No. 756,570. PATENTED APR. 5, 1904.

H. BITNER.

FLAP FOLDER FOR CARTON MACHINES.

APPLICATION FILED DEC. 26, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

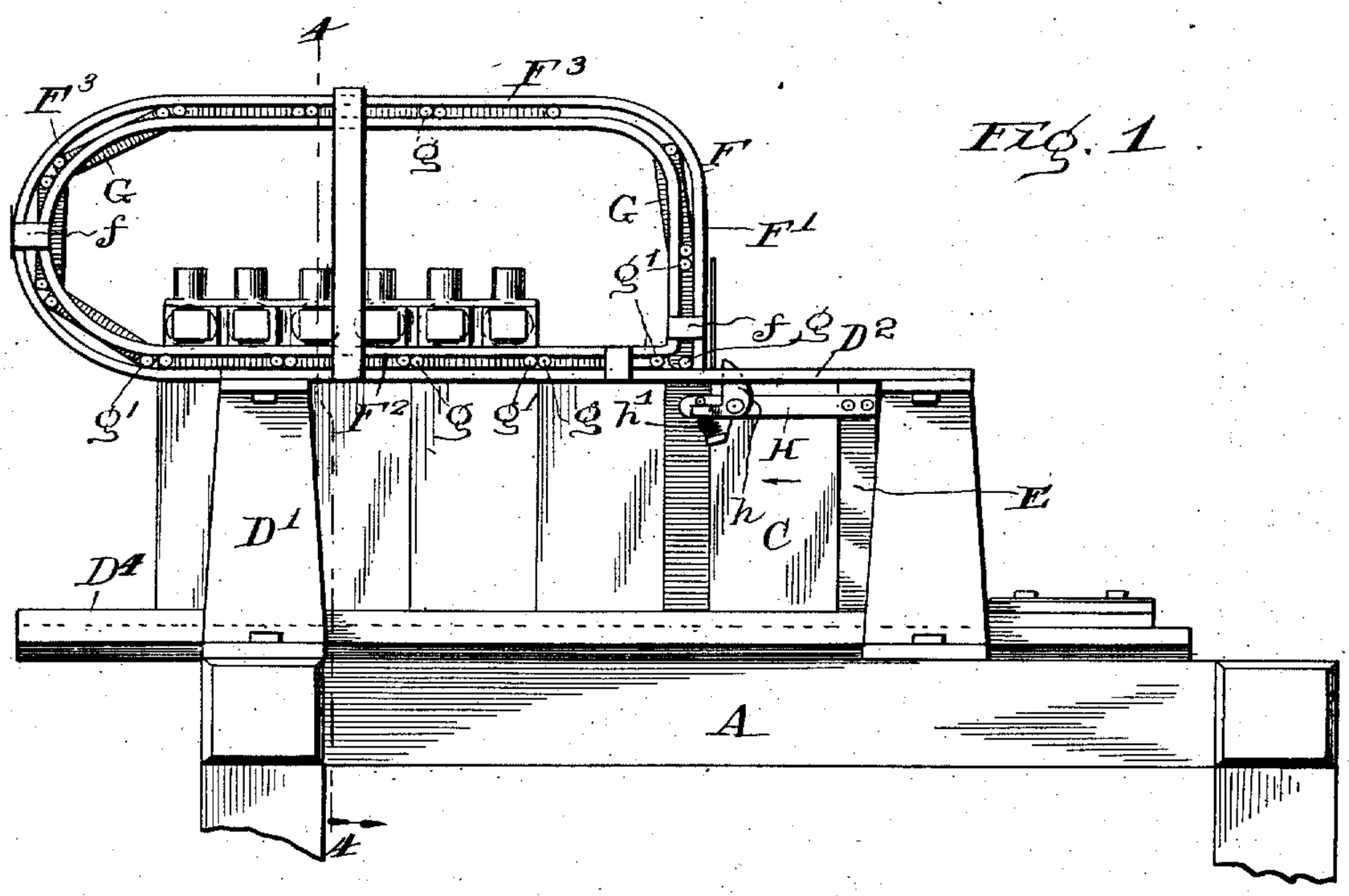

Fig. 1.

