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L. S. SIMON

2,343,813

MAGNETICALLY CONTROLLED ELEMENT

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FIG. 1.

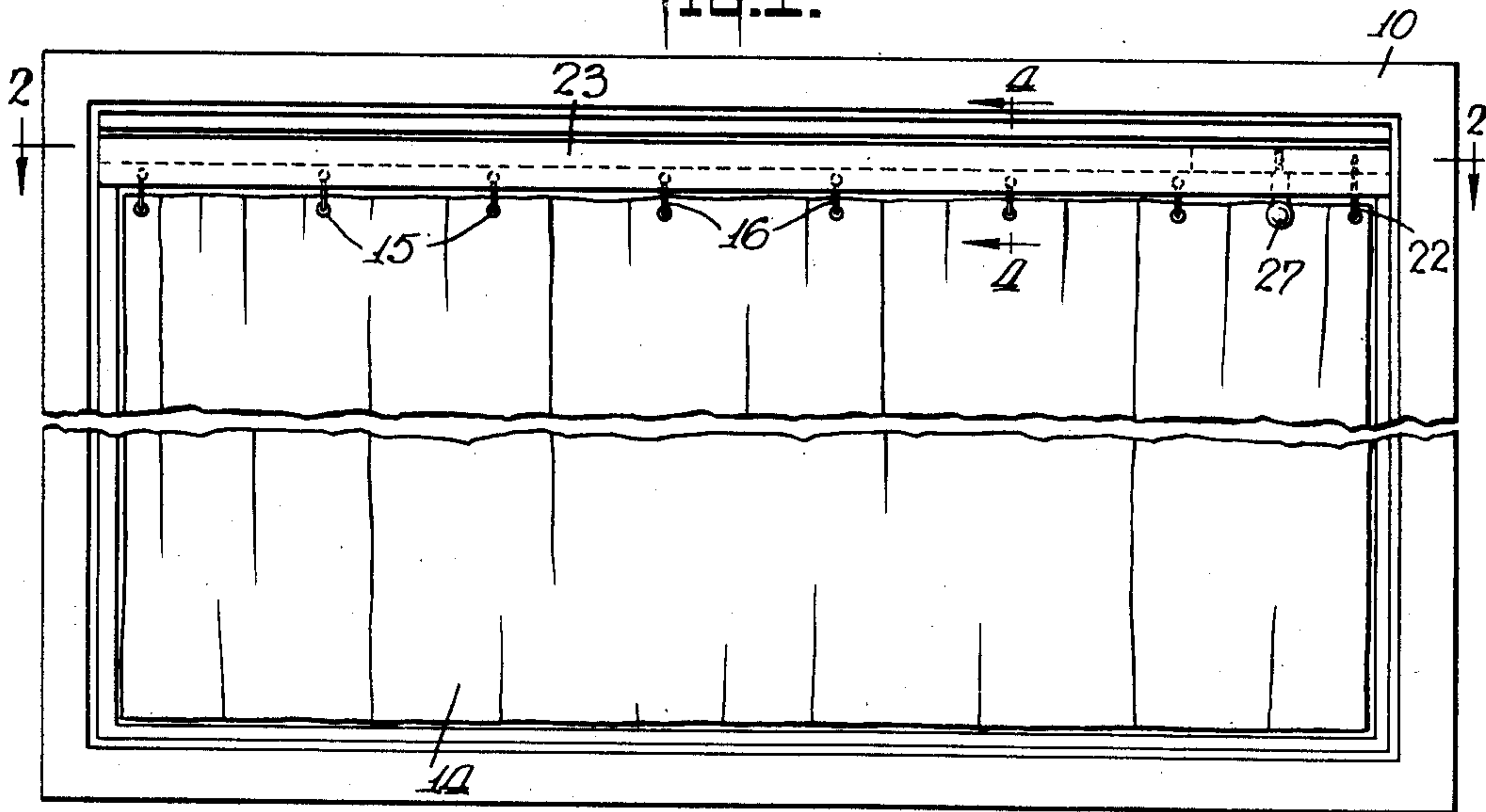


FIG. 2.

