

(No Model.)

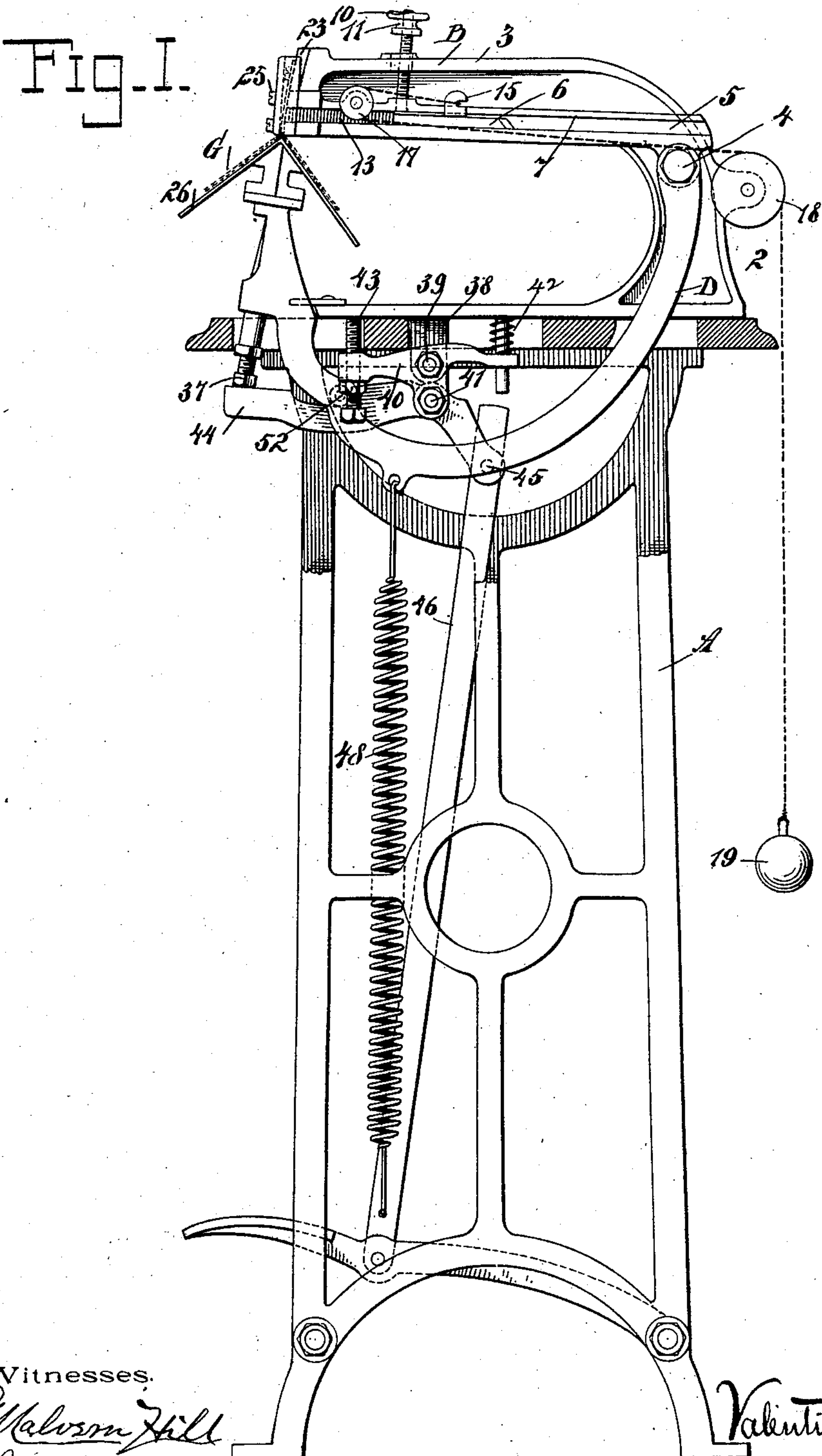
3 Sheets—Sheet 1.

V. ZWISSLER.

STAPLE DRIVING AND CLINCHING MACHINE.

No. 603,438.

Patented May 3, 1898.



Witnesses.

Malcolm Hill
J. A. Linaberg

Inventor.

