April 14, 1931. F. S. CRAVEN 1,801,225

GAME SCORING INDICATOR

Filed June 20, 1929 3 Sheets-Sheet 1

Fig. 1.

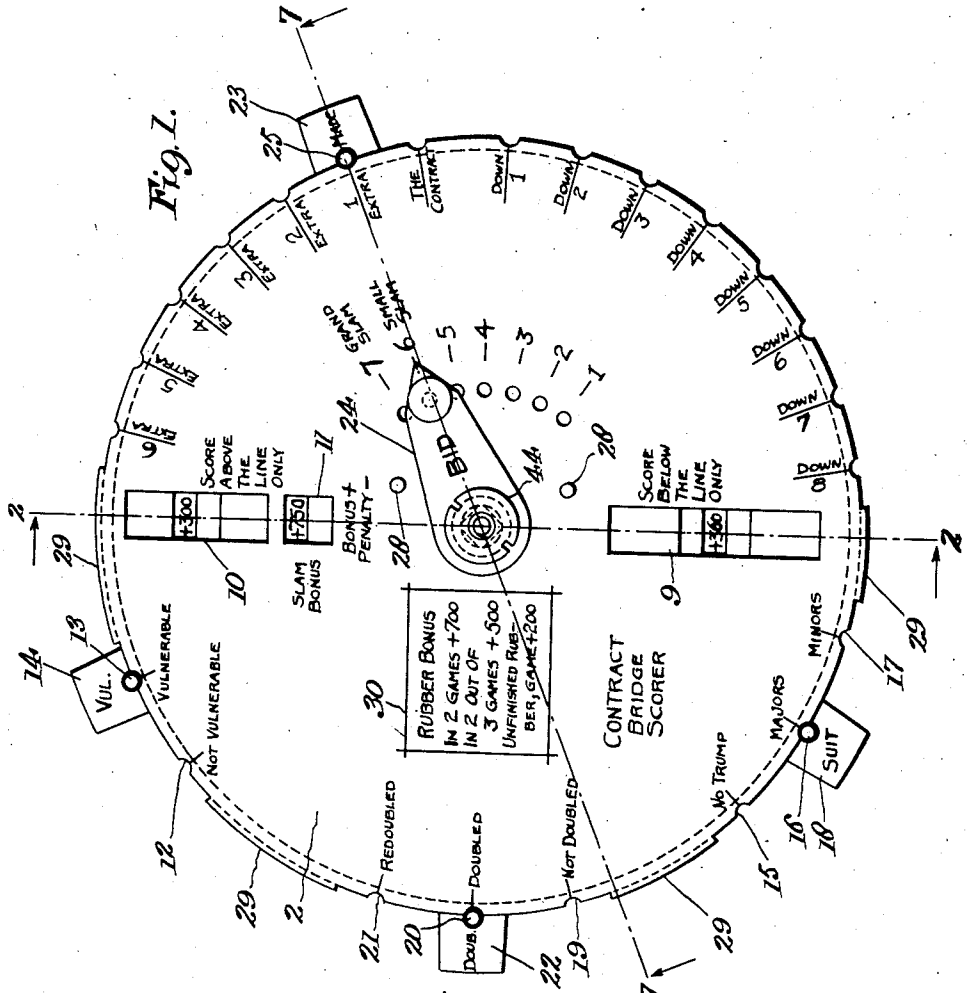
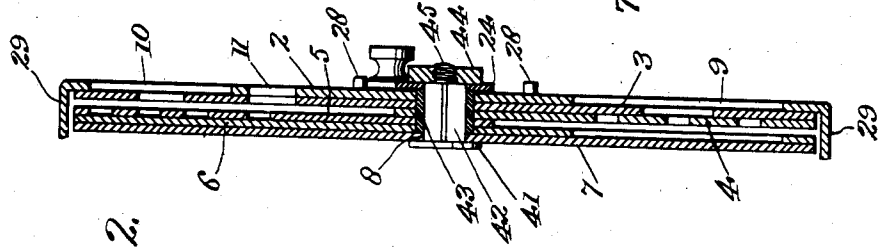


Fig. 2.



