B. G. RAND.

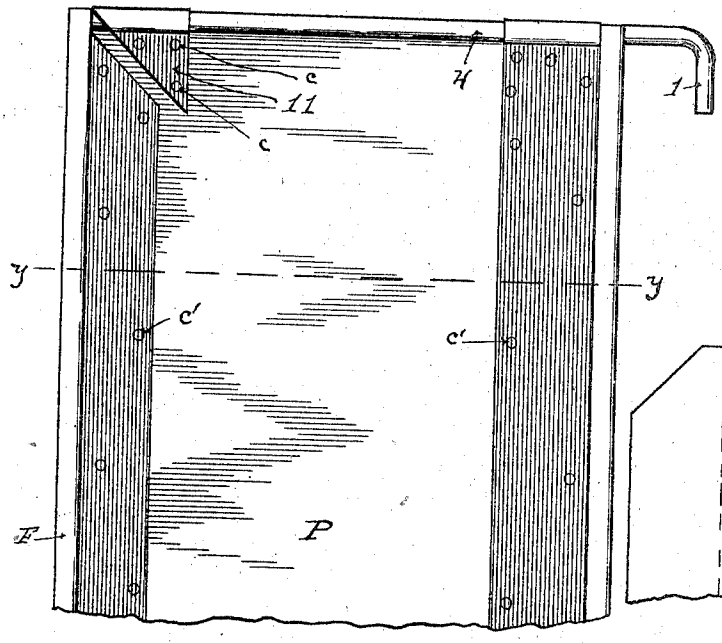
REFERENCE CARD APPARATUS.

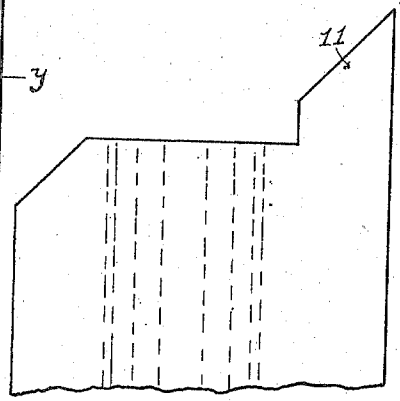
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1,249,669.

Patented Dec. 11, 1917.

2 SHEETS—SHEET 1.





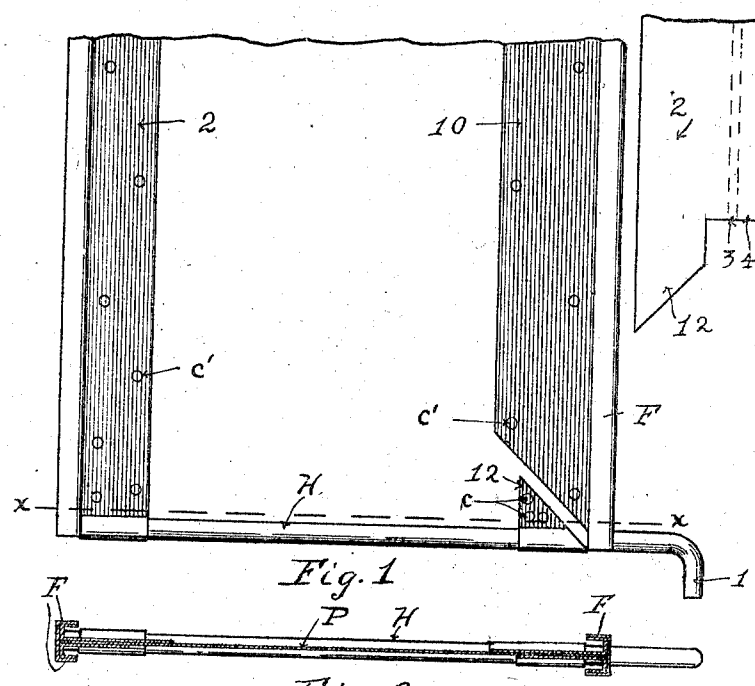


Fig. 1

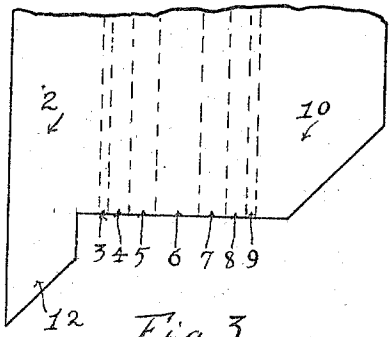


Fig. 3

Fig. 2

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2 SHEETS—SHEET 2.

