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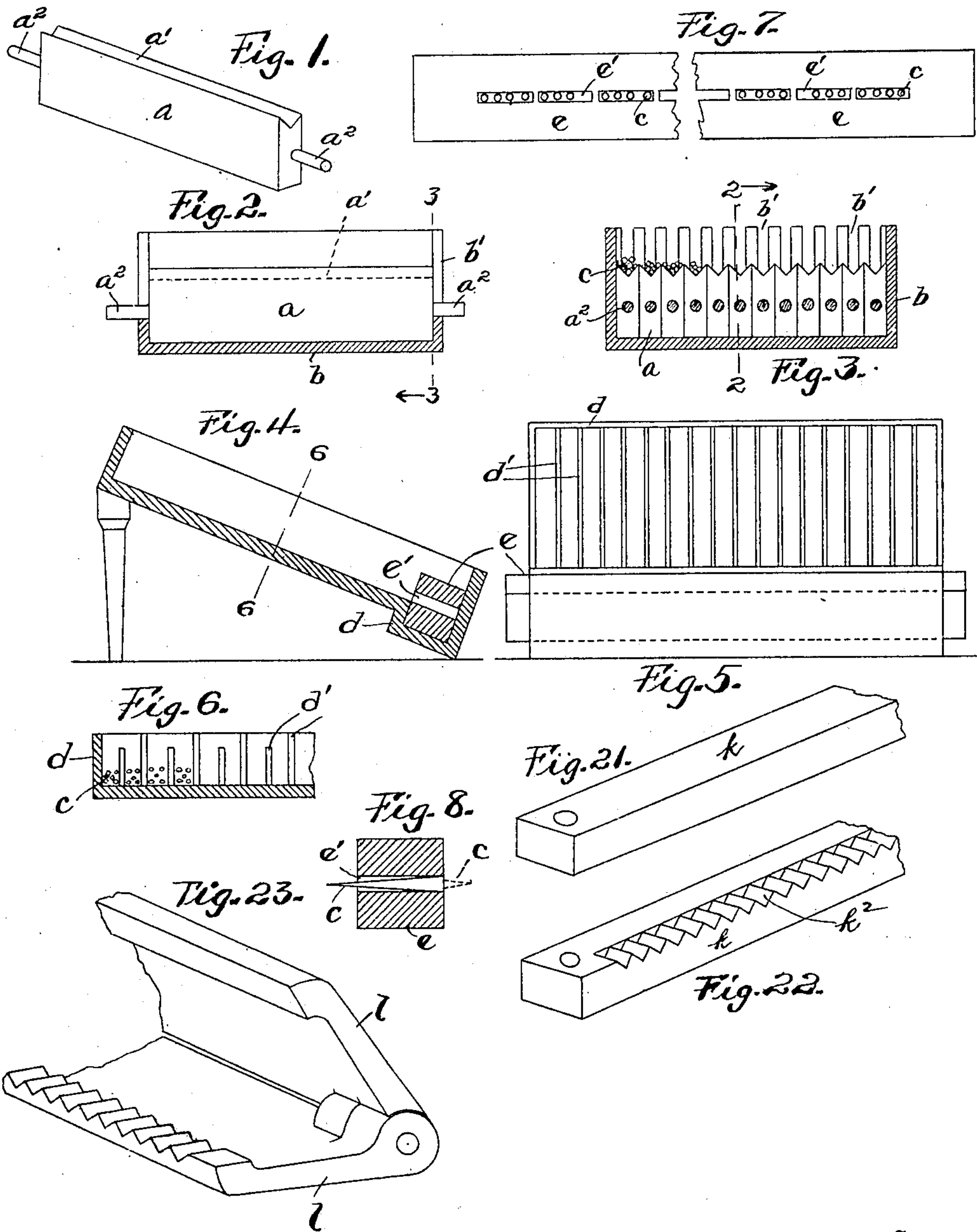
PATENTED JAN. 14, 1908.

R. JOWETT.

PROCESS OF MANUFACTURING COTTON COMBS.

APPLICATION FILED JAN. 17, 1907.

