June 11, 1935. F. B. WATKINS 2,004,513

BRIDGE BIDDING MACHINE

Filed June 19, 1931

Fig. 1

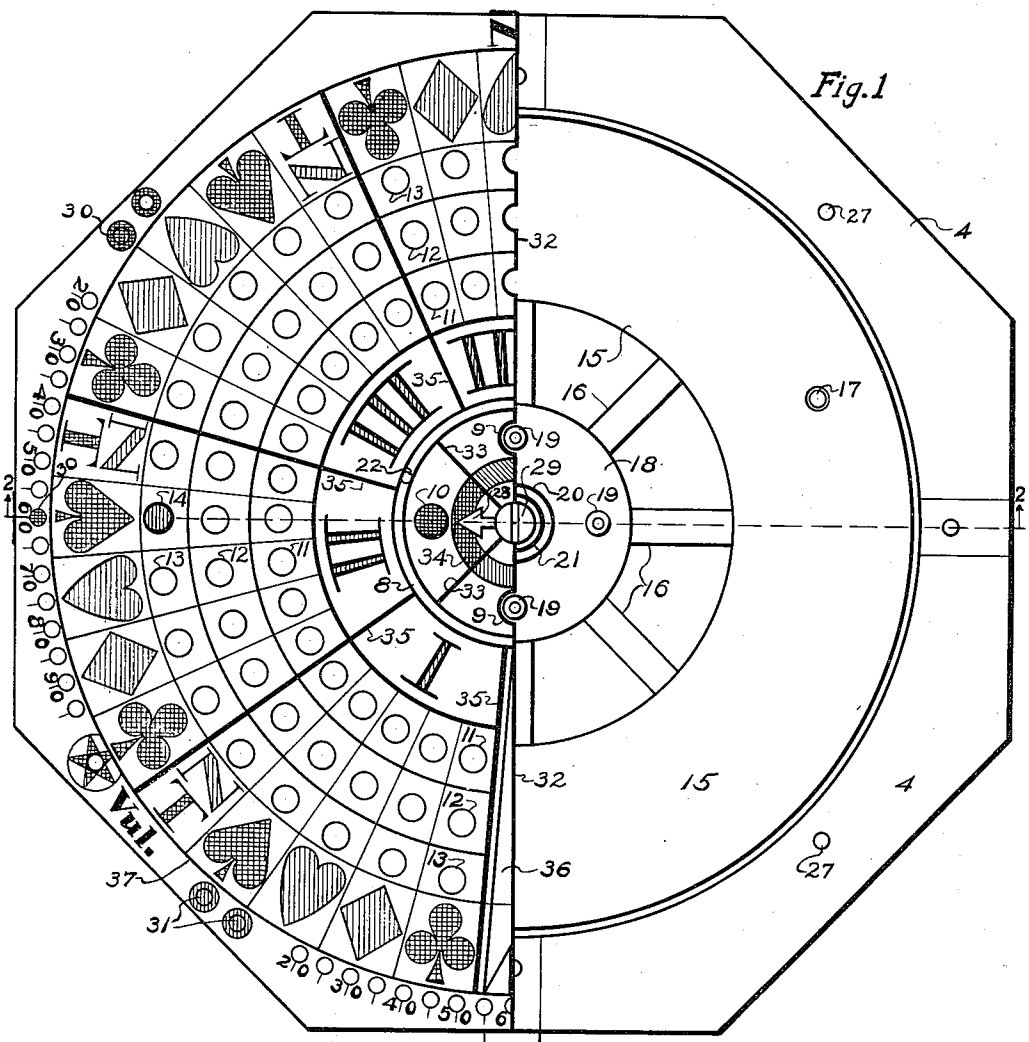


Fig. 2

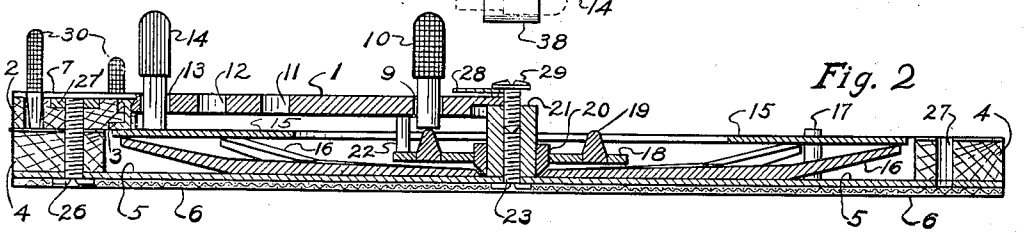
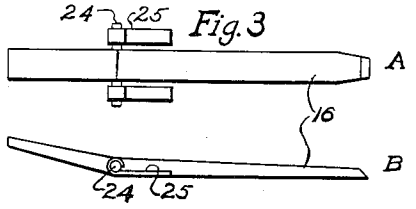