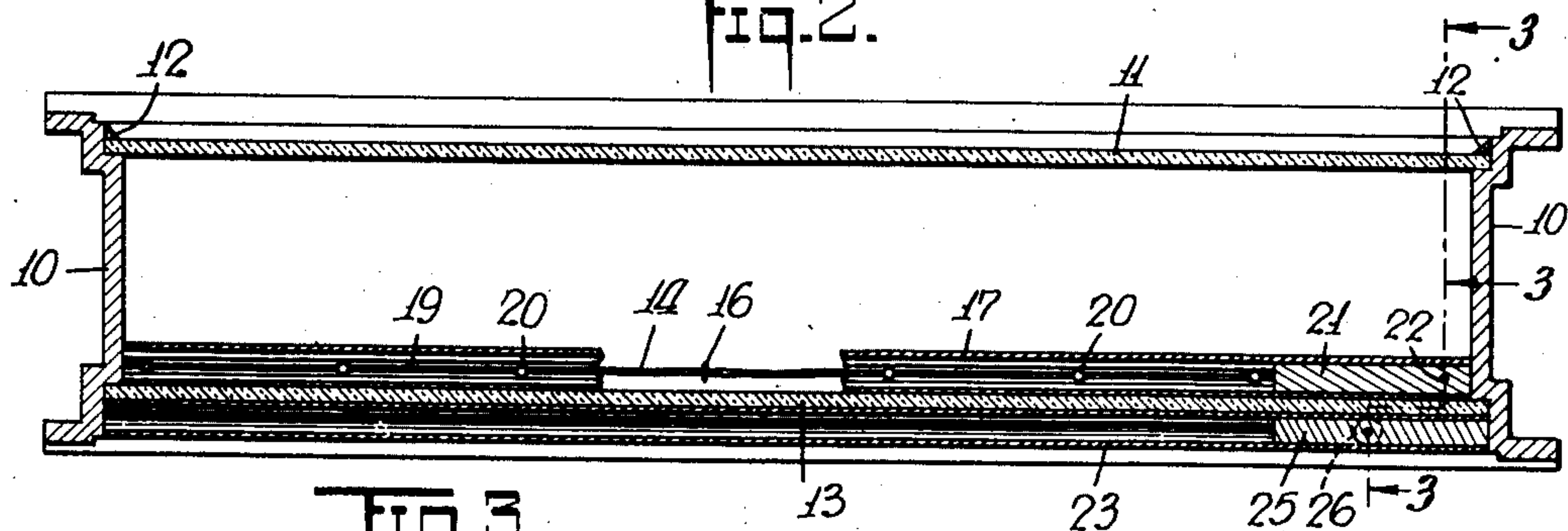


FIG. 3.