3 SHEETS—SHEET 1.



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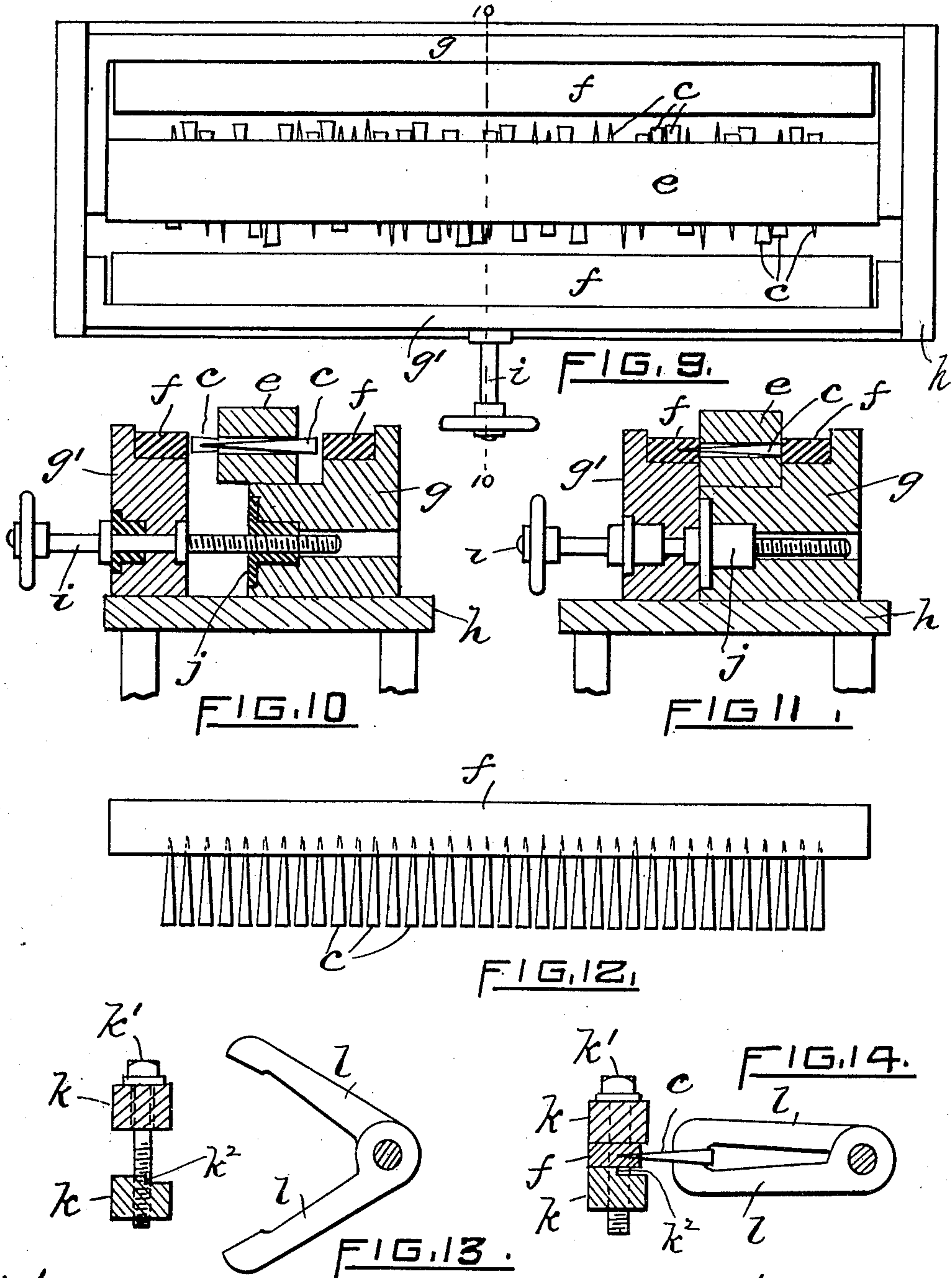
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3 SHEETS—SHEET 2.



WITNESSES.