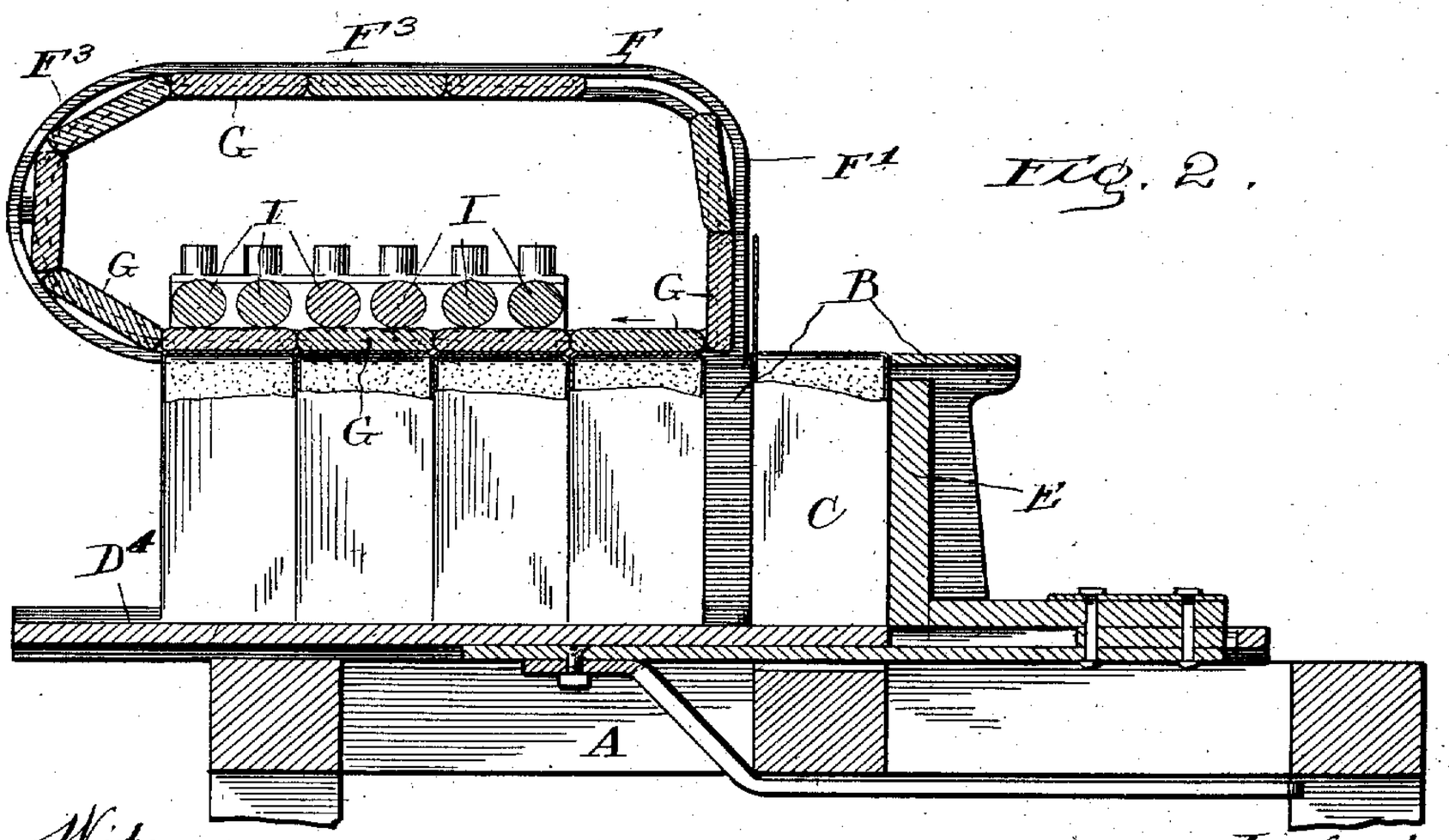

Fig. 2.

