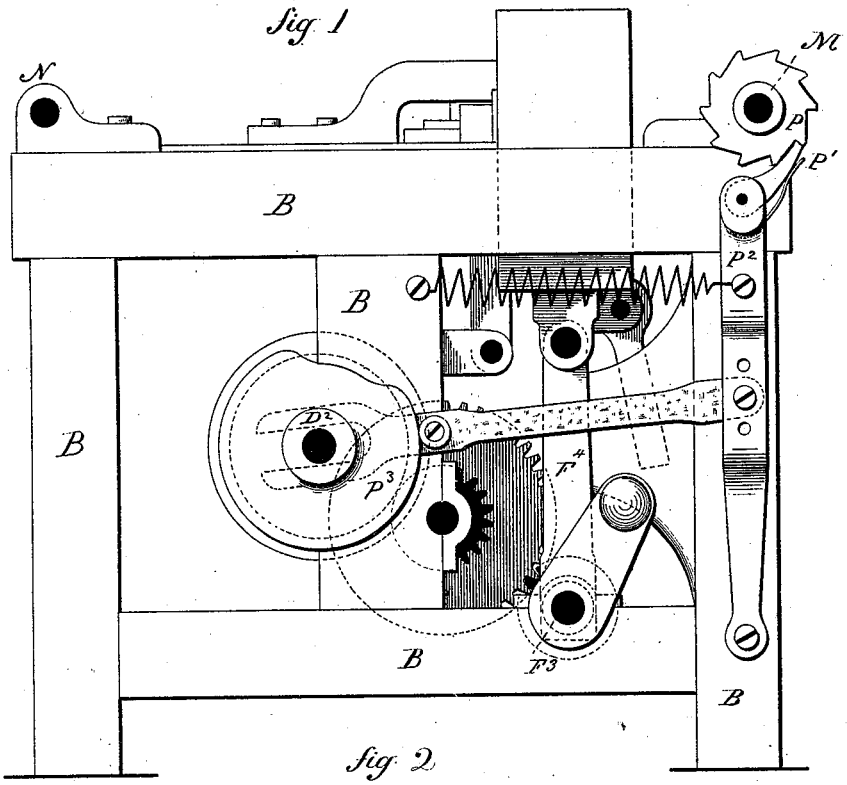
2 Sheets—Sheet 1.

W. SCRANTON.

Machine for Finishing Paper, Felt and other Fabric.

No. 204,100. **Patented May 21, 1878.**

Sig 1



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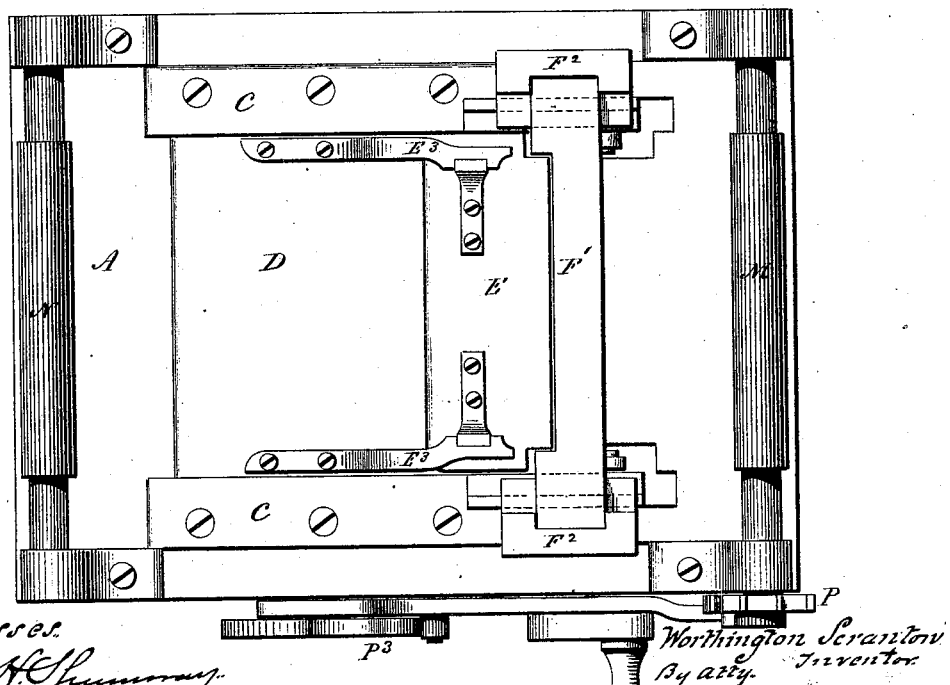

Witnesses.
J. H. Shumway.
E. C. Atkinson.