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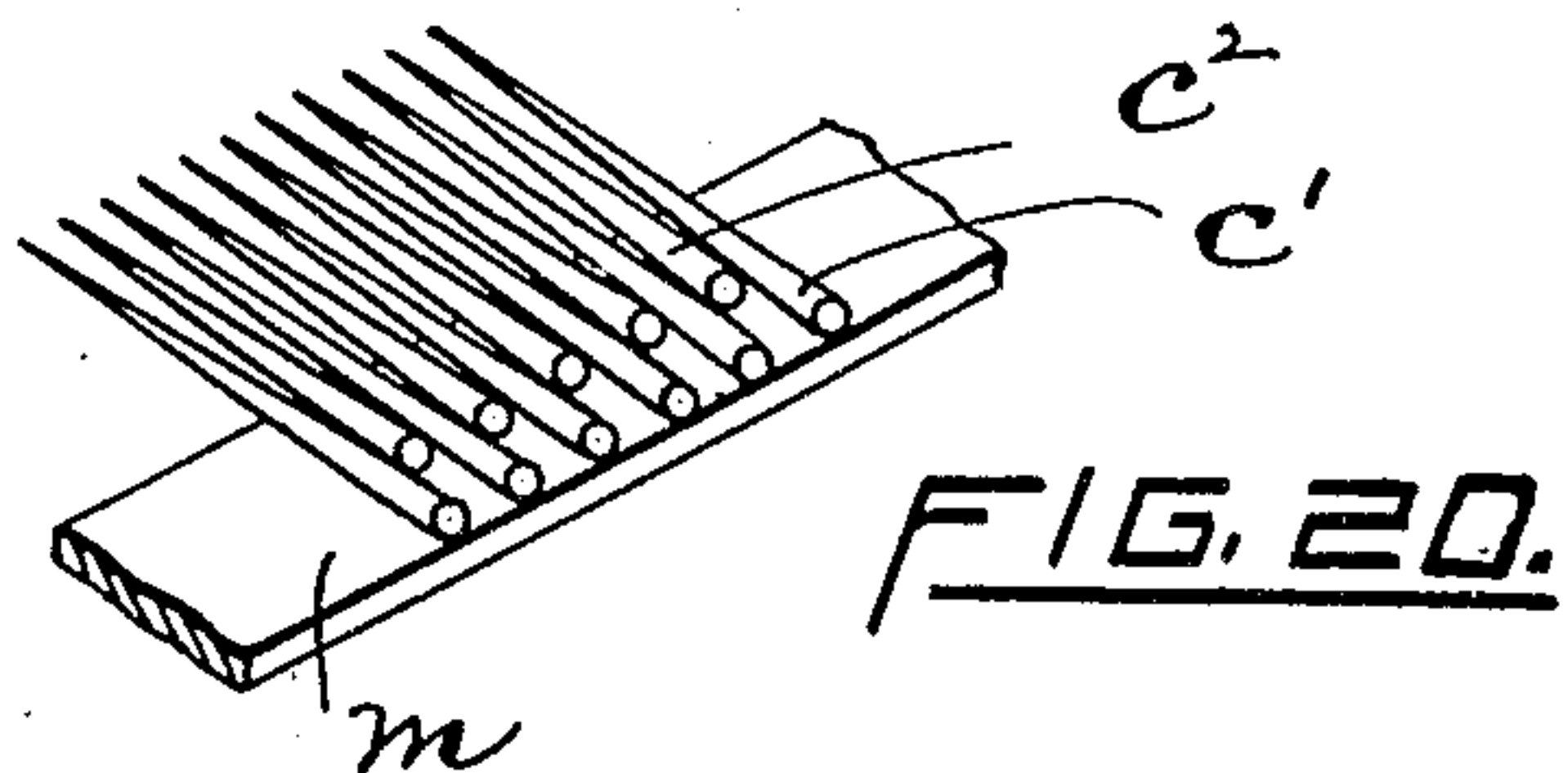
