

976,141.

Patented Nov. 22, 1910.

Fig. 1.

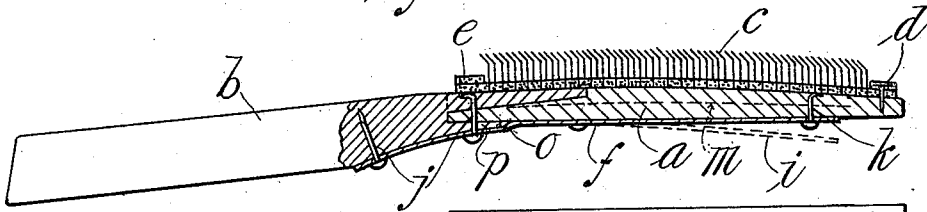


Fig. 2.

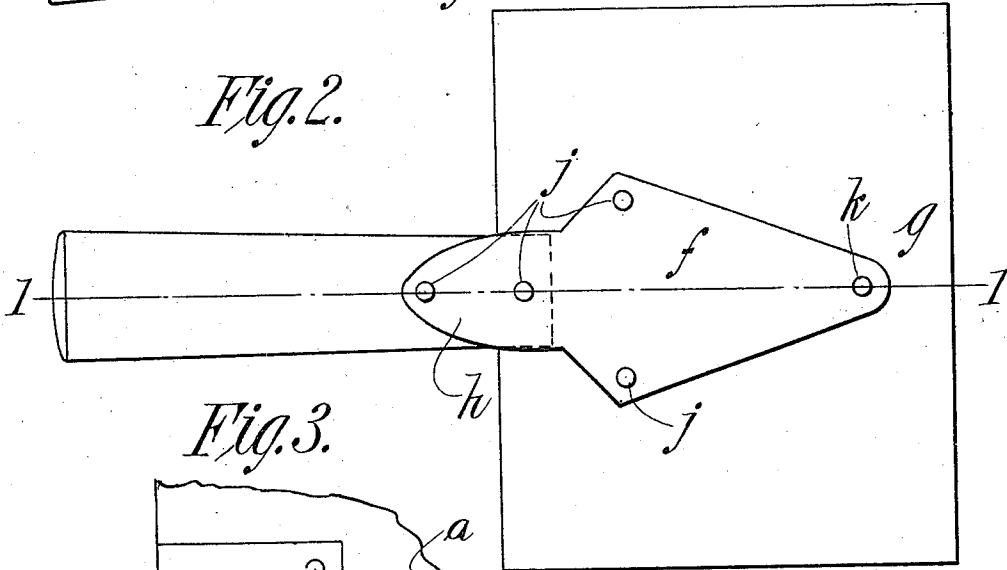


Fig. 3.

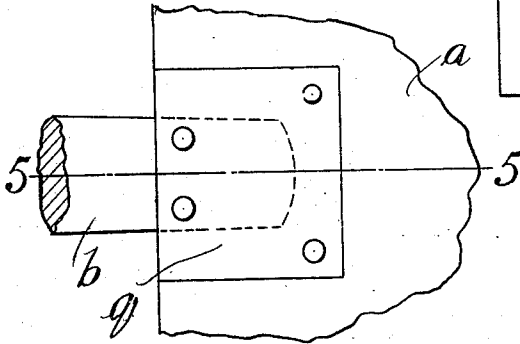


Fig. 4.

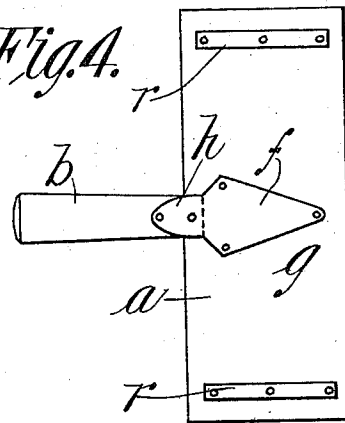
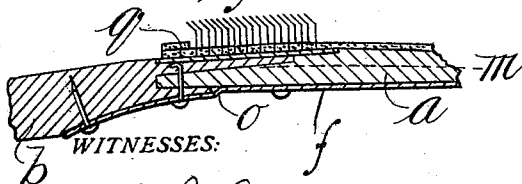


Fig. 5.



WITNESSES:

H. L. Sprague

Harry W. Bowen

INVENTOR,
Charles F. Beckwith,
BY
Chapin & Co.
ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES F. BECKWITH, OF STAFFORD SPRINGS, CONNECTICUT.

HAND-CARD.

976,141.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed March 4, 1910. Serial No. 547,177.

To all whom it may concern:

Be it known that I, CHARLES F. BECKWITH, a citizen of the United States of America, residing at Stafford Springs, in the county of Tolland and State of Connecticut, have invented new and useful Improvements in Hand-Cards, of which the following is a specification.

This invention relates to improvements in hand-carding devices as used in connection with textile products and in which the back member is provided with a strip of card-clothing on its face or operative side, and an elastic or spring member on the opposite or upper side, whereby the stresses exerted by these two members on the back member are practically equal and opposite, so that the back member will retain substantially its shape without permitting the card-clothing to become loosened and thus destroy the usefulness of the carding device. In order to obtain this result the median line of the back member must move in unison with the card-clothing.

A further object of the invention is to provide means for securely attaching the handle to the back member, and, further, as a modification, to provide the back member with spring devices at its opposite ends so that in carding devices that are made of considerable length, these end spring devices will assist in keeping the entire back member from changing its shape.

