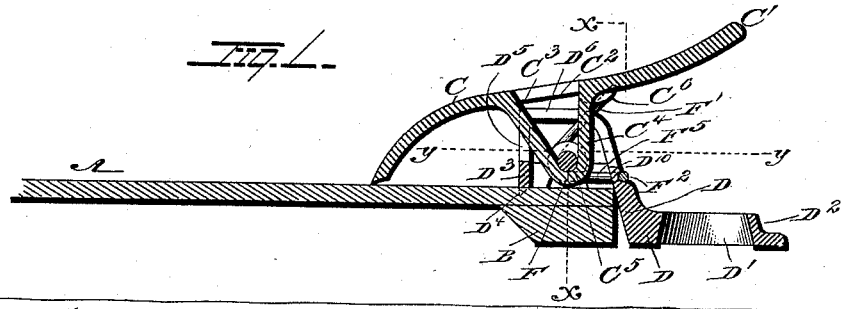
(No Model.)

I. W. HEYSINGER.

SPRING CLAMPING DEVICE.

No. 423,054. Patented Mar. 11, 1890.

Fig. 1.



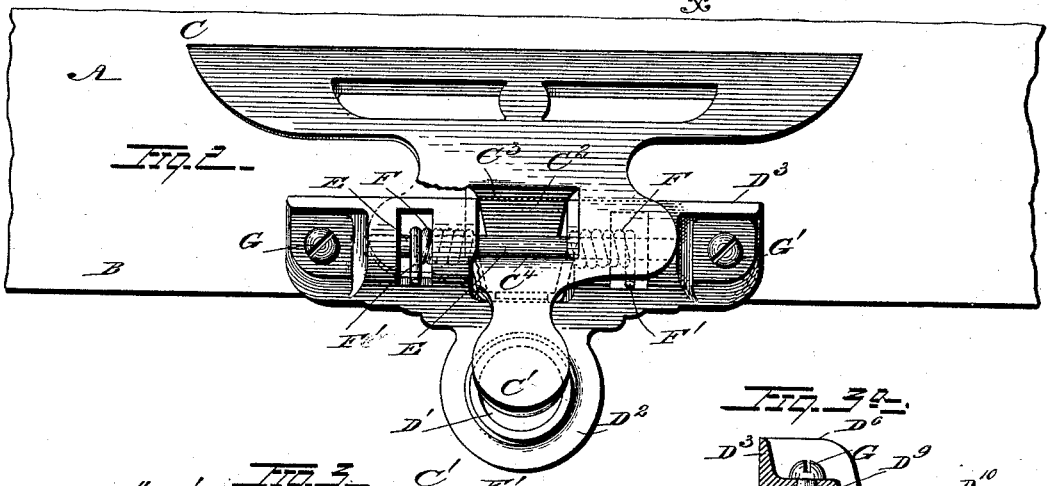


Fig. 2.

Fig. 3.

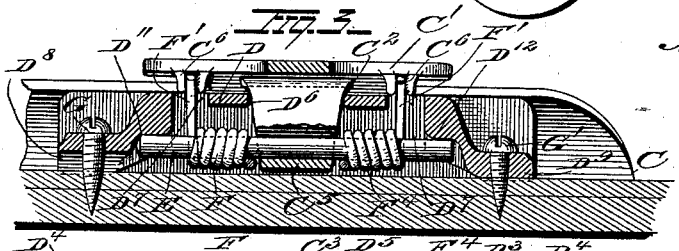


Fig. 3a.

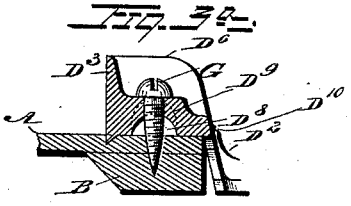


Fig. 4.

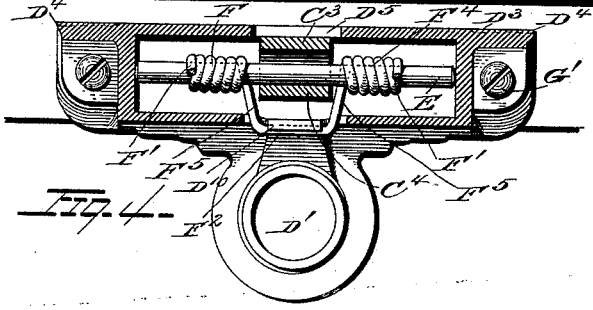


Fig. 6.

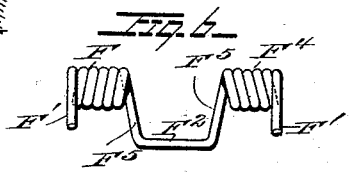


Fig. 7.