Valentine Zwissler

By Gadd-Davis
Attorney.

(No Model.)

3 Sheets—Sheet 2.

V. ZWISSLER.
STAPLE DRIVING AND CLINCHING MACHINE.

No. 603,438.

Patented May 3, 1898.

Fig. 2.

Fig. 3.

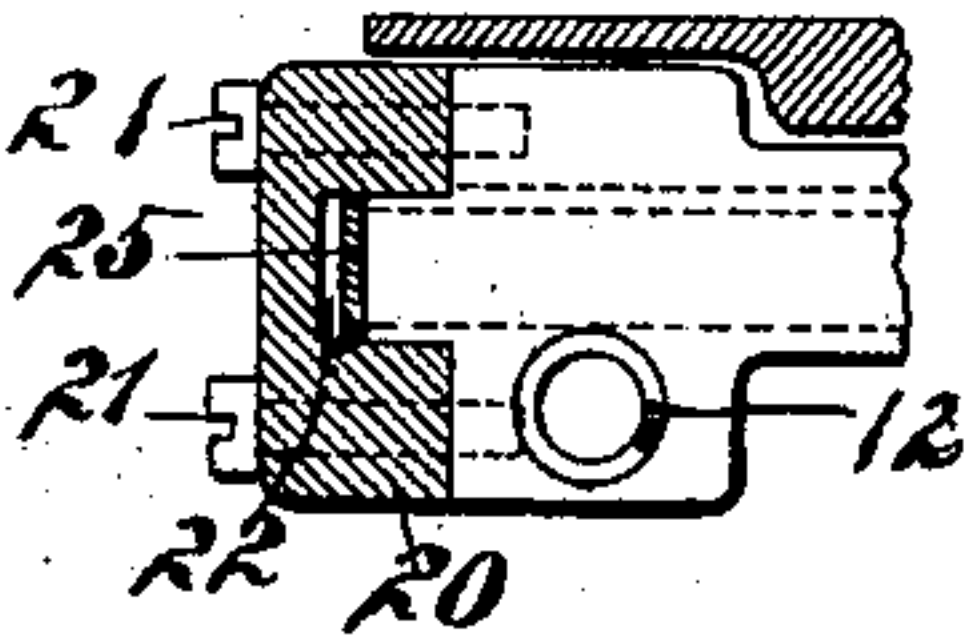
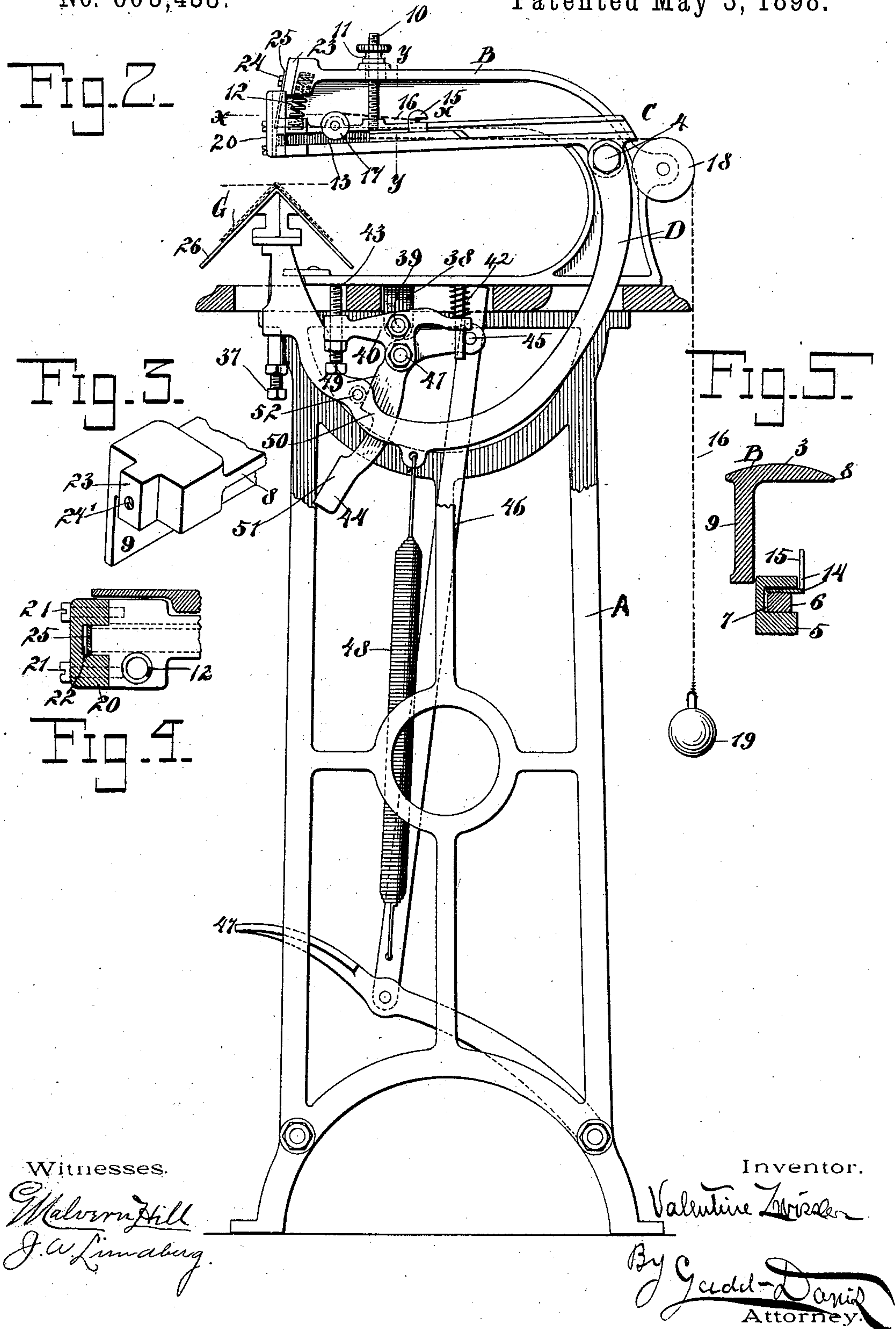
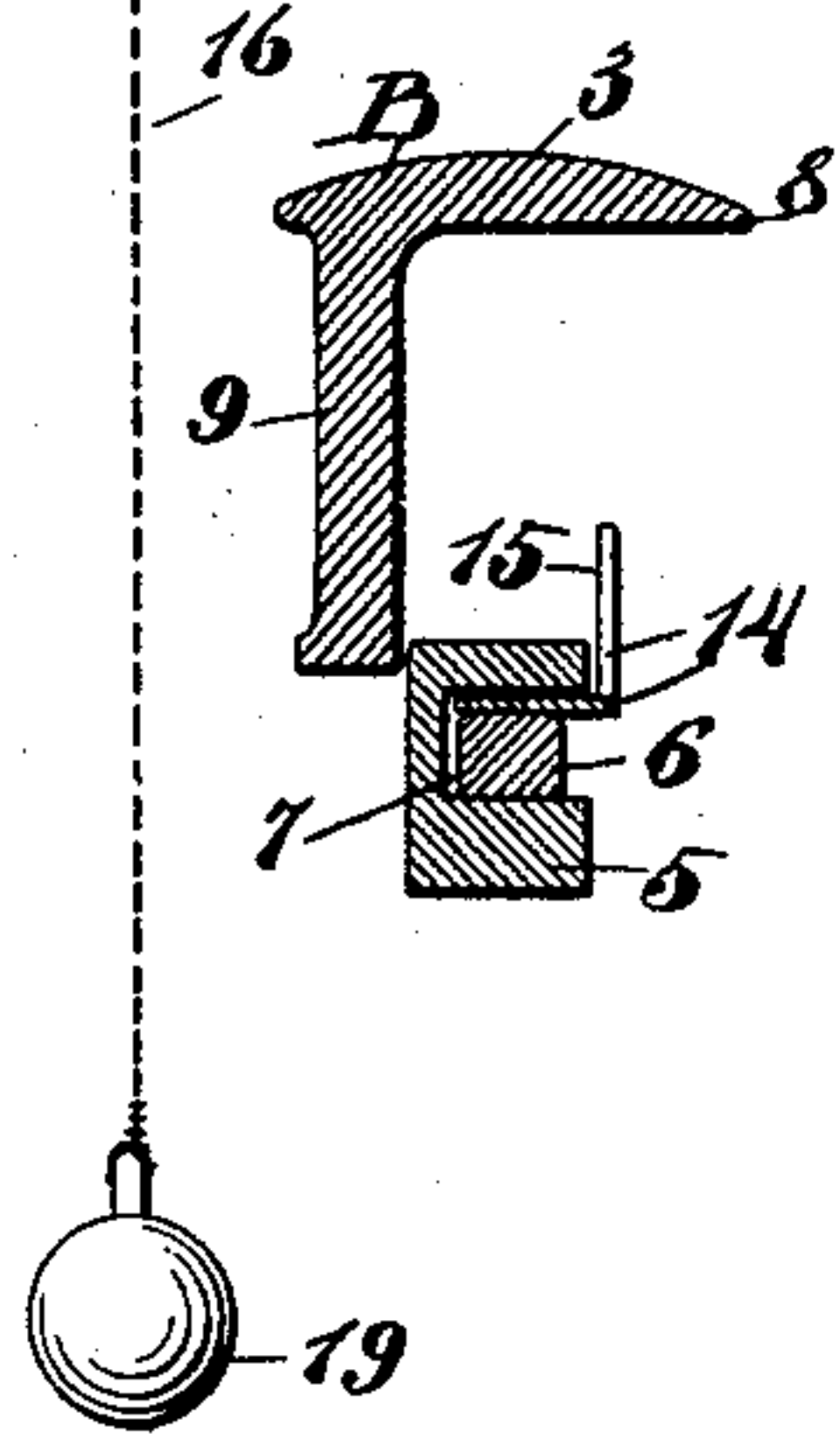