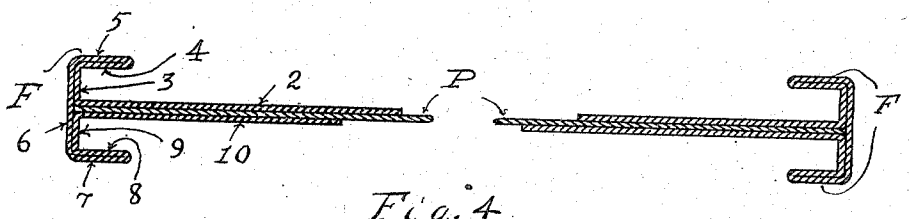


Fig. 4

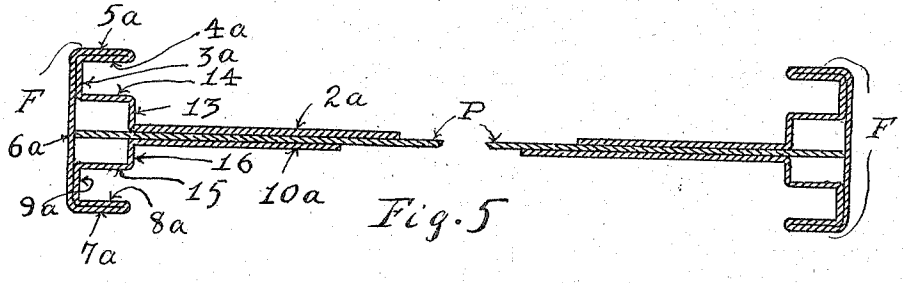


Fig. 5

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UNITED STATES PATENT OFFICE.

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REFERENCE-CARD APPARATUS.

1,249,669. Specification of Letters Patent. Patented Dec. 11, 1917.

Application filed December 4, 1916. Serial No. 135,066.

To all whom it may concern:

Be it known that I, BENJAMIN G. RAND, a citizen of the United States, residing at North Tonawanda, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Reference-Card Apparatus, of which the following is a specification.

My invention relates to improvements in panels or swinging leaves for reference-card apparatus.

Devices of this sort have been made, wherein the panel plate has grooved or recessed side strips with the grooves facing inwardly, said grooves being of sufficient size to permit springing in butts or stubs to which cards are flexibly secured, so that the cards depend in overlapping position on both faces of the panel. Pivot rods having downturned pivot ends are secured top and bottom, and these pivot ends engage in supporting means.

The objects of my invention are to improve the construction of these panels, and among these objects I refer especially to the following: First, to reinforce the panel to make it more rigid and durable; second, to avoid weakening the structure by spot-welding at points where the metal strength should be preserved; third, to form each of the side pieces or flanges from a single piece of metal with the reinforcing strips integral therewith; fourth, to secure the hinge-pivot rods to the panel in a strong, inexpensive manner and without weakening the metal of the rods; fifth, to provide an offset of flanges to permit the use of a greater thickness of overlapping cards. These and other objects will be evident from the following specification and claims and from the annexed drawings in which:—

Figure 1 is an elevation or face view of a panel constructed with my improvements.

Fig. 2 is a section on the line *x*—*x* of Fig. 1.

Fig. 3 is a diagrammatic detail view showing the outline of a blank from which a flange is made.

Fig. 4 is a section on the line *y*—*y* of Fig. 1 on a larger scale.

Fig. 5 is a similar section view showing the special construction hereafter described.

The following reference-letters indicate generally the main parts of the structure: P is the panel plate which is made of sheet metal. F, F are the side flanges containing the grooves to receive the card stubs. H, H are the hinge pivot rods.

To distinguish my improvements generally from the prior art, the common practice has been to form the flanges substantially U-shaped with the openings facing inwardly and the sides of the panel plate setting down into the bottom of the U, thus forming a recess or groove on both sides of the panel plate. The pivot rods have been placed on the ends of the panel plate with the flanges extending sufficiently beyond the ends of the panel plate to permit their being spot-welded to said rods, so that the parts have been secured solely at the four corners and the panel plate having more or less side play in the flanges.

In my construction the panel plates are cut the desired size and the pivot rods H are formed with the downwardly bent pivot ends 1. The metal plates which are to form the flanges are cut in substantially the form shown in Fig. 3. By proper machinery these plates are then formed to the flange construction which I will now describe particularly by reference to Fig. 4 and also Fig. 3.

The portion 2 remains flat to form a reinforcing strip as hereafter shown. The plate is then bent up substantially at right angles to form the wall or surface 3, thence inwardly at substantially right angles to form the wall or surface 4. This forms a groove for one side of the panel plate for the card stubs. It is then bent out a half-turn and folded down upon itself to form the surface 5. Thence it is bent downwardly at substantially right angles to form the edge surface 6. Thence it is bent inwardly to form the surface 7, oppositely positioned to the surface 5, and then folded upon itself to form the surface 8. It is then bent at right angles to form the wall 9, and then is bent to form the second reinforcing portion 10. The groove formed by the surfaces 8, 9, and

10 form the groove upon the second side of the plate. These bent or folded portions are indicated on Fig. 3 by broken lines and corresponding reference numerals.