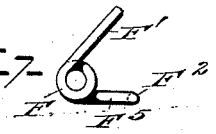
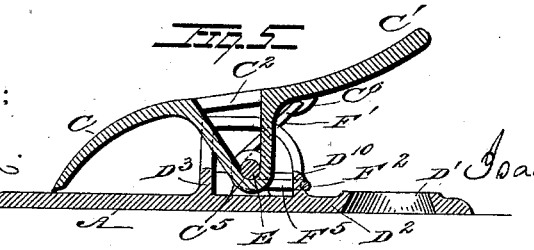


Fig. 5.



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UNITED STATES PATENT OFFICE.

ISAAC W. HEYSINGER, OF PHILADELPHIA, PENNSYLVANIA.

SPRING CLAMPING DEVICE.

SPECIFICATION forming part of Letters Patent No. 423,054, dated March 11, 1890.

Application filed July 27, 1889. Serial No. 318,885. (No model.)

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 made a certain new and useful Improvement in Spring Clamping Devices, of which the following is a full, clear, and exact description, reference being had to the drawings which accompany and form a part of this specification, in which—

Figure 1 is a vertical section through the middle from front to rear of a clamping device embodying my invention, in which the same is mounted upon a base-board adapted to receive and hold large sheets of paper or the like. Fig. 2 is a view from above of Fig. 1, partially broken away to show the working parts beneath, the upper parts indicated in part in dotted outline. Fig. 3 is a vertical cross-section along the dotted line X X of Fig. 1. Fig. 3ª is a similar section through the end screw G of Fig. 2. Fig. 4 is a horizontal section taken on line Y Y of Fig. 1. Fig. 5 is a view similar to Fig. 1, in which the base is of metal, forming an integral part of the clamping device proper. Fig. 6 is a view from above of the spring detached, and Fig. 7 is an end view of the same.

The lettering in all the figures is uniform.

My invention relates to the construction of a spring clamping device adapted to be permanently attached to a board or the like for holding sheets of paper, or, if desired, to be made without such extended board, in which the parts shall be more readily put together with less fitting or hand-work than is usual in such devices, and in which a better clamp is secured, and one in which the sides of the clamping-jaws are self-adjusting to papers or the like of different bulk or thickness at the opposite sides.

Referring to the drawings, A, Figs. 1 and 2, is a board of wood, pasteboard, or the like large enough to support a sheet of paper. To the upper free margin is attached on the under side a re-enforcing strip B, which is adapted to receive the screws G and G′ and support the clamping device. When the board A is made very thick or in the form shown in Fig. 5, this re-enforce B may be dispensed with. Above this strip B, midway between the sides of the board A, is attached by the screws G and G′, passing through the ears D^8 and D^9, Fig. 3, the spring-support D, to which the lever C is pivoted. This support D is made, preferably, of cast metal, hollow underneath, where it rests upon the upper surface of A, and provided in rear with a backwardly and downwardly projecting piece, (shown in Figs. 1, 2, and 4,) which terminates in an opening D′, by means of which the device is adapted to be suspended from a nail when not in use, and which rests upon the table when in use by the point D^2 and prevents downward pressure upon the thumb-lever C′ from tilting up the opposite end of A. The form and method of attachment are best shown in Fig. 3ª. As seen in Fig. 3, this hollow spring-support D, which is open beneath, is provided above with two lateral slots D^7 D^7 and a central slot D^6. As shown in Figs. 1 and 4, the slot D^6 is continued downward in front, at D^5, in the face of the upright D^3. This upright D^3 forms a straight vertical wall, against which the sheets of paper engage at their forward margins when thrust beneath the clamping-jaw and form an even regular pile or series. To prevent sheets from passing beneath the under margin of D^3, (the spring F tending to raise the forward edge of D from the board A,) two indenting-points D^4 D^4 are formed upon the lower edge of D^3, near the sides thereof, and these by the insertion of the screws G and G′ are forced into the surface of the board A, closing this opening so that the papers cannot enter between the support D^3 and the board A. The slot D^5 D^6 is carried backward until terminated in rear by the rib D^{10} in the middle thereof, as shown in Figs. 3ª and 4. The rib D^{10} forms a support for the spring, as will be hereinafter described. At each end the support D is provided with a perforated ear D^8 and D^9, through which the screws G and G′ pass and secure the clamp to the board A. The ear D^9 is flat beneath, (see Figs. 3 and 4;) but the opposite ear D^8 is provided with a longitudinal groove, as shown in Figs. 3 and 3ª, which groove extends through the space occupied by the screw-shank G and into the hollow part occupied by the spring F. The screw-head G, as seen, is higher than the opposite one G′ on account of this groove beneath. The groove D^8 (see

Figs. 3 and 3ª) is provided with a shoulder D^{11}, forming a socket for the end of the spring-supporting pin E when the same has been inserted. This pin E, being inserted through the groove of the ear D^8 before the support D is attached to the board A, passes across, and when the front end rests in the socket D^{12}, Fig. 3, the rear end will occupy the socket D^{11}.