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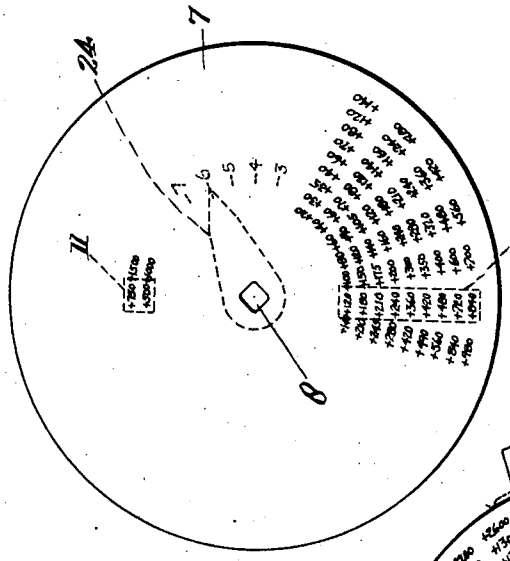


Fig. 3.

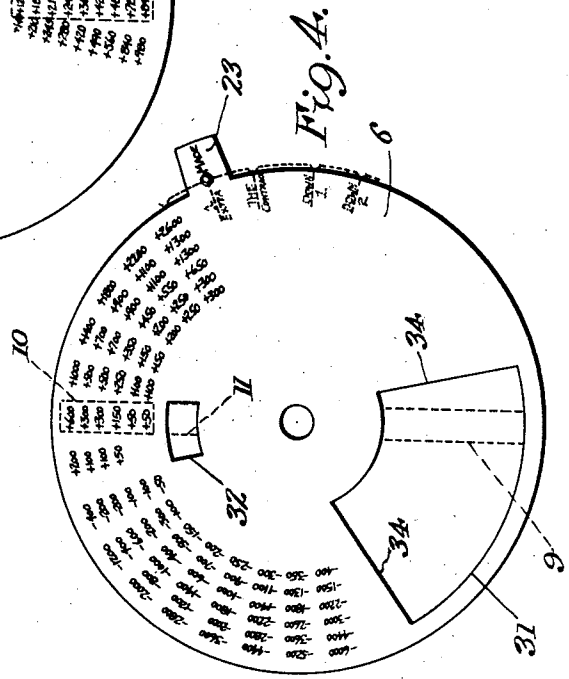


Fig. 4.

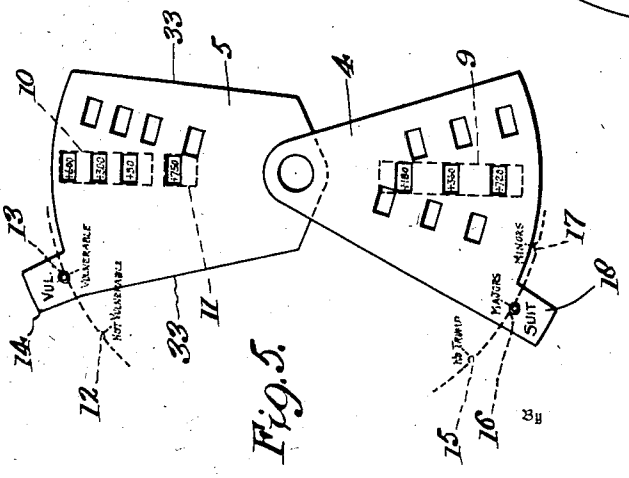


Fig. 5.

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Fig. 6.

