No. 684,641. Patented Oct. 15, 1901.

C. S. KAUFMANN.

INSULATOR FOR STORAGE BATTERY PLATES.

(Application filed Jan. 7, 1901.)

(No Model.)

Fig 4.

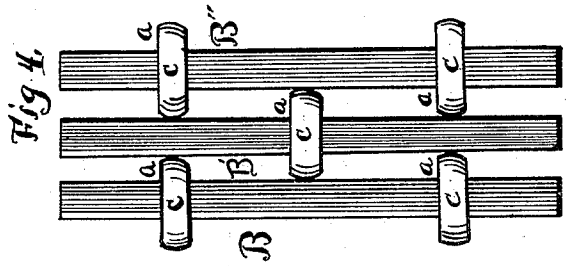


Fig 3.

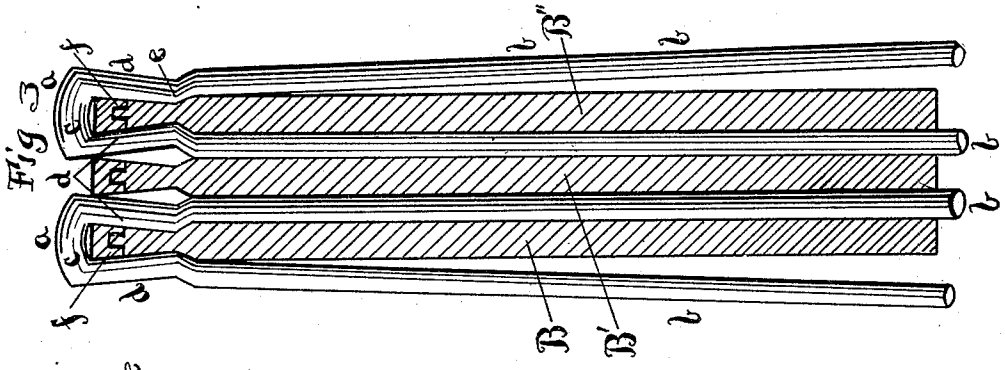


Fig 2.

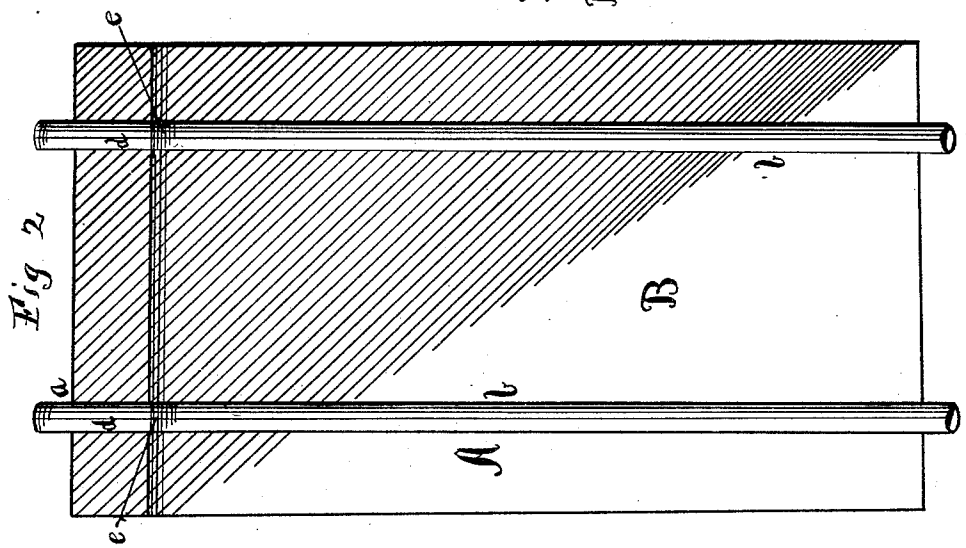
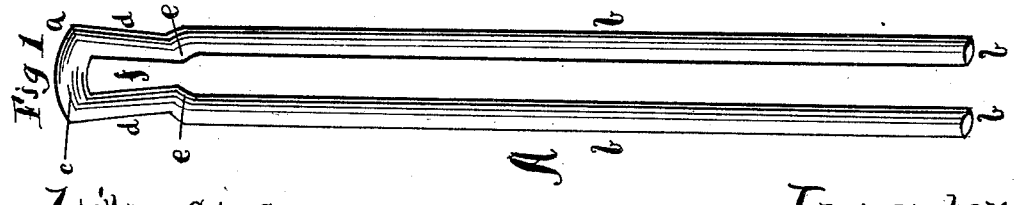


Fig 1.



