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SPRING BINDING POST

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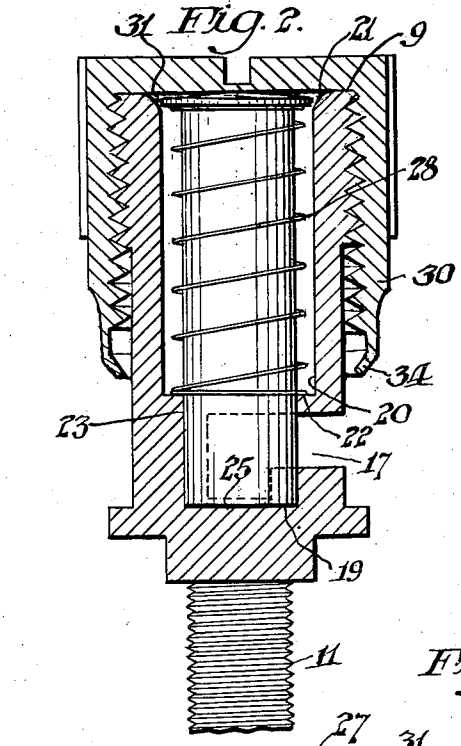


Fig. 2.

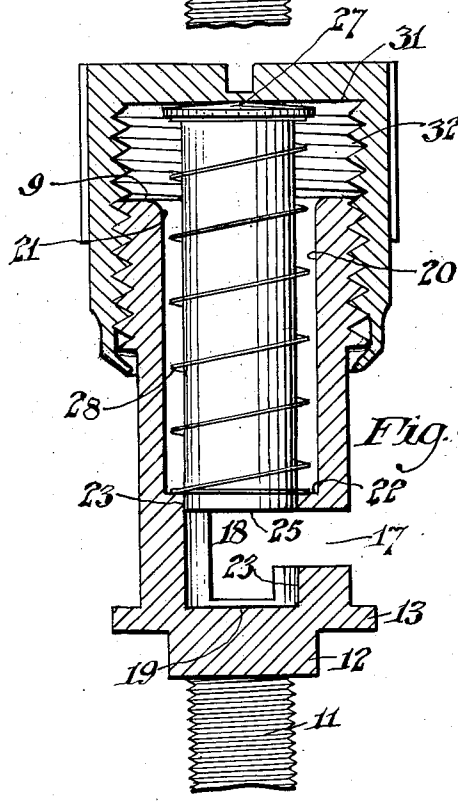


Fig. 3.

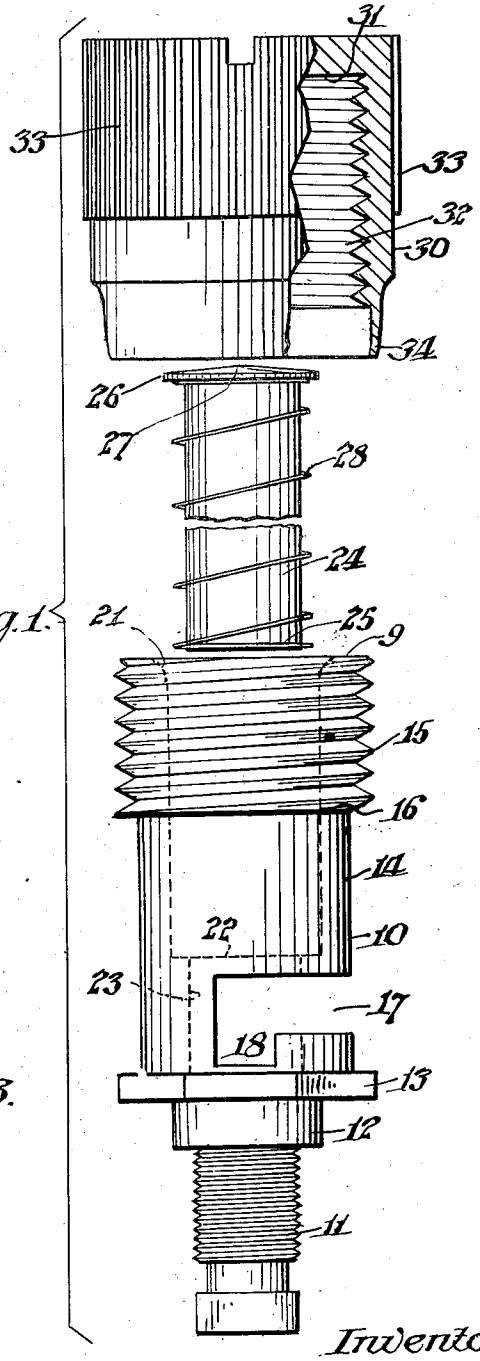


Fig. 1.

