

No. 749,649.

PATENTED JAN. 12, 1904.

D. A. WATERS.
CARD FEEDING MACHINE.
APPLICATION FILED JUNE 21, 1902.

NO MODEL.

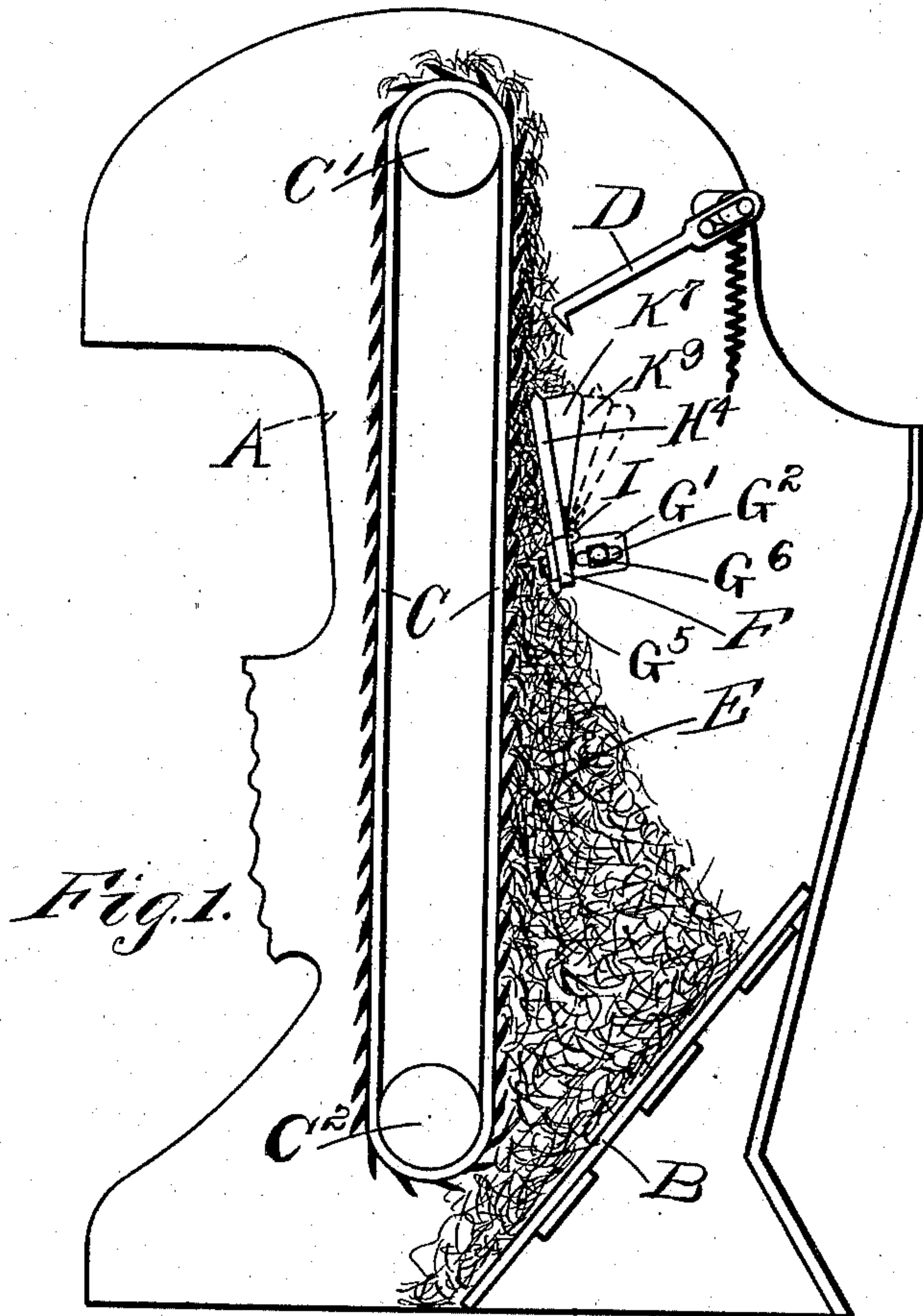


Fig. 1.

