

(No Model.)

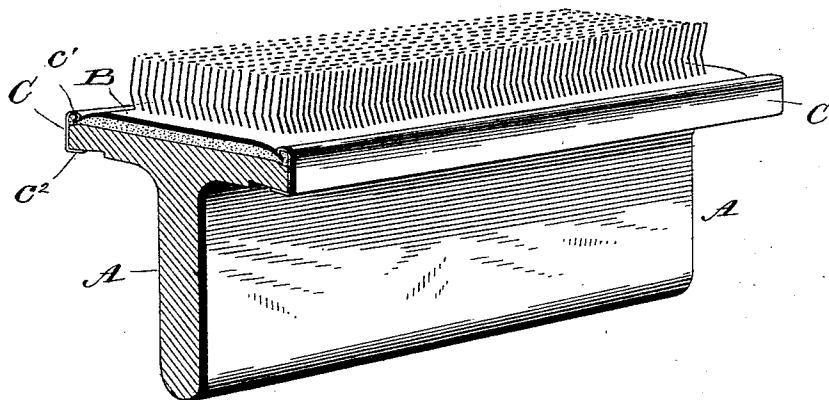
2 Sheets—Sheet 1.

A. HITCHON.
METHOD OF SECURING CARD CLOTHING TO CARDING ENGINE FLATS
AND MACHINE THEREFOR.

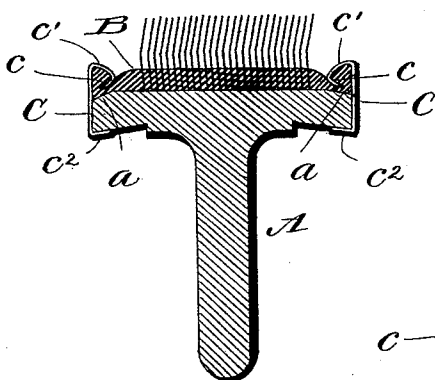
No. 511,146.

Patented Dec. 19, 1893.