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SPRING BINDING POST

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3 Claims. (Cl. 173—259)

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This invention relates to spring binding posts, and particularly to binding posts comprising circuit-making wire clamps.

It is among the objects of this invention; to provide a binding post of economy of production and of ease and simplicity of operation; to provide a binding post of extreme certainty of grip; to provide a binding post of firm and positive circuit-making susceptibility; to provide a binding post of reduced over-all longitudinal size; to provide a binding post of minimal frictional resistance to screw-threaded actuation; to provide a binding post of the follower type with minimized drag on the screw cap in both directions of travel between wire-receiving and wire-gripping; to provide a binding post of the follower type in which rotation of the cap to actuate or permit retraction of the follower is accomplished without necessary rotation of the follower without providing eccentric or asymetrical lateral protrusion on the follower; to provide a binding post which in construction is formed of parts all susceptible to automatic screw machinery production; to provide a practical, cheap binding post formed throughout of cylindrical parts and bores except for the slot for the wire; and many other objects and advantages will become more apparent as the description proceeds.

In carrying out the invention in a simplified form, a screw cap is provided which pushes a cylindrical follower downwardly into a relatively fixed base by means of a substantially point engagement between cap and follower, while a compression spring is arranged to urge the follower upwardly for withdrawal with the cap as the latter is unscrewed, while engaging the follower frictionally against rotation.

In the accompanying drawings,

Fig. 1 represents an exploded side elevation partially in fragmentary section, of the cap, the follower with its actuating spring shown in position surrounding the follower, and the fixed base relative to which the cap, the follower, and one end of the spring have relative movement.

Fig. 2 represents a longitudinal section of the assembled elements with the cap screwed down and with the follower in tight engagement against the anvil portion of the base, and

Fig. 3 represents a similar section with the parts retracted sufficiently far as to receive a wire to be gripped and with which electrical contact is to be established.

Before discussing the invention in detail, mention might be made of the factor which governs the sizes and proportions of parts used herein,

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and this is primarily the voltage or current to be carried and secondarily the diameter of wires to be engaged. These factors will have to be considered in the construction of the binding post of this invention. Generally speaking, the size of the follower and the area of contacting surfaces gripping the wires will be larger with increased voltages or currents to be carried.

Considering first the base 10, it preferably comprises a lower anchoring stud 11 which may be threaded as shown, or be otherwise arranged for anchoring in a supporting base or panel. The stud 11 depends from a block or plug 12 which is round in outline, or so that it can be dropped into a similarly shaped or cooperatively shaped aperture. The plug 12 merges into the larger flange 13, the periphery of which is preferably polygonal as indicated so that it can be held against rotation by being partially dropped into a shallow channel in the panel board or be held by a wrench or the like during anchoring in a panel. A barrel 14 extends perpendicularly from the flange 13 and externally terminates at the upper end in the enlarged threaded portion 15 having a planar end 9 at the top and having a lower shoulder 16 against which an inturned portion 34 of the cap 30 to be described engages to prevent separation of the parts. The barrel is provided externally with a transverse substantially horizontal slot 17 merging at approximately the center of the barrel into a longitudinal slot 18, which preferably terminates approximately at or just above the plane of the upper surface of flange 13, and the bottom thereof may be of any desired shape, such as flat, V or curved. The combined slots 17 and 18 may be as shown, or may be constructed in accordance with the disclosures of any of the figures of Patent No. 2,267,449 to Hugh H. Eby in any of the details thereof.

Internally, the barrel 14 has an axial bore 20 extending inwardly from the upper planar end 9 at a distance long enough to receive and house the compression spring and follower to be described. The upper end or mouth of bore 20 is flared outwardly as at 21 into the plane of end 9 in order to afford clearance for, and possibly, if necessary, to guide the flange of the follower to be described and to prevent the spring from catching on to the edge. The bore 20 terminates part way between end 9 and the horizontal or transverse slot 17 and, preferably, somewhat close to the latter, in an annular, transverse, relatively narrow shoulder 22 lying in a plane normal to the axis of the bore 20 for engagement by a spring to be described. Bore 20 merges at shoulder 22 into a restricted annular

follower guide channel 23, which is preferably of appreciably greater diameter than the width of slot 18, although being preferably, although not necessarily, symmetrical relative thereto, and terminates in a lower surface 19 at least as far down in the base as the lower edge of slot 18 at or just above the plane of the flange 13, although being preferably slightly below the lower edge of slot 18 so as to establish shoulders by which the wires can be engaged in shear by the follower in its gripping action. The bottom 19 of guide channel 20 and possibly also the lower surface of slot 18 and the shoulders, if any, between them comprise an anvil portion relative to which the follower to be described functions.