Fig. 4.

Fig. 5.



Witnesses.

Malvern Hill
J. A. Limburg

Inventor.

Valentine Zwissler

By *Geordie Davis*
Attorney.

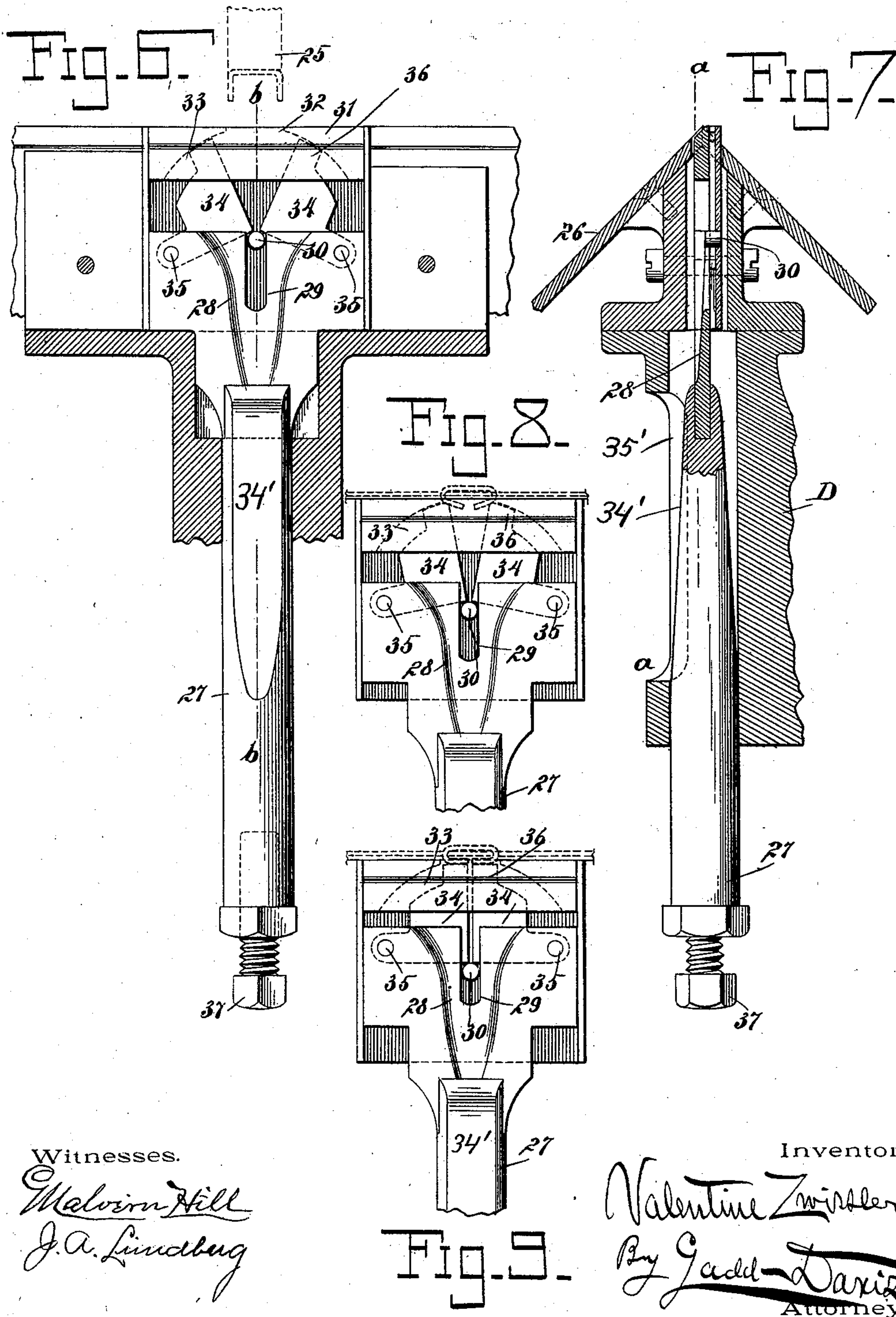
(No Model.)

