(No Model.)

T. M. KENNEY.

CARD OR SHEET TRANSFERRING APPARATUS.

No. 335,204. Patented Feb. 2, 1886.

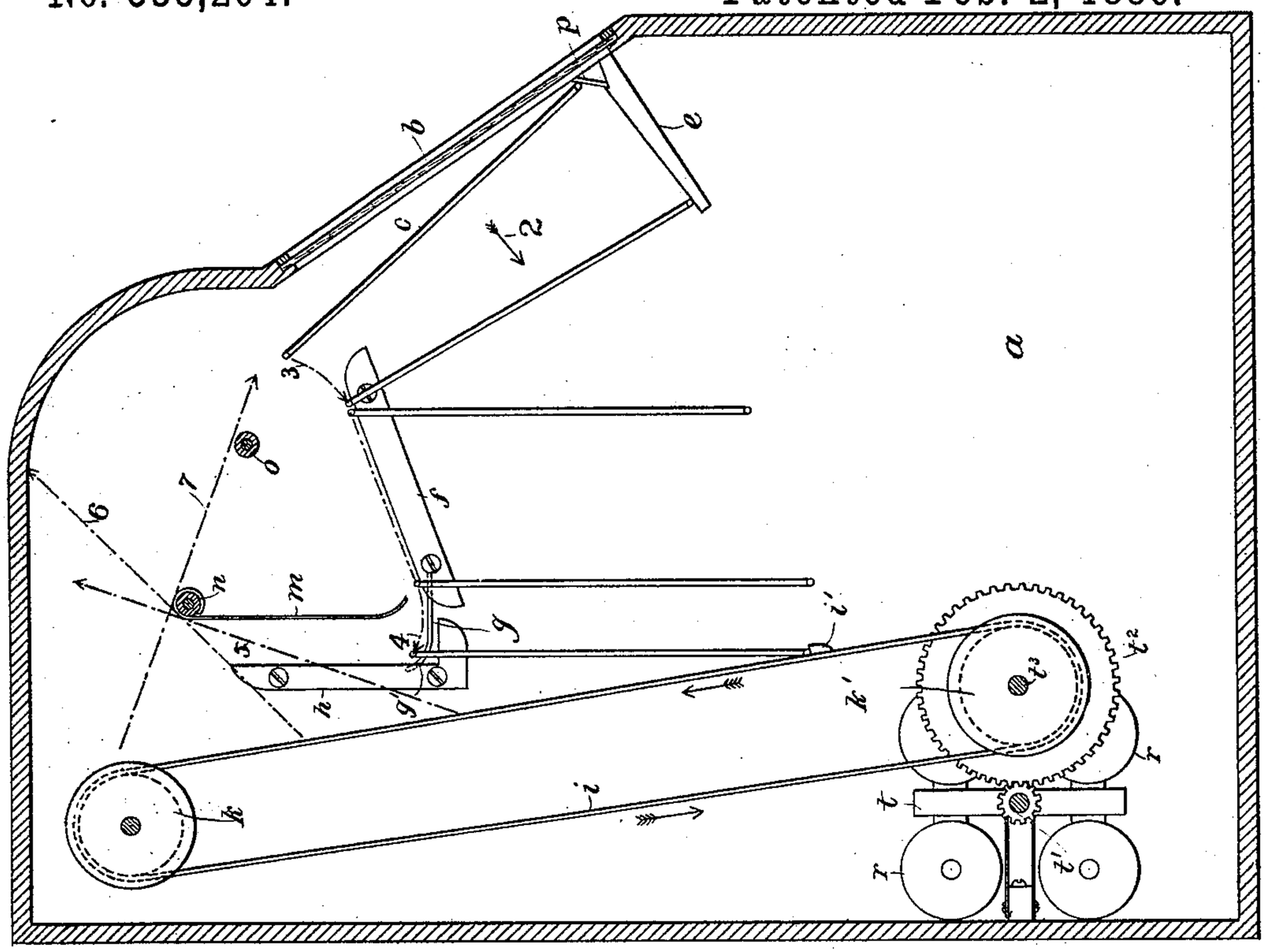

Fig. 1.

