

(No Model.)

I. W. HEYSINGER.

MACHINE FOR INSERTING AND CLINCHING STAPLES.

No. 274,941.

Patented Apr. 3, 1883.

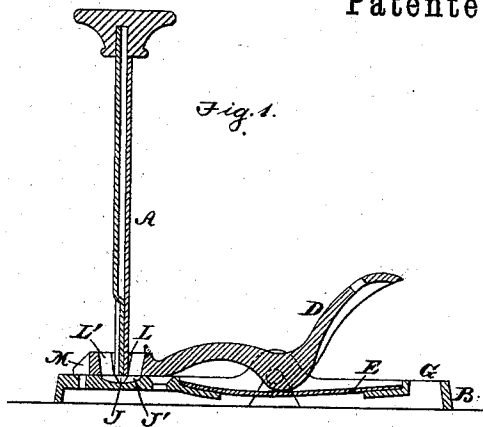


Fig. 1.

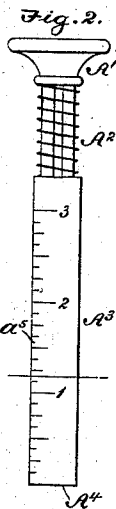


Fig. 2.

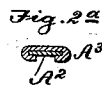


Fig. 2a

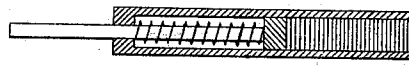


Fig. 3.

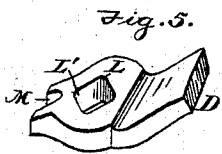


Fig. 5.

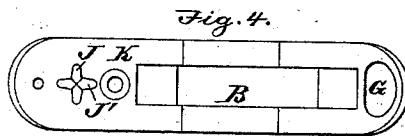


Fig. 4.

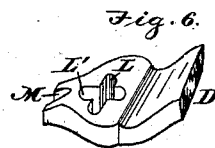


Fig. 6.

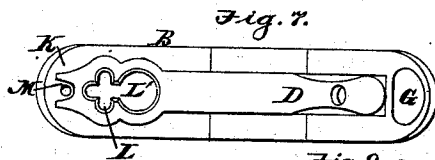


Fig. 7.

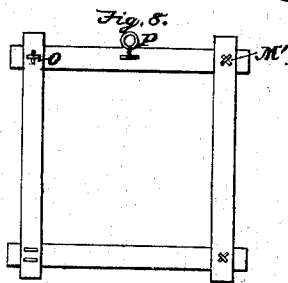


Fig. 8.

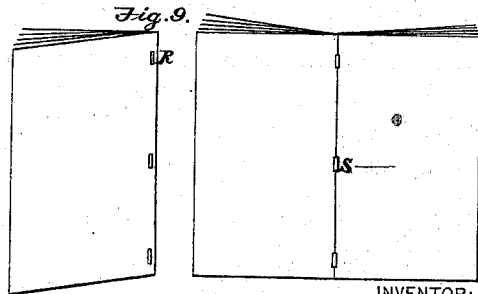


Fig. 9.

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UNITED STATES PATENT OFFICE.

ISAAC W. HEYSINGER, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR INSERTING AND CLINCHING STAPLES.

SPECIFICATION forming part of Letters Patent No. 274,941, dated April 3, 1883.

Application filed March 15, 1882. (No model.) Patented in England April 14, 1880, No. 1,535.

To all whom it may concern:

Be it known that I, ISAAC W. HEYSINGER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Inserting and Clinching Metallic Staples, of which the following is a full, clear, and exact description, reference being had to the drawings accompanying and forming part of this specification.

This invention relates to a new and useful improvement in machines for driving and clinching staples in papers, cloths, leather, wood, and other similar articles; and it consists in a modification of and improvement upon my staple-driving machine, patented to me April 13, 1880, under the title of "Improvement in devices for filing and binding papers," the official number of said patent being 226,402, although there are parts of the present invention which bear no reference to and are not dependent upon anything shown, described, or claimed in the foregoing Letters Patent No. 226,402.

The improvements which form the subject of this present application are adapted to all forms of staple driving and clinching tools, either hand or power, and may be applied thereto, if desired.

This invention and the mode of operation thereof are partly illustrated in Figures 1, 2, 8, 9, and 10 of my Letters Patent of Great Britain, No. 1,535, dated April 14, 1880, and granted to William Robert Lake, as trustee for me, the inventor thereof.

In my invention, as exhibited in the drawings hereto annexed, the case which holds the driving-plunger, and into which the staple is inserted preparatory to being driven, is readily removable from and replaceable in the machine for the more convenient insertion of a staple in said case; and the driving mechanism is adapted to be used independently of the clinching-anvil for driving staples into wood-work when no clinching is desired, as in upholstering furniture, putting down carpets, &c.; and one of the improvements over the form shown in my previous Letters Patent of the United States, above described, consists in the construction and mutual arrangement of the detachable staple-driver and its case and clinching-anvil, whereby said case may be

so placed as to drive a staple, either crosswise or lengthwise of the base-plate of the machine, although other improvements are hereinafter shown and described as a part of my invention.

