

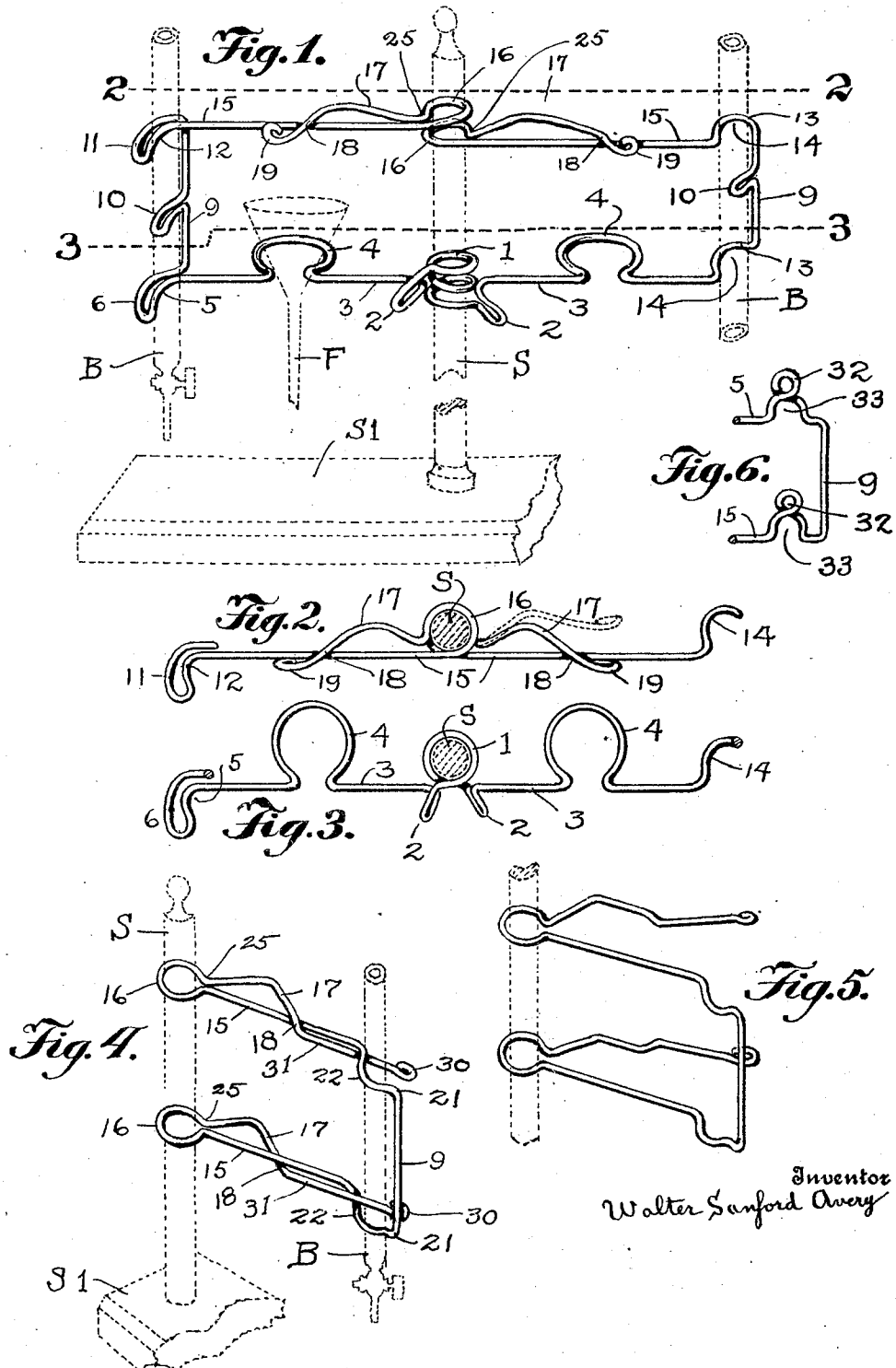
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AUTOMATIC AND ADJUSTABLE BURETTE AND FUNNEL HOLDER

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## UNITED STATES PATENT OFFICE.

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AUTOMATIC AND ADJUSTABLE BURETTE AND FUNNEL HOLDER.

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My invention relates to improvements in burette and funnel holders, or clamps, applied to the ordinary stand now used for such apparatus.