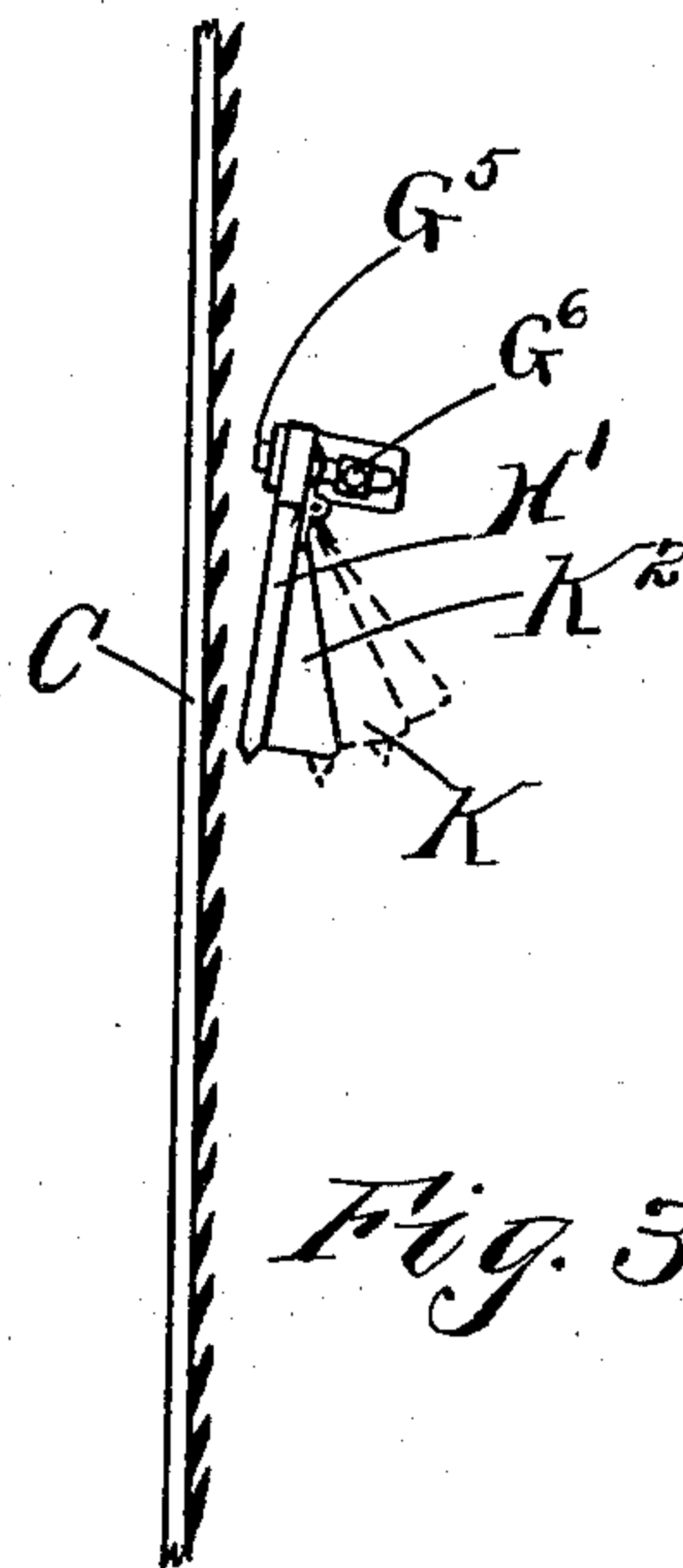


Fig. 3.