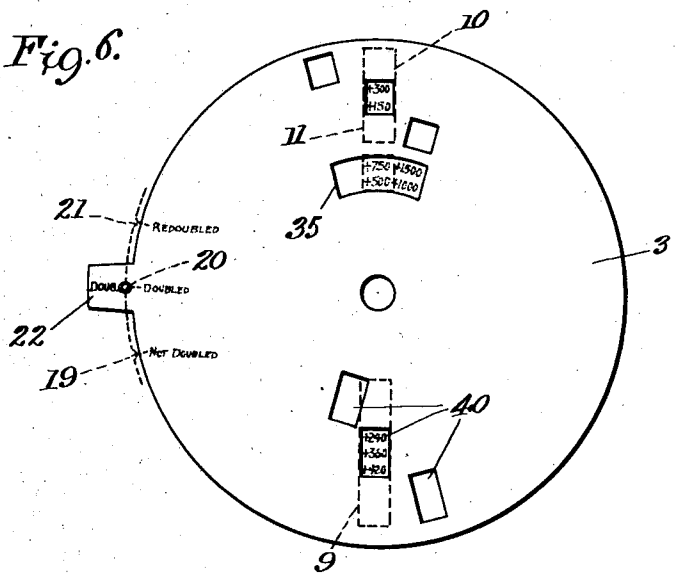
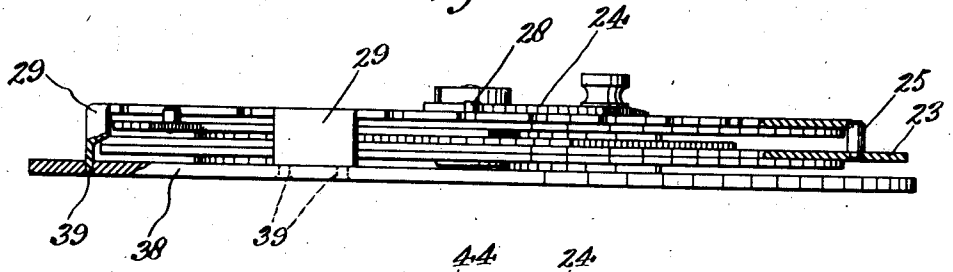


Fig. 7.



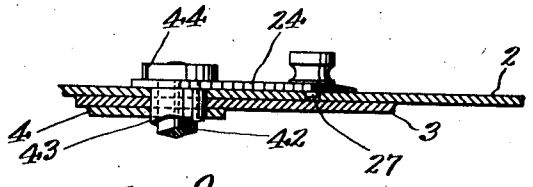


Fig. 8.

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UNITED STATES PATENT OFFICE

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GAME-SCORING INDICATOR

Application filed June 20, 1929. Serial No. 372,374.

My invention relates to indicators for computing and indicating the scores made in games, especially games having a complicated system of scoring such as the card game known as contract bridge. In order to make clear the nature of my invention and to illustrate an application thereof, I have developed it in a form suited to computing and indicating the score in contract bridge, and as such it is illustrated in the accompanying drawings which form a part of this specification.

Since the rules governing the game of contract bridge are well known, and appear in several standard books of reference, these rules will not be elaborated here and it will be assumed that the context will be sufficiently clear without them.

The principal objects of my invention, as developed in relation to scoring in contract bridge, are to compute and indicate the exact value of the bid contracted to be made, provided it be actually made or exceeded by the contractor, or if not made, to blank off all indication of trick values; to compute the exact value of the bonus achieved for bidding and making a "slam"; to compute the exact composite value of all other bonuses except the bonus for winning the final game of a rubber which bonus can be indicated most advantageously by means of a brief explanation appearing on the face of the device; to compute the exact value of penalties; to indicate automatically the appropriate bonuses or penalty, determined from the relation of the tricks made to those contracted for; and to indicate in a single and clear manner whether an indicated value constitutes a bonus or a penalty.

Another and equally important object is to reduce each display to a single value which is the exact amount of the entry to be made on the score sheet, thereby avoiding the chance for error which would exist if the display consisted of a group of values one of which must be selected according to some rule indicated to or known by the scorer.

How these objects are accomplished by my invention will be rendered clear by the following description and reference to the annexed drawings:—

Figure 1 is a full size face view of a device embodying my invention in the form of flat circular disks and partial disks, concentrically mounted with respect to a common axis about which they oscillate, although the device can take other forms, such as flat rectilinear slides having lateral movement in guides, without prejudice to the principles involved.

Figure 2 is a transverse section at full size, taken along the line 2—2 of Figure 1, showing the six disks and partial disks which comprise this form of device, and the axis or spindle about which they oscillate.

Figure 3 is a reduced size face view of the bottom-most disk 7, called the "tricks bid" disk.

Figure 4 is a reduced size face view of the next to bottom disk, called the "tricks made" disk.

Figure 5 is a reduced size face view of the partial disk 4, called the "trump" or "suit" disk and the partial disk 5, called the "vulnerability" disk.

Figure 6 is a reduced size face view of the next to top disk 3, called the "doubling" disk.

Figure 7 is a full size side view, taken at right angles to the line 7—7 of Figure 1, which is partly in section in order to show the construction of the form of pointer detent used for disks 3, 4, 5 and 6 and to show also the construction whereby the device can be mounted on a base plate 38 to which the face plate 2 is rigidly secured.