Witnesses:
Russell Wiles
Chas. O. Sherway

Inventor:
Harry Bitner

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

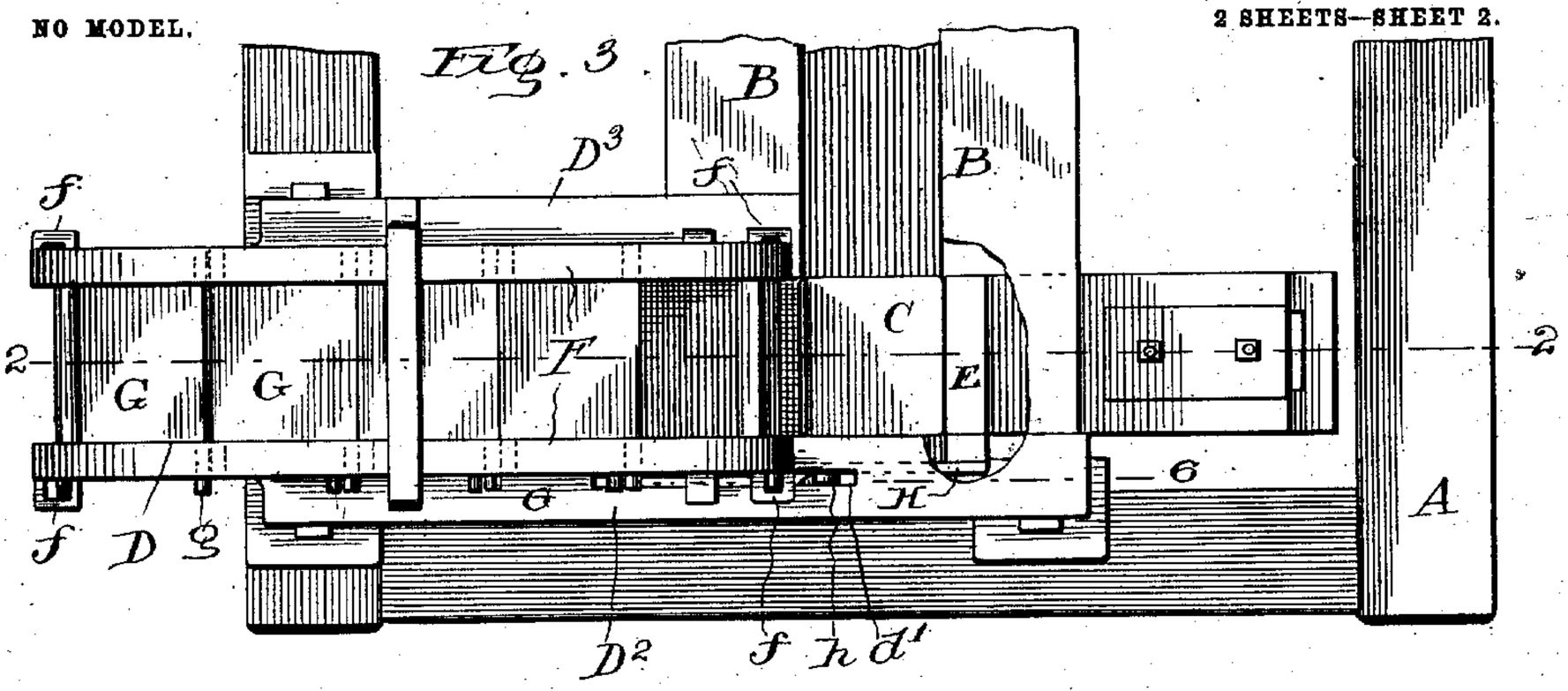


Fig. 4.