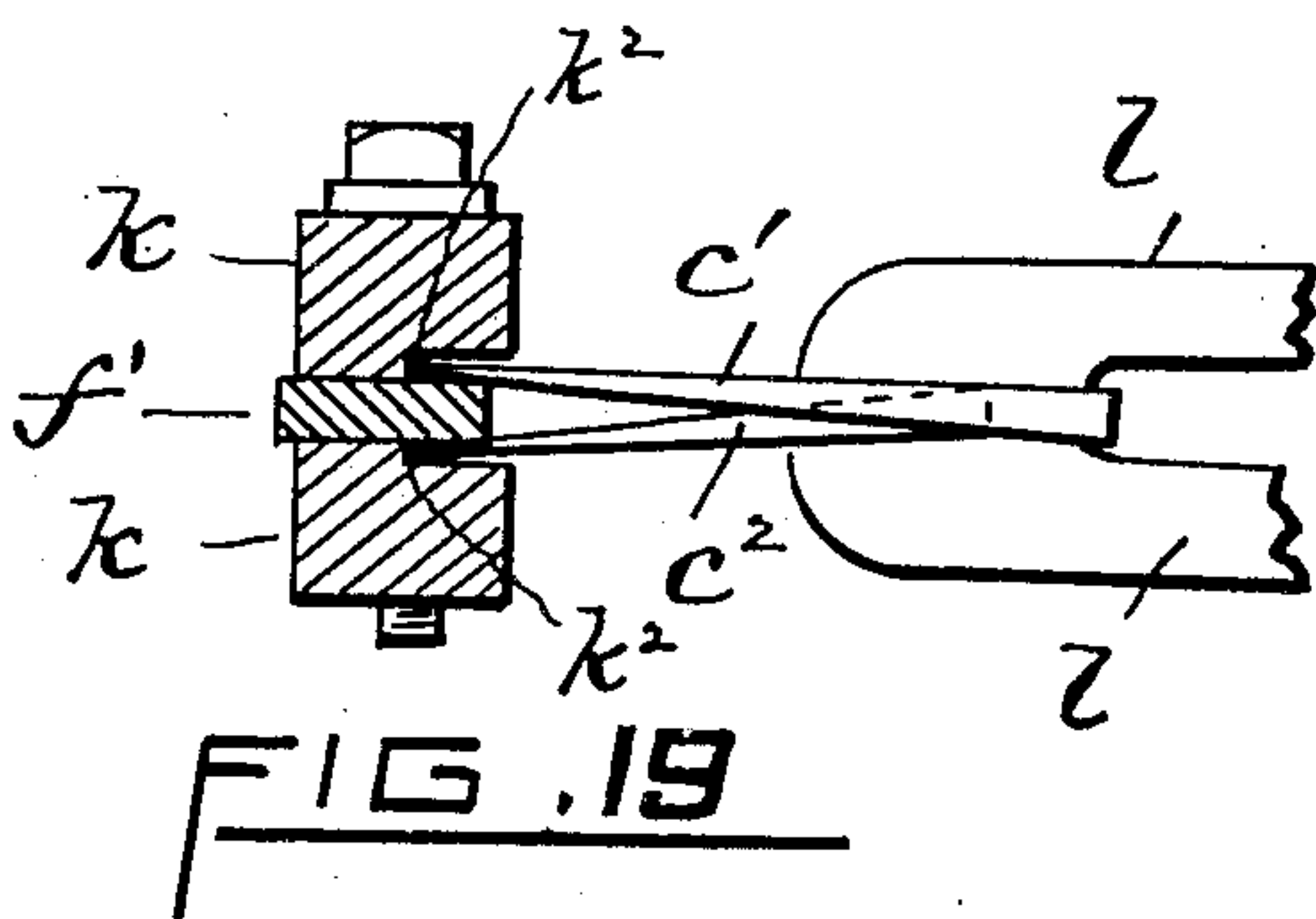
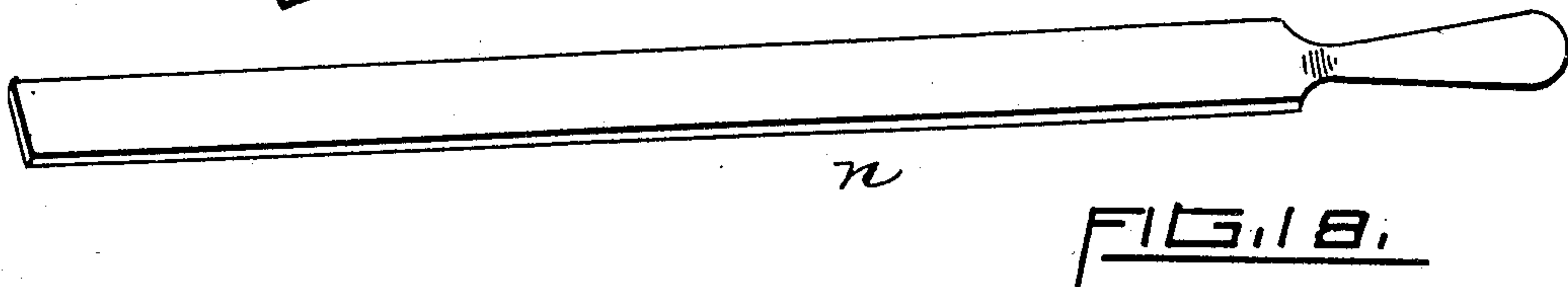