Worthington Scranton
Inventor.
By atty.
Wm. Earl

2 Sheets—Sheet 2.

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Fig. 3

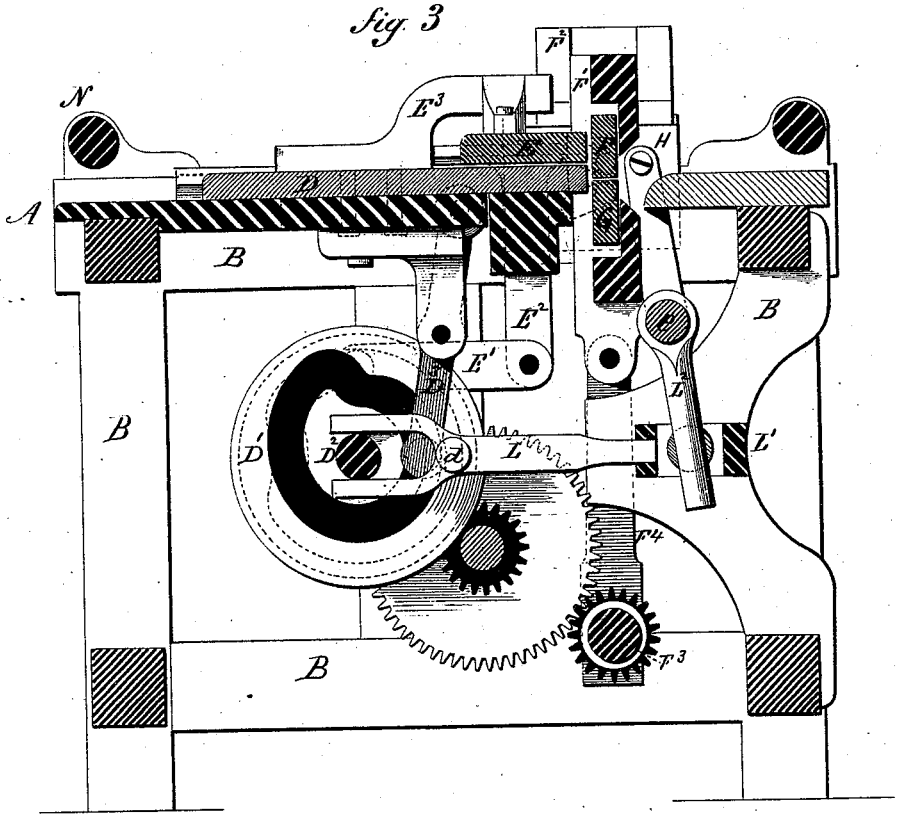


Fig. 4

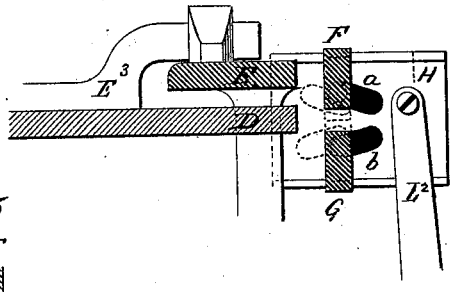
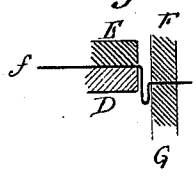


Fig. 5



Witnesses.

J. H. Shumway

D. Atwood

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UNITED STATES PATENT OFFICE.

WORTHINGTON SCRANTON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO JOSEPH PARKER, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR FINISHING PAPER FELT AND OTHER FABRICS.

Specification forming part of Letters Patent No. **204,100**, dated May 21, 1878; application filed April 30, 1878.

To all whom it may concern:

Be it known that I, WORTHINGTON SCRANTON, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Machines for Making Paper Felt; and I do hereby declare the following, when taken in connection 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, side view; Fig. 2, plan view; Fig. 3, longitudinal section; Figs. 4 and 5, detached sectional views to illustrate the operation of the machine.

This invention relates to an improvement in machinery for making paper felt or lint, and is an improvement upon the apparatus for which Letters Patent were granted to Joseph Parker and Joseph H. Greenleaf, dated June 19, 1877, assigned to the said Joseph Parker, assignee in this application. In that patent there was a constant feed and several breakers, both rotary and reciprocating, the reciprocating breakers working up and down through the slots; but these breakers do not produce the most satisfactory result, because they fail to rub the surface of the paper upon itself, as by holding the paper in each hand and rubbing the paper between the fingers, which is correctly stated in that specification as the desired result to be produced by that machine.

The object of this invention is to more perfectly separate the fibers of the paper, that the article produced may be of the softest possible character; and it consists in the construction and combination of mechanism, as hereinafter described, and more particularly recited in the claims.

