No. 818,904. PATENTED APR. 24, 1906.

G. W. McGILL.

WIRE SPRING CLIP.

APPLICATION FILED AUG. 25, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

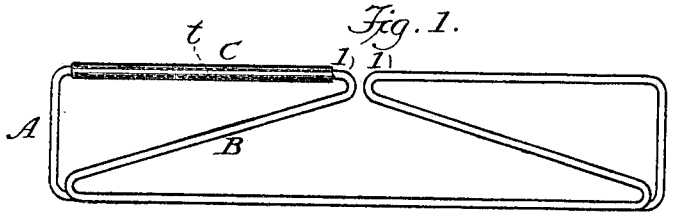


Fig. 2.

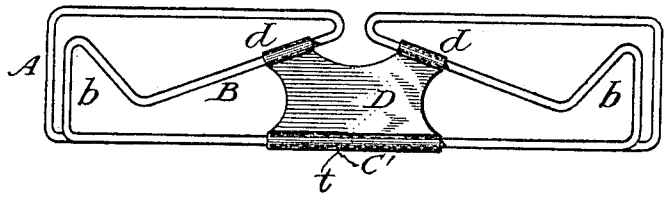


Fig. 3.

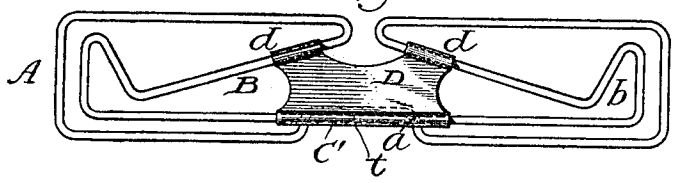


Fig. 4.

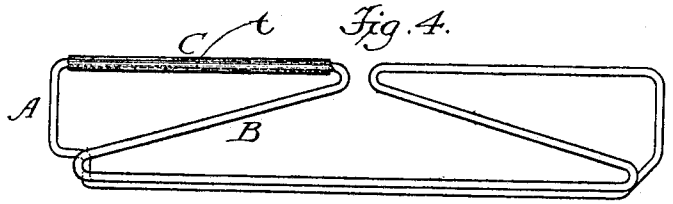
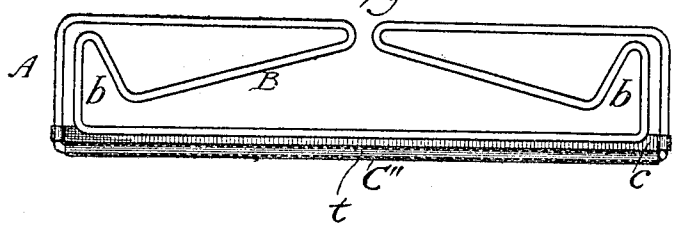


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 6.

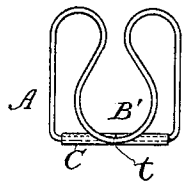


Fig. 7.

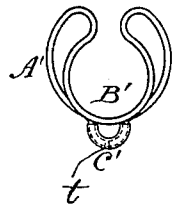


Fig. 8.

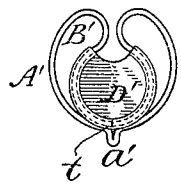


Fig. 9.

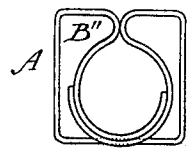
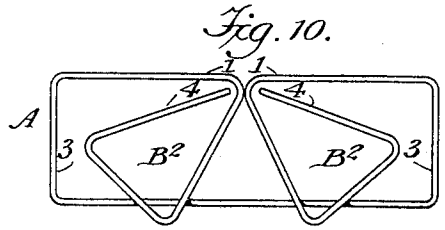


Fig. 10.



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UNITED STATES PATENT OFFICE.

GEORGE W. McGILL, OF RIVERDALE-ON-THE-HUDSON, NEW YORK.

WIRE SPRING-CLIP.

No. 818,904. Specification of Letters Patent. Patented April 24, 1906.

Application filed August 25, 1905. Serial No. 275,735.

To all whom it may concern:

Be it known that I, GEORGE W. McGILL, a citizen of the United States, and a resident of Riverdale-on-the-Hudson, in the county of New York and State of New York, have invented certain new and useful Improvements in Wire Spring-Clips, of which the following is a specification.

This invention relates to wire spring-clips, having for their object the holding together of loose sheets of paper, prints, and such like material, and provides an improvement on the class of clips patented to me May 8, 1900, and March 1, 1904, numbered 649,338 and 753,613, respectively, wherein the clip is fashioned from suitable spring-wire folded in manner to provide inner and outer spring clamping members merging into each other at their upper edges and at their opposite edges free to receive between them the material to be clipped.