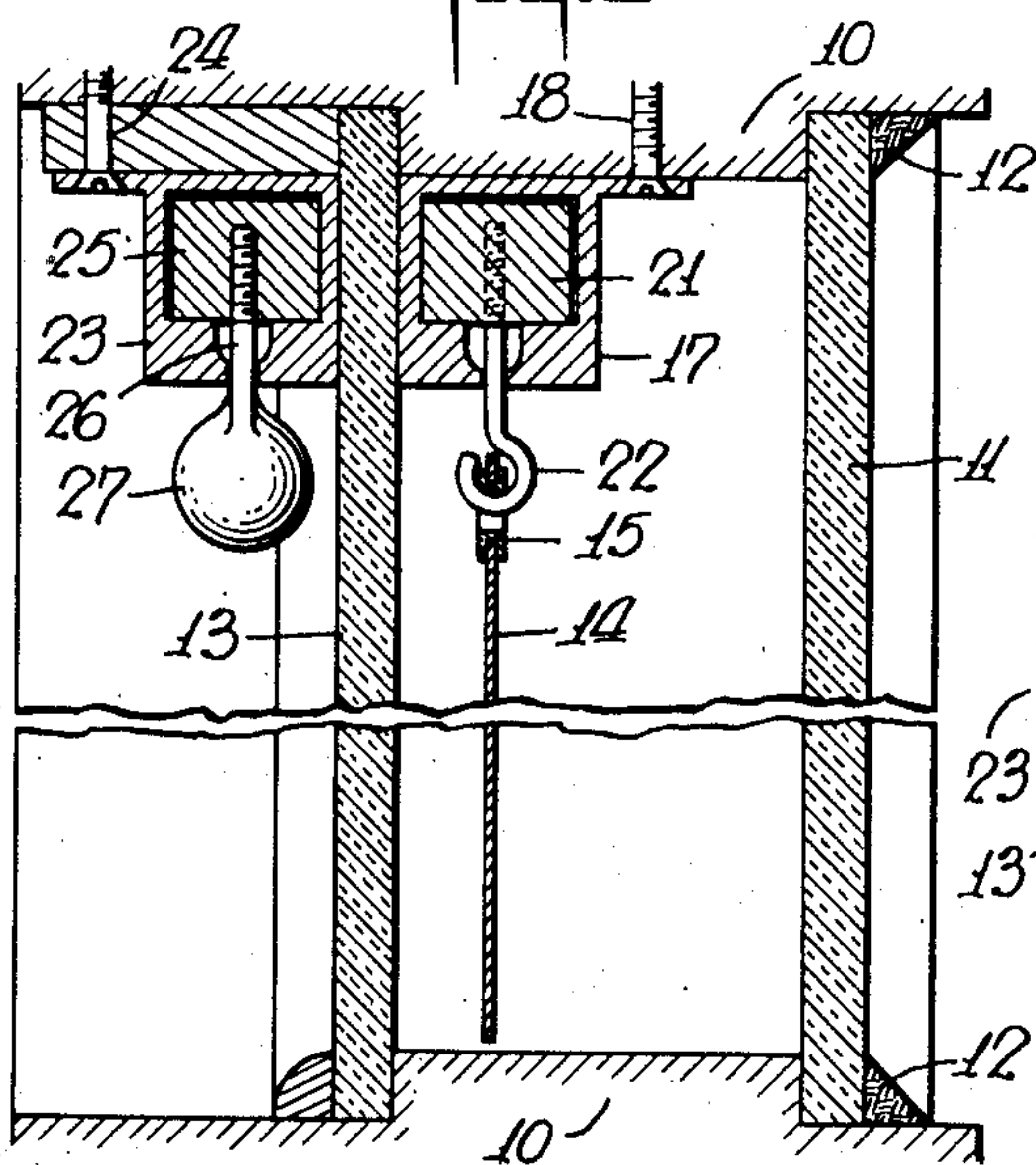


FIG. 4.

