J. PARKER & J. H. GREENLEAF.

PROCESS AND APPARATUS FOR MANUFACTURING PAPER LINT OR FELT.

No. 192,277. Patented June 19, 1877.

fig. 1

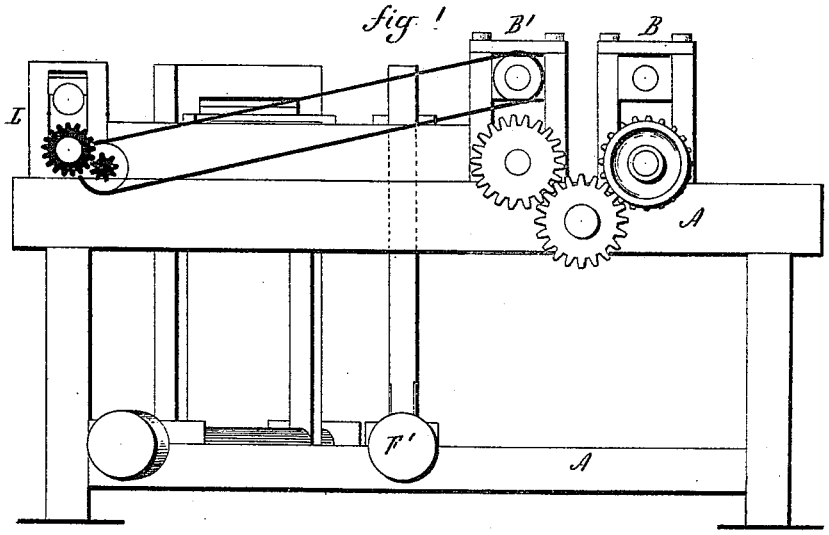


fig 2

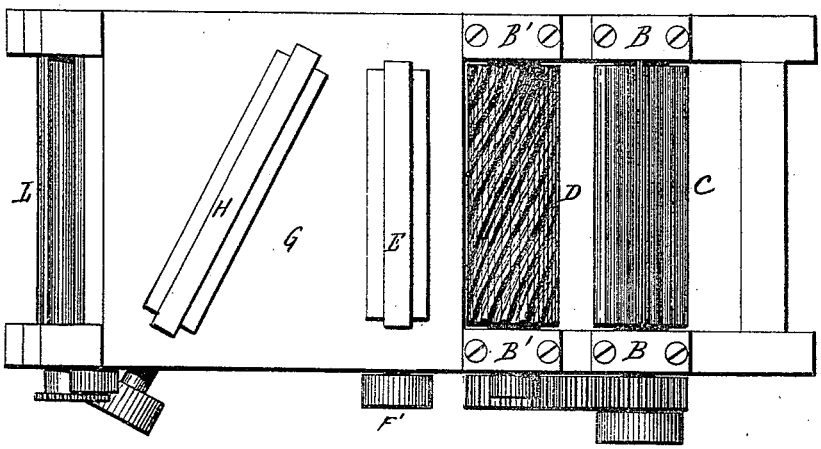
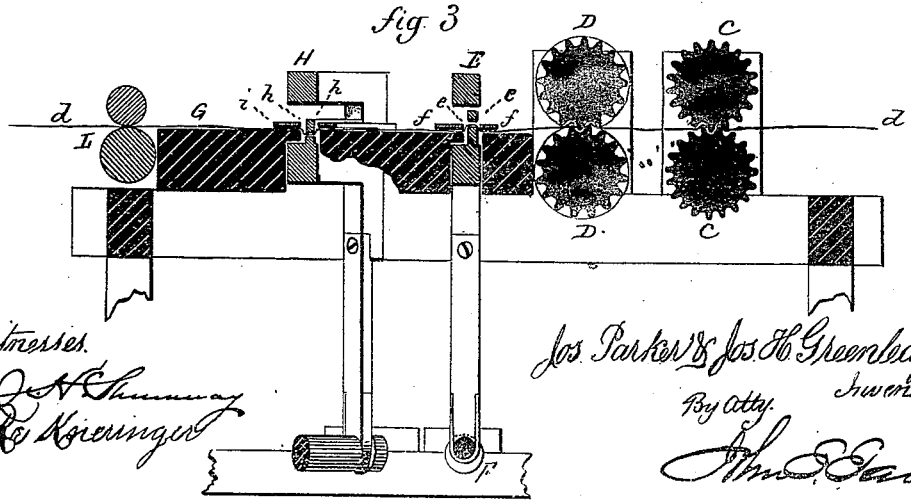


fig 3



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IMPROVEMENT IN PROCESSES AND APPARATUS FOR MANUFACTURING PAPER LINT OR FELT.

Specification forming part of Letters Patent No. **192,277**, dated June 19, 1877; application filed June 13, 1877.

To all whom it may concern:

Be it known that we, JOSEPH PARKER and JOSEPH H. GREENLEAF, both of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Manufacture of Paper Felt or Lint; and we do hereby declare the following, when taken onnection with the accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view; Fig. 2, a top or plan view; Fig. 3, a longitudinal section.

This invention relates to an improvement in the manufacture of paper lint or felt—that is to say, a fabric from paper-pulp possessing the soft fibrous qualities of felt, and which in consequence of such soft fibrous nature becomes a powerful absorbent, and is particularly designed for surgical purposes where lint is usually employed, or for purposes where a similar rapid absorbent is desirable.