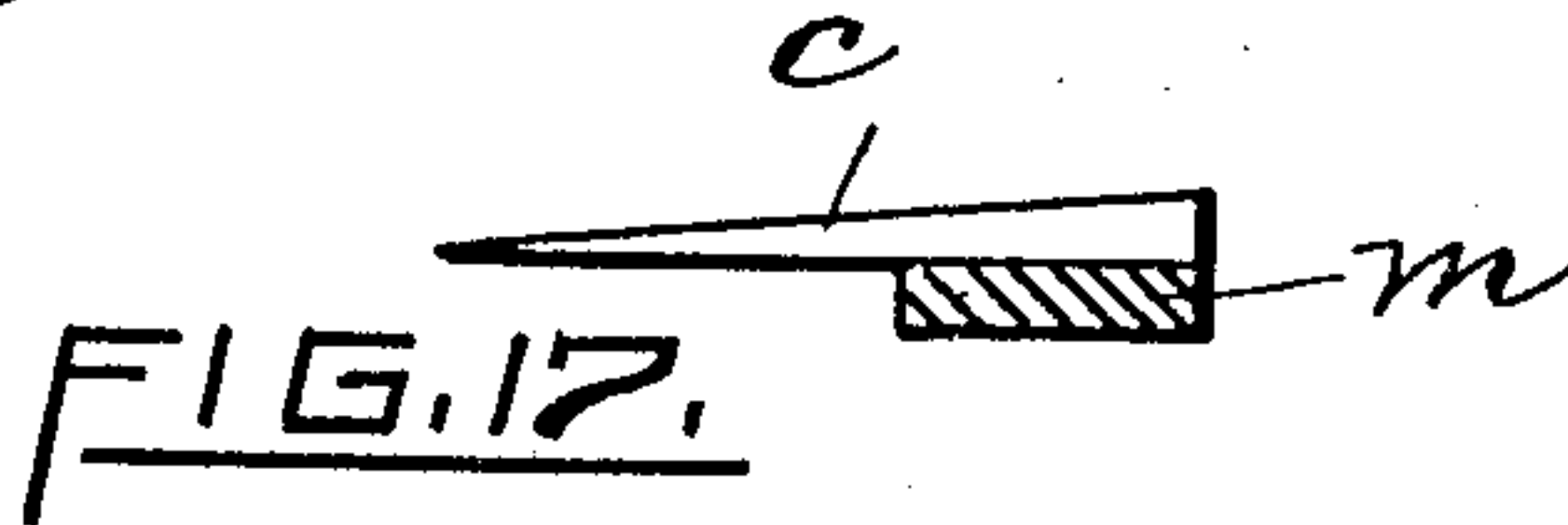
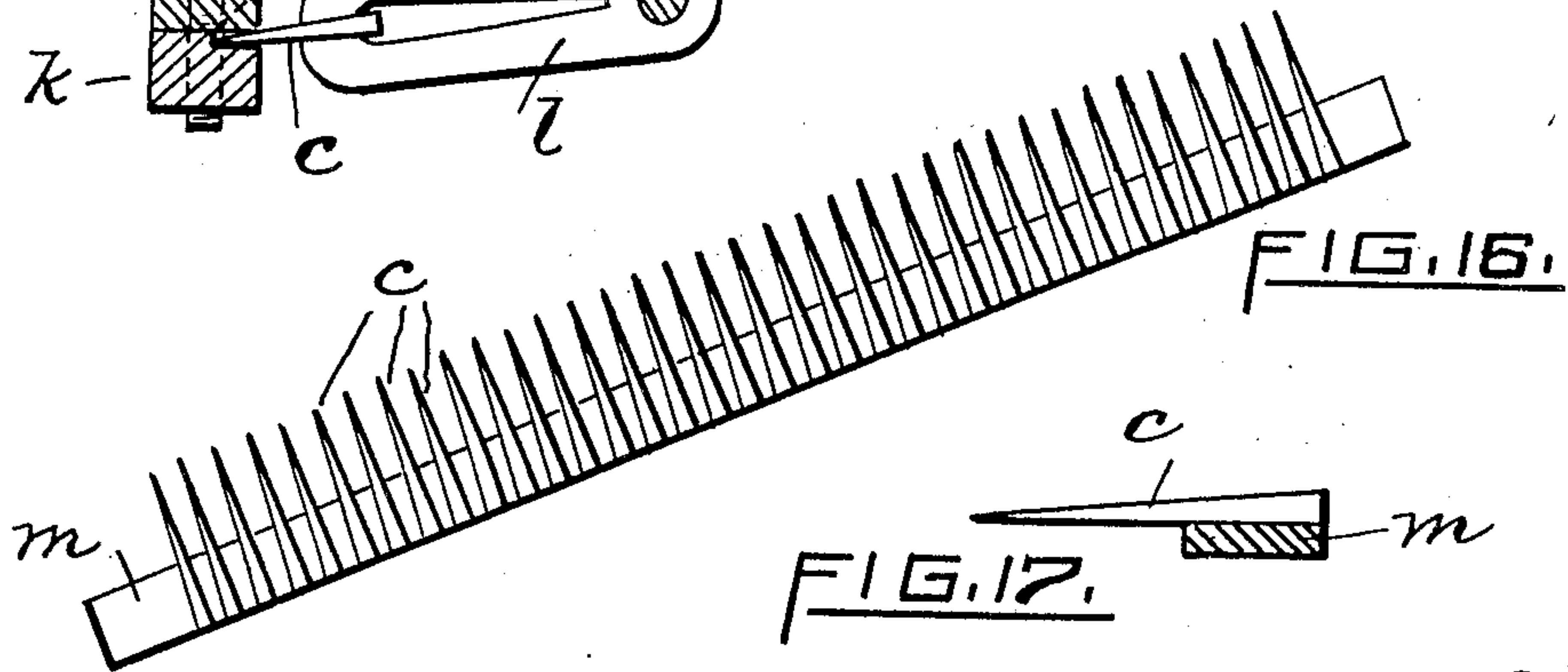
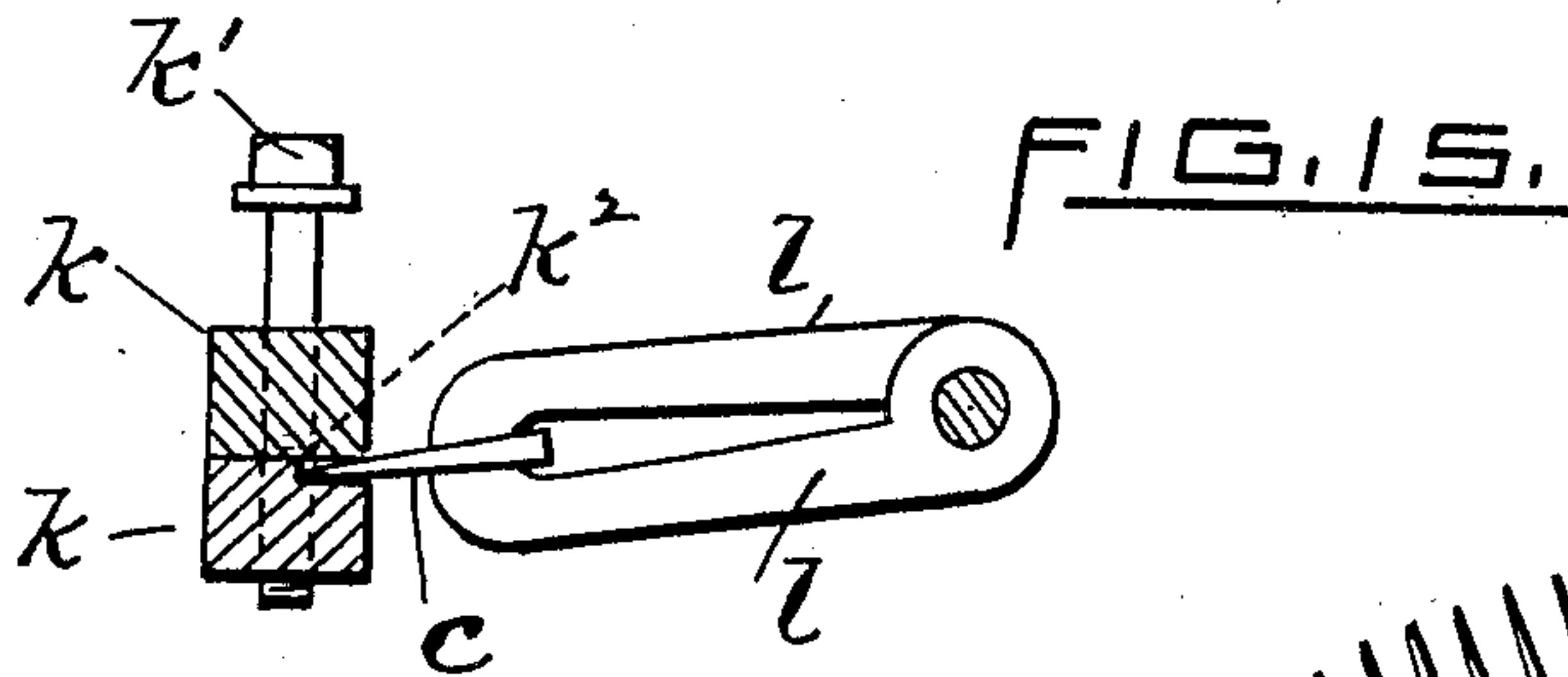
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PROCESS OF MANUFACTURING COTTON COMBS.

