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O. A. SMITH

1,488,948

BINDING POST

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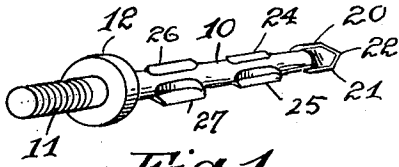


Fig. 1.

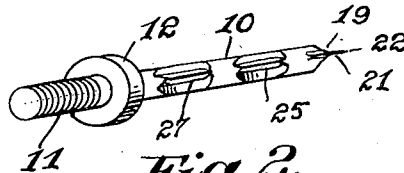


Fig. 2.

Fig. 3.

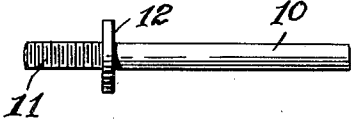


Fig. 4.

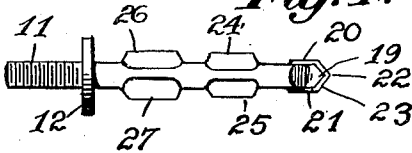


Fig. 5.

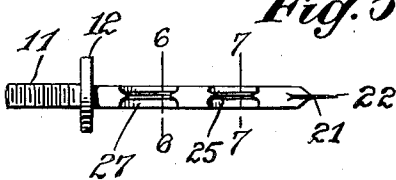


Fig. 9.

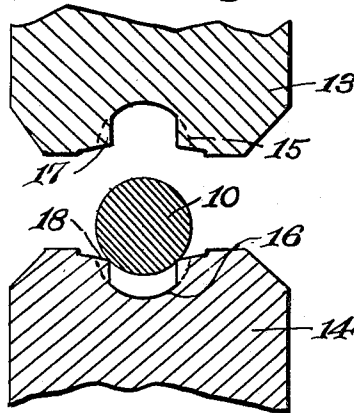


Fig. 10.

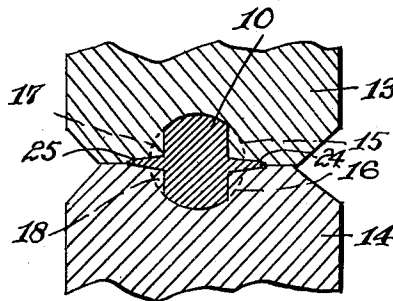


Fig. 6.

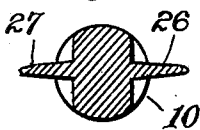


Fig. 7.

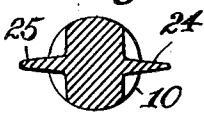


Fig. 11.

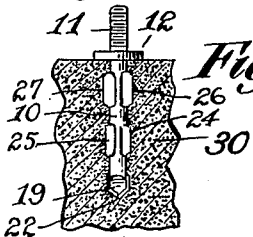
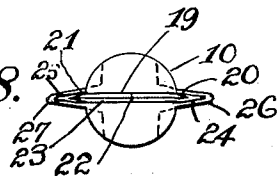


Fig. 8.



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UNITED STATES PATENT OFFICE.

OSCAR A. SMITH, OF EAST CLEVELAND, OHIO.

BINDING POST.

Application filed December 14, 1921. Serial No. 522,296.

To all whom it may concern:

Be it known that I, OSCAR A. SMITH, a citizen of the United States, residing at East Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Binding Posts, of which the following is a specification.

This invention relates to binding posts for battery cells and the method of making the same, an object thereof being to provide an improved binding post which can be effectively and readily forced into the battery carbon element of a cell without any danger of splitting the carbon, and securely held in operative position therein whereby an increased electrical contact and hence better amperage is obtained than in the case of battery elements heretofore constructed.

A further object of this invention is to provide an improved binding post adapted to be positioned in a cylindrical bore formed in the non-metallic or carbon element of a battery cell and having improved means for locking or retaining the binding post in engagement with the battery element, the construction being such as to enable the binding post to be securely held in position without any danger of turning or loosening, and at the same time secure the maximum contacting surface between the binding post and the battery element.

As a result of the foregoing objects and purposes, the binding post is provided preferably at opposite sides thereof with a plurality of alined fins of increasing size from the lower end of the post toward the upper end. In the present instance the several alined fins are wedge-shaped and provided with cutting edges, and each fin may be greater in width, thickness, and length than the next adjacent lower fin, whereby upon forcing the binding post into the carbon element of the cell, each fin will cut into the carbon a part only of the path of the next adjacent fin. Thus, all parts of the various fins will be wedged tightly into engagement and contact with the carbon thereby increasing the locking engagement, increasing the electrical contact, and increasing the amperage.