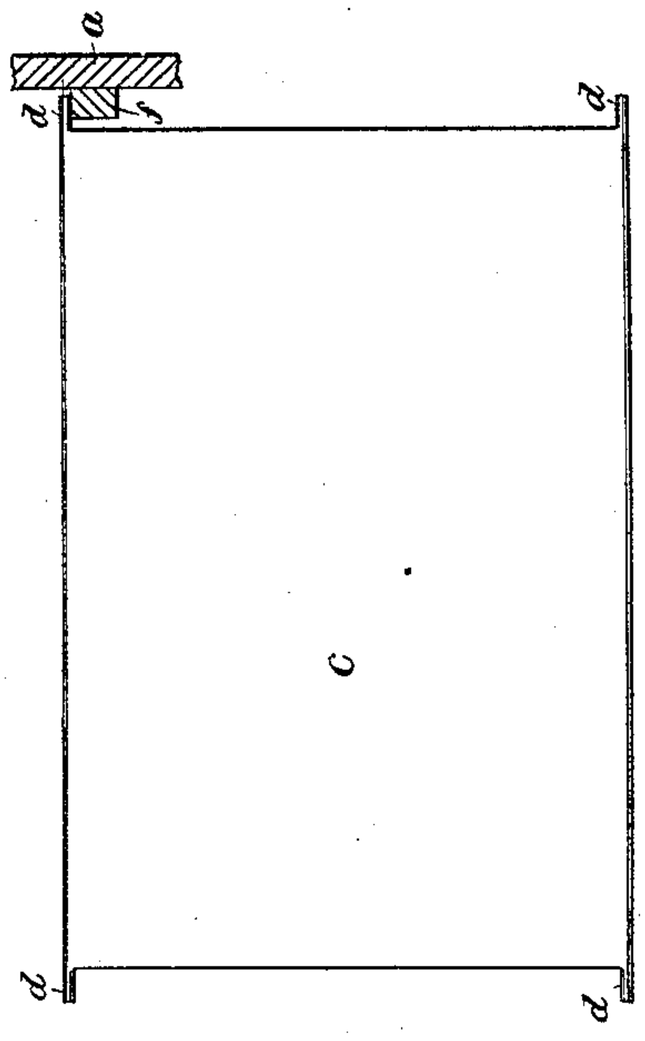

Fig. 2.

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by Cowby & Gregory Attys

UNITED STATES PATENT OFFICE.

THOMAS M. KENNEY, OF CAMBRIDGE, ASSIGNOR TO WALTER S. HAYWARD, OF LYNN, AND WILLIAM C. DEWEY, OF BROOKLINE, MASSACHUSETTS.

CARD OR SHEET TRANSFERRING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 335,204, dated February 2, 1886.

Application filed March 9, 1885. Serial No. 158,235. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. KENNEY, of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Card or Sheet Transferring Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to an apparatus by which cards or sheets are successively presented in a given position, the apparatus being shown in this instance as especially intended for an advertising medium, the cards being presented one at a time before an opening, where they remain for a short interval of time until the next succeeding card is presented. The cards are reversed when coming into position to be viewed, so that the opposite face is presented to the one previously presented. The series of cards are supported on inclined guides or ways, so that they tend by their weight to move away from the position where they are displayed, and a continuously-moving card-transferring device engages the rearmost card or one most remote from the point where they are displaced, and causes it to be transferred to the position at the front of the entire series of cards, thus concealing the one that has just been displaced and itself coming into position to be viewed, where it remains until the card-transferring device, at the end of an interval of time, engages the card at the rearmost end of the series, and carries it over to the front of the series, the operation being maintained continuously. The transferring device, as shown in this instance, is actuated by an electromotor, and the entire apparatus is inclosed in a case or box having an opening or window, through which the cards are displayed. The cards are independent of and disconnected from one another, and are provided at their ends with projections, which engage the guides by which the series of cards are supported, and upon which the said series of cards slide toward the transferring device, so as to be engaged thereby, as described.

Figure 1 is a vertical longitudinal section of an apparatus for transferring cards or sheets in accordance with this invention, a portion of the series of cards being shown in end elevation; and Fig. 2 is a face view of one of the cards, showing, partly in section, one of the guides for supporting the same.

The box or case *a* is of suitable size and shape to contain the cards and supporting and transferring mechanism therefor, and is provided with an opening or window, *b*, through which the cards may be viewed, they being successively placed at the rear of the said opening, and each remaining displayed for a definite interval of time, at the end of which time another card is brought before the opening in front of the one that has just been displayed.

The cards *c* are provided at their ends with projections *d*, which may consist of the projecting ends of wires extending along the upper and lower edges of the cards, and serving to stiffen the same, and the series of cards is supported in the box *a* upon guides *e f*, projecting from the inner surfaces of the sides or ends of the box at a distance about equal to the length of the projections *d*, as shown in Fig. 2. The guides *e* nearest the opening *b* are arranged to support the cards at their lower end, as the guides *f* have to be discontinued for a short distance back of the opening, in order to permit the cards to pass downward from above into the space behind the opening. The guides *e* have a steep inclination downward from the lower end of the opening *b*, so that the cards resting thereon tend to slide in the direction of the arrow 2 as fast as room is made for them by taking away a card from the rearmost of the series, as hereinafter described, it being understood that the entire space between the extreme cards shown is filled with cards, which are in contact with one another along their upper edges, which are substantially in the dotted line 3 4, the lower ends of the said cards being more or less separated, or fanning out, as it were, from the said line 3 4.

Before the lower ends of the cards pass off from the guides *e* in the downward movement in the direction of the arrow 2, the projections *d* at their upper ends have come over the guides *f*, so that immediately after the lower ends of the cards leave the guides *e* the said cards will be suspended from the guides *f*, which are also inclined downward from the opening, so as to tend to continue the movement in the direction of the arrow 2.