In the accompanying drawings, Figure 1 is a longitudinal section vertically through the middle of the tool, the staple-driver being in position for driving a staple crosswise of the base-plate of the machine. Fig. 2 shows the flat front of the staple-driver, the same being in the proper position, when inserted in the machine, for driving a staple lengthwise of the base-plate. Fig. 2^a is a cross-section of the lower part of the staple-driver, showing the driver and its case, the latter having the open groove for the projection of the loop of a suspension-ring staple, as hereinafter described. Fig. 3 shows a staple-driver provided with a laterally-projecting handle, adapted to be used with this machine. Fig. 4 shows the clinching portion of the base-plate or anvil, over and above which is the guide-arm, shown at Figs. 5, 6, and 7; and Figs. 8 and 9 show various positions in which staples and suspension-rings may be inserted and clinched by the use of this machine.

It will be seen by reference to Fig. 1 that the clinching device consists of a base-plate, B, over which is a guide-arm, pivoted or otherwise attached to the base-plate, so as to vibrate thereupon, and preferably provided with a thumb-lever at the rear end thereof, by means of which the slotted guide-arm may be raised from the anvil K.

In my previously-described Letters Patent of the United States No. 226,402 I employed a spring in conjunction with a heel behind the pivoted bearing of the movable arm, so that when pressure was applied to the thumb-lever of the guide-arm, which also acted as a spring paper-clamp, the heel would pass under the pivoted bearing, and the guide-arm would be locked in an open position, from which it could be closed with a snap by pressure applied to the slotted end of the said guide-arm, and thus drive the papers down upon a pin provided therefor in the base part of the tool. In the present invention, however, I do not employ a pin or analogous device, and the guide-arm does not act as a spring paper-clamp, nor is it locked in an open position in the manner de-

scribed in my previous Letters Patent aforesaid; but the arm is made to vibrate with reference to the clinching-anvil, and is adjustable, so as to adapt it to receive papers of varying bulk or thickness and guide the open end of the removable staple-driver accurately against the upper side of the same.

It is obvious that instead of pivoting the guide-arm to the base-plate B, as shown in Fig. 1, it may be otherwise attached, provided it be arranged to have its slotted end freely open and close with reference to the anvil K; and in certain cases, also, the thumb-lever may be dispensed with, as is shown in Figs. 4, 5, 6, and 7.

B is the base-plate, over which is the slotted guide-arm D, the object of which is to guide the detachable case A³ down over the clinching-grooves J J' of the anvil K of the base-plate B.

A³ is the case in which the driving-plunger A² moves. When desired, the plunger may be retracted in its case by a spring, as shown at Fig. 2; but the spring is not essential, as the plunger A² may be readily retracted by the hand, which, after a little practice, is done without thought, and this construction gives greater compactness to the tool when boxed for the trade, and is also cheaper to make.

In the face of the anvil K are shown two transverse clinching-grooves, which cross each other, and have sloped or concaved ends. These cruciform grooves allow the driver, when guided by the collar or socket L L', to bring the staple down over either one or the other, so as to clinch the legs of the same either crosswise or lengthwise, according to the position of the driver above. These grooves may be indifferently of any of the forms of clinching-grooves in common use, and they not only serve to bring the legs together, which would also be accomplished by a mere dish-shaped depression, and which has been used for such purposes, but also prevent lateral displacement, and bring them together upon the same line as that of the crown of the staple, whereby much better finished work can be done than when the grooves are dispensed with, the clinch also being stronger.

The case A³, in its external form, is made of such shape as to prevent the involuntary rotation thereof in the collar, slot, or socket L L' of the guiding-arm D, which collar is made large enough and of such internal form as will allow the case A³ to be easily inserted and withdrawn, and it will be seen that the case may be so inserted as to drive and clinch a staple either crosswise or lengthwise of the base-plate, as may be desired.

The staple-driver which I commonly use is that shown and described in my Letters Patent of the United States and Great Britain above referred to; but any of the forms of portable staple-driver in common use may be employed instead, provided it be made of such external form as to permit the insertion of the nose thereof in the collar, slot, or socket of the guide-

arm, either crosswise or lengthwise of the base-plate, and at the same time prevent the involuntary rotation of the same therein.

To insert a staple in the case A³, it is most convenient to remove said case from the collar, slot, or socket L L'. The staple is inserted with its legs pointing downward, its shoulders and legs fitting into the sides of the grooved case A³. The staple should be made to either fit accurately in the case A³, or else with its legs slightly diverging from each other, so that when inserted in said grooves the legs of the staples will have a slight elastic outward pressure against the sides of the grooves of the case A³ to prevent the staple from falling out. The staple being thus inserted in the case A³, the article to be penetrated (if the staple is to be clinched) is placed upon the anvil. Said case is then inserted, either crosswise or lengthwise of the base-plate B, in the guiding collar, slot, or socket L L', and said case, fitting somewhat loosely therein, will by its own weight drop down upon the article to be stapled. Then a single stroke with the hand upon the head A' of the plunger will drive the staple-legs through the papers, card or other fabric, and completely clinch them down upon the lower side of the same. The detachable driver may be used separately when desired.