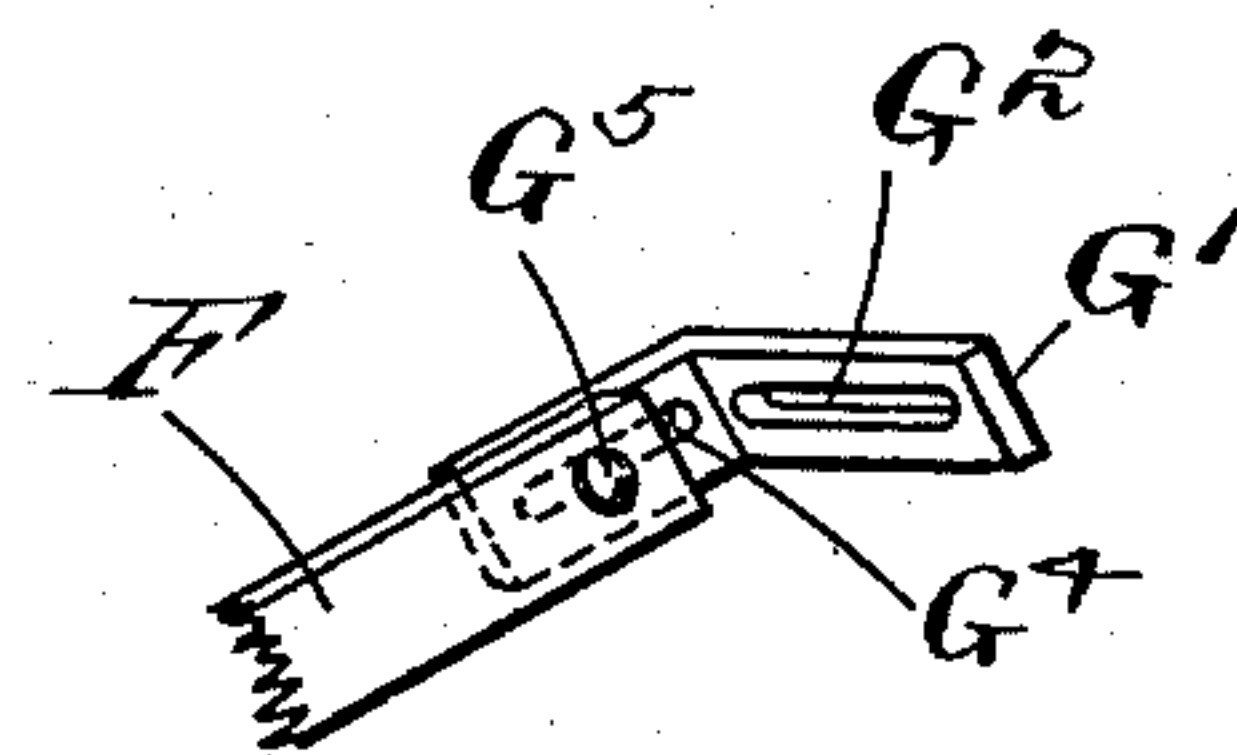


Fig. 4.