A is the bed or table, supported on a frame-work, B, the frame-work also supporting the operative mechanism. On the bed A, and in guides C, a sliding plate, D, is arranged, to which an intermittent reciprocating movement is imparted by means of a grooved cam, D^1, on the driving-shaft D^2, through a lever, D^3, in connection with said slide, the groove in the cam being such that it will hold the slide forward, as in Fig. 3, during a large portion of its revolution, and then will throw the slide back, as indicated in broken lines, and then will again bring the slide forward. Above this slide D is a bar, E, arranged so that its forward edge comes in line with the edge of the slide, and, as seen in Fig. 3, forming one jaw, while the slide D forms a second jaw, between which the paper to be operated upon passes.

On the driving-shaft there is a cam arranged, (indicated in broken lines,) which operates upon the jaw E through levers E^1 E^2, to raise and lower the jaw E, and relatively to the cam D^1, so that the jaw rises just before the slide D retreats and drops just before the slide D advances. This jaw E moves with the slide D, being held there by guides E^3, which govern the vertical movement of the jaw E and connect it to the slide D.

Immediately forward of the edge of the jaws E and D there is a pair of jaws, F G. These jaws are arranged in a vertical carriage, F^1, working up and down in guides F^2, and caused to so work or reciprocate by means of an eccentric or crank, F^3, connected to the carriage by a pitman, F^4. This reciprocation is rapid, and the driving-shaft D^2 and the crank-shaft F^3 are connected together by intermediate gears, so that power applied to one shaft—say the crank-shaft F^3—will communicate power to the other shaft, D^2, the relative velocity of the two, in consequence of such gearing, being so that the jaws F G will reciprocate several times, while the jaws D E are stationary. These jaws F G have also an opening movement, which is produced by means of a horizontal slide, H. (Seen in Fig. 4.) This slide has two inclined grooves, *a b*, each connected to one of the jaws F G, and so that when the slide H is drawn outward the incline will cause the jaws to open, as seen in Fig. 4, and, forced in the opposite direction, will cause the jaws to close, as seen in Fig. 3. The slide H is moved by means of a cam (not shown in Fig. 3) acting upon a stud, *d*, on a rod, L, which is connected to a slide, L^1, in the frame. From this slide a lever, L^2, is connected to the slide H, and hung upon a pivot, *e*, between.

As the slide H is arranged in the vertical

carriage which carries the jaws, it must have the same reciprocating movement, and the lever L^2 is therefore connected to that carriage and moved up and down with it; hence the use of the intermediate slide L^1 to connect the lever L^2 with the rod L.

On the rear of the machine is a shaft, N, on which the paper to be operated upon is wound. On the forward end there is a similar shaft, which takes up the paper after it has been operated upon. This completes the construction of the machine.

Its operation is as follows: The paper is introduced between the jaws E D when in their open and rear position, as seen in Fig. 4, and also between the jaws F G when in their open position. The two pairs of jaws then close upon the paper, the jaws F D advancing toward the jaws F G, and the jaws F G, reciprocating rapidly, double or fold the paper between the two pairs of jaws, as indicated by the solid black line *f* in Fig. 5, and the paper is rubbed upon itself and between the two pairs of jaws, and until the fibers are so completely separated as to make the disintegration complete. In that condition the paper presents the appearance of a light mat of lint. This operation performed on a small portion of paper, the jaws open, as in Fig. 4; that part already operated upon is drawn forward; the jaws E D and F G, taking each pair in a new place, present the next adjacent surface for a like operation, and so on, working the paper, section after section, until the whole is reduced to the required state.

To draw the paper forward so soon as the jaws open, a ratchet, P, is arranged on the shaft N, operated upon by a pawl, P^1, attached to a lever, P^2, which is actuated by a cam, P^3, so that so soon as the jaws open the ratchet and roll M, to which the paper is attached, will be turned to draw the paper forward intermittently, but as fast as worked upon.

This machine differs from the Parker and Greenleaf machine referred to, in that the feed is intermittent, enabling the requisite rubbing of the paper upon itself, as described.

The roll M is not essential, as the paper may be introduced in the form of sheets.

I claim—

1. The combination of the intermittent horizontally-moving jaws E D, combined with the reciprocating jaws F G, the said two pairs of jaws working together to bring the paper between the said two pairs of jaws, and operating upon it in that condition, substantially as described.

2. The combination of the intermittent horizontally-moving jaws E D, combined with the reciprocating jaws F G, the said two pairs of jaws working together to bring the paper between the said two pairs of jaws, and operating upon it in that condition, and an intermittent feed to take up the paper as fast as operated upon, substantially as described.

WORTHINGTON SCRANTON.

Witnesses:
JOHN E. EARLE,
H. A. KITSON.