

Nov. 13, 1923.

1,474,102

L. H. ASHMORE

PAPER CLIP

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Fig. 1.

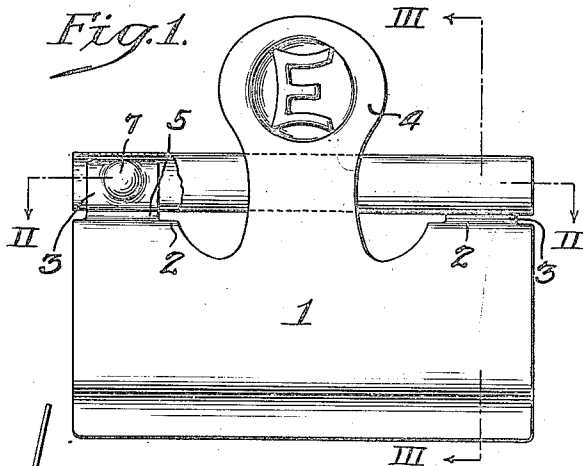


Fig. 3.

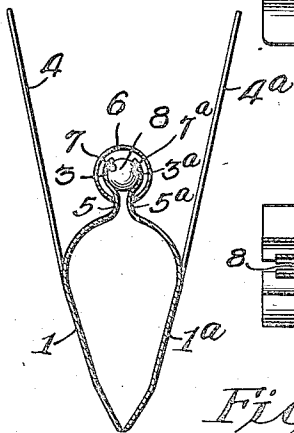


Fig. 4.

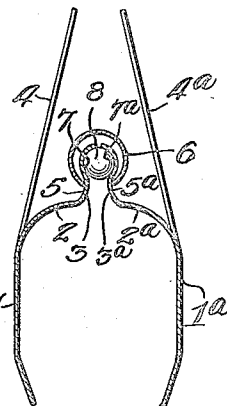


Fig. 2.

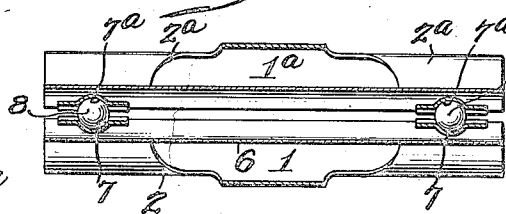


Fig. 6.

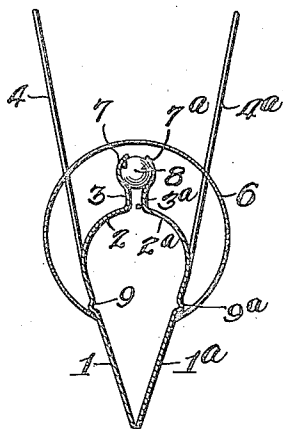
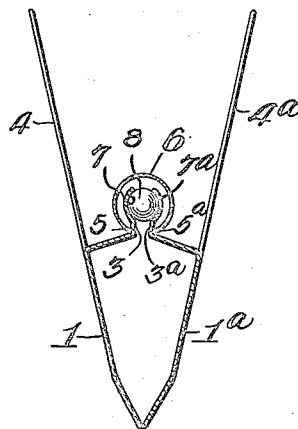


Fig. 5.



Witness:
Walter Chism

Inventor:
Leon H. Ashmore
by Murray C. Boyer
Attorney

UNITED STATES PATENT OFFICE.

LEON H. ASHMORE, OF COLLINGSWOOD, NEW JERSEY.

PAPER CLIP.

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To all whom it may concern:

Be it known that I, LEON H. ASHMORE, a citizen of the United States, and a resident of Collingswood, Camden County, New Jersey, have invented certain new and useful Improvements in Paper Clips, of which the following is a specification.

My invention relates to paper retaining clips and other similar forms of temporary holding devices, and one object of my invention is to reduce the friction of the joint between the gripping plates or jaws which is embraced by the compression spring member; the surface contact of the joint-forming elements forming one feature of my invention being of minimum extent.