The tool is also adapted to drive and clinch wire or other staples having a projecting loop or ring at one side of the crown of the staple. For this purpose I usually, when the loop is of considerable size, enlarge the rear portion of the collar, slot, or socket L L', so as to enable the loop to pass readily through the guide-arm, and thus project from the edge of a show-card or pamphlet laid beneath. It is manifest that an opening or enlargement upon the front side of the collar, slot, or socket L L' would not accomplish the same purpose, as in that case the loop of the suspension-ring would lie down upon the body or face of the show-card, and would not project from the edge thereof, making the device worthless for this purpose.

When the case of the driver is cylindrical in form it is advisable to have a projecting nipple or two or more vertical grooves to fit corresponding grooves or a nipple upon the inner surface of the collar, slot, or socket L L', so that the case A³ may be inserted in the guiding-collar in the proper position and retained therein while the staple is being driven. It is manifest that said grooves should occupy such positions that when the nipple is in either the one or the other of the grooves adapted thereto the driving-blade of the plunger will coincide with one or the other, as may be desired, of the clinching-grooves in the face of the anvil. It is plain that other means for guiding said case in the collar, slot, or socket L L', equivalent to those herein described, may be adopted without departing from the principles of my invention, and hence I do not strictly limit myself to said means above described.

I am aware of the invention described and claimed in my Letters Patent of April 13, 1880,

in which, in connection with a detachable staple-driver, a clinching-base is employed, provided with a spring-clamping arm to compress the papers down upon the clinching-anvil, or a pin provided for that purpose, and to stand open when the arm is raised by the passage of a heel upon the clamping-arm beneath the bearing thereof, as shown and described in said Letters Patent, and I do not herein claim such guide-arm when used as a paper-clamp actuated or operating as described and claimed in said Letters Patent, but disclaim the same as a part of this invention.

I am also aware that clinching-anvils having crossed clinching-grooves have been employed in connection with staple-drivers not capable of being rotated upon their axes, in which four staple-grooves and a four-feathered plunger were employed, by means of which a four-pronged staple or two two-pronged staples could be inserted and clinched upon transverse lines; but my present invention does not relate to the construction or operation of such mechanism, nor do I make any claim thereto.

Having now described my invention and the operation thereof, what I claim is—

1. In a machine for inserting and clinching staples, the base-plate B, having the anvil K, provided with two transverse clinching-grooves, J J', and over said anvil the guide-arm D, provided with guiding-collar L L', in combination with a detachable staple-driver having staple-case A³ and plunger A², the whole constructed to operate substantially as and for the purpose described.

2. In a machine for inserting and clinching staples, the combination of a clinching-anvil provided with a clinching-recess which is adapted to receive a staple upon different transverse lines, and over it a guide-arm, together with a detachable staple-driver, which may be guided to its place over said recess by said guide-arm, and inserted so as to drive and clinch a staple either lengthwise or crosswise of the clinching-base, substantially as described.

3. In combination with the recessed base B, having over it the guide-arm D, provided with guiding-collar L L', the rear portion of which is enlarged so as to allow the passage of the loop of a suspension-ring staple, a detachable staple-driver having an opening in one side of the case thereof, so as to allow a suspension-ring staple to be inserted in said case, the loop of the said staple projecting laterally

from the said opening, the whole arranged to operate substantially as and for the purpose described.

4. In combination with a fixed anvil provided with a clinching-recess which is adapted to receive a staple when driven upon different transverse lines, and over it a guide-arm, a staple-driver which may be withdrawn and partly rotated upon its axis preparatory to driving a second staple, substantially as described.

5. In combination with a base, B, having a recessed clinching-anvil, K, and over said anvil a vibrating guide-arm vertically adjustable in relation to said anvil, and provided with a guideway for the reception of the open end of a detachable staple-driver, a thumb-lever which by being depressed will cause the elevation of said guide-arm, substantially as and for the purposes herein set forth.

6. In a machine for driving staples, the combination of a recessed clinching-anvil and vibrating guide-arm, which may be raised or depressed with reference to said clinching-anvil to accommodate varying thicknesses of paper, and provided with a guiding-collar near the free end of said guide-arm, with a staple-driver having a case, A³, driving-plunger A², and hand-knob A', the whole being adapted to be withdrawn from the said guiding-collar for charging with a staple and reinserted therein for driving and clinching the same, substantially as herein shown and described.

7. A staple-clinching device consisting of a base provided with a recessed clinching-anvil which is adapted to receive a staple upon different transverse lines, and projecting over said recess a vibrating guide-arm having near its free extremity a guideway for the reception of the open end of a detachable staple-driver, the whole being adapted to drive and clinch staples upon different transverse lines, substantially as described.

8. In a device for inserting and clinching metallic staples, the combination of a recessed clinching-anvil, a vibrating guide-arm provided with a thumb-lever at its rear end, and a staple-driver which is adapted to operate with said guide-arm against said clinching-recess, substantially as described.

ISAAC W. HEYSINGER.

Witnesses:

P. O. DONNELL,
F. L. ROEPKE.