Figure 8 is a full size partial section along the axis of the pointer 24 to show the detent employed with this pointer.

In Figures 3, 4, 5 and 6 the positions of the apertures 9, 10 and 11 of the face plate 2 are shown for convenience by means of dashed lines, and portions of the periphery, of disk 2 are likewise indicated.

In the drawings, 2 designates a face plate or topmost disk which is provided with three apertures or windows for disclosing scoring values. Viewing the face plate in its normal position, one aperture 9, marked "score

below the line only", is located in the lower part of the disk in order that its position may have a natural relation with this marking, and is for the purpose of indicating the scoring value of tricks contracted for and made. In Figure 1 there is displayed in this slot the scoring value for a bid of 6 spades, doubled, namely 360 points.

Another aperture 10, the upper of two apertures marked "score above the line only", is located in the upper part of the disk in order that its position may likewise have a natural relation with this marking, and is for the purpose of displaying the composite value of bonuses for making and exceeding contract or the value of the penalty when the contract is not attained. The third aperture 11 is also located in the upper part of the disk, but below aperture 10, with which it shares the marking "score above the line only", and is for the purpose of displaying the slam bonus when earned. In Figure 1 there is displayed in slot 10 the combined bonus for making the contract and one extra trick when doubled and vulnerable, namely 300 points; and in slot 11 is displayed the bonus for bidding and making a small slam when vulnerable, namely 750 points.

The face plate 2, also contains along its margin stop positions for pointers attached to other disks as follows:—

In the upper left sector, two positions, one of them 12, marked "not vulnerable", and the other 13, marked "vulnerable", which regulate the setting of the pointer 14, of the vulnerable disk 5, shown in Figure 2 and Figure 5; in the lower left sector, three positions, one of them 15, marked "no trump", another 16, marked "majors" and the other 17, marked "minors", which regulate the setting of the pointer 18, of the suit disk 4, shown in Figure 2 and Figure 5; to the left, and between these two groups of stop positions, another group of three positions, one of them 19, marked "not doubled", another 20, marked "doubled", and the other 21, marked "redoubled", which regulate the setting of the pointer 22 of the doubling disk 3, shown in Figure 2 and Figure 6. At the right side of the face plate 2, extending from near the top clockwise around to near the bottom of the disk, are a series of fifteen stop positions, marked in succession from the top as follows: 6 extra, 5 extra, 4 extra, 3 extra, 2 extra, 1 extra, the contract, 1 down, 2 down, 3 down, 4 down, 5 down, 6 down, 7 down, 8 down. These positions regulate the setting of the pointer 23, of the tricks made disk 6, shown in Figure 2 and Figure 4. At the right side of the face plate 2, arranged in a small arc concentric with the disk axis, is a series of seven positions which are marked in order from the top clockwise as follows: 7 (grand slam), 6 (small slam), 5, 4, 3, 2, 1. These positions regulate the setting of the "bid" pointer, 24, which is keyed or otherwise attached to the spindle 8, so as to rotate therewith. The bottom most or tricks bid disk 7, shown in Figure 2 and Figure 3, is likewise attached to the spindle 8, so as to rotate therewith, and is thereby, by construction, rigidly positioned in rotational relation to the bid pointer 24, as is shown in Figure 2.

Detents are provided for holding the above pionters temporarily fixed in relation to the face plate 2. It is obvious that various mechanical devices of more or less complication could be utilized for this purpose without affecting the principles involved in the invention. Detents illustrated in the annexed drawings are of simple form, relying upon springiness in the materials used for constructing the disks and pointers. Thus, one form of detent which is shown with relation to the pointer of disks 3, 4, 5 and 6, is illustrated in Figure 7, and consists simply of a cylindrical lug 25, affixed to the pointer which in this case is pointer 23, and so positioned as to engage a notch cut in the periphery of the face plate 2. The vertical height of the lug 25, would be equal only to the distance between the top of the disk to which its pointer relates and the bottom of the face plate, 2, plus an amount slightly less than the thickness of the face plate 2. Thus, the detent is readily disengaged by pushing down upon the pointer carrying it, while lifting slightly upon the contiguous rim of the face plate 2, enabling the pointer to be shifted to and engaged in a new position. The other form of detent, which is applied only to the bid pointer 24, is illustrated in Figure 8, and consists of a short pin 27 which projects through the under surface of the bid pointer 24, and will enter any one of a series of concentrically arranged holes positioned at the stations, at which it is desired that the pointer should stop, as is illustrated in Figure 1.

