May 8, 1928. 1,668,912

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SPRING CLAMP

Filed Feb. 16, 1927

Fig. 1.

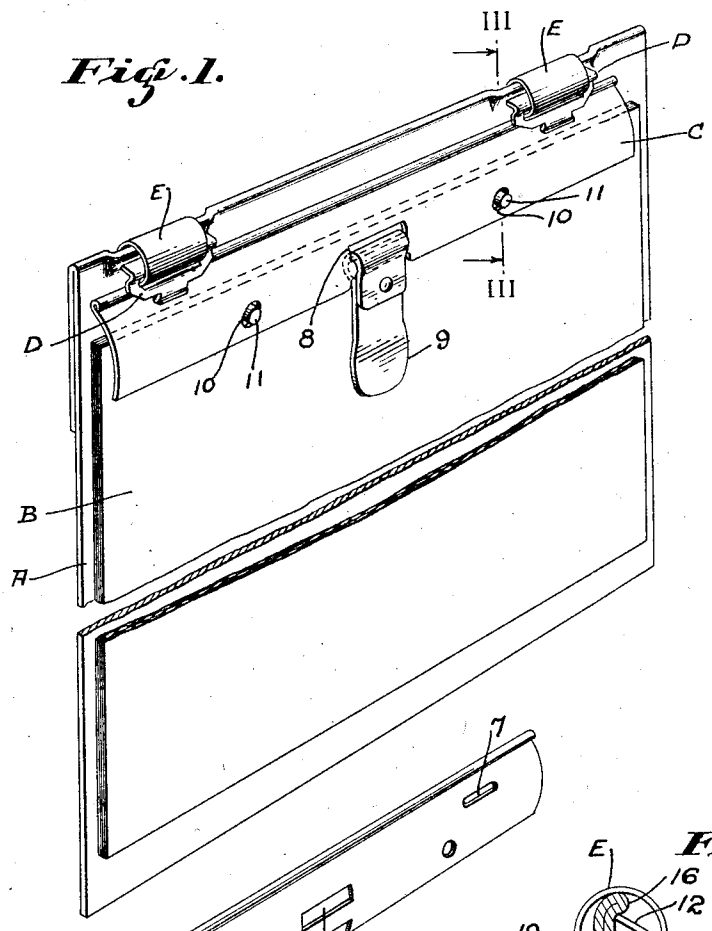


Fig. 2

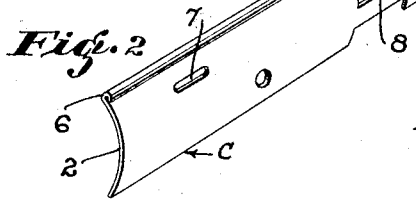


Fig. 4.

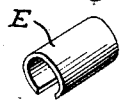


Fig. 3.

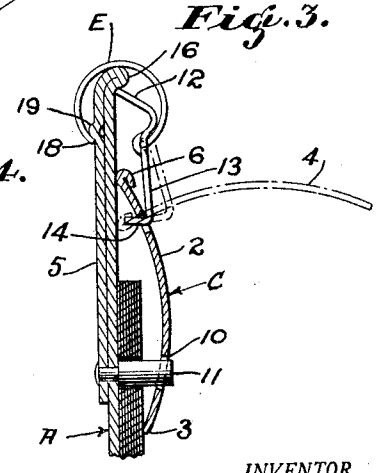
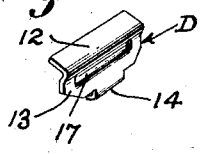


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SPRING CLAMP.

Application filed February 16, 1927. Serial No. 168,569.

This invention relates to a spring clamping device which is particularly applicable to pad holders, filing devices and the like.