A further object of my invention is to cheapen the cost of manufacture by cutting down the amount of metal employed in the formation of the joint of the gripping plates or jaws as well as the expense of pressing or otherwise shaping the same, and a still further object of my invention is to provide a construction that will insure complete parallelism in the contacting portions of the gripping plates or jaws, in order that they may completely effect their intended function.

These and other features of my invention are more fully described hereinafter, reference being had to the accompanying drawings, in which:

Figure 1, is a front elevation of one form of paper-clip having and containing the improvements forming the subject of my invention.

Fig. 2, is a sectional plan view on the line II—II, Fig. 1.

Fig. 3, is a sectional elevation on the line III—III, Fig. 1.

Fig. 4, is a view similar to Fig. 3, showing the gripping plates or jaws in the open position.

Fig. 5, is a view similar to Fig. 3, but showing gripping plates or jaws slightly differing in shape, and

Fig. 6, is a similar view of a paper-clip within the scope of my invention with which a larger sized compression spring may be employed.

In the drawings, 1 and 1^a, represent gripping plates or jaws which are usually exactly alike in shape, size and contour. As shown in Figs. 1, 2, 3 and 4, these plates may be curved at one edge, as indicated at 2 and 2^a;

such edges being provided with projecting portions 3 and 3^a which register with each other. In addition, the gripping plates or jaws are provided with projecting handles or members 4 and 4^a, which may be substantially centrally disposed and continuous therewith and in the same plane, whereby the gripping plates or jaws of the clip may be manipulated.

The projections 3 and 3^a, are disposed outwardly with respect to the curved portions 2 and 2^a of the gripping plates or jaws, and are preferably so connected to the latter as to form shoulders which provide seats 5 and 5^a for engagement by a compression spring 6, of tubular clamping type, which may be of the same length as the gripping plates or jaws 1, 1^a.

The parts so described are substantially the same as those employed in paper-clips of the same general character. In the prior structures, however, the engaging parts between the gripping plates or jaws, or what may be technically termed the "hinge-joint," have been of enlarged extent and subject to considerable friction. This has resulted in the formation of a very stiff joint, and in opening the clip considerable force has been necessary since not only must the spring pressure be overcome but the friction of the parts making up the hinge-joint must also be overcome.

My invention comprises the provision of means to form the desired hinge joint between the gripping plates or jaws with a minimum amount of material, simplicity of arrangement, minimum friction and maximum ease of operation. To this end, the projecting portions 3 and 3^a of the gripping plates or jaws 1 and 1^a, may be cupped as indicated at 7 and 7^a; the cupped portions forming pockets or seats for the reception of bearing elements 8, which may be balls of the type usually employed in ball-bearings. When these bearing elements are in place, the projections 3 and 3^a of the gripping plates or jaws 1 and 1^a are slightly separated, as indicated in Fig. 3, and the application of the clamping spring member 6 holds the gripping plates or jaws together and confines said bearing elements in their pockets or seats 7 and 7^a.

By the use of small independent bearing elements between the gripping plates or jaws, the amount of contacting surface in

the hinge-joint of the clip is reduced to a minimum, with consequent reduction in friction; such construction, moreover, materially facilitating the operation of the clip. Additionally, any wear upon the bearing elements is evenly distributed since they have a tendency to and do turn in their seats when the gripping plates or jaws are opened or closed.

In the form of structure shown in Figs. 1, 2, 3 and 4, the gripping plates or jaws are provided with curved portions 2 and 2^a, adjacent the clamping spring. Such design, however, is not material, and in Fig. 5, I have shown another form of clip wherein that part of these gripping plates or jaws corresponding to the curved portion 2 or 2^a, of the structure shown in Figs. 1, 2, et seq., lies in a plane substantially at right angles to the same; the balance of the construction being substantially like that illustrated in Figs. 1, 2, 3 and 4.

In Fig. 6, I have shown a construction in which the clamping spring is of much larger size than in the forms illustrated in Figs. 1 to 5, inclusive, and instead of engaging seats at the shoulders formed by the projections 3 and 3^a, such spring engages the broad faces of the gripping plates or jaws 1 and 1^a; and the latter may be provided with longitudinal ribs 9 and 9^a, forming abutments for engagement by the free edges of the tubular clamping spring. In this type of structure, the spring is of such size as to necessitate aperturing of the same for the passage of the handles 4 and 4^a of the clip whereby it may be manipulated.