3 Sheets—Sheet 3.

V. ZWISSLER.
STAPLE DRIVING AND CLINCHING MACHINE.

No. 603,438.

Patented May 3, 1898.



Witnesses.

Malvorn Hill
J. A. Lindberg

Inventor.

Valentine Zwißler
By Gadd Davis
Attorney.

UNITED STATES PATENT OFFICE.

VALENTINE ZWISSLER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
SAMUEL J. YARGER, OF SAME PLACE.

STAPLE DRIVING AND CLENCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,438, dated May 3, 1898.

Application filed September 10, 1897. Serial No. 651,174. (No model.)

To all whom it may concern:

Be it known that I, VALENTINE ZWISSLER, a citizen of the United States, residing in the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Inserting and Clenching Metallic Staples, of which the following is a specification, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of machines which are used for the binding together of books or pamphlets, and more particularly to that class of such machines where a series of the staples to be forced through and clenched as a binding-staple for the book are contained in a suitable magazine and are automatically fed forward one by one and inserted in the book.

This invention consists, in substance, of a suitable supporting base and frame, a magazine for holding the staples, means for automatically feeding the same forward into position for insertion, an upwardly-moving table for carrying the pamphlet to be secured together by the staples, means for forcing the staples through the book, means for clenching the staples after being inserted in the same, and means for regulating the movement of the table and the staple-clenching device, although it is not to be understood that the invention is limited to a device necessarily comprising at once all of the devices or mechanisms before mentioned, for the invention consists in certain various combinations or arrangements of devices and parts and the construction of certain devices and parts, all substantially as will be hereinafter more fully described, set forth, and claimed.

Referring to the drawings, Figure 1 is a side view of my improved staple inserting and clenching machine, partially in section, with the parts in the upward or operating position, showing the position of the parts at the moment of the clenching of the staples. Fig. 2 is a like view of said machine with the parts in the lower position ready to be operated. Fig. 3 is a view in perspective of the end of the driving-arm of the machine to which is

secured the staple-driving plunger, and Fig. 4 is a top plan view of the forward portion of Fig. 2 on the line *xx* thereof. Fig. 5 is a view in section of the top portion of Fig. 2 on the line *yy*, looking to the right. Fig. 6 is a front view, partially in section, of the staple-clenching mechanism before the staple is driven, taken on the line *aa* of Fig. 7; and Fig. 7 is a view of such clenching mechanism in central vertical section on the line *bb* of Fig. 6. Fig. 8 is a front view, similar to that shown in Fig. 6, of the upper portion of such mechanism in the position it assumes when the ends of the staple are being driven inward; and Fig. 9 is a view, similar to Fig. 8, of the position assumed by such mechanism when the staple is being fully clenched or driven home to its ultimate position.