APPLICATION FILED JAN. 17, 1907.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

RALPH JOWETT, OF PAWTUCKET, RHODE ISLAND.

PROCESS OF MANUFACTURING COTTON-COMBS.

No. 876,358.

Specification of Letters Patent.

Patented Jan. 14, 1908.

Application filed January 17, 1907. Serial No. 352,699.

To all whom it may concern:

Be it known that I, RALPH JOWETT, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in the Process of Manufacturing Cotton-Combs, of which the following is a specification.

My invention relates to an improved process of manufacturing cotton combs and assembling the needles forming the comb-teeth so that the points are all pointing the same way; spacing the needles; alining the points; and securing the needles to the comb-back.

The accompanying drawings show the method by which my improved process is carried out.

Figure 1 is a perspective view of one of a series of troughs in which the comb needles are placed at the beginning of the process. Fig. 2 is a longitudinal sectional view on the line 2—2 of Fig. 3, showing the box in which the various separate troughs are placed. Fig. 3 is a cross section of the box giving an end view of the various troughs, said cross section being on the line 3—3 of Fig. 2. Fig. 4 is a transverse sectional view of the inclined receptacle into which the needles are transferred from the troughs shown in Fig. 1. Fig. 5 is a front elevation of the same. Fig. 6 is a transverse section of the receptacle shown in Fig. 4 on the line 6—6 of said Fig. 4. Fig. 7 is an enlarged plan view partly broken away of the perforated bar for catching the needles as they slide down the inclined receptacle shown in Figs. 4 and 5, showing a plurality of needles therein. Fig. 8 is a cross section of the member shown in Fig. 7, showing the projecting needles. Fig. 9 is a top or plan view of the device for holding the needle catcher for subsequent operations. Fig. 10 is a section on the line 10—10 of Fig. 9, with the parts arranged as shown in Fig. 9, or separated. Fig. 11 is a view similar to Fig. 10 with the parts compressed or in closed position. Fig. 12 shows the needles with the points all extending in the same direction. Fig. 13 shows two clamps, one for holding the needle holding strip and the other for seizing the needles and withdrawing them from said strip. Fig. 14 shows the two clamps disclosed in Fig. 13, in the closed position. Fig. 15 shows the method of alining the needles. Fig. 16 is the comb with the

needles in position thereon. Fig. 17 is a cross sectional view thereof. Fig. 18 is a view of a separate form of soldering iron employed for soldering the entire comb-full of needles at a single operation. Fig. 19 is a view similar to Fig. 14 illustrating the modifications required when a double row of needles is to be soldered. Fig. 20 is a perspective view of a portion of the needle bar when a double row of needles is attached thereto. Fig. 21 is a perspective view of a portion of the upper clamp member. Fig. 22 is a perspective view of a portion of the lower clamp member, and Fig. 23 is a perspective view of a portion of the clamping device.

Throughout the various drawings the same parts are represented by the same letters.

In Fig. 1, *a* is a member of nearly rectangular cross section having the triangular trough-shaped depression *a'*, and provided at each end with the projecting pins *a²*. This member *a* is in reality a species of counting device, as I have established by experiment the fact that the triangular depression *a'* will hold a certain definite number of needles when filled as full as it can be filled, and that all surplus needles above a definite number will roll off; thus each successive trough-full will contain approximately the same number of needles. The box *b*, Fig. 2 is arranged to hold a number of these troughs *a* side by side, the ends of the box *b* being slotted at *b'—b'*, seen best in Fig. 3, for the accommodation of the projecting pins *a²* of the troughs *a*, these pins serving as handles to the trough. The receptacle *b*, Figs. 4 and 5, is divided into sections, and the contents of a single trough *a* is sufficient to fill to the necessary extent one section of the box *d*, each section receiving approximately the same number of needles. This box *d* contains at its lower extremity a depression or pocket *b'* shown in Fig. 4, and the member *e*, Fig. 6, is adapted to fit into said pocket. This member *e* is shown enlarged in cross section in Fig. 8, and consists substantially of a bar of brass or other suitable material of rectangular cross-section and containing a plurality of perforations *e'* enlarged in Fig. 7. The number of these perforations corresponds to the number of departments or sections of the box *d*, and the thickness of the member *e* in the direction of the perforations is slightly less than the length of the comb needles, so that the comb needles when inserted in said per-

forations project slightly beyond the face of the member *e* as shown in *c—c* in Fig. 8. The cross section of these perforations is less in size than the length of the needles, so that the latter remain in parallel relations therein. 5 The partitions *d'* of the box *d* are not all of the same height but a high and a low partition alternate as shown in Fig. 21; and the distance between two high partitions is so arranged as to be less than the length of the needles *c* thus facilitating the depositing of the needles lengthwise in the bottoms of the sections and preventing their remaining lodged on the tops of the partitions. 10

The letter *c* throughout the various drawings represents the comb needles. 15

Figs. 9, 10 and 11 represent a plan view and cross sections of a frame *g—g'*, the member *g* being fixed to the frame or table *h*, while the member *g'* is movable and may be brought in contact with the member *g* by means of the screw *i* and the nut *j*. The length of the frame *g—g'* is sufficient to accommodate the member *e* as shown in Fig. 9. 20 *f—f* are strips of soft wood loosely fitting in suitable depressions in *g—g'* in such a position that the respective edges of *f—f* are opposite the comb needles in the member *e* when the bar is inserted in the frame. In Fig. 12, *f* represents one of the said strips of soft wood with the comb needles *c* inserted therein. 25 Figs. 13, 14 and 15 are clamps used for transferring the comb needles from the soft wood strips *f* to the permanent back of the comb *m* Fig. 16. 30

k—k is a special form of clamp or vise of cast iron or other suitable material capable of being brought together by the screw *k'*, the lower member *k* having an offset *k²* running the whole length thereof. 35 40