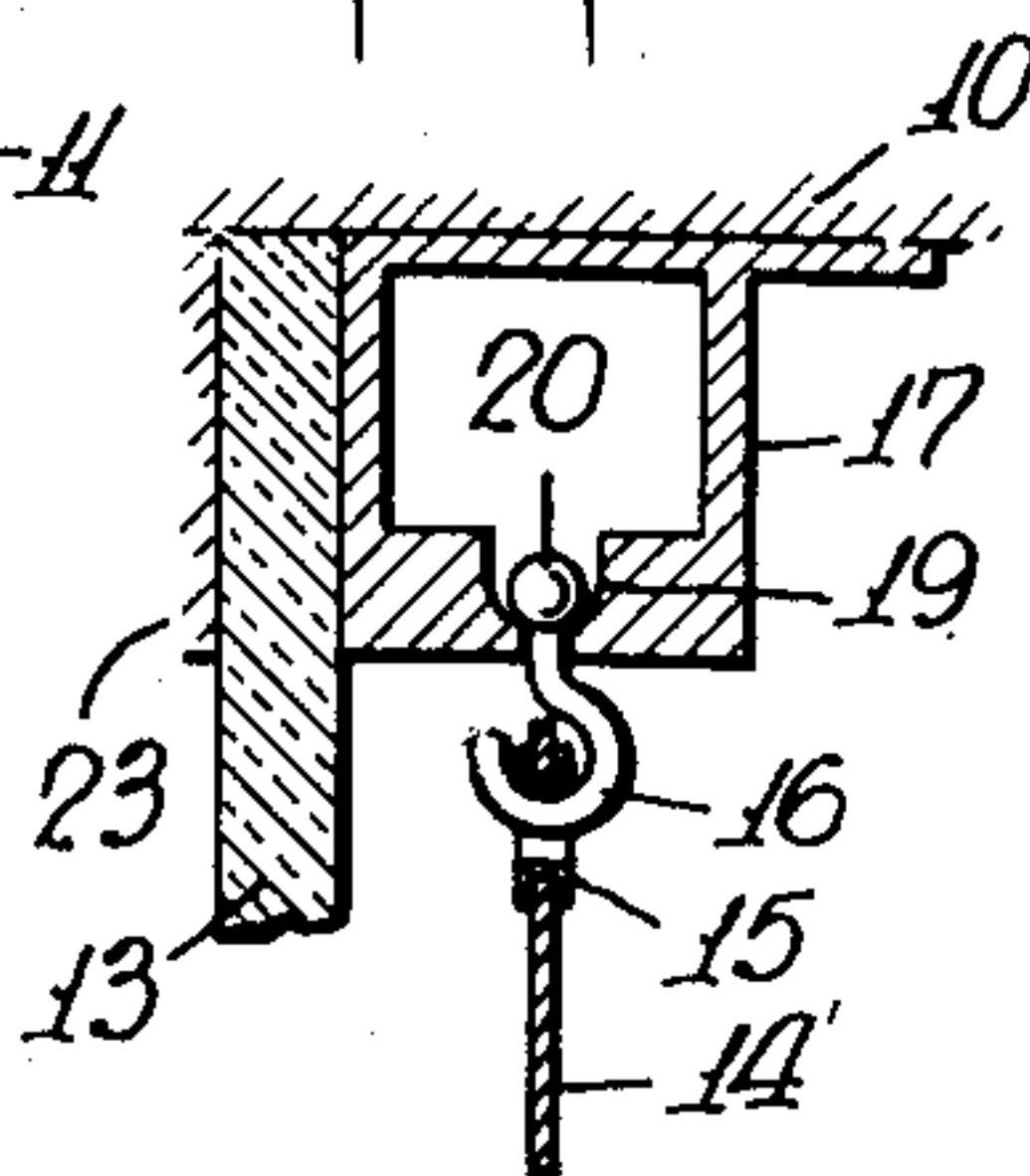
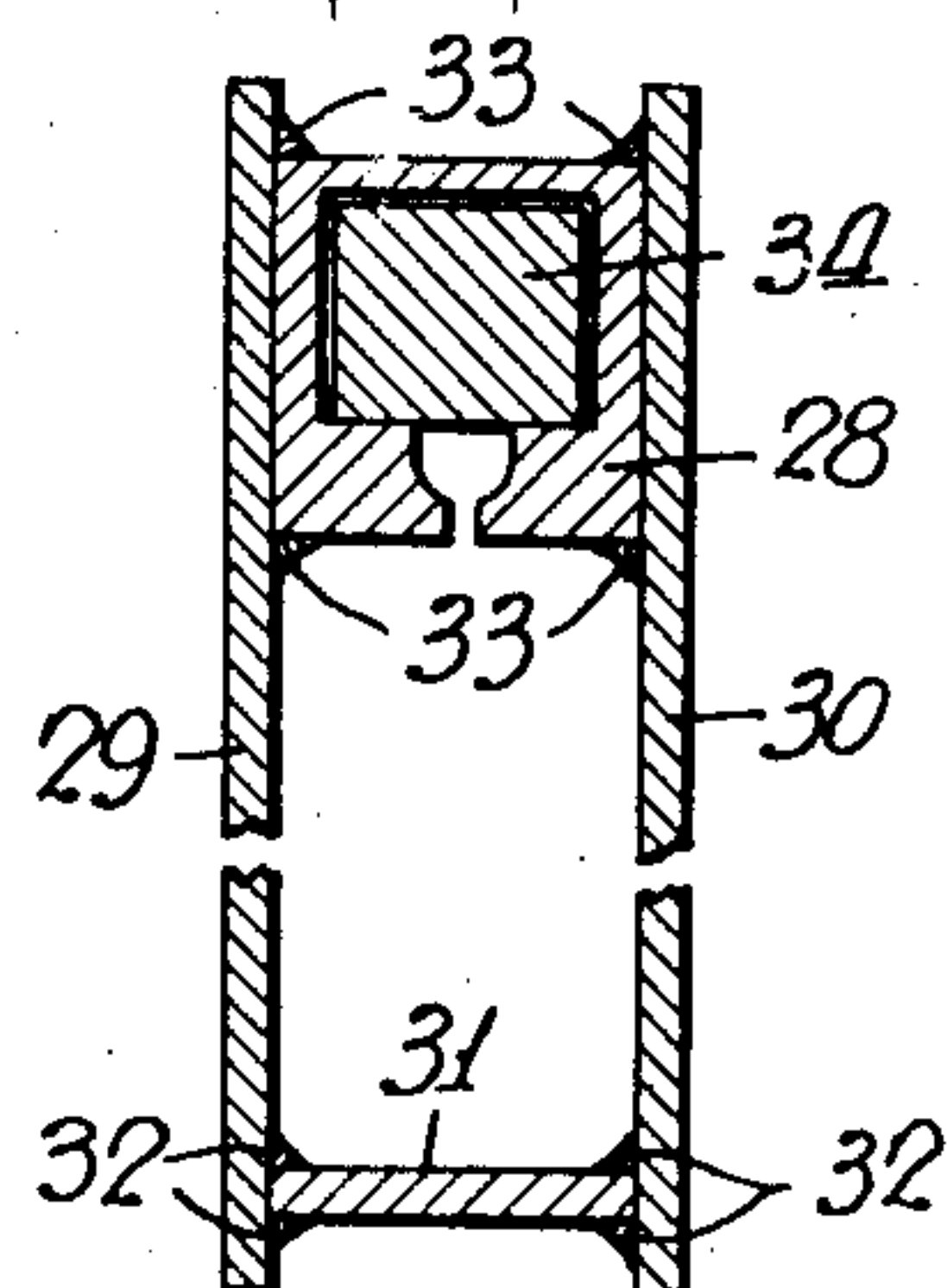