Other objects of this invention will appear in the following description thereof, reference being had to the accompanying drawing forming a part of this specification wherein like reference characters indicate

corresponding parts in the several views and wherein Figs. 1 and 2 are perspective views of my improved binding post illustrating the same in different positions; Fig. 3 is a view illustrating the stock for the binding post cut to the proper length; Fig. 4 is a side view of the completed binding post; Fig. 5 is a side view illustrating another position of the completed binding post; Fig. 6 is a section taken on line 6—6 of Fig. 5; Fig. 7 is a section taken on line 7—7 of Fig. 5; Fig. 8 is an end view of the construction shown in Fig. 5; Figs. 9 and 10 are sectional views illustrating the operation of forming the fins from the stock in suitable die members; and Fig. 11 is a fragmentary view illustrating my improved binding post in operative position in the battery element.

In carrying out my invention it will be seen that the stock 10 is cut off to the required length and size, and at one end thereof is provided with suitable threads 11 and a washer 12, the latter being preferably integral with the binding post and may be upset or formed in a heading machine, or otherwise formed in any suitable manner. Thereupon the post is placed in a punch press provided with suitable dies 13 and 14 and the various projecting fins are formed from the stock. The die members 13 and 14, which are illustrated in Figs. 9 and 10 are each provided with a semi-circular recess as indicated at 15 and 16, adapted to form, when the members are brought together, a continuous cylindrical opening corresponding throughout the major part of the length of the plain or smooth part of the stock to the diameter of the latter. At suitable distances apart and corresponding to the points where the fins or projections are to be formed on the binding post, the die members are built out thereby providing cooperating projections 17 and 18. After the stock has been cut to the desired length, and the washer 12 and threads 11 formed thereon, the smooth portion of the post is placed between the respective die members and the latter are then brought together by a suitable press to form the several sets of fins. The binding post may be provided at either or opposite sides thereof with a plurality of alined fins, and in the present preferred form the fins on one side are located opposite to those on the other side and are all constructed to have cutting edges. The lower end of the post is flattened

to provide preferably a single integral fin 19 projecting beyond the end of the binding post, and also extending laterally as indicated at 20 and 21 at opposite sides of the post. In the present preferred form this fin 19 is preferably made to resemble an arrow-head terminating in a point 22 and preferably beveled around the edges thereof as indicated at 23 to have a wedge-shaped form thereby providing cutting edges. Spaced a suitable distance from the fin 19, the binding post is provided preferably with a pair of oppositely extending fins 24 and 25. These fins are preferably wedge-shaped in form, provided with cutting edges, and as illustrated in Fig. 8 have greater size and thickness in cross section than the fin 19. Furthermore, referring particularly to Figs. 4 and 8, it will be seen that the fins 24 and 25 have each greater width in the direction of the diameter of the binding post or in other words transversely of the post than the laterally projecting fin portions 20 and 21 of the fin 19, and it will also be noted that this pair of fins is longer than the fin portions 20 and 21.

Spaced from the fins 24 and 25 the binding post is provided preferably with another set of oppositely projecting fins 26 and 27 which may also be formed similar in shape to the next adjacent lower fins 24 and 25, and in like manner are preferably wedge-shaped to provide cutting edges. The fins 26 and 27 however are of greater size than the fins 24 and 25 as indicated particularly in Figs. 6, 7, and 8, and in the present instance are greater in thickness, width, and length.

In Figs. 6, 7, and 8 the post is shown in enlarged size and the successive variations in size of the fins or projections are somewhat exaggerated for the purpose of clearly illustrating the fact that the fins increase in size successively from the lower end toward the upper end, although in practice owing to the small size of the binding post, the differences in size may be less significant to the eye and the thickness of the fins at the edges less pronounced. In practice the fins or projections may be beveled off as indicated in Fig. 4 to provide suitable cutting edges and also to accentuate the wedge-shaped formation.

Thus it will be seen that the present improved binding post is provided at its lower end with a projecting fin 19 having cutting edges, this fin also extending laterally at opposite sides to form substantially a pair of cutting fins 20 and 21. Furthermore the succeeding sets of fins located in spaced relation above the fin 19 are in alignment with the fin portions 20 and 21, and are of increasing size from the lower end toward the upper end of the binding post. Although the several sets of fins in the present instance

are shown of successively different lengths, the same may if desired have the same length. However it will be noted that the upper set of fins are thicker at the base thereof and also wider in a radial direction than the next adjacent or intermediate set of fins 24 and 25, the latter being in turn thicker at their base and also wider in a radial direction than the bottom fins 20 and 21.