This detent is disengaged simply by springing the end of the bid pointer 24, upward with respect to the top surface of the face plate 2, enabling the pointer to be shifted to and engaged in a new position.

Limit stops are also provided on the face plate 2, to prevent the various pointers from moving beyond their intended range of travel. For the bid pointer 24, these stops could consist merely of pins or lugs, such as 28 in Figure 1, Figure 2 and Figure 7, projecting upward from the face of the face plate 2, and positioned close to the pivot 8, so that they would not be ridden over when the pointer is sprung for shifting its position. Limit stops for the other pointers could consist of downward projecting lugs or flanges formed from the rim of the face plate 2, such as the flanges 29 shown in Figure 1, Figure 2, and Figure 7. As shown in Figure 7, these flanges can be utilized as feet, provided with small rivetable projections 39 to

be inserted in appropriate holes in the base plate 38 and riveted over, in case it be desired to provide the device with a fixed base. With regard to the forms of detent which have been described, it is obvious that other forms could be utilized without affecting the principles of my invention.

The face plate 2 can also carry on its face, as in the position marked 30 in Figure 1, a brief statement of the rule covering the scoring of the rubber game. In any other convenient position there could appear also the descriptive name or purpose of the device and the name of its manufacturer.

The construction of the device must provide for rigid interconnection of the pointer 24 and the disk 7 as has been described, yet allow for free oscillation relative to one another and the face plate 2 and the disk 7 of the interior disks 3, 4, 5 and 6. This is provided for by the construction of the pivot assembly of the device. The central pin 41 has a square shank 42 which is a snug fit in square axial holes 8 in the disk 7 and the pointer 24. Between this disk and its pointer is the cylindrical ferrule 43 which fits snugly around the square shank 42 of the central pin 41, and is of a height slightly exceeding the combined thickness of disks 3, 4, 5 and 6, thereby insuring these disks freedom of oscillation as well as providing them a spindle upon which to revolve. The assembly is then locked securely by the nut 44 which screws down on the threaded end 45 of the central pin 41. However, it is evident that any other mechanical arrangement which would answer the same purposes could be employed without prejudice to the principles involved in my invention.

Having now described the face plate 2 and indicated some of the other features of the device, the detailed description and use of the other disks will be taken up.

Of next importance is the bottom or "tricks bid" disk 7 illustrated in Figure 3. On this disk are entered all trick values of from one to seven tricks undoubled, doubled and redoubled, and in the minor suits, major suits and no trump, a total of sixty-three values. These values are arranged in seven straight columns radiating from the axis of the disk spindle 8, the columns being so positioned with respect to distance from the axis that all figures of any one column could be observed through the aperture 9 of the face plate 2 if there were no other disks in place and if the disk 7 were properly oriented with respect to the face plate 2. Thus, if the bid pointer 24 were successively brought opposite each of its indicated positions on the face plate 2, in the manner previously described, each of the radial rows of figures on disk 7 would in turn take position, under the aperture 9 of disk 2. From the foregoing it will be apparent that the right hand radial row of figures on disk 7 represents the various possible values of a bid of one, the left hand row represents similar values of a bid of seven or grand slam, and the intervening rows similarly represent the values of intervening bids in increasing series from right to left.

It will be observed further from Figure 3 that there are nine sets of values in each radial row and that of these the three nearest the center of the disk are the values of undoubled bids, the middle three are those of doubled bids and the outer three are the values of redoubled bids. Reference to Figure 6 will illustrate the action of the doubling disk 3, whereby one of its three irregularly spaced lower apertures 40 is aligned with aperture 9 of the face plate 2, cutting off the view of two of the above three groups of values and exposing one group, depending upon the position occupied by the pointer 22. In the illustration this pointer occupies position 20, marked "doubled" and the exposed values in aperture 9 therefore are those for doubled bids. Since in all the drawings the various disks are shown only in one position each, which is the position indicated by the disk pointer in Figure 1, the values appearing in aperture 9 of Figure 6 are the same as those in Figure 3, and are for a bid of six tricks.