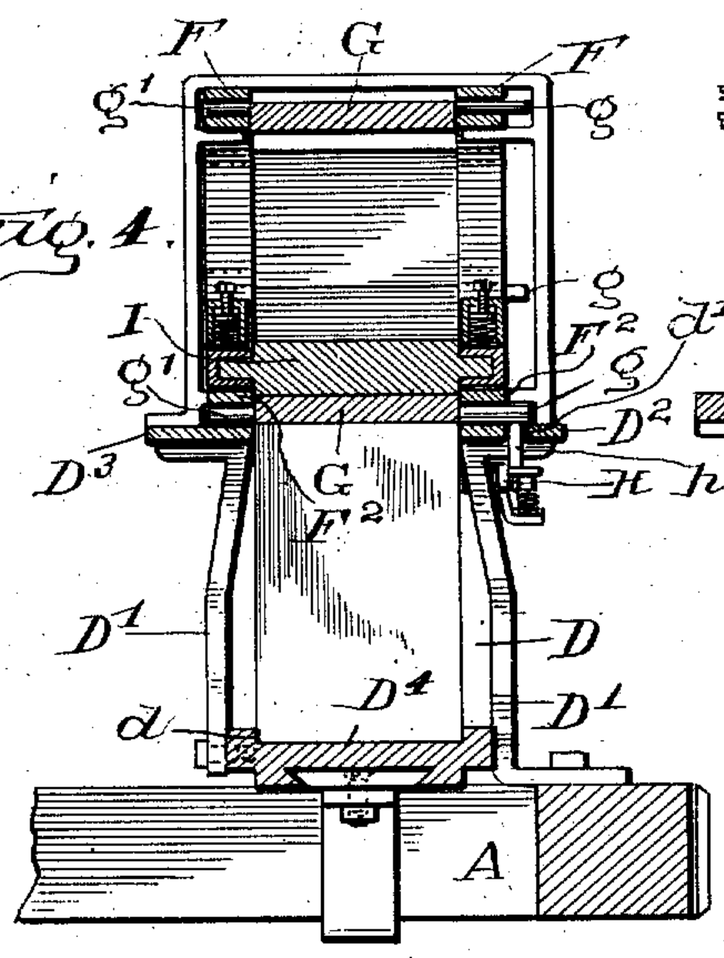


Fig. 5.

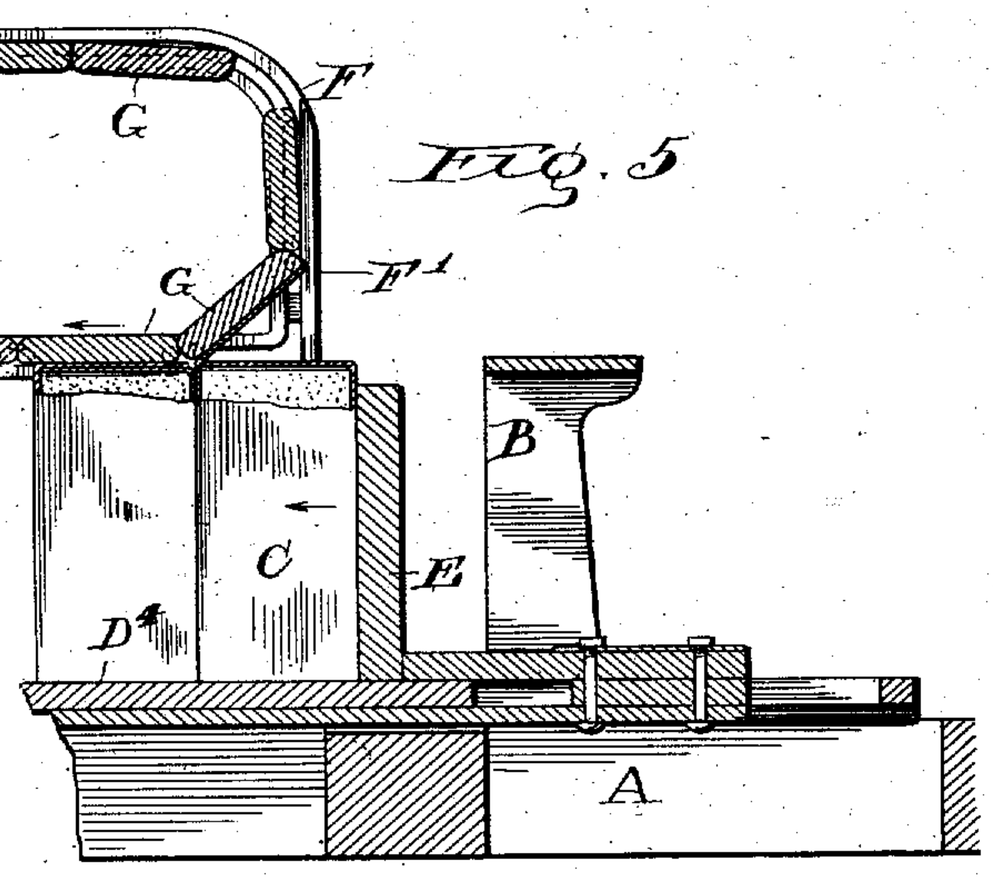
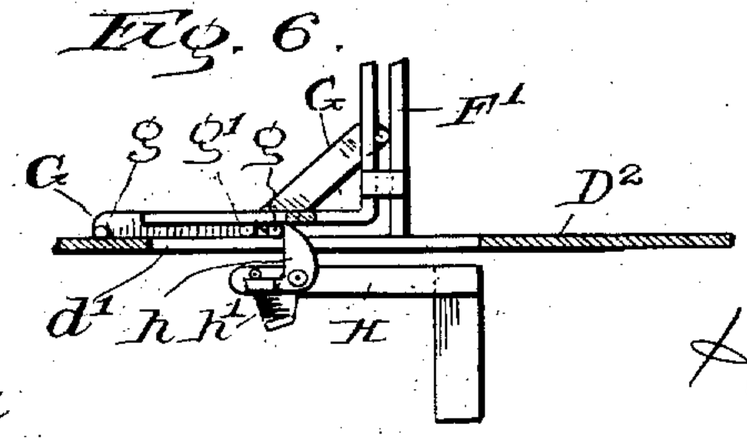