Referring to the drawings, the reference-letter A designates a suitable framework of any desired form, upon the top of which is a suitable bar B, preferably of the shape shown, composed of an upright standard 2 and an outwardly-extending upper bar 3.

Pivoted to the bar B, preferably at the point marked 4, upon a suitable pivot-pin or shaft is the staple-carrying magazine-bar C, which is so mounted upon such pivot-pin that the outer end thereof will move freely up and down. The staple-carrying magazine-bar C is provided with a staple-carrying bar 6, which is located in the slot 7 of such bar C. The bar B at its upper part 3, at all except its end portion, is in cross-section of substantially the form shown in Fig. 5, and at its extreme outer end is of the form shown in perspective in Fig. 3, it being at this portion composed of an upper bar 8 and a lower bar 9, extending downward at right angles to the bar 8.

Secured at the lower end to the staple-carrying magazine-bar C, preferably at about the point shown in Figs. 1 and 2, is a screw 10, which passes up through a suitable hole provided therefor in the top portion 8 of the upper part 3 of the bar B, and upon the screw 10 is screwed a suitable thumb-screw 11, by which the downward movement of the magazine-bar C is limited or by which it may be locked in the extreme upward position to close the staple-magazine, such bar C being nor-

mally forced downward to the full length allowed by the thumb-nut 11 by a suitable spring 12, located at the ends in sockets 12'.

The staples 13 desired to be used in the machine are straddled or placed upon the staple-bar 6 and are normally forced forward to the extreme end of such staple-bar by the staple-feeding bar 14, which is provided with the upwardly-extending hook 15, to which is secured a chain 16, passing over wheels 17 and 18, to the end of which chain 16 is secured a weight 19, by the operation of which weight the staples are normally forced forward into working position, or such staple-feeding bar 15 may be forced forward so as to feed the staples by a suitable spring or any other desired manner.

Firmly screwed upon the extreme outer free end of the magazine-bar C is the face-plate 20, which is preferably in cross-section of the form shown in Fig. 4 and is secured to such magazine-bar C by suitable screws 21. This face-plate 20 is provided with a central slot 22, which is of such width as to receive and hold therein by frictional contact the staples 13 when they are pushed into the slot thereof one by one by the action of the staple-feeding bar 14. The end of the bar B is provided with a stud 23, which is adapted to move freely up and down in the slot 22, and to the outer end of this stud is secured by a screw 24 a staple-driver or driving plunger or plate 25, the screw 24 passing for that purpose into a hole 24'.

Pivotally supported at any suitable point upon the frame, preferably upon the pivot 4, is a table-supporting bar D, preferably of the curved form shown, which is provided at its outer free end with a suitable table 26 for receiving the articles to be bound, which may be of the saddle form shown or of flat or any other desired form.

Carried by the bar D and located immediately beneath the staple feeding and driving mechanism heretofore described and the table 26 is the staple-clenching mechanism. (Shown in detail in Figs. 6 to 9, inclusive.) Such staple-clenching mechanism consists, preferably, of a bar 27, a slide-plate 28, having the slot 29, adapted to receive the pin 30, secured in the table-supporting bar D, a top plate 31, having a staple-receiving slot 32, and the circular slideways 33, and two staple-clenching plates 34, pivoted to the plate 28 at 35, preferably of the shape shown and having the upwardly-extending point 36, and the bar 27, provided at the bottom with a set-screw 37 for regulating the force of the clenching movement of the staple-clenching plates. The bar 27 is preferably provided on one side with a flattened portion 34', registering with the slot or opening 35' in the end of the bar D, the purpose of which flattened portion and slot or opening is to permit of the escape down by said bar and out through said slot of waste or mutilated staples which may be acted upon by the clenching-plates.

Pivotally secured to the frame below the

table, preferably upon a suitable lug 38, by means of a pivot-pin 39, is a lever 40, adapted to receive the pivot-pin 41, and this lever 40 has its rearward end normally pressed downward by a suitable spring 42, and has its position regulated by means of a suitable set-screw 43. Pivoted upon the pivot 41 is a lever 44, pivoted at the rear end, by means of a pivot-pin 45, to the connecting-rod 46, which rod 46 is secured at its upper end to the table-bearing bar D. The lever 44 is provided at its forward end and on its upper side with a slide-face, ending in an abrupt entrant hollow 50, beyond which is a hammer-face 51, and secured to the table-bearing bar D at the point shown is a pivot-pin 52, preferably provided with a suitable friction-wheel, mounted thereon as shown in dotted lines in Figs. 1 and 2.

