

(No Model.)

A. C. SHUTTLEWORTH.
ELECTROMAGNETIC PIN EXTRACTOR ATTACHMENT FOR CLOTH
FINISHING MACHINES.

No. 567,619.

Patented Sept. 15, 1896.

FIG. 1.

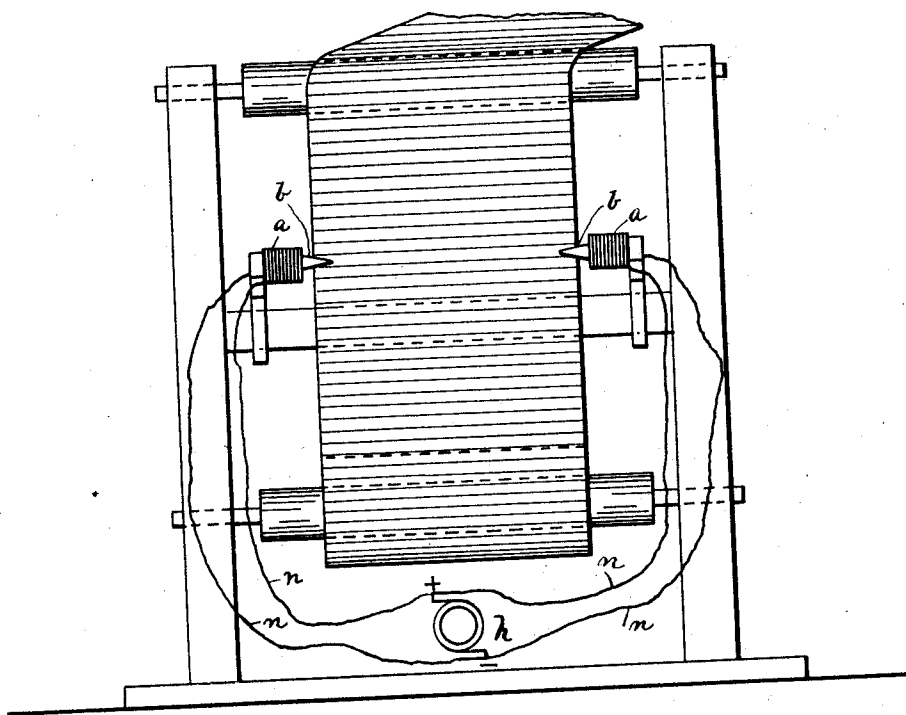


FIG. 2.

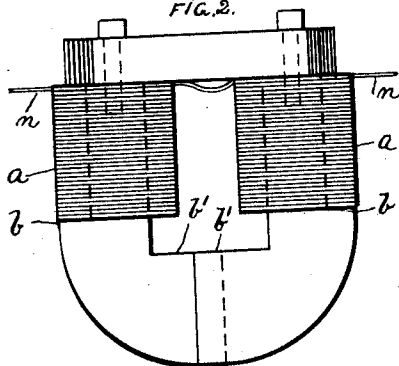
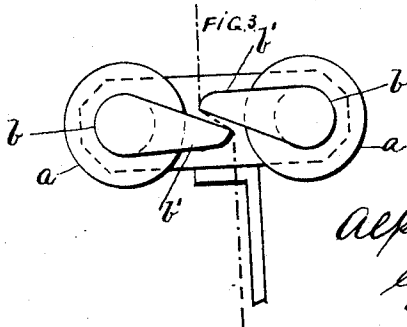


FIG. 3.



WITNESSES:

a. Crookland
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INVENTOR

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att'y

UNITED STATES PATENT OFFICE.

ALPHEUS C. SHUTTLEWORTH, OF PHILADELPHIA, PENNSYLVANIA,
ASSIGNOR TO HOWARD A. ENGLE, OF SAME PLACE.

ELECTROMAGNETIC PIN-EXTRACTOR ATTACHMENT FOR CLOTH-FINISHING MACHINES.

SPECIFICATION forming part of Letters Patent No. 567,619, dated September 15, 1896.

Application filed November 12, 1895. Serial No. 568,661. (No model.)