Reference to Figure 5 will show how the "trump" or "suit" disk 4 operates to cut down to a single value the three values exposed by disk 3. In the drawing the suit disk 4 is set for its intermediate position 16, marked "majors" which thereby exposes to view the second, fifth and eighth values of the vertical column on disk 7 which appears in aperture 9. But since disk 3 has blanked off the upper and lower of these, only the middle value, which is the value of six tricks in hearts or spades, doubled, appears to the observer.

Reference again to disk 7 on Figure 3 shows that it carries in its upper part the four possible values of the slam bonus. These are so positioned on the disk that they register radially with aperture 11 of the face plate 2 and they register with it arcually when disk 7 is set for a bid of six or seven which are the slam bids. Reference to Figure 5 shows how the vulnerability disk 5 operates to cut off the upper or lower part of the aperture 11 of the face plate 2, depending on whether disk 5 is set at position 12 or 13 respectively, thereby revealing to the observer only one value of the slam bonus. As illustrated in Figure 1, the disk 5 is set at the vulnerable position 13 and the disk 7 is set for a bid of 6, therefore the value +750 appears in aperture 11, which is the value of a little slam when vulnerable.

But an essential feature of the game of contract bridge is the provision that should the contractor fail to take the number of tricks

called for by his contract he shall lose the trick value of his bid and any slam bonus to which he would otherwise have been entitled. In my invention this is accomplished by means of disk 6 as shown in Figure 4. When disk 6 is set for "the contract" or for any number of extra tricks, the large aperture 31 registers with and fully opens aperture 9 of the face plate 2, but should disk 6 be set for "down 1" or down any other number of tricks, the aperture 31 will swing clear of aperture 9, blanking off the view of disk 7 therethrough. In like manner the aperture 32 of disk 6 registers with and opens up aperture 11 of the face plate 2 when the disk 6 is set for "the contract" or for "1 extra", which are the only possible positions for which disk 6 could be set when a slam has been bid and made; but when disk 6 occupies any other of its positions the aperture 32 will no longer register with aperture 11 of the face plate 2, thus blanking off the slam bonus from view.

Another function of disk 6 is to carry on the upper part of its face all the possible values of bonuses for making and exceeding the contract and all penalties down to those for eight "under tricks." These are arranged in radial rows, the values in the left hand eight rows being the possible penalties for "under tricks," those in the ninth row from the left being the possible bonuses for making the contract and those in the remaining six rows at the right being the possible combined bonuses for making the contract, which bonus accrues whenever the bid has been doubled or redoubled, and the bonuses for exceeding the contract by one or more tricks, as may be indicated by the setting of the pointer 23 of disk 6 relative to the indications on the right rim of the face plate 2. The above bonuses and penalties are so arranged that an entire vertical column will register within the length of the aperture 10 of the face plate 2, a different column registering therewith whenever the setting of the pointer 23 is changed.

Within all vertical columns the values are arranged in the same sequence, namely: the two values nearest the pivot of the disk are for an undoubled bid, the middle two values are for a doubled bid and the outer two values are for a redoubled bid; and of each of these pairs of values the one nearer the disk pivot is for a bid made when not vulnerable and the other is for a bid made when vulnerable.

Reference to Figure 5 will now disclose how the partial disk 5 operates to expose those values which relate to bids made when vulnerable and cuts off values relating to bids made when not vulnerable, or vice versa, depending on whether its pointer 14 be set at position 13 or 12. Likewise, Figure 6 shows how the disk 3 blanks off two thirds of the aperture 10, exposing any one of the three pairs of values previously referred to, depending on the setting of the pointer 22 relative to its positions 19, 20 or 21. It will be seen that the interaction of these two disks 3 and 5 with the aperture 10 of the face plate 2 will operate to reduce to a single value the display visible in aperture 10. Thus, Figure 6 shows disk 3 set for "doubled" which exposes only the two middle values of the column registering with aperture 10 of the face plate 2, namely, +300 and +150; and Figure 5 shows disk 5 set for vulnerable, thereby blanking off the lower of these two values and exposing only the upper one, namely +300. This is the value which appears in aperture 10 of Figure 1 and consists of the sum of the bonus for making contract when doubled and vulnerable, namely +100, and the bonus for one extra trick when doubled and vulnerable, namely +200.