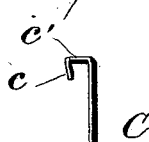
~~Fig. 1.~~



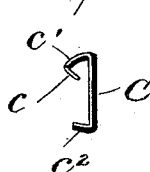
~~Fig. 2.~~



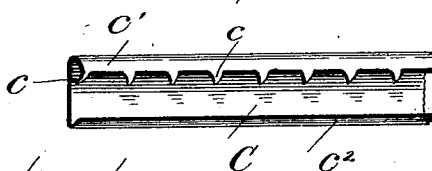
~~Fig. 3.~~



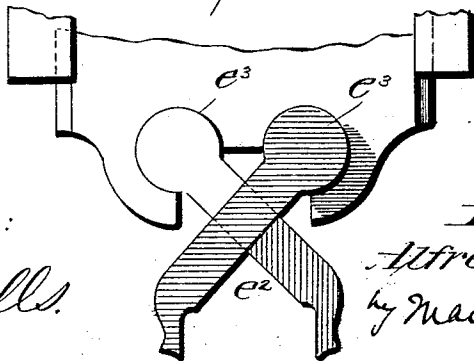
~~Fig. 4.~~



~~Fig. 5.~~



~~Fig. 6.~~



Witnesses:
L. C. Mills.
E. J. Davis

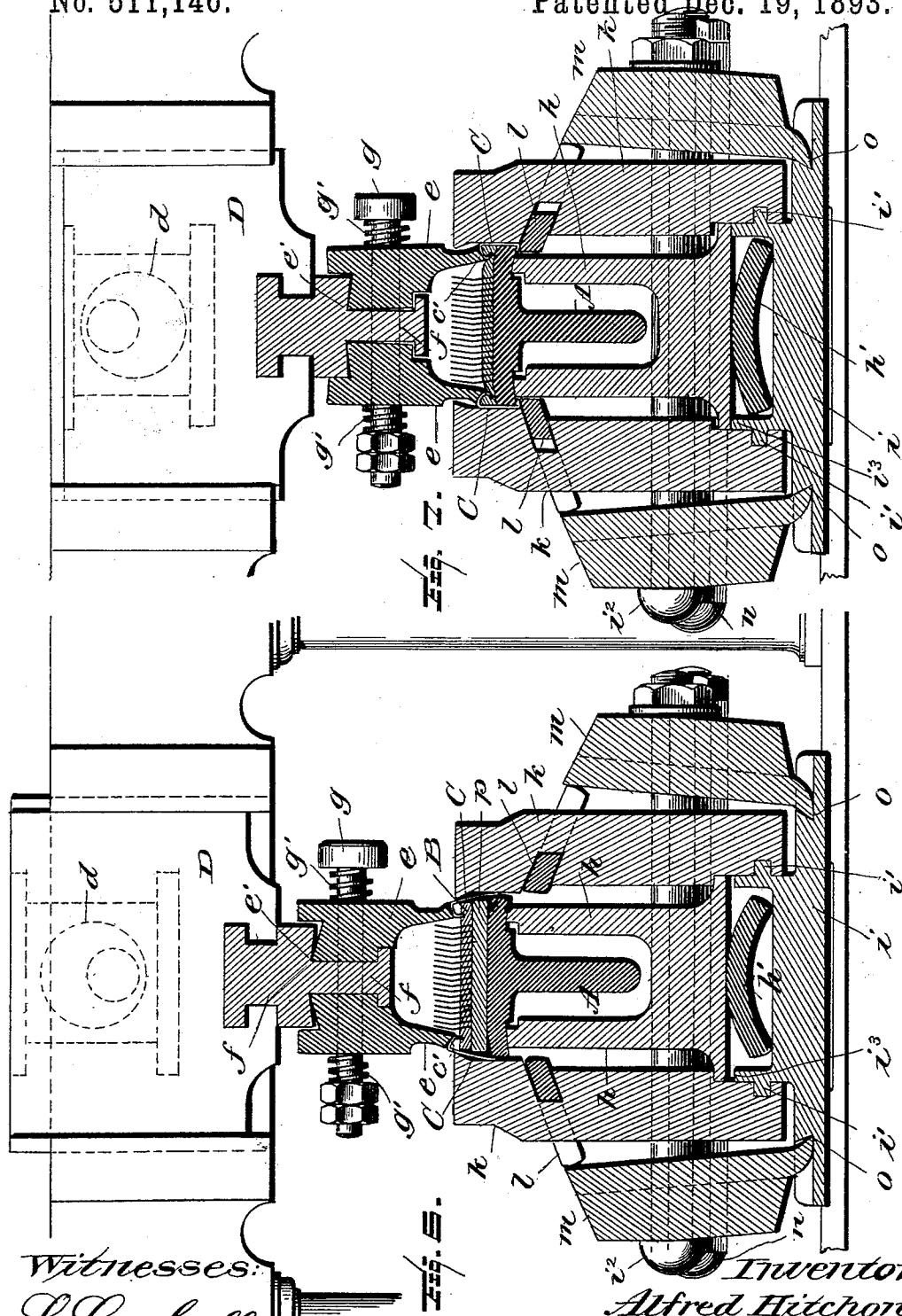
Inventor:
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Attorney.

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his Attorney.

UNITED STATES PATENT OFFICE.

ALFRED HITCHON, OF ACCRINGTON, ENGLAND.

METHOD OF SECURING CARD-CLOTHING TO CARDING-ENGINE FLATS AND MACHINE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 511,146, dated December 19, 1893.

Application filed September 15, 1893. Serial No. 485,595. (No model.) Patented in England March 25, 1892, No. 5,844, December 8, 1892, No. 22,494, and April 27, 1893, No. 8,471.

To all whom it may concern:

Be it known that I, ALFRED HITCHON, a subject of Her Majesty the Queen of Great Britain, residing at Accrington, in the county of Lancaster, England, have invented certain new and useful Improvements in Methods of Securing Card-Clothing to Carding-Engine Flats and Machines Therefor, (for which I have obtained British Letters Patent No. 5,844, of March 25, 1892, No. 22,494, of December 8, 1892, and No. 8,471, of April 27, 1893,) of which the following is a specification.