To all whom it may concern:

Be it known that I, ALPHEUS C. SHUTTLEWORTH, a citizen of the United States, residing at Philadelphia, (Frankford,) in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electromagnetic Pin-Extractor Attachments for Cloth-Finishing Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

It is well known to those engaged in finishing woven fabrics that small particles and short pieces of iron or steel in the form of short pins coming from the burr of the loom-temple during the weaving operation, and from the tentering and other kinds of cloth-finishing machines, and from other causes in the manufacture, find lodgment permanently in or near the selvages of the woven fabric, and which must of necessity be removed in order that the fabric can be treated and the further operations of pressing and finishing it for the market can be accomplished, and without any detriment to the cloth and ruinous results to a hot press or any other form of finishing-machines. At present the usual form or plan adopted is to carefully feel along the selvages or edges of the fabric with the fingers and remove the pins, an extremely slow, expensive in labor, and thoroughly unsatisfactory plan, inasmuch and principally because the pins or pieces of metal are so exceedingly small that the fingers, no matter how sensitive they become by practice, cannot detect with certainty and locate them, and the pieces of metal are also many times found embedded in the body of the fabric in such a manner as to utterly defy all means of determining their existence or presence except by means of such an invention as I will hereinafter fully describe and claim. Should any pins be left, the very smallest one of them would work inestimable damage if allowed to enter the finishing-machine, both as to the machine and the fabric, it very often occurring that many yards of

cloth may be materially damaged and even positively ruined before their presence is discovered, besides seriously damaging the machine. By this invention, however, all the dangers arising from their presence from whatever cause in the fabric is guarded against in the working of any damage whatever, either to the machine or the cloth in the further preparation of it for the market, and entirely and completely avoiding all danger from the pins or metallic fragments in a very inexpensive, thorough, and rapid manner.

Having referred briefly to the likelihood and troubles arising from the presence of the pins or small metallic pieces in the edges of the fabric coming to a finishing-press, and to the danger and expense should they enter the finishing-machine, both as to expensive damages to it and the great liability of ruining large quantities of cloth, and having pointed out the needs, intent, and value of this invention, I will state that it broadly consists in the use of magnets, preferably electromagnets, arranged in such a manner in relation to the feeding of the cloth to any kind of finishing-machine, each of the selvages or edges of the fabric when being finished being compelled to pass to a sufficient depth between and around overlapping edges or jaws of the said electromagnets, thereby making it utterly impossible for any particle or any shaped piece of metal sensitive to magnetic attraction to pass beyond and into the machine; but, on the other hand, it will be instantly extracted and, if needs be, torn bodily from the fabric and compelled to cling to either member or core-jaw of each magnet at its respective side of the machine, and from which it can be readily removed.

The practical construction I have found to be up to this time the most efficient is illustrated in detail and application in the drawings herewith.

Referring to said drawings, Figure 1 is a front elevation showing the application of the electromagnets, both mounted on a suitable framework which might otherwise represent the frame of a finishing-machine, and it shows the cloth to be finished passing between and around the jaws or overlapping faces of the peculiarly-shaped cores of the

electromagnets and before entering the finishing-machine, together with the magnets' connection with the electric generator. Fig. 2 is a top or plan view of one of the electromagnets as I prefer its practical construction. Fig. 3 is a view of the end face thereof, showing the overlapping jaws or faces of the poles of the magnet.

In the drawings the magnets shown are of the usual commercial pattern, *a* representing the winding, and *b* representing the cores or poles, yoked together in the usual manner, the special difference in the invention being in the form and construction of the cores or poles, as I will now fully describe. Each core or pole *b* of the electromagnet has its axial line in the same plane, and each has an extension part or wing *b'* of a lateral width sufficient to overlap the cloth about two and one-half inches, sufficiently far, however, to pass the danger-line of location of any metal fragments. The extended jaw or wing portion *b'* of the cores or poles *b* taper and overlap and are separated from each other sufficiently to allow for the passage of the cloth and at the same time producing angles that deflect it from its normal line for the purpose of causing the jaws to bear firmly upon the surfaces

of the cloth, and thus cause the pins or metal fragments to loosen sufficiently their hold in the cloth and to be attracted and removed by magnetic influence. I prefer to use electromagnets instead of permanent magnets, as they can be made more powerful and are more reliable, and when using electromagnets they are connected to the electric generator *h* by means of the wires *n* in the usual manner. Of course it would be practical to extend the jaws of the cores of the electromagnets so as to embrace the whole of each face of the cloth, but I have found that this practically is not necessary or desirable.

Having thus described my invention, I claim the following:

In a device for removing magnetically-affected particles from cloth the combination of a supporting-framework, and an electromagnet having extending poles relatively associated and constructed to overlap each other, for the purpose set forth.

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

ALPHEUS C. SHUTTLEWORTH.

Witnesses:

LEWIS F. BROUS,

H. W. SHUTTLEWORTH.