5 The main object of my invention, is to provide a device of this type, which is formed of a single length of spring wire, so bent upon itself as to form an adjustable spring clamp that will automatically and  
10 securely engage a vertical shaft, yet can easily be instantly released, by pressure of thumb and finger, when desiring to change its position on the shaft; then, by further bending of the two ends of said spring wire,  
15 form automatic holders for burettes and funnels, that exposes the readings thereon throughout full length.

20 A further object is to provide a rigid holder that will be strong and durable in use, and a time saver, because of freedom from set-screws.

25 A still further object is to provide a holder that is simple and practical, in construction, and comparatively cheap to manufacture.

30 With these, and further objects, in view, the invention consists in certain novel features of construction, and combinations and arrangements of parts, as will be fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

35 Figure 1 is a perspective view, in front elevation of my improved burette and funnel holder in use.

Fig. 2 is a sectional view on the dotted line 2—2 of Figure 1.

Fig. 3 is a sectional view on the dotted line 3—3 of Figure 1.

40 Fig. 4 is a perspective front elevation of my improved holder, in locked position, as designed for a single burette.

45 Fig. 5 is a perspective view in released, or unlocked, position, of the device shown in Figure 4.

Fig. 6 is a sketch of a modified form of the burette clamping end of my device shown in Figures 1 and 4.

50 Similar numbers refer to similar parts throughout the several views.

Referring in detail to Figures 1, 2 and 3, of drawings, my improved automatic burette and funnel holder is formed of a single piece

of spring wire, bent upon itself, to form an expansible and contractible loop.

55 The central portion of the wire may be bent, one or more times, spirally around a cylinder, to form an expansible spring receiving coil member 1, of a diameter slightly less than the vertical standard S, to which it  
60 is to be applied so that when expanded and placed thereon it will automatically contract, and rigidly clamp itself thereto.

65 After crossing, the ends of the wire are then bent backward at equal, but slightly divergent angles, but in a plane at right angles to the diameter of the cylinder. Then, at a point about one inch from the cylinder, the ends of the wire are bent backward upon  
70 themselves, but each toward the other, forming loop members 2, 2, the planes of which are in alignment with the diameter of the cylinder.

75 At meeting points with member 1, the ends of the wire are then bent backward, at opposite but equal angles, and in the same plane, which must be at right angles to the diameter of the cylinder, forming members 3, 3.

80 Referring in detail to Fig. 1, the dotted lines represent the apparatus with which my improved device is to be used; I being the base, and S being the vertical standard.

85 Now press together members 2, 2, together to open coil spring member 1, and slip same on standard S, where, when released, it automatically, and securely clamps itself. See particularly that members 3, 3 are in perfect alignment with each other, along a line touching the circumference of standard S,  
90 and at right angles thereto.

95 The ends of the wire are then bent backward, in same plane, and around to about four fifths circles, in parallelism with the base S, 1, to form opposite companion funnel holding members 4, 4, with equal angles, and ends in perfect alignment, as extensions of members 3, 3.

100 The ends of the wire are then bent differently, to produce slightly different forms of clamping members for burettes B, B, but still retaining the predominant characteristics of the clasps.

105 The end of the wire to the left is bent forward in the plane of members 4, 4, and curved toward member 1, to form the curved

retaining member 5, for burette, then bent backward in same plane and reverse curve, to a point slightly to the right of member 5, forming member 6, the two forming retaining finger. The end of the wire is then bent vertically, at right angle to planes of members 4, and 5, and in same vertical plane as members 3, 3 forming member 9.

The end of the wire is then bent forward horizontally, and at right angles to members 9, and 3, then backward on itself, forming loop member 10, the plane of the loop being at right angle to the plane of members 4, 4, thus forming another retaining finger.

The end of the wire is then bent upward, in alignment, as an extension of member 9.

The end of the wire is then bent forward and back, in reverse order to members 5, 6, and in parallelism therewith, to form their companion members 11, 12.

The burette B, (represented by dotted lines), being forced against curved members 5, and 12, by pressure of spring member 10, is automatically and firmly held.

The end of the wire is then bent, at right angle to member 9, in vertical plane with 9 and 3, 3, forming member 15.

The clamped burette B, being now held in parallelism and alignment with standard S, the end of the wire is bent backward around standard S, to form clamping loop 16, its plane being at right angle to standard S.