The object of the present invention is to generally improve and simplify the construction and operation of devices of the character described, to provide a spring clamping device which is comparatively flat so as to consume a minimum of space when applied to a filing device or the like, to provide a spring clamping device in which the clamping member has a wide range of movement permitting it to clamp or grip a single sheet of paper as well as a stack of sheets and further to provide a spring whereby pressure is applied to the clamping member in such a manner that the clamping member may swing through a wide range of movement without stressing or unduly flexing the spring. One form which the invention may assume is shown by way of illustration in the accompanying drawings in which

Fig. 1 is a perspective view of a pad holder showing the application of the spring clamping device,

Fig. 2 is a perspective view of the clamp,

Fig. 3 is an enlarged vertical section taken on line III—III, Fig. 1,

Fig. 4 is a perspective view of one of the clamping springs,

Fig. 5 is a perspective view of the intermediate clamping member.

Referring to the drawings in detail and particularly Fig. 1, A indicates in general a plate or holder adapted to receive one or more sheets of paper such as indicated at B. The holder is in this instance provided with the spring clamping device which forms the subject matter of the present application.

The spring clamping device consists of a main clamping member C, a pair of intermediate clamping members D and a pair of clamping springs E. The main clamping member C is best illustrated in Figs. 1, 2 and 3. It consists of an elongated plate which is slightly curved or concaved in cross-section as shown at 2. The outer edge 3 serves as a clamping or gripping member while the inner edge serves as a fulcrum point about which the clamping plate is swung when moved to release position as indicated by dotted lines at 4 in Fig. 3. The holder A may be constructed of any suitable material but is in this instance shown as constructed of sheet metal, the upper end of the holder being folded back on itself as indicated at 5 to form a reinforced head section. The inner edge of the clamping plate C when moved from clamping position to release position slides along the surface or reinforced head portion of the holder A and has a tendency to frictionally grip and scratch or wear the surface of the head of the holder due to the spring pressure applied through means of the springs E and the intermediate clamping members D. To reduce the frictional and scraping action, the inner edge of the clamping member is rounded and bent gack on itself as indicated at 6 thereby forming a rounded bearing or pivotal point about which the clamping member may swing with a minimum of effort. The clamping plate is otherwise provided with two slots 7 disposed at opposite ends thereof, the function of which will hereinafter be described and it is also slotted as indicated at 8 to receive a strap 9 whereby the clamping member may be swung from clamping to release position. The clamping plate may also be provided with a pair of round perforations 10 if pins or posts are employed as indicated at 11. This feature is, however, optional as the sheets of paper gripped by the clamp are securely held regardless of the posts 11.

The intermediate clamping members are best illustrated in Figs. 1, 3 and 5. Each consists of a foot section 12, a forwardly extending plate section 13 and the gripping tongue 14. The foot sections of the respective intermediate clamps engage the upper surface of the head of the holder and the gripping tongues 14 extend through the slotted portions 7 of the main clamp C. Raised shoulders 16 are formed rearwardly of the foot extensions 12 of the intermediate clamps and these shoulders secure the intermediate clamps against rearward movement or accidental release. The forwardly extending plate sections 13 of the intermediate clamps are recessed as indicated at 17 and these recesses receive the upper ends of the springs E, the recesses securing the springs against release and against lateral movement with relation to the intermediate clamps. The springs are otherwise extended over the upper end or head of the holder and engage the underside of the head as indicated at 18, shoulders 19 being formed on the rear surface to secure the lower ends of the springs against release.

Clamping devices of the character here

illustrated are subjected to considerable use particularly when applied to filing devices, i. e., to the extent that the main clamp C may be opened and closed numerous times each day. The efficiency of clamping devices of this character depends to a great extent upon the tension of the springs E and the efficiency of the springs in turn depends to a great extent upon the range of flexing movement to which they are subjected. One of the important features of the present invention is the interposition of the intermediate clamping members between the springs and the main clamping member C. This interposition of the intermediate clamping members permits a wide range of movement of the main clamping member as illustrated in Fig. 3, it reduces the range of movement of the intermediate clamping sections as illustrated by the dotted and full line position shown in Fig. 3 and it further reduces the range of movement of the spring E. In other words, the range of movement of the spring E during maximum movement of the main clamping member A is so small as to be almost unnoticeable. This brings about an ideal condition and long life of the spring E as the smaller the flexing movement of the spring, the greater its life and efficiency. By referring to Figs. 1 and 3, it will be noted that the general arrangement of the mechanism is such that a flat elongated clamping mechanism is obtained. This is of particular importance when the device is used for filing purposes as a minimum amount of space is required. The posts 11 together with the perforations 10 may be employed if desired, but it is obvious that they are not essential as the gripping action of the main clamp due to the spring pressure employed, is such that one or more sheets will be held with sufficient security.