Fig. 6.



Witnesses:
Russell Wiles
Chas. O. Shurvey

Inventor:
Harry Bitner

No. 756,570. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

HARRY BITNER, OF BERWYN, ILLINOIS, ASSIGNOR TO ISAAC PILSER AND CHARLES G. LIVINGSTON, OF CHICAGO, ILLINOIS.

FLAP-FOLDER FOR CARTON-MACHINES.

SPECIFICATION forming part of Letters Patent No. 756,570, dated April 5, 1904.

Application filed December 26, 1903. Serial No. 186,697. (No model.)

To all whom it may concern:

Be it known that I, HARRY BITNER, a citizen of the United States of America, residing at Berwyn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Flap-Folders for Carton-Machines, of which the following is a specification.

My invention relates to certain new and useful improvements in flap-folders for carton-machines; and the object is to produce a device of this class for folding the last flap of the four which are folded in an ordinary machine.

The advantages of my improved folder will appear more fully and at large in the course of this specification.

To these ends alone my invention consists of certain features of construction which are clearly set forth herein and illustrated in the accompanying drawings.

In the accompanying drawings, Figure 1 is a side elevation of my improved flap-folder. Fig. 2 is a vertical section in the line 2 2 of Fig. 3. Fig. 3 is a plan of the device, a certain portion of the superstructure being broken away to show the construction. Fig. 4 is a vertical section in the line 4 4 of Fig. 1 looking in the direction of the arrow. Fig. 5 is a section in the same plane as Fig. 2, but showing the parts in a different position; and Fig. 6 is a section in the line 6 6 of Fig. 3, showing the parts in the same position as Fig. 5.

The flap-folder herein illustrated is primarily designed for use upon a machine of the general construction illustrated in the application of Charlie Redd, Serial No. 165,267, now pending in the Patent Office, the same being adapted to take the place of the weighted rollers therein shown, which fold the last flap of the carton. It could evidently, however, be used upon any other machine where the carton is released from the carrying device after the first side flap is folded and before the last side flap is folded.

Referring now to the drawings, A indicates the supporting-framework of the machine, this framework being of any ordinary type, and B B indicate the sides of the operating-trough through which the carton is passed while the front and rear flaps and the first side flap are folded. A carton C is shown in Figs. 1 and 2 at the end of the operating-trough in position to be operated upon by mechanism for folding the said flaps.

Extending transversely from the end of the operating-trough is an eduction-trough D, having suitable supporting-columns D′, which support the top thereof, and having a bottom D^4 with a central depressed portion *d* of suitable width to receive the bottom of a carton. A plunger E, Fig. 2, is provided adjacent to the end of the operating-trough, which is reciprocated by suitable mechanism (not here shown) and which is adapted when so reciprocated to force the cartons in succession from the end of the operating-trough into the eduction-trough.