Hence when the binding post is forced into the cylindrical hole in the end of the carbon post or element 30, the lower fin 19 with its laterally extending fins 20 and 21 will cut its own path and also a part of the path of the next succeeding fins 24 and 25. The latter set will cut an additional path in the carbon post for itself and thereby a portion of the path of the upper set of fins 26 and 27. The latter in turn will cut an additional path of greater width and thickness or size than the preceding fins. As a result of this operation it will be readily seen that the binding post will be rigidly secured within the carbon post, and that by virtue of the several sets of fins of different sizes cutting paths of different sizes in the carbon, the maximum contacting surface and firmness as to position of the post will be attained, thus obtaining the maximum electrical contact, increasing the amperage, and obtaining a permanent and more effective engagement of the binding post and battery carbon element.

Although I have described my invention in its preferred form it is to be understood that I do not limit myself to the construction herein shown and described except in so far as defined in the claims or embraced within the scope thereof.

I claim as my invention:

1. A binding post comprising a shank adapted to be forced into a carbon post said shank having its entering end shaped into a relatively thin fin.

2. A binding post comprising a shank adapted to be forced into a carbon post, said shank having its entering end flattened to form a relatively thin fin having a triangular cutting edge.

3. A binding post comprising a shank adapted to be forced into a carbon post, said shank having its entering end flattened to form a relatively thin fin having a triangular cutting edge merging into a pair of side cutting edges.

4. A binding post comprising a shank adapted to be forced into a carbon post, said shank having a flattened entering end provided with a wedge shaped entering portion.

5. A binding post comprising a shank adapted to be forced into a carbon post, said shank having a flattened fin extending beyond the end thereof and provided with a cutting edge.

6. A binding post comprising a shank adapted to be forced into a carbon post, said shank having a flattened fin extending beyond the end thereof and provided with a beveled edge and a relatively thick base.

7. A binding post adapted to be forced into a carbon post and having at its end a flattened and pointed fin.

8. A binding post having a plurality of alined flattened fins of successively increasing thickness.

9. A binding post having a pair of alined flattened fins, one longer than the other.

10. A binding post having a plurality of alined fins one longer and thicker than another.

11. A binding post having a plurality of alined fins of increasing width and thickness from the lower end toward the upper end of the post.

12. A binding post having a plurality of sets of alined fins, the fins of one set being thicker than the fins of another.

13. A binding post having a plurality of sets of alined fins, the fins of an upper set being of greater size than the fins of the next adjacent lower set.

14. A binding post having a pair of alined fins, one wider transversely of the post than the other.

15. A binding post having a plurality of sets of alined fins, an upper set being wider transversely of the post than a lower set of fins.

16. A binding post having extending from one or more sides thereof a plurality of alined flattened fins of increasing size from one end of the post toward the other end.

17. A binding post having extending from one or more sides thereof a plurality of alined flattened fins of increasing size from one end of the post toward the other end, one of said fins projecting beyond an end of said post.

18. A binding post having an integral washer thereon and also having a projecting flattened fin.

19. A binding post adapted to be inserted in a non-metallic battery element and having a plurality of alined fins at one or more sides thereof, one of said flattened fins constructed to form a part only of the path of

the next succeeding alined fin when the post is forced into said element.

20. A battery cell element comprising in combination a non-metallic element having a bore in its outer end portion and a binding post projecting into said bore, said binding post having a flattened and sharp edged fin extending beyond the end thereof.

21. A battery cell element comprising in combination a non-metallic element having a bore in its outer end portion and a binding post projecting into said bore, said binding post having a fin extending beyond the end and also having flattened fins at different sides of the post.

22. A binding post comprising a shank having at its end a flattened wedge shaped fin provided with a beveled cutting edge.

23. A battery cell element comprising in combination a non-metallic element having a bore in its outer end portion and a binding post projecting into said bore, said binding post having at several sides thereof a plurality of fins of increasing size from one end of the post toward the other end.

24. A battery cell element comprising in combination a non-metallic element having a bore in its outer end portion and a binding post projecting into said bore, said binding post having at several sides thereof a plurality of sets of alined fins, the fins of an upper set being of greater size than the fins of the next adjacent lower set.

25. A binding post having at its side a projecting flattened wedge shaped fin.

26. A binding post having at one or more sides thereof a plurality of flattened fins of different sizes.

27. A binding post having along the length thereof a plurality of flattened fins of successively increasing size, and each having a lengthwise extending cutting edge.

28. A binding post having along the length thereof a plurality of flattened fins of successively increasing size, and each having a lengthwise extending cutting edge, said post also terminating in a flattened fin projecting beyond the end of the post.

Signed at Cleveland, Ohio, this 9th day of December 1921.

OSCAR A. SMITH.