FIG. 5.



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MAGNETICALLY CONTROLLED ELEMENT

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12 Claims. (Cl. 160—340)

My present invention relates generally to the art of controlling certain movements of an element on one side of a wall or the like by a control means on the opposite side thereof.

While the broader phases of my invention are obviously not restricted to any single specific purpose, nor to the control of any particular type of movable element, the present improvement is primarily adapted for use in connection with a movable element whose nature and purpose render it relatively inaccessible and thus make a more direct control of its movements difficult, cumbersome, or otherwise impractical or undesirable. As an example, my invention may be utilized to control the movements of a curtain or similar movable element arranged on one side of a window pane or wall portion, by an actuating instrumentality which is positioned on the opposite side of the pane or wall portion. Thus, my invention is of unique utility and value in controlling a movable element mounted between the two parallel panes of a double-paned window of the type which is used in certain buildings and in railroad cars, airplanes, and the like. I have therefore chosen to illustrate the general nature of the invention as it may be applied to a window of such character, although it will be understood that the usefulness and applicability of the invention is of far wider scope.

My invention is predicated upon the ability of certain magnetically-coupled members to react with each other notwithstanding the interposition between them of a physical barrier. This well-known phenomenon is harnessed to a practical purpose by arranging a pair of magnetically-coupled members, on opposite sides, respectively, of a wall portion, window pane, or the like, one of the members being articulated to a movable element on one side of the wall, whereby actuation of the other member may be caused to control the movement of the magnetically-coupled member, hence the movable element.