In the patented clips the receiving edges or sides of the coacting clamping members are set in manner either to cross and normally bear against each other at some portion of their surfaces and over which they are not adapted to be sprung or they are set in manner to admit of the free edge of the lesser member being freely vibrated back and forth through the greater one and without any portion of the wire composing the free edge of either member coming in contact or bearing one against the other. In the clip construction as first above described the wires forming the outer edges of the clamping members are crossed in resilient spring-bearing one by the other and project one beyond the other to an extent to prevent their being sprung one over the other when it becomes desirable to reverse their position and set in restoring the spring resilience of the clip where lost through strain or usage. In the clip construction as second above described, the clamping members being fashioned and set to freely vibrate back and forth one through the other without bearing upon each other at any part, the material clipped when not of considerable bulk will be forced by the resilience of the smaller clamping member through the larger one and crushed and crumpled up therein.

My present improvement overcomes both these objections by the wires forming the outer edges of the clamping members being set in manner to have them bear wholly or in part against each other to support from both sides the material clipped between them and prevent its being crushed or crumpled in the clipping and to enable the parts in bearing to be sprung one over the other in reversing transversely their positions in the operation of restoring the spring resilience of the clip.

In the accompanying drawings, forming part of this specification, and in which like letters and numerals of reference indicate corresponding parts, there are illustrated some of many ways in which the improvement may be carried into effect, it being understood that the underlying principle thereof common to each may be embodied in other forms of the clip and still be within the scope of the invention.

In the drawings, Figures 1 to 10, inclusive, are views in elevation of ten forms of the clip differing more or less in general configuration, but all having embodied therein the improved features herein set forth and having the wire forming it folded into a plurality of clamping members differing in size, the greater member partly inclosing or forming a frame for the lesser and the latter disposed over the area of the greater and set in coacting spring-bearing with parts of its frame and adapted to be sprung transversely through such frame and to bear alternately from opposite transverse direction against either side of it.

In Figs. 1 to 5, inclusive, the wire forming the clip is shown folded in a manner to provide a greater or outer clamping member of rectangular oblong configuration and a lesser member of angular configuration with the top part of both members merging into each other near the vertical center or axis of both and the uninclosed parts of the lesser member set in resilient spring-bearing with portions of the frame of the greater and having the terminals of the wire forming the device brought together in alinement, as at *t*, and housed thereat by a metal tube.

In constructing the device as shown in Fig. 1 the wire from which it is fashioned may be first folded in its central part in manner to provide the lesser or angular member B and thence folded from the central top part of such member, as at 1 1, into the rectangular frame of the greater member A, with the base wire of both members in transverse spring-bearing and the ends of the wire set in abutting alinement in the top part of the member

A and housed and held together in that position in a tubular metal case C.

In constructing the device as shown in Fig. 2 the wire may be folded from its central part into the rectangular frame providing the greater clamping member A and thence folded inward and downward into the angular frame providing the lesser member B, which lesser member is provided with a metal plate D, spanning its central area and housing within the folded portions of its edges, as at *d d C'*, parts of the folds of the wire providing such lesser member, bracing such folds together in manner to secure to them a unison of movement and an increase of clamping force and also housing in the fold of its lower edge at C' the abutting ends of the wire composing the device. In the construction shown in this figure and in Figs. 3 and 5 the end portions of the lesser member B are provided with the supplemental angular loops *b b* to provide it increased clamping area or surfaces adjacent to the ends of the member A.

In Fig. 3 the construction and operation are substantially the same as in Fig. 2, the exception being that the central part of the base of the member B bears transversely against a raised section *a* of the base of the member A instead of the whole part of both bases being in transverse bearing, or nearly so.

In Fig. 4 the construction is substantially the same as that shown in Fig. 1, the exception being that the ends of the base of the member B bear transversely against a stepped corner at one end and its equivalent a slanting corner at the other end of the base of the member A instead of lengthwise against the base of that member.

In Fig. 5 the construction is substantially the same as that described in Fig. 2, the exception being that the ends of the wire forming the device are seated in the base of the member A, and the metal tube C'', housing the same, extends the full length of such base and is provided with a bracing plate or fin *c*, giving the base greater depth, with the ends of such fin encircling the lower part of the wires forming the ends of the member A, bracing that member, and the base of the member B is set to bear transversely against the fin extension of the base of the member A instead of against such base proper.

In the construction shown in Fig. 6 the clamping member B' is given a circular formation, with its lower part bearing transversely against the incased portion of the base of the clamping member A, wherein the ends of the wire are housed in the tubular case C.

In the construction shown in Fig. 7 both clamping members A' and B' have a crescent-like formation connected at their upper parts or horns and have their lower parts bearing transversely one against the other, with the terminals of the wire forming in the base of the member A' a shallow semicircular supplemental loop, which is incased or housed in a crescent-shaped tube *c'*.

In Fig. 8 the construction is the same as in Fig. 7, excepting that the ends of the wire forming the device terminate in the member B', with their terminals abutting in alinement and held in that position by the metal plate D' spanning such member and inclosing the folds of the wires providing it. In this construction the lower part of the member A' is shown folded to form an outwardly-projecting lip *a'* to facilitate the separation of the two members in receiving the material being clipped.