Fig. 14 shows a strip *f* containing the comb needles *c* held securely in one clamp while the remaining clamp consisting of the jaws *l—l* is closed upon the heads of the comb needles. The offset *k²* in the clamp *k—k* is used for the purpose of alining the points of the comb needles as shown in Fig. 15. The face of the offset *k²* is corrugated or indented with parallel grooves spaced to conform to the spacing of the comb needles when the latter are in permanent position on the comb as shown in Figs. 22 and 23, and the faces of the jaws of the clamp *l—l* are similarly indented. 45 50

Fig. 16 shows the needles *c* placed in position on the back of the comb *m* which is composed of metal, preferably brass or tinned iron, shown in cross section in Fig. 17. Fig. 18 is a modified form of soldering-iron capable of soldering the needles upon the entire comb or even on two or more combs at once. 55 60

Fig. 19 shows a modification of the clamp *k—k* for the purpose of forming combs with a double row of needles, this modification 65

consisting of adding an offset to the upper member of the clamp similar to that of the lower one hereinbefore described. By this modification shown in Fig. 19 the alternate teeth *c'—c²* are placed on opposite sides of the strip *f'* thus forming two rows of needles. 70 The needles are then clamped securely in the clamp *k—k* and while held in that position the blunt ends or heads of the needles are placed upon the comb-back *m* and soldered in position. Figs. 22 and 23 are respectively a plan and front view of the offset *k²* showing the parallel grooves or corrugations for the reception of the needles. 75

The operation of my invention I will now proceed to describe. The box *b* containing the troughs *a* Fig. 1, is supplied with needles in bulk, a slight sifting motion of *b* causing them all to be distributed evenly throughout. The perforated member *e* is then placed in the depression at the bottom of *d* and one of the troughs *a* is then taken from box *b* and being held over the receptacle *d* is tilted sidewise, each section receiving approximately the same number of needles, which instantly slide down toward the member *e* until the perforations *e'* are charged with the needles. The member *e* filled with comb needles projecting heads and points indiscriminately, is then placed in the frame *g—g'*, the comb needles, heads and points, being shown at *c—c*. The soft wood strips *f—f* are placed in position and the members *g'—g* brought together by the screw *i*. This forces the projecting points of the comb needles into the soft wood strips *f—f*. The members *g—g'* are then separated and the two strips *f—f* removed with the comb needles fastened therein as shown in Fig. 12, and one of the strips with its needles adhering therein reversed in position, the points being now all in one direction. One of the strips *f—f* is then secured in the clamp *k—k* and the clamp *l—l* applied. The closing of the jaws of *l—l* on the needles serves at the same time to space the needles properly by means of the indentations or depressions in the faces of the jaws, any empty spaces being readily filled by hand. When *l—l* is firmly closed on the needles, they are taken from the strip of wood *f* by *l—l*, the latter being held preferably on centers applied to the ends of the hinged back, and the points are then brought in line by pressing the same against the back of the offset *k²* Fig. 15. The depth of the offset *k²* is so slight that when the members of *k—k* are brought together by the screw *k'* the needles are held securely and all properly spaced and alined. *l—l* then releases them and they are applied by *k—k* to the back *m* of the comb, and prepared for soldering. This is done by the special soldering-iron *n* Fig. 18, corresponding in length to the comb, or the number of combs to be soldered at once. The iron is 80 85 90 95 100 105 110 115 120 125 130

heated its full length and applied to the
needles with a suitable solder until the latter
flows; the iron is then removed and the
operation is complete. The same opera-
5 tions are employed in the making of the
double rowed comb shown in Fig. 20, the
only difference being that the points of al-
ternate needles have to be adjusted on op-
posite sides of the strip of wood *f'* before
10 being applied to the back of the comb *m*.
As the needles are made of very fine steel
wire, the heads are easily brought flatly in
contact with the comb-back while the
points, in two separate rows, are being held
15 in the clamp *k—k* Fig. 19. After soldering,
the points remain in two permanent rows
while the heads are held flat on the comb-
back by the solder.

Having now described my invention, what

I claim and desire to secure by Letters Pat- 20
ent is

The method of manufacturing cotton
combs consisting in arranging the requisite
number of needles in parallel masses, trans- 25
ferring each of the masses of needles to a re-
ceptacle of less depth than the length of the
needles, forcing penetrable members against
the pointed ends of the needles, clamping
the needles in uniformly spaced relations,
and applying the needles to a backing mem- 30
ber in position for soldering.

In testimony whereof I affix my signature
in presence of two witnesses.

RALPH JOWETT.

Witnesses:

CURTIS M. LOVELACE,
JAMES L. JENKS.