In a simple embodiment of the invention, as applied to a window pane or the like, at least one of the members is a magnet, while the other member is a second magnet or block or body magnetically responsive to the first member. These members are preferably mounted in parallel guideways, one of the members being constructed to serve as a control handle or actuating member, the other being articulated in suitable fashion to the movable element which is to be controlled.

I achieve the foregoing general objects, and such other objects as may hereinafter appear or

be pointed out, in the manner illustratively exemplified in the accompanying drawing, in which:

Figure 1 is an elevational view of an illustrative double-paned window with which my present magnetic control has been associated;

Figure 2 is a cross-sectional view taken substantially along the line 2—2 of Figure 1;

Figure 3 is an enlarged cross-sectional view taken substantially along the line 3—3 of Figure 2;

Figure 4 is an enlarged fragmentary cross-sectional view of the curtain, its support, and the adjacent wall portion, taken substantially along the line 4—4 of Figure 1; and

Figure 5 is a view similar to Figure 3 showing a modification.

The window I have chosen to illustrate consists essentially of a frame 10 which may be of any selected material and of any desired structural character, an outer pane 11 (of glass or the like) being secured to the frame as at 12, in parallel relationship to an inner pane 13 similarly held in fixed position by any suitable means. In the space between the two panes 11 and 13 I have illustratively shown a curtain 14 which will serve as an example of the type of movable element whose movements are to be controlled.

The curtain 14 has been shown as a hanging type of flexible character provided with a series of eyelets or similar openings 15 arranged in spaced relationship along its upper edge, a series of hooks 16 or the like (see Figure 4) being engaged with these openings to support the curtain within a guideway 17 mounted along the inside surface of the pane 13. This guideway may be of substantially rectangular cross-sectional shape, and is secured to the framework in any desired manner as illustratively exemplified by the bolt or fastener 18 (Figure 3). In the lower portion of the guideway a longitudinal channel 19 is provided, to accommodate the ball-shaped ends 20 of the hooks 16.

Mounted in the main portion of the guideway 17 is a block or member 21 with which the curtain hook 22 is associated, this hook having a shank portion which is screw-threaded or otherwise extended upwardly into permanent association with the member 21.

Along the outside surface of the pane 13 I mount a similar guideway 23 which is secured in position by any suitable means, as exemplified by the fastener 24, and which accommodates a block or member 25. Extending downwardly through a longitudinal groove in the lower por-

tion of the guideway 23 is the shank portion 26 of a control handle 27, this handle being screw-threaded or otherwise permanently associated with the member 25.

In accordance with my invention, the guideways 17 and 23 are arranged in parallel relationship on opposite sides, respectively, of the pane 13 and the members 21 and 25 are of magnetically-coupled character. For example, one or both of the members may be a block or body of suitable metal or metallic alloy, permanently magnetized while the other member is a similar block of metal or metallic alloy which may or may not be itself permanently magnetized but which is nevertheless magnetically responsive to the other member.

The blocks 21 and 25 may be arranged so that they will react with each other, either negatively or positively, depending upon the arrangement desired, but the preferred arrangement provides for a magnetic attraction between the two members so that they constantly tend to remain in close proximity to each other. As a result, manipulation of the exteriorly accessible handle 27 to shift the member 25 longitudinally along the guideway 23 will result in carrying with it the member 21. The longitudinal movement of the latter member within its corresponding guideway 17 will obviously bring about corresponding movements of the curtain 14 to which it is articulated.

Accordingly, although the space between the two panes 11 and 13 is relatively inaccessible, the curtain 14 or other element mounted in this space may be moved back and forth in a direction parallel to the plane of the pane 13 by merely actuating the handle 27.

The advantages of this construction will be obvious, and include not only a simplification in structure and the employment of a minimum number of operative parts, but also an ability to keep the curtain 14 thoroughly protected and shielded against possible damage, soiling, or other impairment, thus making it possible to utilize a curtain material of relatively delicate character.