I prefer the use of spherical bearing elements in forming the hinge-joint between the gripping plates or jaws. It is obvious, however, since the movement of the gripping jaws is in a single plane, that small cylindrical objects might be employed in the pockets or seats 7 and 7^a; the latter being correspondingly altered in shape; hence my claims are to be construed as covering the spherical elements described as well as small rollers arranged to operate in a similar manner and the use of any equivalent element in combination with a construction capable of performing a similar function.

The two-point contact of the spherical bearing elements or their equivalent between the gripping plates or jaws, in connection with the compression spring which holds the gripping plates in firm engagement with said spherical elements, insure that the edges of said gripping plates or jaws will be kept in absolute parallelism, and as long as the compression spring is in position to hold the parts of the clip together; these gripping plates or jaws will not become distorted.

While I have described my improved paper-clip as a complete article of manufac-

ture and intended more particularly for holding loose sheets of paper and similar objects, it will be understood that either one of the clamping plates or jaws may be permanently attached to a suitable backing or support, and that in either instance, the free edges of the gripping plates or jaws may be notched or serrated for the purpose of effecting a more secure hold upon an object gripped between the same if desired for any purpose.

I claim:

1. A paper-clip, comprising plates forming gripping jaws, a clamping spring for confining said plates in gripping engagement, and a ball-bearing joint for said gripping plates.

2. A paper-clip, comprising a pair of plates forming gripping jaws and mounted for movement with respect to each other, a ball-bearing joint for said gripping plates, and a tubular clamping spring embracing said joint and serving to hold said plates in gripping engagement.

3. A paper-clip, comprising a pair of plates forming gripping jaws and mounted for movement with respect to each other, a pair of balls disposed between said gripping plates upon which the latter may turn, and a tubular clamping spring embracing the ball-engaging portion of said plates and serving to hold the latter in gripping engagement.

4. A paper-clip, comprising a pair of plates forming gripping jaws, a clamping spring for holding one edge of said plates in gripping engagement, aligned projections carried by the opposite edges of said plates, and independent members interposed between said aligned projections and constituting bearing elements upon which said plates may rock.

5. A paper-clip, comprising plates forming gripping jaws, operating handles connected to said gripping plates, aligned projections having depressions forming seats carried by said plates, bearing members disposed in said seats and separating the plates, and a compression spring for holding said plates together and in gripping engagement with said bearing members.

6. A paper-clip, comprising a pair of gripping jaws, lateral projections carried by said jaws adjacent the ends of the same; said projections being disposed in alignment and cupped to form seats or pockets, bearing elements disposed in said seats and separating the gripping jaws, and a clamping spring embracing said projections and holding them in contact with the bearing elements; said projections being arranged to form shoulders for engagement by the clamping spring.

7. A paper-clip, comprising a pair of gripping jaws, operating handles carried

thereby, lateral projections carried by said jaws on opposite sides of said handles; said projections being cupped to form seats or pockets, spherical bearing elements disposed in said seats and separating the gripping jaws, and a clamping spring embracing said projections and holding them in contact with the spherical bearing elements; said projections being arranged to form shoulders for engagement by the clamping spring.

8. A paper clip, comprising a pair of plates forming gripping jaws, spring means for holding said plates in gripping engagement, and independent members interposed between aligned seats formed in the meeting edges of said plates and constituting bearing elements upon which said plates may

rock; said bearing elements being confined in place by said spring means.

9. A paper clip comprising a pair of plates forming gripping jaws, clamping means tending to hold one edge of said plates in gripping engagement, and a pair of independent members set at separated points and interposed between the opposite meeting edges of said plates; said members being interposed between aligned seats carried by said plates and constituting bearing elements upon which said plates may rock and being confined in place by said clamping means.

In witness whereof I have signed this specification.

LEON H. ASHMORE.