The supports or columns D′ of the eduction-trough support plates D^2 D^3, which serve as a top for the eduction-trough, and two parallel endless tracks F. Each track consists of two parallel rails spaced apart by connecting-yokes *f*. Each track F has a vertical portion F′ and a horizontal portion F^2, said horizontal portion extending along a considerable portion of the length of the eduction-trough. The portions of the track which connect the end of the horizontal portion F^2 with the upper end of the vertical portion are generally indicated in the drawings by F^3 and may be of any desired configuration. The form illustrated is, however, compact and simple and for these reasons highly desirable. A plurality of presser-blocks G run between the tracks F. These blocks are of substantially the breadth of the space between the tracks, and each is substantially as long as the top of a carton. The ends of each of these blocks are provided with pins *g g′*, which run between the rails of the track, thereby supporting and guiding the blocks. The plunger E bears on its upper end a forwardly-projecting arm H, at the extremity of which is pivoted a trigger *h*, made in the form of a bell-crank lever. The trigger projects upward through a slot *d′* in the plate D^2, heretofore referred to, and is adapted when the plunger is reciprocated to engage with the pins *g*, which project out

through the space between the rails of the track F, thereby moving each block in succession forward along the track. A spring h' engages with one arm of the trigger h and holds the same normally in a vertical position, but permits it to swing upon its pivot as the plunger is returned to position, the trigger then passing under the pins on the blocks G.

The operation of so much of the device as has thus far been described will be readily apparent by reference to Figs. 2 and 5 of the drawings. When the parts reach the position as shown in Fig. 2, in which the carton C has just come into position for the last flap to be folded, the plunger E is pushed forward, forcing the carton through the position shown in Fig. 5 to that of the second carton in Fig. 2. The trigger engages with the lower pin upon the adjacent block G, as indicated in Fig. 6, and carries this end of the block along with the forward upper corner of the carton, as shown in Fig. 5. Meanwhile the other or rear end of the block G is guided by the pins thereon so as to swing down upon the last flap of the carton. The movement of the block G relative to the carton therefore is the same as if the block were hinged to the upper forward corner of the carton. The result of this is that as the block bends the flap down upon the carton there is no relative movement between the flap and the carton, and the flap is brought down accurately upon the top of the carton without any possibility of being pushed too far in the direction of the fold or being displaced laterally from its proper position. Furthermore, the bend in the flap at the corner of the carton is made exactly in the plane of the top thereof, because the initial engagement of the block with the flap is over the entire surface of the latter, and the effect is the same as if a hinged door or cover were brought down upon the top of the carton. The block which has thus been brought down upon the carton remains in the same position thereon, as both are pushed onward by the entrance of the next carton into the eduction-trough and the movement of the next block into position thereon.

A plurality of spring-pressed rollers I are supported above the path of the blocks, and these rollers engage with the blocks to press them firmly into contact with the tops of the cartons and hold them firmly against the same until the glue has ample opportunity to set.

I realize that considerable variation is possible in the details of this construction without departing from the spirit of the invention, and I therefore do not intend to limit myself to the specific form herein shown and described.

I claim as new and desire to secure by Letters Patent—

1. In a device of the class described, the combination with mechanism for shifting the cartons sidewise, of a plurality of blocks, and mechanism for swinging the blocks down upon the cartons about axes stationary with respect thereto.

2. In a device of the class described, the combination with suitable means for shifting the cartons sidewise, of a plurality of blocks adapted to fold one side flap thereof, mechanism for shifting the blocks sidewise at the same speed with the carton, and mechanism for swinging the blocks down upon the carton while moving at the same speed therewith.

3. In a device of the class described, the combination with mechanism for shifting the cartons sidewise, of a plurality of blocks adapted to fold one side flap thereof, means for supporting the blocks in a vertical position adjacent to the cartons, and mechanism for shifting the blocks sidewise at the same speed with the carton, and for simultaneously swinging them into a horizontal position.

4. In a device of the class described, the combination with mechanism for shifting the cartons sidewise, of a plurality of blocks adapted to fold one side flap thereof, means for supporting the blocks in a vertical position adjacent to the cartons, and means of engagement with the lower edge of the blocks for shifting the lower edge of the block sidewise, thereby causing the block to swing into a horizontal position upon the carton without longitudinal movement with respect thereto.

5. In a device of the class described, the combination with means for shifting the cartons sidewise, of a vertical and a horizontal guideway, means of connection between the ends of the same, suitable blocks adapted to run through the guideways, and means for successively engaging the lower edges of the blocks as they pass down the vertical guideway to move the same forward at the same speed with the cartons.

6. In a device of the class described, the combination with means for shifting the cartons sidewise, of a horizontal guideway above the path of the carton when shifted sidewise, a vertical guideway joining said horizontal guideway at one end thereof, means of connection between the other ends of the guideways, of a plurality of blocks adapted to engage with the tops of the cartons, and running in the said guideways, and means actuated by the carton-propelling mechanism for engaging with the lower edges of said blocks at the lower end of the vertical guideway, and forcing the same into the horizontal guideway at the same speed with the carton.