The thumb-lever C′, provided with clamping-jaws C, turned downward to form a broad-faced clamping-edge upon the top surface of the board A, is shown in Figs. 1 and 2. It is preferably formed of a cast-metal plate. In the middle, at C^2, is an opening in the upper surface having downwardly-extended walls C^3 C^4 in front and rear, closed beneath by the V-shaped bearing C^5, Fig. 1, the sides being open. When the thumb-lever rests over the support D, the downward loop or extension C^2 C^3 C^5 enters the slot D^6, and the apex C^5 rests against or nearly against the upper surface of the board A. The pin E, inserted as above described, will pass through the V-shaped bearing of the loop C^5 and prevent the lever C from being lifted, while the same may be vibrated upon the pin E as a pivot.

The spring is shown detached in Figs. 6 and 7. It consists of a double-coiled spring F and F^4, the coils of which are reverse to each other, having the rearwardly and upwardly projecting wires F′ and F′ at the ends, and the rearward loop formed by the sides F^5 F^5 and the rear cross-piece F^2, the whole being formed from a single piece of wire. In use the ends F′ F′ are seated, as shown in Figs. 1, 3, and 5, in notches on the under side of the lever C, in rear of the pivoted bearing, while the loop F^2 is hooked over the rib D^{10} at the rear end of the slot D^6. (See Figs. 1 and 3.) The coils F F^4 surround the pin E, while the V-shaped bearing of the lever C occupies the space between the coils F and F^4. As the projecting wires F′ F′ bear against the sides of the thumb-lever C while the support is at C^5 in the middle, it is obvious that the broad clamping-jaw C will be held down at the sides by these spring-wires F′ F′, and that if either side be raised the corresponding spring-wire will operate to bring it down again, irrespective of the operation of the other spring-wire upon the opposite side of C.

To put the device together, the spring F is first inserted from beneath into the spring-support D, the wires F′ F′ projecting upward through the slots D^7 D^7, and the loop F^5 and F^2 of the spring forced upward until, by the yielding of the wires F′ F′ against the front of the slots D^7 D^7, the part of the spring F^2 escapes above the rib D^{10} and, springing backward, hooks itself thereupon. The V-shaped loop of the lever C is now inserted downward through the slot D^6, and the rear of the thumb-lever C′ raised so that the front side C^3 of the V-shaped bearing occupies the slot D^5 in the wall D^3, the clamping-jaw C hanging over and downward in front. The wires F′ F′ are placed in the notches C^6 C^6, and the pin E inserted by its rounded point through the groove in the ear D^8, enters the coil F of the spring, passes through it, then passes through the V-shaped bearing of the loop of the thumb-lever C^5, then through the opposite coil F^4, and finally seats itself in the socket D^{12}. The rear end of the pin passes through the groove of the ear D^8 and seats itself in its socket D^{11}, the wires F′ F′ of the spring F acting to draw the ends of the pin E into place. The thumb-lever C′, being now brought down, raises the jaw C, and, the clamp being placed at the edge of the board A over the re-enforce B, it is securely screwed down thereto by the screws G and G′, which draw the points D^4 D^4 into the surface of A and give the clamping-jaw C a firm spring-bearing against the upper side of A, the tilting backward of the thumb-lever in screwing down the screws throwing the spring F under tension.

In Fig. 5 the invention is shown as applied to a simple cast-metal base, the parts A and D being formed integral with each other. In this form somewhat more force is required to insert the pin E, as the spring F is under greater tension, this being the only difference, except such as is obvious from the construction thereof.

I use my improved spring clamping device for all purposes for which such articles are employed, and I do not rigidly confine myself to the specific construction herein shown and described, but modify the same, as would be done by any mechanic skilled in the art, to suit special requirements without departing from the principles of my invention as herein shown, described, and claimed.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination with the board A B, the support D, open beneath, having rearward and downward extension D^2 on a level with the under surface of B, integral with said support D, spring F, pin E, clamping-jaw C, loop C^5, pivoted in said support D, and thumb-lever C′, extended to the rear and operating above said rearward extension D^2, substantially as and for the purposes described.