It is often desirable to employ a double-paned window which has the space between the panes hermetically sealed. Such a construction affords the possibility, among others, of partially evacuating the space between the panes, or of dehydrating the air or other gas which has been sealed in. I have illustrated such an element in Figure 5, and have shown the manner in which a guideway 28 of the present character may be employed as a part of the sealing means. The two panes 29 and 30 are peripherally engaged by a sealing means which holds them together as a unit and seals the enclosed space between them. I have illustratively shown a sealing means in the form of a spacing element or frame 31 which is secured to the panes by sealing fillets 32 or the like. One portion of this frame may be constituted of the guideway 28 which would be held in secure engagement with the two panes by means of the sealing fillets 33 or the like. This guideway might be constructed in the same manner as the guideway 17 (Figure 3) accommodating a magnetized or magnetically-responsive member 34, and having associated with it a movable element (not shown in Figure 5) which would thus form a permanent part of the unitary double-panel structure. Such a structure, when installed for use, would afford not only the advantages of a hermetically-sealed unit, but

would permit control of the movements of the accommodated element by merely providing a cooperative magnetic member in an accessible position exterior to one or both of the panes 29 and 30.

It will be understood that the invention is not restricted to a double-paned construction, nor necessarily restricted to a device in which the wall portion is of glass or other transparent material. Similarly, even where the invention is applied to a window of the character shown, it is not essential that the movable element be a curtain of the character illustrated, nor even a curtain at all, any other movable element mounted within the space between the panes being obviously capable of control by the magnetic arrangement described.

In general, it will be understood that the details herein described and illustrated may be modified by those skilled in the art without departing from the spirit and scope of the invention as expressed in the appended claims, and for this reason it is intended that these details be considered as being merely illustrative and not necessarily of limiting character.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is:

1. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means for moving said element.

2. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means controllable from the exterior of said window for moving said element.

3. In a window having spaced parallel panes, a movable element in the space between them, a device on the exterior of the window for controlling the movement of said movable element, and means magnetically coupling said device with said movable element through one of said panes.

4. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means for moving said element, said means comprising magnetically coupled members on opposite sides, respectively, of one of said panes.

5. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means for moving said element, said means comprising magnetically coupled members on opposite sides, respectively, of one of said panes, the member on the inside being articulated to said movable element.

6. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means for moving said element, said means comprising magnetically coupled members on opposite sides, respectively, of one of said panes, one of said members being a magnet, the other being magnetically responsive thereto.

7. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means for moving said element, said means comprising magnetically coupled members on opposite sides, respectively, of one of said panes, one of said members being a magnet, the other being magnetically responsive thereto, the member on the inside being articulated to said movable element.

8. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means for moving said element, said means comprising parallel guideways on opposite sides, respectively, of one of said panes,

and magnetically coupled members mounted for movement in said guideways, respectively.

9. In a window having spaced parallel panes, a movable element in the space between them, and magnetic means for moving said element, said means comprising parallel guideways on opposite sides, respectively, of one of said panes, and magnetically coupled members mounted for movement in said guideways, respectively, the member on the inside being articulated to said movable element, whereby movements of the member on the outside will control the movements of said movable element.

10. A window having spaced parallel panes, and sealing means peripherally engaging the panes to hold them together as a unit and to seal the enclosed space between them, said sealing means including an element forming an interior guideway for a movable element to be accommodated within said enclosed space.

11. The combination with a window pane, of a movable element mounted alongside of the pane for movement in a plane parallel to the pane, and magnetic means for controlling the movement of said element from the opposite side of said pane.

12. The combination with a window pane, of a movable element mounted alongside of the pane for movement in a plane parallel to the pane, and magnetic means for controlling the movement of said element from the opposite side of said pane, said means comprising magnetically coupled members on opposite sides, respectively, of said pane, one of said members being articulated to said movable element whereby actuation of the other member will control the movement of the magnetically-coupled member hence of the movable element.

LESTER S. SIMON.