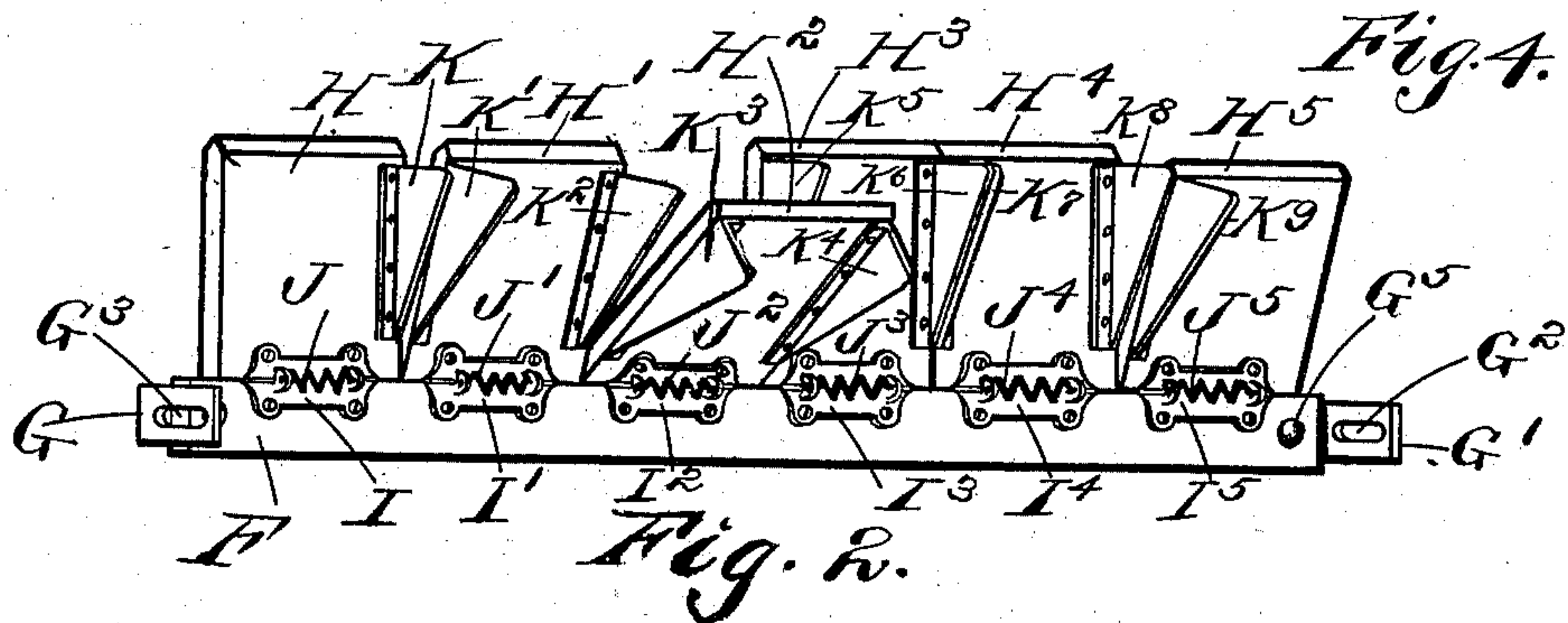


Fig. 5.

Witnesses.
John G. Gally.
Erving S. Porter.

Inventor.
Douglas A. Waters
by
Gardner W. Emerson
Attorney.

UNITED STATES PATENT OFFICE.

DOUGLAS H. WATERS, OF POQUETANUCK, CONNECTICUT, ASSIGNOR TO
EDDO V. BATES, OF DRACUT, MASSACHUSETTS.

CARD-FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 749,649, dated January 12, 1904.

Application filed June 21, 1902. Serial No. 112,717. (No model.)

To all whom it may concern:

Be it known that I, DOUGLAS H. WATERS, of Poquetanuck, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Card-Feeding Machines, of which the following is a specification.

This invention relates to the type of card-feeding machines commonly known as the "Bramwell," in which the stock in the feeder-box is carried up in comparatively regular quantity by means of a "spike-apron" to be first delivered to a weighing device, then discharged and fed forward to the cards in even quantity.

It is the purpose of my invention to secure as nearly an even load of stock upon the spike-apron as possible whether the box is full, partly full, or nearly empty. Ordinarily if the box were full a larger surface of stock and at a greater weight would be in contact with the spike-apron than if the box were almost empty, and as the stock is carried up by the spike-apron these conditions change, making an uneven feed.

By the device of his Patent No. 667,213, February 5, 1901, George Geb attempts to secure the above result by arranging an evening-board in the feeder-box near the upwardly-moving spike-apron, so controlling such board that it will tend to press the stock against the spike-apron, as therein described. To obtain the same result, devices wherein an evening-board fixed at its upper edge with its free edge pointing downward and toward the spike-apron and pressed toward the spike-apron by means of levers and weights have also been used with some success. My invention accomplishes the same result in a more perfect manner.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical side view with the end of the feeder-box removed, showing only the parts necessary to understand my invention. Fig. 2 shows the cross-bar, evening-boards, and attachments in slight perspective. Fig. 3 shows another method of adjusting my device with the free edges of the evening-boards

pointing downward. Fig. 4 shows one of the brackets which support the cross-bar.