2. In combination with hollow support D, open beneath and having central slot D^6, the clamping-jaw C, and thumb-lever C′, and downwardly-projecting loop forming V-shaped bearing beneath the level thereof, said bearing adapted to be inserted from above in said slot D^6, together with cross-pin E, inserted transversely along said support D from beneath, supported at the ends in said support D, and the said V-shaped bearing C^5, supported beneath said pin E, together with coiled spring F, surrounding said pin E, having one abutment against said thumb-lever and the other against said support D and opening, substantially as and for the purposes described.

3. In combination with the longitudinal

support D, hollow beneath and having central slot D^6 and lateral slots D^7 D^7, the spring F, having coils F and F^4, and interposed space formed by the bend F^5 F^2 F^5, and terminal wires F′ F′, and the pin E, supported at the ends thereof in sockets D^{11} D^{12} and surrounded by the coils F and F^4 of said spring, together with the clamping-jaw C, having thumb-lever C′ and downwardly-extended loop C^2 C^3 C^5 open at the sides thereof, said loop inserted in said slot D^6 and said pin E passed through the same, the wires F′ F′ of said spring passed outwardly through said slots D^7 D^7 and supported by spring tension against the under surface of C′ at C^6 C^6, and the cross-piece F^2 of said spring supported on lip D^{10} of said support, substantially as described.

4. In combination with the hollow longitudinal support D, open beneath and having slot D^6 and sockets D^{11} and D^{12}, opening downwardly, and groove D^8 beneath, opening at one end into socket D^{11}, the spring F, having double reversed coils F and F^4, projecting terminal wires F′ F′, central bend F^5 F^2 F^5, and the clamping-jaw C, having opening C^2 in its upper surface, and downward loop C^3 C^4 C^5, open transversely, said loop adapted to occupy said slot D^6, together with pin E, extended through said loop and having the ends thereof supported in said sockets D^{11} D^{12}, the said pin adapted to be inserted or removed through said groove D^8, and said coils F and F^4 of said spring surrounding said pin E when in place, the free ends F′ F′ supported in notches C^6 C^6 of said clamping-jaw in rear of said loop, and said bend F^2 of said spring supported by the said fixed support D, substantially as described.

5. In a spring clamping device, a pivoted clamping-plate C, having opening C^2 in its upper surface and a downwardly-extended loop formed by the front and rear extension C^3 and C^4, joined together at the bottom to form the pivoted bearing C^5, open at the sides thereof, in combination with a spring-support D, a transverse pin E, supported at the ends in said support D, the middle thereof extended through said loop C^3 C^4 of said clamping-plate C and forming a pivoted joint in said bearing C^5, and a spring adapted to operate against said clamping-plate, substantially as described.

6. In combination with clamping-jaw C, having thumb-lever C′, downwardly-extended loop C^3 C^4 C^5, closed in front and in rear and open at the sides thereof, and notches C^6 C^6, the spring-support D, pin E, supported therein, spring F, having opposite coils F F^4, free ends F′ F′, and backward loop F^5 F^2 F^5, surrounding said pin E, said loop F^2 sustained by said support D, and said free ends F′ F′ adapted to engage with said notches C^6 C^6 in rear of said pivoted bearing C^5 and compress said clamping-jaw C against said base-plate A, substantially as described.

7. As an article of manufacture, a spring clamping device consisting of base A, spring and pin support D, attached rigidly thereto, said support concave beneath and having slot D^6, rib D^{10}, and open sockets D^{11} D^{12}, formed integral therewith, pin E, the ends thereof adapted to be supported against upward strain in said sockets D^{11} D^{12}, the middle thereof extended across and beneath said slot D^6, clamping-plate above having clamping-jaw C, thumb-lever C′, opening C^2, loop C^3 C^4 C^5, open at the sides thereof beneath said plate C, and notches C^6 C^6, formed integral therewith, together with spring having opposite coils F F^4, surrounding said pin E between the ends and middle thereof, central loop F^5 F^2 F^5, extended backward, the cross part F^2, sustained upon said rib D^{10}, the free terminal wires F′ F′, projecting backward and upward at the sides thereof, adapted to engage in said notches D^6 D^6, said clamping-plate C pivoted to said support D by the insertion of said pin E transversely through said bearing C^5 thereof, the whole so constructed as to compress the said clamping-jaw C against said plate A by the action of the spring terminals F′ F′ and to permit independent vertical motion of the said sides of the said clamping-jaw by independent action of one or the other of said spring-wires F′ F′, substantially as described.

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Witnesses:
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