2 Sheets--Sheet 1.

E. B. BEECHER.

Feeding-Mechanism for Paper-Box Machines.

No. 162,341. Patented April 20, 1875.

Fig 1.

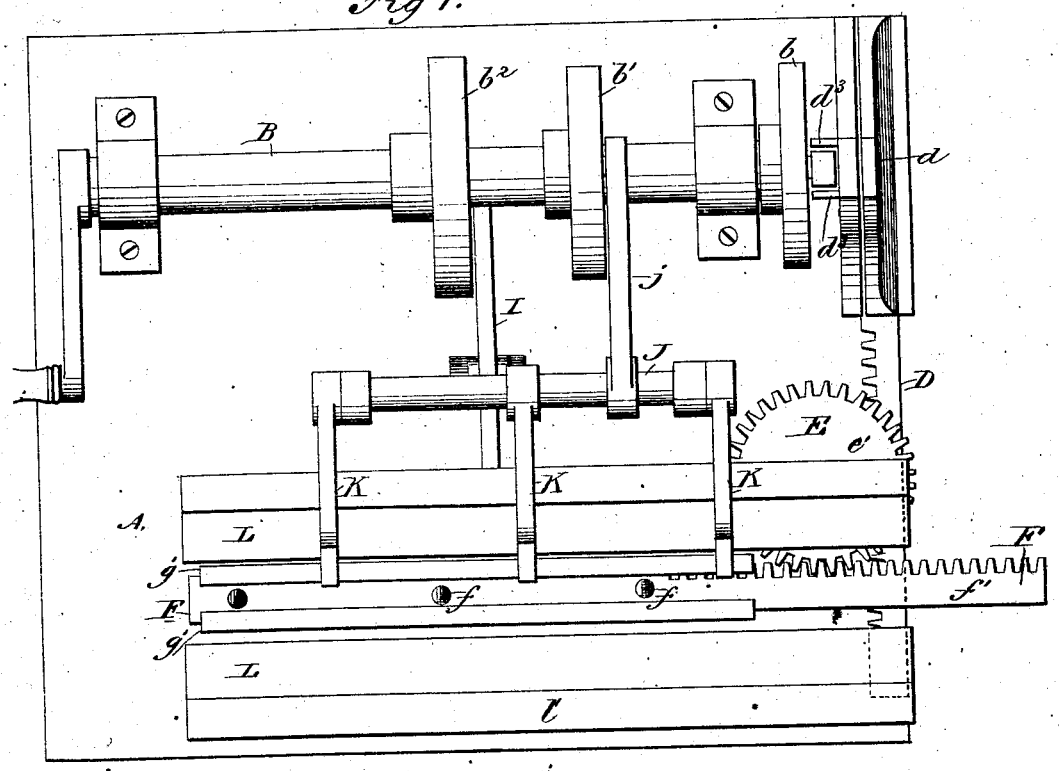
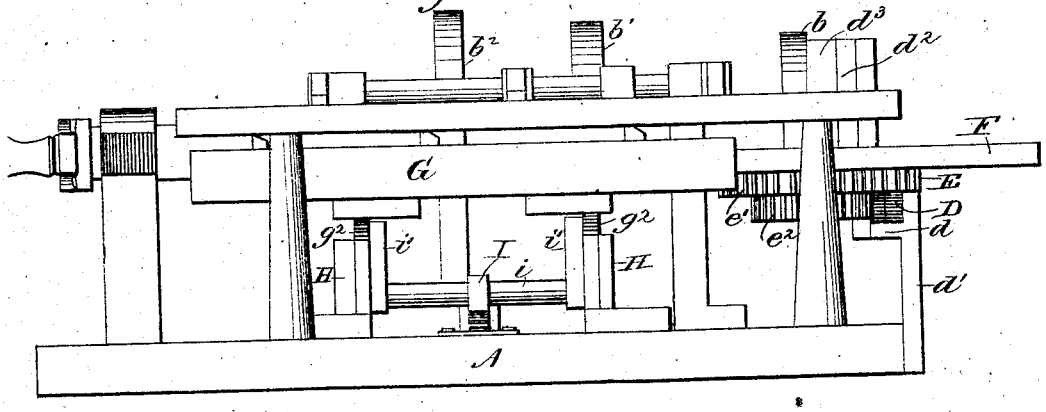


Fig 2.