A cylindrical follower member or shank 24 having the plower preferably planar end 25, is provided for guiding sliding disposition in the restricted follower channel 23. At its upper end the follower is provided with a flange 26 extending laterally beyond the shank or cylindrical portion of the follower 24, and the upper flanged surface is preferably shaped conically or otherwise so as to furnish a concentric point 27 to be engaged by the cap to be described. A compression spring 28 is provided preferably of such inner diameter as to have slight clearance from the follower 24, and preferably also, of such outer diameter as to have slight clearance from the bore 20, so that the normal flexing of the spring between states of compression is usually accompanied by a minimum of axial frictional resistance between the moving and stationary parts. The spring 28 engages between the flange 26 of the follower and shoulder 22 in the bore 20 of the base, and constantly urges the follower upwardly in the combined bore and channel after the follower has been disposed in the latter two openings as indicated in Figs. 2 and 3, while exerting frictional resistance against relative rotation of the follower and base. The follower 24 obviously may be made either by a screw machine or by an upsetting machine. Indeed, in certain cases it is contemplated that the follower 24 may comprise a rivet.

The binding post assembly is completed by a cap 30. This is provided with an internally planar transverse surface 31 for engagement by the point 27 of the follower concentrically of the cap. The cap is internally threaded as at 32, is preferably externally knurled as at 33, and at the lower end is provided with an annular thin web 34 susceptible to being inturned as shown in Figs. 2 and 3, in position to abut the flange 16 of the base to prevent complete separation of the parts after the initial assembly.

With the parts assembled as indicated, the screwing down of the cap forces the transverse web 31 against the central point 27 of the follower, and with a minimum of rotational frictional effects forces the follower axially against the lower anvil surface of the guide channel at 19. The follower, as noted, is also frictionally engaged by the spring 28 under the flange 26 and as this frictional area is greater than that developed between the conical point 27 and the cap 30, the follower is held against rotation with the cap, and this is accomplished without providing eccentricities or protuberances on the follower and also without modifying the follower-guide channel with eccentric or asymmetrical slots to prevent such rotation. To facilitate gripping and contact-making, the end of the follower 24 at 25 may be roughened or serrated, or it may be provided with a pin or the like as shown in the aforesaid patent to Hugh H. Eby.

Obviously, the axial length of the follower-guide channel will be such as to insure proper guiding and the short over-all length of the whole binding post will be clear, as will the fact that variations of relative proportions will be made as desired.

Having thus described my invention, I claim:

1. A binding post comprising a threaded base having a wire-receiving slot extending to an opening in the side of the base, a relatively narrow axial guide channel and a relatively wider recess in concentric aligned relation in the base, the intersection of the channel and recess defining a shoulder in the base between the channel and recess, a follower slidably mounted in the guide channel and having a flanged end, a compression spring disposed in the recess and surrounding the follower, said spring being compressed between the flange of the follower and the shoulder in the base, a threaded cap surrounding the flanged end of the follower and movable on and relative to the threaded base in constant contact with said follower and arranged to force the follower inwardly against the lower end of the guide channel in the base, the contacting portions of the follower and cap comprising respectively a substantial point and a relatively flat surface to minimize rotative friction in the contact between them as the cap turns on the threaded base.

2. A binding post comprising a threaded base having a wire-receiving slot extending to an opening in the side of the base, a relatively narrow axial guide channel and a relatively wider recess in concentric aligned relation in the base, the intersection of the channel and recess defining a shoulder in the base between the channel and recess, a follower slidably mounted in the guide channel and having a flanged end, a compression spring disposed in the recess and surrounding the follower, said spring being compressed between the flange of the follower and the shoulder in the base, and a threaded cap surrounding and movable on and relative to the threaded base in constant contact with said follower and arranged to force the follower inwardly against the lower end of the guide channel in the base, said cap being rotatable for axial movement and having internally a downwardly presenting relatively flat surface, and said follower terminating toward the cap in an external point substantially concentric to the follower so that contact of the follower and cap is through the point whereby rotative frictional resistance between the cap and follower is minimized as the cap turns on the threaded base.

3. A binding post comprising a base having an anchoring portion, a transversely opening wire-receiving slot having a portion extending longitudinally of the base above the anchoring portion, a compound axial aperture being formed in the base extending from one end toward the anchoring portion and comprising a wide recess and a narrower follower-guide channel respectively separated by an annular shoulder internally of the base, said base being externally threaded to receive a threaded cap, a cylindrical follower having a shank to slide axially in the guide channel to intersect the wire-receiving slot, a compression coil spring disposed in the wider recess surrounding the cylindrical follower, means connecting the coil spring to the follower for outward urging relationship relative to the shoulder, a cap threaded on the base in position to engage and force the follower inwardly against the resistance

of the spring, said connecting means comprising a flange on the follower substantially conical in cross section and of greater diameter than the cylindrical portion of the follower, the contact between the cap and the follower being through the point of the said conical end only.

BENJAMIN FOX.

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