It is to be noted that the free edges of the reinforcing strips 2 and 10 are not even. There is distinct purpose and utility in this feature. When the flanges are thus formed the tendency is for the two strips 2 and 10 to hug closely together, and in assembling by inserting between them, the panel plate P, if the edges were even the operator would have to pry them apart with some sort of a sharp instrument, with material loss of time. By having the edges offset as shown, the operator merely presses the outstanding strip away from the other with the panel plate itself and shoves the flange onto the panel. It is also to be noted that, by this construction, there is no raw edge to the flange, that both outer surfaces of the grooves are double thick and that the outer edges of the panel are covered; and particularly it is to be noted that by making this outer surface 6 integral with both groove constructions an absolute stop and gage for the panel is provided, so that uniformity in assembling is attained without the use of gage means.

Turning now to Fig. 1, with the flanges F thus formed and put in place upon the two sides of the panel plate P, the pivot rods H are put in place and the mitered ends 11 and 12 are brought over these rods and clamped down upon the panel plate P and are spot-welded at points such as indicated by the small circles *c*. The reinforcing strips 2 and 10 are likewise spot-welded as indicated by the small circles c^1.

It will now be seen that the first four of the objects of my invention, as above stated, have been attained. It now remains to describe the modified construction shown in Fig. 5.

For certain uses it is desirable to have the grooves for the card stubs set out or offset from the plane of the panel plate in order that a greater thickness of overlapping or underlapping cards may set into each panel. As shown in Fig. 5, the plate 2^a is bent upwardly to form the offset portion 13, thence outwardly to form the groove wall 14, thence upwardly to form the wall 3^a, thence inwardly to form the wall 4^a, thence folded back upon itself to form the surface 5^a, thence downwardly to form the finished edge 6^a, thence inwardly to form the surface 7^a, thence folded upon itself to form the wall 8^a, thence upwardly to form the wall 9^a, thence inwardly to form the wall 15, thence upwardly to form the offset 16, and finally inwardly to form the reinforcing strip 10^a. This construction materially increases the card-thickness capacity of the panel.

It will, of course, be understood that the order of bending stated is not that performed by a machine, but is given to show the form of construction. It will also be understood that, with this construction, the pivot rods are secured and the parts secured together as above described.

Having thus described my invention, I claim:

1. In a structure of the type described, the combination with a panel plate and pivot rods of flanges adapted to be secured to said panel plate and adapted to secure said rods at the ends of said plate comprising metal plates bent to form card-stub grooves on both sides of said plate and reinforcing strips integral with said flanges and adapted to lie flat against said plate upon opposite portions thereof and to be secured thereto, and extensions on said flanges adapted to be brought over said rods and to be secured to said plate.

2. A panel of the type described comprising a panel plate, grooved flanges on opposite sides of said plate to receive card stubs and reinforcing strips integral with said flange portions lying flat on said plate and adapted to be spot-welded thereto and pivot rods secured over the ends of said panel plate.

3. A card-receiving panel of the type described comprising a panel plate, grooved flanges on opposite sides of said plate and offsets and reinforcing strips on said flanges, said reinforcing strips being adapted to be secured to said panel plate, whereby said grooves are set out from said plate to increase the depth capacity of said panel.

4. A card-receiving panel of the type described comprising a panel plate, one-piece flanges secured thereto comprising sheet-metal blanks bent up to form grooves upon opposite sides of said plate, to form finished face and edge surfaces, and the free edges of said strips extending inwardly and lying flat upon the surfaces of said panel plate and adapted to be secured thereto, whereby the grooves are of equal width and positively positioned and whereby said flanges are gaged to position in assembling, pivot rods on the ends of said panel plate and extension portions on said flange portions adapted to engage over said rods and to be rigidly secured to said panel plate.

5. A panel of the type described comprising a panel plate, side flanges having oppositely-positioned grooves adapted to receive card stubs, reinforcing strips integral with said flange portions adapted to lie against and to be secured to said plate, said flanges being formed of metal plate bent as described to form the walls of said grooves of double thickness or fold of the plate, pivot rods at the ends of said panel and extensions on said flange portions for en-

gaging over said rods and adapted to be secured to said panel plate.

6. In a panel of the type described, a panel plate, flanges oppositely grooved to receive card stubs and reinforcing strips integral with said flange portions and adapted to lie flat upon the faces of said panel, and the free edges of said reinforcing portions extending one beyond the other, whereby the two said portions may be sprung apart to permit the insertion of the panel plate.

BENJAMIN G. RAND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."