Inventor.

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2 Sheets--Sheet 2.

E. B. BEECHER.

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Fig 3.

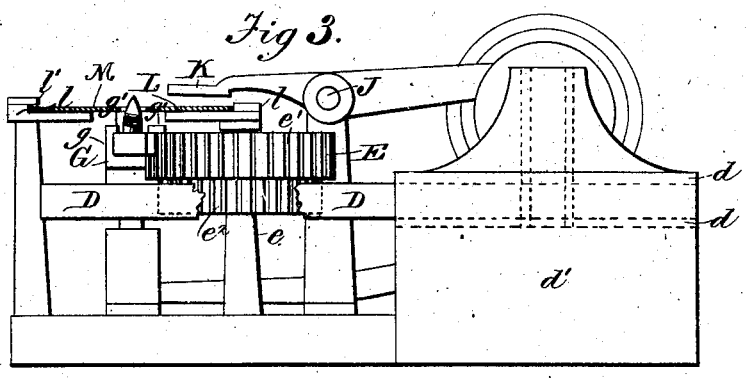


Fig 4.

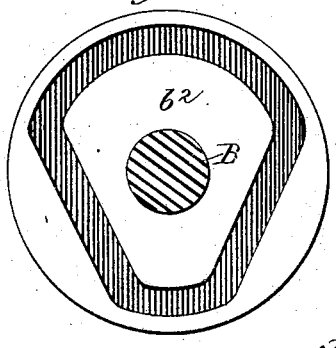


Fig 5.

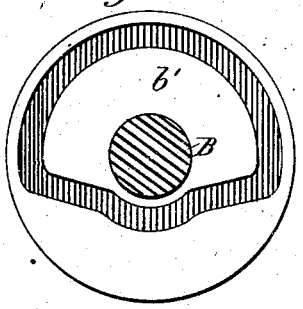
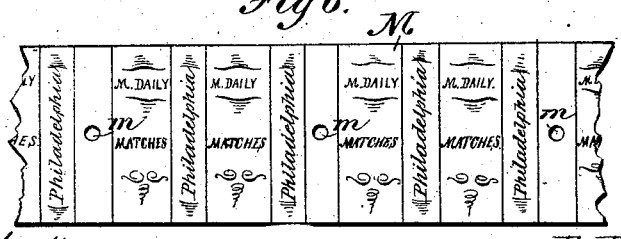


Fig 6.



Witnesses

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UNITED STATES PATENT OFFICE.

EBENEZER B. BEECHER, OF WESTVILLE, CONNECTICUT.

IMPROVEMENT IN FEEDING MECHANISMS FOR PAPER-BOX MACHINES.

Specification forming part of Letters Patent No. **162,341**, dated April 20, 1875; application filed February 2, 1875.

To all whom it may concern:

Be it known that I, E. B. BEECHER, of Westville, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Feeding Mechanism for Paper-Box Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

This invention consists, mainly, in certain details of construction by means of which a box-blank strip, which has been previously printed upon one side, may be fed to the box-forming machine with great accuracy, so that the folding of the box may register with the printing of the same, and render it certain that the box will be formed with the printed matter in its proper place.

In the drawings, Figure 1 represents a plan view of my improved machine; Fig. 2, a front elevation; Fig. 3, an end elevation, and Figs. 4 and 5 side elevations of the cams; Fig. 6, a plan view of the printed and perforated strip.

To enable others skilled in the art to make and use my invention, I will now proceed to fully describe its construction and manner of operation.