The operation of the device is as follows: The parts being in the position shown in Fig. 2, the operator places the book desired to be stapled upon the saddle-table 26, as shown at G in dotted lines, and presses downward with his foot upon the treadle 47, which draws down the connecting-rod 46, and thus forces upward the outer or hammer-faced end 51 of the lever 44. The table 26 is gradually raised by this movement by the action of the roller and pin 52 upon the slide-face 49 of such lever 44, and as it is gradually raised the book is caught and compressed between the outer end of the magazine-bar C and such table 26, and as the downward motion of the treadle 47, and consequently the upward motion of the table 26, continues, one of the staples 13 being always in position in the slot 22, beneath the staple-driving plunger or driver 25, and, as the upward movement continues, the staple remains stationary and is by the action of the driver or plunger 25, as the magazine-bar C continues its upward movement, driven through the book or pamphlet and is by the action of the plates 34, as they are by this upward movement forced into the position shown in Fig. 8, driven inward in its points, as shown, and the moment that the pin 52 reaches the end of the slide-face 49 and drops into the entrant hollow 50 the force which is exerted upon the treadle 47 causes the hammer-face 51 of the lever 44 to deliver a hammer-like blow upon the set-screw 37, which forces the staple-clenching plates, which are then in the position shown in dotted lines in Fig. 8, forcibly upward, so as to clench such staples into the position shown in dotted lines in Fig. 9. Inasmuch, however, as the particular clenching mechanism shown herein is not broadly new and forms no part of this invention, it is not deemed necessary to more fully explain the mechanism thereof, as the same is well known in the art.

It will be seen by an examination of the drawings that the force exerted in the final clenching of the staple by the hammer-face 51 of the lever 44 may be regulated by a proper setting of the set-screw 37 and that the distance of the travel of the table is reg-

ulated by a proper manipulation of the set-screw 43, by which the pivot 41, supported in the lever 40, is moved from front to rear of the frame.

5 The principal object of my invention is to provide an easier and more efficient method of binding books or pamphlets by assisting in the feeding to the binding-table of the papers or pamphlets to be bound whether the
10 table be of the saddle form shown in full lines or of the straight form shown in dotted lines in Fig. 2, which may be used with equal facility and effect, for it will be seen that when the operator places the pamphlet or
15 book to be bound upon the table 26 the upward movement of such table facilitates the smoothing and drawing into proper position of such book or pamphlet and therefore also the insertion of the staples, and it is evi-
20 dent that this upward movement will therefore enable the operator with practice to bind a much larger number of books in a given time than with the stationary tables now in use.

25 The moving table, in combination with staple-clenching mechanism actuated by the continued movement of the mechanism which moves the table after the table has ceased to move, is, so far as I am aware, broadly new,
30 and I do not intend to limit myself to the exact form of construction shown or to any particular form of the whole or any of the parts of said device or to the particular manner of combining the same together to bring about
35 the desired result, as it is evident that many modifications in the construction, combination, and arrangement of the several parts of my improved staple inserting and clenching machine may be made without departing from
40 the scope of my invention.

Having now particularly described my said invention, its construction and operation, what I claim, and desire to secure by Letters Patent, is—

45 1. In a machine of the class described, the combination with a staple-driving mechanism, of an upwardly-moving table, mechanism for raising the table, a staple-clenching mechanism located below the table, and means
50 for actuating the staple-clenching mechanism after the table has ceased its upward movement actuated by the continued movement of the table-raising mechanism, substantially as shown and described.

55 2. In a machine of the class described, the combination with a moving or vibrating magazine for holding the staples, of a stationary staple-driver or plunger, an upwardly moving or vibrating table, mechanism for raising the
60 table, and means for clenching the protruding ends of the staples after they are driven actuated by the continued movement of the table-raising mechanism, the driving of the staples being accomplished by the upward
65 movement of the table and the clenching by positively-actuated clenching mechanism, substantially as shown and described.