In the construction shown in Fig. 9 the wire, as in Fig. 2, is folded from its central part into the rectangular clamping member A and thence folded inward and in opposite directions into segments of circles set one within the other and providing the lesser or inner clamping member B'' with the duplex wire of its lower part or base bearing transversely and in the same direction against the wire forming the base of the greater or outer member A.

In the construction shown in Fig. 10 the wire is folded from its central portion into the rectangular clamping member A and thence at 1 1 bent inward and divergingly downward across the base of the member A and thence divergingly upward to the points 3 3 within the area of the member A and thence convergingly upward into the vertexes 4 4 at the central top of the member A, providing in angular duplex formation the lesser clamping member B^2, both parts of which duplex formation are set to bear transversely and simultaneously in the same direction against the base of the member A.

In Figs. 9 and 10 the folds of the wire providing the lesser clamping member are not shown connected together, as they are in the other figures of the drawings; but such disconnection does not change the direction or manner of their simultaneous bearing upon the greater member or the object or result of such bearing or their adaptability to be transversely sprung through the area of the greater member and to simultaneously bear together upon the same side of the lower part of such member, as in the other figures, where the folds are shown connected, and such disconnection makes no fundamental or other difference in the construction or operation of the device or in the results obtained.

In all the forms of the device herein shown the novel feature common to all consists in the wire forming it being folded into a plurality of clamping members differing in size, the greater member partly incasing the lesser and the lesser disposed over the area of the greater and set in coacting spring bearing with parts of its frame and adapted to be sprung transversely through such frame and

to bear alternately from opposite transverse directions against either side of it in carrying out the operation of reviving the resilient bearing of the members.

The clip is operated by separating the free edges of its coacting spring clamping members and introducing between them the material to be clipped, where it is held by the closing together of such edges when released and their resilient spring bearing one toward the other.

In spring-wire clips constructed as herein described when the resilience or spring of the wire has become impaired from usage or other causes it may be readily restored by springing the bearing-wires of the clamping members one over the other into reverse transverse bearing with each other, leaving them in that position or bringing them back to their original position after the direction and force of their spring or resilience has been reset by this operation.

The oblong configuration of the device as shown in Figs. 1, 2, 3, 4, 5, and 10 is secured through the rectangular oblong configuration of its greater clamping member and has for its object the production of a clip of greater width or spread than depth to admit of the device being used in clipping the long narrow blank margins of documents and similar papers without covering any part of their written or printed surfaces. Such configuration brings the lineal area of the bearing-surfaces of both members near to the source of their resilient spring force, such spring force being located in the folds of the wire connecting the members together. In this form of construction relatively great length of bearing-surfaces crossing the axis of the device may be obtained without weakening the force of the resilient spring-bearing of the parts, as would be the case were the line or point of bearing far removed from the line or source of spring force.

The square or circular configuration of the device as shown in Figs. 6, 7, 8, and 9 will be found particularly well adapted for clipping the corners of papers.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A spring-clip of the character described having the wire forming it folded into a plurality of clamping members differing in size, the greater member partly inclosing or forming a frame for the lesser, and the latter disposed over the area of the greater and set in coacting spring bearing with parts of its frame, and adapted to be sprung transversely through such frame and to bear alternately from opposite transverse direction against either side of said parts.

2. A spring-clip of the character described having the wire forming it folded into a plurality of clamping members differing in size, the greater member partly inclosing or forming a frame for the lesser, and the latter disposed over the area of the greater and set in coacting spring bearing with parts of the frame and adapted to be sprung transversely through such frame and to bear alternately from opposite transverse direction against either side of said parts, such lesser member being provided with a metal plate spanning the folds of the wire forming it and bracing such folds together and securing to them a unison of movement and an increased clamping force.

3. In a spring-clip constructed as described of an outer member and a lesser or inner member provided with a metal plate spanning its area and housing within the folded portions of its edges parts of the wire composing such member.

4. In a spring-clip of the character described the wire forming the clip folded in manner to provide a plurality of clamping members differing in size, the greater member having two short straight parallel sides connecting with two longer straight sides set parallel with each other and providing the clip an oblong outer frame having four straight sides set at right angles with each other, the wire in one of such sides being disconnected at the top of the axis of the clip and carried downward obliquely in opposite directions from said axis across the frame and set in part in spring bearing with its lower edge.

5. In a spring-clip of the character described the wire forming the clip folded in a manner to provide a plurality of clamping members differing in size, the greater member being of rectangular oblong configuration and partly inclosing or forming a frame for the lesser, with the uninclosed parts of the latter set in spring bearing with the frame of such greater member and adapted to be transversely sprung through such frame.

Signed at Riverdale-on-the-Hudson, in the county of New York and State of New York, this 24th day of August, A. D. 1905.

GEORGE W. McGILL.

Witnesses:

W. HARRY McGILL,

CHAS. E. WARREN.