Soft paper, such as blotting-paper or like materials made from paper-stock in half-state, while they possess a considerable absorbing power, do not attain the full capacity of absorption except the material be first moistened or pressed upon the liquid to be absorbed so as to force the liquid into the fibers of the paper.

The object of this invention is the production of a felt or lint from paper-pulp which shall be an instantaneous absorbent and without the aids usually applied to similar materials.

In practice, we use paper produced by any of the usual machinery in sheets or rolls substantially like blotting-paper, but paper produced by the Fourdrinier machine is preferred, as it possesses the quality of uniform strength in every direction; whereas paper made on the cylinder-machine is weak in one direction, and would not stand the breaking process. Yet the pulp may be otherwise manipulated so as to assume the form and consistency of blotting-paper, and from this material we produce our improved paper felt or lint.

The invention consists in subjecting the paper to a breaking or rubbing process, as more fully hereinafter described.

The best arrangement of mechanism for thus manipulating the paper which we have yet tried is represented in the accompanying illustration.

A represents the frame of the machine, on which, in suitable bearings B, a pair of fluted rolls, C, are arranged—say, with the flutes running longitudinally of the roll—the ribs of one roll working in the grooves of the other. Adjacent to these, in similar bearings B′, another pair of fluted rolls, D, are employed; in these the flutes run spirally—that is to say, the flutes in the successive pairs of rolls run in a different line—and the number of such pairs of rolls may be multiplied to any desirable extent; in this case two pairs only are shown.

Near the rolls D a slide, E, is arranged. This moves in guides vertically, and is preferably in a line substantially parallel with the rolls to which it is adjacent.

To this slide a rapid vertically-reciprocating movement is imparted by means of its communication with the shaft F, to which power is applied by the pulley F′ or otherwise. This slide carries a pair of thin bars, *e*, leaving a space between them parallel with the surface of the table or bed G, and at each side of the bars *e* is a stationary bar, *f*, distant above the table slightly more than the thickness of the paper, which is to pass between the table and the bars *f*. Below the bars *f* the opening through the table corresponds substantially to the opening between the bars *f*, and the relative position of the bars *e* to these two openings is such, that the reciprocating movement will carry the lower bar *e* up between the two bars *f f*, as shown in Fig. 3, and returning, the bars will fall until the upper bar *e* passes below the surface of the table, so that the opening between the two bars *e e* passes both above and below the space between the table and the bars *f f*.

A second slide, H, is next arranged and in a line diagonal to the slide E; this carries similar bars *h*, and works between similar bars, *i*, arranged relatively to the table as described for the first. The bars *h h* in Fig. 3 are shown

in the down position and the bars *e e* in the up position, and the reciprocation, therefore, is from the position in one to the position in the other.

More or less of such bars may be arranged, but should be at different angles to each other; two, however, are found to be sufficient.

The operation of the machine is as follows: The paper prepared as first described is introduced between the first rolls, as indicated by the line *d*, and passes between the first pair of rolls, thence to the next pair.

The bending of the paper into the grooves of the rolls produces upon the paper a rubbing action, which causes a disarrangement or loosening of the fibers of the paper. From these rolls the paper passes between the bars *f f* and the table and between the reciprocating bars *e*, thence between the table and the bars *i* and between the reciprocating-bars *h*, thence to the feeding-rolls L, the latter gradually drawing the paper through the breaking and rubbing mechanism.

The action of the reciprocating bars would be illustrated by holding a fabric in both hands closed upon it a short distance from each other, and rubbing or breaking the whole intermediate body between the fingers of the two hands. A single pair of the bars would perform the same work by presenting the paper successively at different angles, but the combination of the fluted rolls and reciprocating bars perform the work much more expeditiously and effectively than when either are used separately. This breaking action separates the fibers from the close contact into which they are brought in the manufacture of the paper, and leaves the fabric light and soft like fine felt or lint, and so opens the whole body of the paper that it absorbs instantly on coming in contact with anything of a liquid nature, and without the pressure of previous dampening necessary in the use of the paper before being subjected to this process.

The relative arrangement of the rolls to each other or of the bars to each other is not material in the performance of this process.

The feeding device is applied in order to give a gradual and positive movement to the material, and operates so that the work may be evenly performed throughout.

We do not wish to be understood as broadly claiming a felt or lint like material from paper-pulp; as such, we are aware, is not new, the same having been described in Vol. 1, page 384, Pennsylvania Hospital Reports of 1868, and shown to have been used in the Austro-Prussian war of 1866; but

What we do claim as our invention is—

1. The process herein described for the manufacture of paper felt or lint, consisting in subjecting the paper to a breaking or rubbing and breaking process wherein the whole body is softened, substantially as described.

2. In a machine for the manufacture of paper felt or lint, the combination of fluted rolls and vertically-reciprocating breakers, substantially as described.

3. In a machine for the manufacture of paper felt or lint, the combination of fluted rolls and reciprocating brakes with feeding mechanism to draw the material through the rubbing and breaking devices, substantially as described.

4. In a machine for the manufacture of paper felt or lint, the combination of reciprocating brakes with the feeding mechanism to draw the material through said rubbers, substantially as described.

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