Under my invention, which has been designed with more particular reference to the securing of card clothing to metal card flats, the clothing is secured to the flat by devices which operate to hold the two together and at the same time to stretch the clothing at the time it is secured and to hold it in that stretched condition. The clothing is held to the flat by metallic strips having "peg tooth" edges, the edges on which the teeth are formed being preliminarily bent to overhang the clothing, and the teeth themselves being bent point down from these overhanging edges with their points inclining outwardly toward the selvages of the clothing. These teeth by downward and outward pressure applied simultaneously, are forced down into the clothing in an outwardly slanting direction, their points turning outward toward the selvages, the effect of this operation being to clinch them in the clothing, and at the same time to stretch the latter toward the side edges of the bar. The lower edges of the metal fastening strips are then bent under the edges of the bar, the result being that the outer edges of the bar and clothing are clasped or clamped together by strips which at the same time hold the clothing in its stretched condition.

The nature of my invention and the manner in which it is or may be carried into effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view, and Fig. 2 is a cross section of a metal flat made in accordance with my invention. Fig. 3 is a section of the fastening strip in the form into which it is preliminarily bent. Fig. 4 is a like section of the same as it appears when fully bent. Fig. 5 is an inner face elevation of the

latter. The strip of course is bent to the shape shown in Figs. 4 and 5, only after it has been applied to and clinched upon and into the metal flat and the clothing. It is shown, however, separate from the flat and clothing, so that its shape at this turn may be more fully illustrated. Fig. 6 is a transverse sectional elevation of appliances for exerting the downward and outward pressure by which simultaneously the strips are clinched upon and into the flat and clothing, and the clothing, by and during the clinching operation, is stretched upon the flat. In this figure the parts are shown in the position they occupy at the commencement of the operation. Fig. 7 is a like view of the same appliances in the position they occupy after the operation has been completed. Fig. 8 shows in cross sectional elevation a modification of the expanding presser tool by which downward and outward pressure is delivered.

The metal flat is shown at A. Upon its face is the card clothing B, held thereon in stretched condition, by the thin metal strips C (preferably steel), which clasp the edges of the flat and clothing; the upper bent over edges of the strips are armed with teeth *c*, which are driven down into, and outwardly toward the selvages of the clothing, thus stretching the latter crosswise of the flat, and holding it in stretched condition; the under edges of the strips are bent beneath the side edges of the flat, thus clamping the parts tightly in place. The face of the flat along its edges is beveled slightly as seen at *a*, thus making the surface of the flat lower along the outer edges than at the central portion; I find that this better insures the holding of the clothing in close connection with the surface of the flat, and avoids overstretching the clothing, thus giving more flexibility to the card teeth or wires. The strips C before they are applied are preliminarily bent at their upper edges to the form shown in Fig. 3, the teeth *c* being bent down from the overhanging horizontally bent solid portion *c'* of the upper edge, and having a slight outward inclination. They are then applied to the clothing B, which is laid upon the face of the flat A, and is of a width less than that of the flat, and then by downward and outward press-

are, exerted upon the heads of the teeth, that is to say, upon the inner edge of the part c' , the teeth are forced into the clothing downwardly and outwardly, with the result of stretching the clothing, and of being clenched therein, taking ultimately the shape shown in Fig. 4. Thus the clothing is stretched by and during the operation of securing it on the flat. The bending of the lower edges c^2 of the strips under and against the under face of the flat, completes the operation.

Appliances by the aid of which this method of simultaneously stretching and securing the clothing to the flat can conveniently be practiced, are represented in Figs. 6 and 7.

D is a cross head arranged to slide vertically in suitable guides and actuated to move by any proper means,—as for example the eccentric d . At its lower end it carries an expanding presser tool consisting of the two jaws e , held to a support f on the iron head by a cross bolt g , and pressure springs g' , which tend to press the jaws toward each other. The jaws have their fulcrums at e' .

