertically-movable sleeve mounted on the main portion of said frame and adapted to be automatically connected to and disconnected from the hammer to produce a movement thereof upon its pivot to its operative position and to permit the operation thereof. As herein shown, the said handle

e is provided with a spring-latch e^2 , connected at e^3 with a guide-rod e^4 , pivotally connected at e^5 to the said sleeve or an arm or projection e^6 thereof. The said guide-rod e^4 is engaged by a movable guiding-support d^5 in the end of the hammer-lever, so that as the said sleeve e moves upward the latch e^2 will be properly guided to engage a projection d^6 upon the hammer-lever, so that in the downward movement of the sleeve e the said hammer will be rocked upon its pivot. In the upward movement of the sleeve e , therefore, the spring-latch e^2 automatically connects with the hammer-lever, and in the downward movement thereof the hammer is carried to its operative position or "set," as shown in dotted lines, Fig. 1, and as it reaches such position the latch is engaged by a pin or projection d^7 , and thereby tripped or thrown off of the projection d^6 , freeing the hammer and allowing the same to strike a blow, the force of which is augmented by the action of the springs d^3 .

To use the device, therefore, the attendant or operator simply grasps the handle or sleeve e , and in carrying the tack-driver to its operative position it is obvious that the relative upward movement of said handle is caused by the actual downward movement of the rest of the device, owing to its weight, so that when the tip b^4 of the main frame, which is at the end of the guideway b , is placed over the point where it is desired to drive the tack the remainder of the operation consists only in forcing downward the said sleeve, which first lifts and then releases the hammer and drives the tack which is then in the guideway b below the driving-rod a .

To insure the presence of a tack in the guideway b at the time of operating the hammer and to prevent the possibility of there being more than one tack present at a time, the column of tacks in the chute c is controlled by appliances the arrangement and operation of which form a feature of the present invention.

As herein shown, the end of the chute c is provided with a gate f , movable transversely across the same, there being just sufficient space between the said gate and the side of the driver-rod, when the said driver-rod is down, as shown in Fig. 3, to contain a single tack, the remaining tacks in the column being prevented from entering by the presence of the said gate. The said gate f is adapted to be closed, as by a spring f^2 , which operates upon a pivoted bar f^3 , to which the said gate is secured, the said bar being adapted to be moved to open the gate by means of a cam projection f^5 , adapted to cooperate with the driver-rod a , so that the descent of the said driver-rod will result in the opening of the said gate, which will then be automatically closed after the driver-rod rises.

The gate-controlling device, shown as consisting of the cam f^5 , above described, is so arranged with relation to the driver-rod that

the gate will not be opened until the said driver-rod has moved to a position to prevent a tack from entering the guideway *b*, the said cam *f*⁵ being shown as adapted to extend into
 5 said guideway below the chute *c*, so that the gate will not be opened until the end of the driver-rod has passed wholly beyond the said chute. When, therefore, the device is in its
 10 normal condition—that is to say, with the sleeve down and disconnected from the hammer and the hammer itself held down by its springs upon the end of the plunger *a*²—the said gate will be opened, as shown, and the last tack of the column of tacks will lie adjacent to and in engagement with the side of
 15 the driver-rod *a*.

In the operation of the device the sleeve or handle *e* becomes connected in its movement in one direction, as hereinbefore described,
 20 with the hammer, and the said hammer will be lifted by the movement of the sleeve in the other direction, so that the driver-rod will rise owing to the stress of its spring *a*³, and as soon as the end of said driver-rod passes beyond the cam *f*⁵ the gate *f* will be closed and
 25 will separate the last tack of the column from those above it, it being impossible, therefore, for another tack to enter the guideway until after the said driver-rod has descended so as
 30 to again open the gate.