At the lower end of the guides *f* the cards are supported upon a guide, *g*, substantially horizontal for a short distance, and then curved upward, as shown at *g'*, at the end of which is a substantially vertical guide, *h*, which arrests the further movement of the series of the cards in the direction of the arrow 2, with the rearmost card or one most remote from the opening *b* in position to be engaged by the transferring device, which in this instance consists of an endless belt, *i*, passing over pulleys *k* and *k'* near the top and bottom of the box, and provided with one or more projections, *i'*, adapted to engage the rearmost card as it hangs on the guides *g*, as shown in Fig. 1, the belt *i* moving in the direction indicated by the arrows.

The projection *i'*, as shown, engages the lower edge of the card, and, moving upward, raises the card; and the belt *i* is slightly inclined with relation to the guide *h*, which engages the projection *d* at the upper end of the card in its outward movement, so that as the projection *i'* carries the card upward it also carries its lower end to the rearward of the guide *h*, causing the upper portion of the card to incline forward, in which position the projection *d* at its upper end will be engaged by a guide, *m*, preventing the card from tipping over in the forward direction.

At the upper end of the guide *m* is a roller or support, *n*, extending across the box from side to side, and as the card is raised it will rest on the roller *n* and projection *i'*, as shown by the dotted line 5, and in the further upward movement of the projection *i'* the card will incline forward more and more over the roller *n* until, when it arrives at about the position shown by the dotted line 6, its center of gravity is forward of the support *n*, and the forward portion of the card will drop upon a second support or roller, *o*, in substantially the position shown by the dotted line 7.

The roller *o* is below the roller *n*, so that when the card drops from the position 6 to the position 7 it will move forward over the rollers *n* and *o* under the action of gravity, it being guided by them just above the upper edge of the foremost card resting on the guide *e*, as shown, so that the lower edge of the said card that is passing over the rollers *n* and *o* will slide into the space between the opening *h* and the foremost card *c* at the rear thereof. The cards *c*, in thus falling in front of the opening *b*, will preferably strike on a bunter, *p*, which may consist of short wires preferably placed in position to receive the card between its ends, so that in falling it does not strike on the projections *d*, tending to bend them.

When a card, *c*, is removed from the rear end of the series by the projection *i*, as thus described, the entire series will slide by their weight slightly toward the lower end of the guide *f*, and the curvature of the guide at *g'* causes the rear end of the lowermost card to incline slightly away from the remainder of the series toward the belt *i*, so that the projection engages it with certainty. After a card, *c*, has thus been thrown down in front of the opening *b*, it will remain stationary until the belt *i* has made a complete revolution, or until the projection *i'* has engaged and raised another card; and it will be seen that in passing over the roller or support *n* the position of the card is reversed, so that the opposite side is presented to the opening *b* to that which was presented the last time that the said card was placed behind the said opening.

If the belt *i* occupies a longer time in making a complete revolution than is desired for the display of each card, the said belt may be provided with two or more of the projections, *i'*, arranged at equal distances apart thereon.

The belt *i* may be actuated by any suitable mechanism, and, as shown in this instance, it is actuated by an electromotor consisting of magnets *r* and a revolving armature, *t*, provided with a pinion, *t'*, meshing with a gear, t^2, on the shaft t^3 of the pulley *k'*.

It will be seen that the cards *c* are all independent of and disconnected from one another, and that a greater or less number may be employed, it not being necessary that the entire space on the guides *e f* should be occupied.

It is obvious that mechanism of the hereindescribed nature may be employed for automatically reversing the position of cards or sheets for other purposes than advertising, and that the invention is not limited to an advertising apparatus.

I claim—

1. The supporting-guides and series of independent cards or sheets supported thereon, combined with a transferring device, whereby the cards are consecutively transferred from one to the other end of the series, substantially as described.

2. The box or frame-work provided with inclined guides, combined with a series of cards or sheets supported on the said guides and a transferring device, whereby the cards are consecutively transferred from the lower to the higher end of the said guides, substantially as described.

3. The box or frame-work provided with inclined guides to receive the lower edges of cards or sheets, and guides to receive projections from the upper edges of the said cards or sheets, combined with the transferring device to raise a card or sheet from the said guides, and supports to receive a card when thus raised and direct the same to the opposite end of the guides from which it was raised, substantially as described.

4. The box or frame-work provided with supporting-guides for cards or sheets, combined with a transferring device, consisting of an endless belt provided with a card-engaging projection, and supports *n* and *o*, which receive the card or sheet from the engaging device, substantially as described.

5. The box or frame-work provided with guides *e*, *f*, *g*, and *m*, and supports *n* and *o*, combined with the cards or sheets having pro-

jections at their ends and the transferring device co-operating therewith, substantially as described.

6. The box or frame-work provided with card or sheet supporting guides, combined with the transferring device, whereby the cards or sheets are engaged and lifted, one at a time, and the supports over which the said cards are turned and dropped from the transferring device, and the bunter upon which the cards strike as they fall from the said support, substantially as described.

7. A series of cards provided with projections at their corners, combined with guides to receive the said projections and support the cards, and a transferring device to remove a card from one end of the series and transfer it to the other end, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS M. KENNEY.

Witnesses:
B. J. NOYES,
F. CUTTER.