While certain features of the present invention are more or less specifically described and indicated, we wish it understood that various changes may be resorted to within the scope of the appended claims; similarly, that the materials and finish of the several parts employed may be such as the manufacturer may dictate or varying conditions or uses may demand.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:—

1. A spring clamping device comprising a holder, a main clamping member mounted thereon, an intermediate clamping member supported by the holder at one end and resting on the main clamping plate at the opposite end, and a spring straddling one end of the holder, one end of the spring engaging the rear side of the holder and the opposite end engaging the intermediate clamping member and exerting a downward pressure on the intermediate clamping member and the main clamp.

2. A spring clamping device comprising a holder, a main clamping member mounted thereon, an intermediate clamping member supported by the holder at one end and resting on the main clamping plate at the opposite end, a spring straddling one end of the holder, one end of the spring engaging the rear side of the holder and the opposite end engaging the intermediate clamping member and exerting a downward pressure on the intermediate clamping member and the main clamp, and means for securing the main clamping member against endwise movement with relation to the intermediate clamping member.

3. A spring clamping device comprising a holder, a main clamping member mounted thereon, an intermediate clamping member supported by the holder at one end and resting on the main clamping plate at the opposite end, and a spring straddling one end of the holder, one end of the spring engaging the rear side of the holder and the opposite end engaging the intermediate clamping member and exerting a downward pressure on the intermediate clamping member and the main clamp, means for securing the main clamping member against endwise movement with relation to the intermediate clamping member, and means securing the intermediate clamping member against endwise movement with relation to the spring.

4. A spring clamping device comprising a holder, a main clamping member mounted thereon, an intermediate clamping member supported by the holder at one end and resting on the main clamping plate at the opposite end, a spring straddling one end of the holder, one end of the spring engaging the rear side of the holder and the opposite end engaging the intermediate clamping member and exerting a downward pressure on the intermediate clamping member and the main clamp, means for securing the main clamping member against endwise movement with relation to the intermediate clamping member, means for securing the intermediate clamping member against endwise movement with relation to the spring, and other means securing the intermediate clamping member against endwise movement with relation to the plate.

5. A spring clamping device comprising a holder, said holder having a pair of shoulders formed thereon, one on its front surface and one on its rear surface, a main clamping member supported by the holder, an intermediate clamping member having a foot-like extension engaging the shoulder on the front surface of the holder, said shoulder securing the intermediate clamping member against endwise movement on the holder, a projection on the opposite end of

the clamping member engaging the main clamping member, a substantially U-shaped spring straddling one end of the holder, one end of the spring engaging the rear surface of the holder and being maintained in engagement with the shoulder on the rear side of the holder and the other end of the spring engaging the intermediate clamping member at a point intermediate its ends and exerting a downward pressure on the intermediate clamping member and the main clamping member and means securing the main clamping member and the intermediate clamping member against endwise movement with relation to each other and the spring.

6. A spring clamping device comprising a holder, said holder having a pair of shoulders formed thereon, one on its front surface and one on its rear surface, a main clamping member supported by the holder, an intermediate clamping member having a foot-like extension engaging the shoulder on the front surface of the holder, said shoulder securing the intermediate clamping member against endwise movement on the holder, a projection on the opposite end of the clamping member engaging the main clamping member, a substantially U-shaped spring straddling one end of the holder, one end of the spring engaging the rear surface of the holder and being maintained in engagement with the shoulder on the rear side of the holder and the other end of the spring engaging the intermediate clamping member at a point intermediate its ends and exerting a downward pressure on the intermediate clamping member and the main clamping member and means securing the intermediate clamping member against endwise movement with relation to the spring and other means securing the main clamping member against endwise movement with relation to the intermediate clamping member.

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