7. In a device of the class described, the combination with a suitable plunger adapted to move the cartons sidewise, of an endless guideway, having a horizontal portion over the path of the cartons when shifted by said plunger, and a vertical portion adjacent to said cartons before they are moved by said plunger, a plurality of blocks running through said endless guideway, and a projecting arm on said plun-

ger adapted to engage with the lower edge of each successive block at the lower end of the vertical guideway.

8. In a device of the class described, the combination with a plunger adapted to shift the cartons sidewise, of an endless guideway having a horizontal portion over the path of said cartons when shifted sidewise, and a vertical portion adjacent to said cartons before they are shifted by said plunger, of a plurality of blocks having suitable pins projecting through said guideway, a projecting arm upon the plunger, and a suitable trigger upon the arm adapted to engage with the lower pin upon each successive block in the vertical guideway when moved in one direction, and to pass under the same when returning.

9. In a machine for folding and pasting the end flaps of cartons, a last-fold device comprising a series of blocks adapted to be brought down upon the top of a carton, means for bringing these blocks in succession into a position substantially parallel with the last unfolded flap, means for advancing the carton to bring said flap against the block, means for thereafter swinging the block about an axis coinciding substantially with the desired bend in the last flap, to bring the flap and block down upon the top of the carton, and means for advancing the carton and block together and pressing the block upon the carton to set the glue.

10. In a machine for folding and pasting the end flaps of cartons, a last-fold device comprising a series of blocks adapted to be brought down upon the top of a carton, means for bringing these blocks in succession into a position substantially parallel with the last unfolded flap, means for advancing the carton to bring said flap against the block, means for thereafter advancing the carton and block together and simultaneously swinging the block about an axis coinciding substantially with the desired bend in the last flap until the block rests upon the top of the carton, and means for pressing the block thereon to set the glue.

In witness whereof I have signed the above application for Letters Patent, at Chicago, in the county of Cook and State of Illinois, this 15th day of December, A. D. 1903.

HARRY BITNER.

Witnesses:
RUSSELL WILES,
CHAS. O. SHERVEY.

Correction in Letters Patent No. 756,570.

It is hereby certified that the name of the first-mentioned assignee in Letters Patent No. 756,570, granted April 5, 1904, upon the application of Harry Bitner, of Berwyn, Illinois, for an improvement in "Flap-Folders for Carton-Machines," was erroneously written and printed "Isaac Pilser," whereas said name should have been written and printed *Isaac Pieser;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of April, A. D., 1904.

[SEAL.]

F. I. ALLEN,
Commissioner of Patents.

ger adapted to engage with the lower edge of each successive block at the lower end of the vertical guideway.

8. In a device of the class described, the combination with a plunger adapted to shift the cartons sidewise, of an endless guideway having a horizontal portion over the path of said cartons when shifted sidewise, and a vertical portion adjacent to said cartons before they are shifted by said plunger, of a plurality of blocks having suitable pins projecting through said guideway, a projecting arm upon the plunger, and a suitable trigger upon the arm adapted to engage with the lower pin upon each successive block in the vertical guideway when moved in one direction, and to pass under the same when returning.

9. In a machine for folding and pasting the end flaps of cartons, a last-fold device comprising a series of blocks adapted to be brought down upon the top of a carton, means for bringing these blocks in succession into a position substantially parallel with the last unfolded flap, means for advancing the carton to bring said flap against the block, means for thereafter swinging the block about an axis coinciding substantially with the desired bend in the last flap, to bring the flap and block down upon the top of the carton, and means for advancing the carton and block together and pressing the block upon the carton to set the glue.

10. In a machine for folding and pasting the end flaps of cartons, a last-fold device comprising a series of blocks adapted to be brought down upon the top of a carton, means for bringing these blocks in succession into a position substantially parallel with the last unfolded flap, means for advancing the carton to bring said flap against the block, means for thereafter advancing the carton and block together and simultaneously swinging the block about an axis coinciding substantially with the desired bend in the last flap until the block rests upon the top of the carton, and means for pressing the block thereon to set the glue.

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