Since doubling and redoubling does not affect the values of the slam bonus, a large aperture 35 is cut in disk 3 which fully opens up aperture 11 of the face plate 2 whatever the setting of disk 3. In like manner, in Figure 5, since the suit bid does not affect penalties or bonuses appearing in apertures 10 or 11, large apertures could be cut in disk 4 opening up apertures 10 and 11 or, more simply, the unused portions of disk 4 can be entirely cut away, as illustrated in Figure 5. The same reasoning applies to the disk 5 which can similarly be reduced to a partial disk because vulnerability does not affect the value of tricks, which appear in aperture 9 of the face plate 2.

When the device is constructed of warpable materials such as celluloid or paper it is necessary to cut the sector edges 33 of disk 5 at a considerable angle to the radial in order to prevent interference with the radial edges 34 of the large aperture 31 of the contiguous disk 6, shown in Figure 4. When cut as above described there results a scissor-like engagement of these edges which is devoid of interference. However, there is no necessary sequence of position of disks 3, 4 and 5 with respect to one another. It is necessary only that they be grouped together under the face plate 2 and above disks 6 and 7, the illustrated arrangement being adopted only for convenience. Thus should the arrangement be varied so that disk 4 became adjacent to disk 6, it would be necessary to cut the sector edges of disk 4 in the manner above described for disk 5.

The details of my invention having now been described, the action of the whole is readily explained by reference to Figure 1. During the bidding, preliminary to playing a hand, the pointer 23 of the tricks made disk 6 is set at the indication "the contract". on disk 2 and the pointer 14 is set to indicate whether or not the player is vulnerable. He may then, by manipulating pointers 18 and 24, to show suit and amount of a contem-

plated bid, ascertain by observing the exhibit in aperture 9 whether his bid will be sufficient to score game; or, by manipulating other pointers, he can investigate the bonuses or penalties contingent upon doubling or redoubling and upon making or exceeding the contract or failing to make it, thereby informing himself regarding the wisdom of risking a contemplated bid. After a hand has been played the proper entries on the score sheet are determined by setting pointer 14 for vulnerability, pointer 18 for suit bid, pointer 24 for tricks bid, pointer 22 to indicate whether the bid was doubled, redoubled or un-doubled, and pointer 23 to show whether the contract was made, exceeded or not made, and by how many tricks. When thus set the device will show in aperture 9 the score to be entered on the score sheet below the line in the contractor's column; and in apertures 10 and 11 the scores to be entered above the line, in the contractor's column if marked plus but in the adversaries column if marked minus. If game be scored and it be the deciding game of the rubber, the bonus, therefor is determined from the printed instructions, 30, appearing on the face of the device.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:

1. In an indicator, a relatively-fixed face member having slots and bearing indicia, a movable tricks-bid member having group tables of values adapted to appear selectively at one of the slots, a movable tricks-made member also having group tables of values exposable selectively at another slot, and cooperating window members for blanking off portions of said tables.

2. In an indicator, a face plate having slots, a tricks-bid disk movable angularly with respect to said face plate and having tables of group values for appearing selectively at certain of the slots, a tricks-made disk rotatable with respect to the plate and disk and having group values to register with a slot of the face disk, vulnerable and suit disks rotatable independently about the plate and disks and having radially and circumferentially offset windows to register selectively with said slots, and a doubling disk having a circumferentially enlarged opening to register at all times with a slot of the face plate and also having groups of radially and circumferentially offset windows to selectively register with the other slots of the face plate.

3. In an indicator, a face plate having slots, a tricks-bid disk movable angularly with respect to said face plate and having tables of group values for appearing selectively at certain of the slots, a tricks-made disk rotatable with respect to the plate and disk and having group values to register with a slot of the face disk, vulnerable and suit disks rotatable independently about the plate and disks and having radially and circumferentially offset windows to register selectively with said slots, a doubling disk having a circumferentially enlarged opening to register at all times with a slot of the face plate and also having groups of radially and circumferentially offset windows to selectively register with the other slots of the face plate, a pin on the tricks-bid disk passing through the other disks and face plate, a pointer fixed on the pin in front of the face plate, a scale on the face plate over which the pointer is adapted to be deflected, and a sleeve on the pin for rotatably passing through the disks except the tricks-bid disk.

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