A represents the supporting-bed of this part of the machine. B represents the main shaft, receiving power from any suitable source, which is provided with the crank-wheel *b* and disks b^1 b^2, having cam-grooves, as shown. D represents a rack-bar, adapted for longitudinal movement in the ways *d* (shown in dotted lines, Fig. 3) of the standard d^1, which is provided with a head-block, d^2, having flanges or guiding-strips d^3 d^3, as shown. E represents a double-gear wheel, suitably supported upon the shaft *e*, which consists of the large upper wheel e^1, with broad periphery, and the smaller lower wheel e^2, the latter being adapted to engage with and receive movement from the rack-bar D, as shown. F represents the feeding-bar, suitably held from lateral or vertical movement by the side pieces *g g* and top flanges g^1 g^1 of the supporting-bar G, but left free to move readily in a longitudinal direction when properly operated, which is provided with a series of feeding-pins, *f f*, upon its upper face, and with the rack f' upon its edge at one end. G represents the supporting-bar before referred to, provided with the vertical arms or bars g^2 g^2, held in the slotted guiding-standards H H, and prevented from moving in a longitudinal or lateral direction, but permitted to move freely in a vertical direction. I represents a pivoted bar or lever, one end of which is provided with a stud or pin adapted to rest in the cam-groove of the wheel b^2, and communicate a reciprocating movement to the lever. The other end of the lever is provided with a suitable opening, through which extends the cross-bar *i*, having at each end an arm, i', pivoted to the vertical arms g^2 of the supporting bar G, as shown. J represents a shaft, supported upon suitable standards, as shown, which has attached thereto the arm *j*, the free end of which is provided with a stud adapted to move in the cam-groove of disk b^1, and communicate a rocking movement therefrom to the shaft J. K K represent presser-arms, also attached at one end to shaft J, which are adapted to rise and fall as the shaft rocks, and press upon and release at regular intervals the paper strip being fed to the box-forming part of the machine. L L represent boards resting upon suitable standards, which are adapted to support and guide the strip of paper in its movement, the outer one being provided with a guiding-strip, *l*, and flange l', and the inner one simply with the guiding-strip *l*, the presser-bars serving to keep this edge of the paper from rising vertically to any extent. M, Fig. 6, represents a continuous box-blank strip of great length, having one side properly printed with a series of impressions, divided into groups of five members, each group being adapted to cover properly the front, back, and sides of a box, when the same is finally formed from the strip, the fifth member forming the pasting-lap. *m m* represent perforations in the strip, which are located at regular and suitable distances apart, and coinciding with the pins upon the feeding-bar.

The operation is as follows: The box-blank strip having been suitably printed and perforated, one end of the same is placed in the machine in such position that one of the feeding-pins will coincide with one of the perforations. Motion then being given to the ma-

chine, the strip is fed and guided accurately to the box-forming mechanism, it being carried, in consequence of the peculiar mechanism employed, exact distances at each movement. The revolution of the main shaft, by means of its crank-wheel and the rack-bar which it moves, gives an alternating rotary motion to the double-gear wheel E, the movement of which latter is conveyed to the rack of the feeding-bar, which thus receives its reciprocating movement in a longitudinal direction. The movement of the main shaft, by means of its disk b^2, and the intermediate lever, the cross-shaft, and the arms, is conveyed to the supporting-bar G, which thus receives movement in a vertical direction. The movement of the main shaft also is communicated, by means of the arm *j* and the rock-shaft J, to the presser-bars, which are thus given their proper vertical movement.

These parts work in harmony as follows: As the main shaft revolves, the supporting-bar of the feeding-bar is raised by the movement of the lever I, for the purpose of causing the feeding-pins to engage with the perforations of the box-blank, after which the feeding-bar F, by the operation of the rack-bars and intermediate gear-wheel, is carried forward with the strip the proper distance, and is then lowered by the return movement of the lever I, for the purpose of disengaging the feeding-pins, and then carried back to its normal position by the return action of the rack-bars and gear-wheel. The presser-arms operate to clamp and release the strip in harmony with the other movements of the machine. By means of the broad periphery of the gear-wheel *e* the rack of the feeding-bar remains in constant contact with it in all its vertical movements.

By means of the construction described, the printed strip is fed accurately to the box-forming mechanism, so that the folding of the box will register with the printing, and render it certain that the box will be so formed as to present its printed matter in the proper place.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A feeding-bar provided with a series of independent pointed feeding-pins at regular distances apart, adapted, substantially as described, to feed a perforated box-blank strip, as set forth.

2. The combination of the vertically and longitudinally reciprocating feeding-bar, having the rack, with the gear-wheel, having the broad-faced periphery, as and for the purpose described.

3. The guiding-table formed in two separate parts, with an intermediate space, in combination with the feeding-bar and the presser-bars, as described.

4. The combination of the rack mechanism, intermediate double-gear wheel, the feeding-bar, and the vertically-moving supporting-bar, as described.

This specification signed and witnessed this 25th day of January, 1875.

EBENEZER B. BEECHER.

Witnesses:
H. A. BARNES,
J. F. BENTON.