Referring to the drawings,—Figure 1 is a sectional elevation on the line 1—1, Fig. 2, clearly showing the manner in which the card-clothing and spring member are attached on the upper side of the body member, and in dotted lines, the position of the spring member before the back member is secured in place. Fig. 2 is a plan view of the upper side of the carding device showing the shape and location of the spring member. Fig. 3 is a slightly different form in which a strengthening plate for the handle and the body member is located on the inner side of the body member, the handle being shown broken off and a portion of the body member broken away with the card-clothing omitted. Fig. 4 is a structure in which the carding device is larger than that shown in Figs. 1 and 2, and provided with a spring member at its opposite ends of the back. Fig. 5 is a vertical sectional view on the line 5—5, Fig. 3.

Referring to the drawings in detail, *a*

designates the back member, *b* the handle secured thereto, and *c* the usual card-clothing that is attached to the back member at its forward and rear edges, as shown at *d* and *e*.

f designates a strip of spring metal (preferably steel) that is attached to the back member and extends forwardly from the handle and beyond the center line of the back member, as shown at the point *g*; and its rearward portion is attached to the handle by means of the extension part *h*.

In assembling the elements shown in Fig. 1, the card clothing *c* is first tacked along its forward edge and then, by means of suitable stretching devices, the card-clothing is drawn rearwardly and secured to the back member at the point *e*. Since the effect of tightly stretching the card-clothing causes the back member to be bent or curved out of its normal shape and gradually become loosened or slack, rendering the device useless, it is necessary to provide some means to counteract the bending of the back member and the loosening of the card-clothing.

I have found that by the use of the spring member, as shown at *f*, (which before it is secured in place normally assumes the position shown in the dotted line at *i*,) a stress on the back *a* will be exerted in the opposite direction to that caused by the card-clothing *c*, whereby the median line *m* of the back *a* always will move in unison with the card-clothing and the opposing action of the spring member *f* will maintain the card clothing *c* in a stretched condition at all times. The rear end *h* of this spring member is first secured to the handle and to the rear edge portion of the back *a* by means of the nails *j*; then by springing downward its forward edge into contact with the upper surface of the back member and securing the same by means of the nails *k*, the stress of the spring member is transferred to the back member. These two stresses, one of which tends to cause the back *a* to move in one direction, and the other in the opposite direction, will cause the median line of the back member to change and consequently the card clothing is kept tight so that the life of the hand-card is greatly prolonged.

It will be noticed that the spring member *f* is provided with an offset portion *o* that engages the forward edge *p* of the handle *b* which portion has the effect of preventing any looseness of the handle with re-

lation to the back *a* when in use. The member *f* also greatly strengthens the back *a* since it extends forward toward the front edge of the same, as indicated at *g*.

5 In the construction shown in Figs. 3 and 5, a plate *q* is provided on the inner side overlapping the meeting edges of the handle and back member. This plate serves to strengthen the attachment of the handle to
10 the back, as in use there is naturally a great deal of pressure exerted by the operator on the handle and unless the connection between the back and handle is made very strong, the device will break at this point; otherwise
15 this construction is the same as that shown in Figs. 1 and 2.

In Fig. 4 a slight modification is shown in which the back *a* is made much longer than that shown in Fig. 1, and in order
20 to preserve the shape of the back member throughout its length so that the card clothing will always remain in a stretched condition, spring members *r* are secured to the opposite ends, as shown, which normally
25 have a tendency to bend or spring outward in the same manner as that shown in Fig. 1 at *z*, whereby the position of the median line of the back will move and the card-clothing be maintained in a stretched condition.
30

It will therefore be seen that the above improvements in hand-cards greatly increase the life and usefulness of the device, first, by securely attaching the handle to the back
35 portion, and second, by causing the median line of the back member to move in unison with the tension of the card-clothing, thus maintaining the same always in a stretched condition. It will therefore be seen that
40 the card-clothing is automatically maintained in a stretched condition irrespective of the effect of atmospheric conditions as regards humidity. The strip of spring metal *f* therefore yields or moves in unison
45 with the card-clothing so that there is always exerted a tension upon the same without resorting to any adjustment.

What I claim, is:—

1. In a hand-card for use in connection
50 with textile products, the combination with

the back member, of a handle, and a card-clothing attached to the back-member, said clothing being secured to the back-member in a stretched condition, a resilient plate secured to the opposite side of the back-member and extending onto and secured to the handle, the normal tendency of the plate, when attached as described, being to exert a force on the back member in opposition to that exerted by the stretched card clothing, whereby the clothing is constantly kept tight, as described.

2. In a hand-card, the combination with the back member, of a handle, and a card-clothing attached to the back member in a stretched condition, a spring plate secured to the handle and back member, whereby the original condition of the card clothing is maintained.

3. In a hand-card, the combination with the back and handle members and the card-clothing attached to the front side of the back member in a stretched condition, of a plate extending across the meeting edges of the handle and back member, and a second plate of spring material extending across the meeting edges of the handle and back member but located on the outer surface thereof and normally exerting a tendency to spring outwardly, said spring member being provided with an offset to engage the end portion of the handle, as described.

4. In a hand-card device for use with textile products, a back member, a spring member secured to the upper side of the back member, the normal tendency of which is to bend outwardly, as described, and the card clothing being secured to the face side of the back member in a stretched condition.

5. In a hand-card device, a back member, card-clothing secured thereto in a stretched condition, a handle therefor, and a spring member engaging the handle and back member and provided with an offset, the offset portion engaging the end portion of the handle, as described.

CHARLES F. BECKWITH.

Witnesses:

K. I. CLEMONS,
HARRY W. BOWEN.