To insure the passage of the tack which is adjacent to the hammer into the guideway below the said hammer, the tool is herein shown as provided with a device for positively
 35 engaging the said tack and pushing it into the guideway *b*, the said device or “kicker-in,” as it may be called, comprising a toe or projection *g*, having an inclined surface *g*², adapted to engage the side of the tack after
 40 the driver has passed upward beyond the chute *c* and push the said tack into the guideway *b*. The said kicker-in is also controlled by the driver-rod *a* and is moved out of the path of said driver just as the latter descends,
 45 this being accomplished, as shown, by providing, in conjunction with said kicker-in, a cam projection *g*³, which extends into the guideway *b* just above the chute *c*. The said kicker-in is normally pressed inward by
 50 means of a spring-arm *g*⁴, to which it is connected, and will obviously operate as soon as the driver-rod *a* rises above the cam projection *g*³, the said projection being just above the chute, so that the kicker-in operates as soon as the driver-rod is withdrawn
 55 from the path of the tack next to be driven. Obviously as the driver-rod descends on being struck by the hammer it will engage the cam projection *g*³ and move the kicker-in out
 60 of the way and drive the tack then in the guideway, the remaining tacks being controlled by the gate *f*, which is not opened until the driver-rod has passed wholly below the chute.

65 It is not intended to limit the invention to the specific construction herein shown and

described, since modifications may obviously be made therein.

I claim—

1. In a hand tack-driver, the combination 70 with a driver-rod adapted to cooperate with a tack to be driven, of a pivotally-supported hammer for said rod, and an actuating device adapted by a continuous movement in one direction to automatically set and release 75 said hammer to drive the tack, substantially as described.

2. In a hand tack-driver, the combination with the driver-rod, of a guideway for said driver-rod formed in a suitable frame or casing, the end of the said driver-rod projecting beyond the said casing, an external hammer connected with said casing and adapted to strike the end of the said rod to drive the tack, and an actuating device adapted by 85 a continuous movement in one direction to set and release said hammer, substantially as described.

3. In a hand tack-driver, the combination with the guideway, adapted to receive tacks 90 one by one, of a driver-rod longitudinally movable in said guideway, a sleeve surrounding said guideway and longitudinally movable with relation thereto, a hammer pivotally supported above said guideway and adapted to strike the said driver-rod, a latch 95 connected with said sleeve and adapted during the movement thereof in one direction to engage the said hammer whereby a movement thereof in the opposite direction will carry 100 the hammer to its operative position, and means for automatically disengaging said latch to permit the hammer to operate, substantially as described.

4. In a tack-driver, the combination with 105 the driver-rod, of a guideway for said driver-rod, a raceway or feed-chute for the tacks extending toward said guideway, a gate normally extending transversely across said raceway and yieldingly held in such position as 110 by a spring, and a projection directly connected with said gate and extending into said guideway beyond the said chute in the path of said driver-rod whereby the said gate is opened by the cooperation of said driver-rod 115 with said projection after the end of the said driver-rod has passed the said chute in its operative movement, and is closed by the action of its spring before the end of the driver-rod has reached the chute in the inoperative 120 movement of said rod, substantially as described.

5. In a tack-driver, the combination with the guideway *b*, of the driver-rod *a* longitudinally movable therein, the feed-chute *c* 125 opening into said guideway, the gate *f* mounted on the pivoted bar *f*³ and extending transversely across said feed-chute, and the projection *f*⁵ from said bar extending into said guideway below the said feed-chute and adapted to be engaged and operated by the driver-rod, substantially as described. 130

6. In a tack-driver, the combination with
the driver-rod and guideway therefor, of a
feed-chute or raceway communicating with
said guideway, a gate for controlling the tacks
5 in said raceway, an actuating-cam for said
gate extending into said guideway below the
said raceway and adapted to be operated upon
by the driver to open the gate, a "kicker-in"
for positioning a tack in said guideway, and
10 a cam projection from said "kicker-in" ex-
tending into the said guideway above the said
chute, said cam projection being adapted to

be operated upon by the driver to move the
said "kicker-in" out of the way during the
descent of said driver, substantially as de- 15
scribed.

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

JAMES H. FERGUSON.

Witnesses:

H. J. LIVERMORE,
JAS. J. MALONEY.