Similar letters refer to the same parts throughout the several views.

A is the casing.

B is the inclined board, whose function is to allow the stock to roll down into contact with the spike-apron C.

C' is the upper and C² the lower pulley, over which spike-apron C runs in carrying the stock to the top.

D is the evening-comb, which is so operated as to knock off bunches or undue quantities of wool which may be carried up by the spike-apron.

E represents the wool or other textile fiber forming the stock, the box being shown as less than half full.

F is the cross bar or stay, of wood or metal, of a length about equal to the width of the feeder-box. To each end of the cross-bar F is adjustably bolted the angle-irons or brackets G and G' by means of bolts G⁵, passing through holes in the cross-bar and through adjusting-slots G⁴ in angle-irons G and G' and held in place by suitable nuts. Brackets G and G' may be adjusted so that cross-bar F may be raised or lowered or moved toward or away from apron C by means of the adjusting-slots G² and G³ in angle-irons G and G' and the adjusting-bolts G⁶, which pass through these slots and also through the end casings of the feeder-box A and are provided with suitable tightening-nuts. By loosening these nuts the brackets may be adjusted, and so the cross-bar, and then by tightening the nuts brackets and cross-bar may be held firmly in place.

In the Geb device and the other device above mentioned the pressure of the evening-board upon the stock between it and the spike-apron is not uniform, for if a bunch or congestion of stock forms at one place it forces the whole board away from the apron, and thereby reduces the pressure on such portions of stock as are not so closely packed.

I overcome the above objection by hinging to the edge of the adjustable cross-bar F by means of the hinges I, I', I², I³, I⁴, and I⁵ a plu-

rality of shorter evening-boards $H H' H^2 H^3 H^4 H^5$ instead of using one long board. These boards are beveled on both sides on the end opposite the hinges and are placed as close together as is consistent with their free motion on the hinges. The hinges $I I'$, &c., are provided with springs $J J' J^2 J^3 J^4 J^5$ of any suitable design adapted to press the boards $H H'$, &c., toward the spike-apron C when the cross-bar is in the position shown in Fig. 1. In the drawings the well-known form of spiral door-spring is shown; but any form of spring may be used which will produce the necessary pressure. The evening-boards $H H'$, &c., are provided at adjacent edges with fan-shaped wings or plates $K K' K^2 K^3 K^4 K^5 K^6 K^7 K^8 K^9$, the purpose of which is to prevent the stock getting caught between the edges of adjacent evening-boards, and thus jamming and preventing the boards from working independently.

The operation is as follows: Fig. 1 shows one usual position of the cross-bar and evening-boards, showing the bar at such a distance and position that if no stock were in the feeder-box the free edges of the evening-boards would be upward as close as possible to the spike-apron and nearer thereto than the cross-bar. The dotted lines show the position the evening-boards assume as stock accumulates between them and the spike-apron, each board working independently of the others. Fig. 3 shows a section of spike-apron and the cross-bar and evening-boards in another position when the cross-bar is turned end for end. In this latter position if no stock were in the feeder-box the free edges of the evening-boards would be downward as near as possible to the spike-apron and nearer thereto than the cross-bar, and the dotted lines show the position the boards assume as stock accumulates between them and the spike-apron. These two positions are not the only ones which may be used with my device, and I do not confine myself to them. The cross-bar, and with it the evening-boards, may be completely rotated and moved in any radial direction from bolt G^6 the full length of the slots G^2 and G^3 , and the same thing may be done when the cross-bar is turned end for end. Of course a cross-bar rigidly fixed in any suitable position may be used in place of my adjustable cross-bar, and the wings $K K'$, &c., may be dispensed with, if desired. Any suitable form of springs or other equivalent devices may be used in place of the spiral springs shown.

The chief advantage of my device is that by providing a number of independently-working evening-boards in place of a single one a bunch of stock in one place affects only one board, while the others maintain the same pressure, and thus the places on the spike-apron where the stock is thin receive the same pressure as the places where the stock is thick or bunched. The facility with which the cross-

bar and evening-boards may be adjusted is also an advantage.