The jaws and iron head are placed vertically over a bed h upon which the metal flat to be clothed rests in the position indicated in Figs. 6 and 7. This bed is made slightly yielding for which purpose it rests upon a spring h' interposed between it and the base i . To the base are fitted on opposite sides thereof upright side blocks k , between which the flat and its clothing are placed, and which hold in place the outer vertical edges or sides of the fastening strips. These side blocks fit on ribs i' on the base, and are gripped and held together in place by the bolts i^2 . In the side blocks k are swaging or bending slides l arranged to move in and out in slanting grooves in the side blocks, and intended to bend the lower edges of the fastening strips inwardly and under the side edges of the flat. The vertically yielding or depressible bed h , when pressed down to the full extent, rests on shoulders i^3 on the base; and when in this position the flat is just in the right position to permit the bending slides to act on the lower edges of the fastening strips, as shown in Fig. 7. The slides l are actuated by lever blocks m fulcrumed at o and bearing at their upper ends against the outer projecting ends of the slides. These lever blocks can be drawn together by any suitable means,—as for example, by bolts n which grip them. By setting up the nuts on these bolts, the lever blocks can be drawn together so as to cause them to force inwardly the slides l and thus to bend the lower edges of the fastening strips beneath the side edges of the metal flat.

Before commencing the operation of securing the clothing to the flat, I prefer to interpose between the flat and the clothing a cushion plate p as indicated in Fig. 6. This cushion plate remains until after the first pressure has been delivered and the fastening teeth have been partly set or embedded in the

clothing. It is then removed, and the operation is completed as indicated in Fig. 7.

The acting ends of the jaws e are slightly concave in section and are made slanting or inclined as shown in the drawings, and their fulcrums e' are in vertical planes between or inside of the planes in which the acting ends stand. By reason of this construction and arrangement the jaws in their descent deliver downward and outward pressure simultaneously upon the fastening strips.

In lieu of mounting the jaws as shown in Figs. 6 and 7, I can cross them as shown in Fig. 8, where e^2 represents the crossed jaws, and e^3 their fulcrums. This arrangement causes the jaws to exercise greater stretching action on the card clothing, than that represented in Figs. 6 and 7.

In Fig. 6 the expanding pressure tool is represented as having descended a short distance just far enough to drive the teeth of the fastening strips part way through the clothing. The clothing itself, it will be noted is less in width than the face of the flat to which it is being applied.

In Fig. 7 the parts are represented as in the position they occupy when the operation is concluded. The clothing it will be noted is stretched the full width of the flat, and the teeth which are clinched in the clothing are bent down and outwardly toward the selvage. Thus the clothing is stretched by and during the operation of fastening it to the flat, and is securely held to the latter in that stretched condition.

I have described one mechanism for securing the parts; but I do not limit myself to that mechanism.

What I claim, and desire to secure by Letters Patent, is—

1. The method of securing card clothing to flats, which consists in applying and fitting to the selvages of the clothing toothed clasp- ing or fastening strips, having their toothed edges preliminarily turned over or bent so that the teeth shall overhang the clothing, then forcing the teeth into the clothing by simultaneously applied downward and outward pressure so that the teeth shall be clinched in the clothing and extend downwardly and outwardly toward the selvages of the latter, and finally securing the clothing in stretched condition, and while clamped upon the flat, by bending or turning the lower edges of the strips around the edges and upon the back of the flat, substantially as hereinbefore set forth.

2. The combination substantially as hereinbefore set forth of the flat supporting bed, the reciprocatory expanding presser tool constructed and arranged substantially as hereinbefore described to deliver simultaneously downward and outward pressure upon the fastening strips along each edge of the flat, the side blocks between which the tool descends, and the swaging or bending slides, for acting

upon the lower edges of the fastening strips, substantially as and for the purpose hereinbefore set forth.

5 3. In mechanism for securing card clothing to metal flats, the combination of the expanding presser tool, the yielding bed *h* and the removable cushion plate *p*, used in connection with, and for securing, metallic strips and card clothing to the flats, as hereinbefore de-

scribed and illustrated in the accompanying 10 drawings.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALFRED HITCHON.

Witnesses:

WM. B. GRAY,
TOM BULLEYL.