Witnesses;
Samuel W. Banning
Thomas B. McGregor

Inventor
Charles S. Kaufmann
By Banning & Banning
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES S. KAUFMANN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE AMERICAN BATTERY COMPANY, OF CHICAGO, ILLINOIS.

INSULATOR FOR STORAGE-BATTERY PLATES.

SPECIFICATION forming part of Letters Patent No. 684,641, dated October 15, 1901.

Application filed January 7, 1901. Serial No. 42,372. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. KAUFMANN, a citizen of the United States, residing at 172 South Clinton street, Chicago, Illinois, have invented certain new and useful Improvements in Insulators for Storage-Battery Plates, of which the following is a specification.

The object of this invention is to construct an insulator for use in maintaining the separation of the plates of an accumulator or storage battery which will be simple and inexpensive as to manufacture and which at the same time can be easily manipulated and will be found efficient under all circumstances and not liable to ride the plate or become easily displaced in the handling and use of the plates and battery; and the invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings illustrating the invention, Figure 1 is a side elevation of the insulator of the invention; Fig. 2, a side elevation of a battery-plate having two of the insulators thereon; Fig. 3, a sectional elevation of a series of three battery-plates separated by the insulators, and Fig. 4 is a top or plan view of a series of three battery-plates separated by a series of insulators.

The insulator A is made of vulcanized rubber, gutta-percha, or other suitable insulating material and is formed with an engaging head or neck *a* and two legs or members *b*, joined or united to the head or neck. The head or neck is formed of a top or cross piece *c* and side pieces *d*, inwardly converging and terminating in a shoulder *e* at the juncture with each leg or member *b*, and each shoulder has, as shown, a slight outward flare. The legs or members *b* extend from the shoulders, so as to stand parallel, or approximately so, one with the other when the insulator is detached, as shown in Fig. 1. It will be noticed that the legs or side members, with the sides of the neck of the insulator, as a whole approach most closely one to the other at the shoulders and that the formation of the neck is such as to leave an opening *f* of a keystone shape. The distance between the legs at the mouth of the opening *f* is slightly less than the thickness of a battery-plate or of the frame for the plate, as shown in Fig. 3, so that when the insulators are slipped on over the heads or support of a plate the contact at the shoulders *e* causes the legs or side members *b* of the insulators to be thrown outward, as shown in Fig. 3.

The insulators are to be used in a battery by slipping one or more of them over each plate, so as to have a leg or side member of an insulator on each side of the plate. An arrangement of insulators and three battery-plates B B′ B^2 is shown in the drawings. The insulators can be arranged on the plates, as shown, or in any other suitable manner that will insure the insulating or separating of one plate from another, and it is to be understood that the representation of three plates is only for the purpose of illustration, as any number of plates can be employed. As shown, the initial or first plate B has slipped thereonto two insulators, one at or near each side edge of the plate, the second plate has one insulator slipped thereonto at or near the center of the plate, and the third plate has two insulators slipped thereon, as in the first plate, giving an alternating of two and one insulators for each two adjoining plates, which arrangement can be continued for any number of plates. This alternating arrangement of two and one insulators for adjacent plates gives a bearing for each plate at three different points, one at or near each side edge and one at or near the center, by which the parallelism of the plates is maintained and the plates are held apart uniformly.

It will be noticed that when an insulator is slipped onto a plate its legs or members are spread or thrown apart at the bottom or lower end, and when the next plate is brought against the preceding one the leg or legs of the insulator or insulators on the preceding plate will be forced and pressed tightly against the plate, and such forcing and pressing of the leg of each insulator inward will cause the shoulder or point of contact to be firmly compressed against the head or neck of the plate, thus preventing any slipping of the plates or of the insulators, producing and maintaining a separation and insulation of

the plates in a manner and by means which will be thoroughly effective.

What I regard as new, and desire to secure by Letters Patent, is—

1. An insulator for battery-plates formed with a head or neck, two side bars each extending downward and then flaring outward leaving a shoulder and two legs one extending downward from each shoulder, substantially as described.

2. An insulator for battery-plates, formed with a head or neck, two side bars each extending downward and inward and then flaring outward leaving a shoulder, and two legs one extending downward from each shoulder the two legs being parallel with one another, substantially as described.

3. In an electric battery, the combination of a series of plates separated and insulated by a series of insulators adapted to slip down over the heads of the plates, each insulator formed with two legs and a head or neck, with the side bars of the head or neck extending downward and inward, and then flaring outward and downward leaving a shoulder, substantially as described.

CHAS. S. KAUFMANN.

Witnesses:
SAMUEL W. BANNING,
THOMAS B. MCGREGOR.