What I claim as my invention, and desire to cover by Letters Patent, is—

1. In a card-feeding machine, the combination with a feeder-box and spike-apron of a cross-bar fixed at each end to an inner side of the feeder-box so as to be in proximity to the rising portion of the spike-apron, a plurality of adjacent evening-boards independently hinged to said cross-bar, wings or plates affixed to adjacent edges of said evening-boards, suitable hinges which attach the evening-boards to the cross-bar, and suitable springs adapted to force the evening-boards independently toward the spike-apron and to allow said evening-boards to give back as stock accumulates between them and the spike-apron.

2. In a card-feeding machine, the combination with a feeder-box and spike-apron of a cross-bar adjustably attached at each end to a side of the feeder-box so that its position relative to the rising portion of the spike-apron may be changed, a plurality of adjacent evening-boards each independently hinged to said cross-bar, wings or plates affixed to adjacent edges of said evening-boards, hinges adapted to connect the respective evening-boards with the cross-bar and springs adapted to keep the evening-boards normally pressed toward the spike-apron.

3. In a card-feeding machine, a cross-bar which is somewhat shorter in length than the inside width of the feeder-box, slotted angle-irons adjustably bolted to each end of the cross-bar and adapted to be adjustably bolted each to a side of the feeder-box, combined with suitable evening-boards attached by suitable hinges to the cross-bar and suitable springs adapted to press the evening-boards toward the spike-apron and a feeder-box and spike-apron together with wings or plates affixed to adjacent edges of said evening-boards, as described and for the purpose specified.

4. In a card-feeding machine, a cross-bar F , angle-irons G and G' adjustably attached one at each end of cross-bar F , slots G^4 , in angle-irons G and G' , bolts G^5 , adapted to attach angle-irons G and G' to cross-bar F , and bolts G^6 , adapted to pass through slots G^2 and G^3 in angle-irons G and G' and through casing A , whereby the position of cross-bar F may be adjusted relatively to spike-apron C , a casing A and a spike-apron C , combined with a plurality of evening-boards $H, H', H^2, H^3, H^4, H^5$, a plurality of wings or plates $K, K', K^2, K^3, K^4, K^5, K^6, K^7, K^8, K^9$, affixed to adjacent edges of evening-boards $K, K', K^2, K^3, K^4, K^5$, a plurality of hinges $I, I', I^2, I^3, I^4, I^5$, which attach said evening-boards to cross-bar F , and a plurality of springs $J, J', J^2, J^3, J^4, J^5$, adapted to press the said evening-boards toward the upwardly-moving portion of the spike-apron C , as described and for the purpose specified.

5. In a card-feeding machine, the combination with a feeder-box and spike-apron of a cross-bar fixed at each end to a side of the inside of the feeder-box so as to be crosswise,
5 parallel to and in proximity to the rising portion of the spike-apron, a plurality of adjacent evening-boards hinged at their upper edges to said cross-bar in such a manner as to be independently movable to and from the spike-
10 apron, and springs so adapted as to normally hold the lower edges of said evening-boards in close proximity to said spike-apron and to allow the evening-boards to give back as stock accumulates between them and the spike-
15 apron.

6. In a card-feeding machine, the combination with a feeder-box and spike-apron of a cross-bar fixed at each end to a side of the inside of the feeder-box so as to be crosswise,
20 parallel to and in proximity to the rising por-

tion of the spike-apron, a plurality of adjacent evening-boards hinged at their upper edges to said cross-bar in such a manner as to be independently movable to and from the spike-
apron, suitable wings attached to adjacent 25 edges of said evening-boards adapted to prevent the stock getting caught between said adjacent edges, and springs so adapted as to normally hold the lower edges of said evening-boards in close proximity to said spike-apron 30 and to allow the evening-boards to give back as stock accumulates between them and the spike-apron.

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

DOUGLAS H. WATERS.

Witnesses:

LEVI E. WATERS,
JOHN P. FLYNN.