The wire is then bent backward at 25, in plane of member 16, then curved forward in same plane, and over 15, until loop member 16 rigidly clamps shaft S, when the end is again bent downward and looped backward to hold it there.

Referring again to the end of the wire, to the right of standard S, where we left it, after forming extension of member 3, the end of the wire is then bent backward and to the right, to form curved loop 14, in same plane as members 4, 4, then bent upward, at 13, to form companion members 9 and 10 to same numbered members at left of standard S, with parallel planes and alignment.

The wire is then bent, at 13, to form companion member to 14 below, and in parallel plane and vertical alignment.

The wire is then bent backward, in same plane, forming member 15, in perfect alignment with the member 15 to left of standard S.

With burettes B, B, in place, and in parallelism with shaft S, the wire is then bent around standard S, in the plane of the companion loop member 16, but in the opposite direction.

The wire is then further bent to form opposite companion members to 17—18—19, at the left of standard S.

Referring in detail to Fig. 4, of drawings, a single burette holder is formed of a

single piece of spring wire bent to right angles, at points 21—21, forming vertical member 9.

The ends of the wire are then bent backward to form companion curved shoulder members 22—22, in parallel planes, perpendicular to member 9.

The wire is then bent forward at the ends of the curved shoulders in the same planes and to equal angles, forming the members 15—15 in parallelism and alignment.

At equidistant points from the curved shoulder members 22—22, the member 15 is then bent forward, in the same planes, and around to form loop members 16, 16 to receive the standard S, and which loop members 16—16, shall rigidly clamp the standard S, when members 17—18, 17—18, are formed, as in Figure 1.

The ends of the wire are then extended from members 18—18 in alignment with members 15—15, to a point even with member 9, where they are bent backward to form loops 30—30, in planes at right angles to member 9, thus completing the opposing engaging members 31—31.

When a burette is forced between member 9 and members 30—30, it is rigidly held in upright position, yet can be instantly, and easily, removed for cleaning.

The modification shown in Fig. 6 is formed by simply making horizontal figure eights, in members 15<sup>a</sup> extending to member 9<sup>a</sup>, spring loops 33<sup>a</sup>—33<sup>a</sup>, engaging and holding the burette securely, in vertical position.

I may make my holders in combination, or separate, and for use with any number of burettes or funnels, as desired.

The operation of all forms of my device will be readily understood, and it should be noted that any of them are easily applied to and detached from any suitable standard or supporting rod. The burettes need only to be gently forced between spring receiving members, or therefrom, there being no set screws to loosen or wear out, and the burette readings are at no time hidden but are always in plain view.

While my coil spring clamp is designed, primarily, for use with burette and funnel holders, it will be apparent that it can also be employed to support any light shelf, or cross arm, where change of position is frequently desirable.

In the combination holder, shown in Fig. 1, the members 16, 16 are left in unlocked position, (see Fig. 2, dotted lines) when using as funnel holder only; the device can then be easily raised, or lowered, by pressing together members 2—2.

Various other slight changes may be made in the general form and arrangement of parts described, without deviating from the

invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

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

1. A clamp as herein characterized comprising a single piece of wire bent upon itself to form upper and lower expansible loops adapted to resiliently and adjustably engage a supporting standard said wire extending laterally from said loops to form upper and lower arms, said arms having a portion bent in a horizontal plane to define expansible loops adapted to receive and clamp cylindrical articles, said upper and lower arms connected at their outer ends by an uprightly disposed bar.

2. A clamp as herein characterized, comprising a single piece of wire bent to form a vertical end bar and upper and lower horizontal arms extending inwardly from said end

bar, said arms bent adjacent said end bar in a horizontal plane to form loops adapted to receive and clamp cylindrical articles, and the inner ends of said arms bent in horizontal planes to form expansible loops adapted to resiliently and adjustably engage a supporting standard.

3. A clamp as herein characterized, comprising a single piece of wire bent to form a vertical end connecting bar and upper and lower horizontal arms extending inwardly from said end bar, said arms bent and offset laterally in a horizontal plane to form loops adapted to receive and hold cylindrical articles, the inner ends of said arms bent upon themselves in horizontal planes to form expansible loops adapted to resiliently and adjustably engage a supporting standard, and thence extending outwardly and bent, and extending outwardly along one side of the arms and extended across the loops at the outer ends of the arms.

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