3. In a machine of the class described, the combination with a magazine or means for holding the staples to be driven, of a staple-
70 driver or plunger, a moving or vibrating table, mechanism for moving the table, and means for clenching the staples actuated by the continued movement of the table-moving mechanism, substantially as shown and
75 described.

4. In a machine of the class described, the combination with a magazine or means for holding the staples to be driven, of a staple-
80 driver or plunger, a moving or vibrating table, mechanism for moving the table, and means for clenching the staples after being driven located below and carried by the table and actuated by the continued movement of the table-raising mechanism, the driving
85 being accomplished upon the upward movement of the table, and the clenching by positive action of the clenching means or mechanism, substantially as shown and described.

5. In a machine of the class described, the
90 combination with a suitable supporting-frame having a bar B secured thereto, of a pivoted staple-carrying magazine-bar C, a pivoted bar D, carrying a table, and means carried by the bar D, for clenching the staples, substantially
95 as shown and described.

6. In a machine of the class described, the combination with a suitable supporting-frame, of a staple-carrying magazine-bar C and a
100 pivoted bar D carrying means for clenching the staples after being driven, the magazine-bar C and the bar D being pivoted upon the same point, substantially as shown and described.

7. In a machine of the class described, the
105 combination with a suitable supporting-frame, of a bar B provided at the free end with a staple-driving plunger 25, a staple-carrying magazine-bar C pivoted to the bar B and provided with a slotted face-plate 20, means for
110 normally forcing the free end of the magazine-bar C away from the free end of the bar B, a bar D pivoted to the bar B and provided with clenching mechanism for clenching the staples after being driven, and means for
115 moving the bar D so as to drive the staples by the forcing upward by the bar D of the bar C and for clenching the staples after they are driven, substantially as shown and described.
120

8. In a device of the class described, the combination with a suitable supporting-frame, of a staple-carrying magazine-bar C pivoted thereto, and a screw 10 for limiting the downward movement of the bar C, substantially
125 as shown and described.

9. In a device of the class described, the combination with a bar B provided with a staple-driving plunger 25, of a staple-carrying
130 magazine-bar C, a pivoted bar D, a table and a staple-clenching mechanism carried by the bar D, means for forcing the bar D upward so as to compress the book or pamphlet to be bound between the table and the end of the

bar C, and for continuing the upward movement of the table so as to force the free end of the bar C upward and drive the staple, and means for clenching the staples when driven,

5 substantially as shown and described.

10 10. In a device of the class described, the combination with a bar B provided with a staple-driving plunger 25, of a pivoted bar D, a table and a staple-clenching mechanism carried by the bar D, a pin 52 in the bar D, a lever 44 having the slide-face 49, the entrant hollow 50, and hammer-face 51, and means for actuating the lever 44, substantially as shown and described and for the purposes set
15 forth.

20 11. In a device of the class described, the combination of a bar B having a staple-driving plunger 25, of a pivoted staple-carrying magazine or bar C, a pivoted bar D, a table and a staple-clenching mechanism carried by the bar D, an adjustable lever 40 and a lever 44 pivoted to the lever 40, substantially as shown and described and for the purposes set forth.

25 12. In a device of the class described, the combination of a bar B provided with a staple-driving plunger 25, a pivoted bar D, a table and a staple-clenching mechanism carried by the bar D, means for clenching the
30 staples after being driven, and means for reg-

ulating the point of the upward movement of the table at which the staples are clenched, substantially as shown and described and for the purposes set forth.

13. In a machine of the class described, the 35 combination with a stationary staple-driving plunger, of a moving staple-carrying magazine-bar, a moving table and staple-clenching mechanism, and means for locking the moving staple-carrying magazine-bar and staple- 40 driving plunger in the extreme clenching position so as to prevent accidental feeding of the staples, substantially as shown and described.

14. In a device of the class described, the 45 combination with a stationary driving-plunger, of a moving staple-carrying device or magazine, a bar D, a bar 27 reciprocating in the bar D and provided with a flattened portion 34' registering with a slot or opening 35' 50 in the end of the bar D, substantially as shown and described and for the purposes set forth.

Signed in the city and county of New York, in the State of New York, this 31st day of 55 July, A. D. 1897.

VALENTINE ZWISSLER.

Witnesses:

FRANK H. MASSEY,
C. L. DAVIS.