Fig. 3



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BRIDGE BIDDING MACHINE

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15 Claims. (Cl. 273—148)

My invention relates to a bridge bidding machine and the first object thereof is to provide a machine on which all the combinations of bidding, doubling, redoubling and passing can be visibly registered. The second object is to provide means for actuating an ejector plate by which the registering of a bid, double or redouble will eject previously registered passes from their registered positions until the bid is established. The third object of my invention is to afford facilities for operating the ejector plate in a shallow housing, giving the machine a small board-like appearance, so that it can be used with facility on a card table or made a part thereof. The fourth object is to provide the combination in a machine by which the bidding progresses around the machine in a clock-wise direction. The fifth object is to provide a combination for registering declarations which makes it apparently impossible to register an insufficient bid. The sixth object is to provide means for identifying the player who makes the first declaration. The seventh object is to provide the combination in a machine by which the player, whose turn it is to make a declaration, can be identified. The eighth object is to provide a machine which holds the eyes of the players, eliminates the necessity for conversation and requires a coordination of mind and muscle to operate said machine, thus improving the bidding. The ninth object is to provide a machine on which a complete record of the declarations can be registered and retained. The tenth object is to conspicuously show the current rubber score, and whether or not the players have scored a game, becoming vulnerable in contract bridge.

I accomplish these objects by mechanism illustrated in the accompanying drawing forming a part hereof, in which:—

Figure 1 is a plan view of the machine with the right half of the cover plate removed in order to show the general arrangement of the centrally located ejector plate, a multiplicity of levers and the large plate or ring disc which operates the ejector plate thru the levers. The right half of the cover plate substantially duplicates the half shown, except that the numbering of the sections showing the ranking bids is continuous, and that one scoring set answers for each set of partners.

Figure 2 is a vertical section on the line 2—2 of Figure 1; the "men" used in registering the bid and pass shown, and the scoring pins, are retained in full in order to distinguish them by their colors.

Figure 3 is a plan view and elevation, A and B respectively, of a detached lever, showing the metal anchor straps and pin used to fasten it in position.

Similar numerals refer to similar parts throughout the several views.

In the drawing the main body of the machine is comprised of a metal plate 1, riveted to the wooden ring 2, by the rivets 3, and separated from the metal base plate 5 by the wooden spacer ring 4. It is preferably octagonal in plan view, providing for a circular layout on the cover plate and sides facing the players. A felt covering 6 is glued and fastened to the under side of the base plate 5. A heavy Bristol board 7 is glued to the wooden ring 2 and on this is printed, in their ranking order, the suit characters, etc. (N/T stands for no trump.)

The double line 8, on the metal plate 1, separates the passing area, containing the four passing holes 9, from the area containing the three rows of thirty-five holes each, used in biding, doubling and redoubling. Markers, herein termed "men", made of suitable material are inserted in the several holes to register any declaration, which may be a pass, a bid, or a double or redouble of a bid. These markers have a portion of proper size to be received by the hole and a shoulder that limits the distance the marker may be inserted into the hole. "Man" 10, in hole 9, shows a pass registered. Row 11 is used to redouble a bid; row 12 is used to double a bid; row 13 is used to register a bid, as shown by "man" 14. In registering a bid, double or redouble it is necessary to place the "man" in the identified hole desired and push it down as far as it will go. When the "man" 14, shown resting on the plate or ring disc 15, in Figures 1 and 2, registered the bid the ring disc 15 was depressed. Said ring disc rests on the short arms of levers 16, and is otherwise positioned by pins 17 and wooden ring 2.

The long arms of the levers 16 engage the ejector plate 18, carrying the ejector pins 19, thru the collar 20 which slides up and down on the central rod 21. The collar 20 is soldered to the ejector plate 18 and its lever-contact face is cut on an angle. (Forty-five degrees in the present instance.) When a lever engages the collar 20, in an effort to raise the ejector plate, the contact is necessarily not at the center of the ejector plate and an effort to tip or rock said ejector plate takes place which produces

considerable friction between the collar 20 and the rod 21. Too short a collar, a worn collar, too great a distance off center of the point of application of the lever with the ejector plate, or a combination of these factors, can cause said collar to lock to said rod. A lifting force, produced by a lever acting against the angular face of the collar 20, produces a force, acting thru the point of contact of said lever with said collar, which is normal to the vertical or long axis of rod 21, and reduces the tendency for the short bearing collar 20 to rock and bind on the rod 21, by holding the collar in contact with said rod at the point of contact of said lever with said collar. The sliding action of the collar 20 on the rod 21 is thus facilitated and less space is required for its operation because a shorter collar can be used.

The ejector pins 19 are soldered in place to the ejector plate 18 so as to register with the pass holes 9 in plate 1. The ejector plate 18, carrying the ejector pins 19, is positioned by bearing rod 21, firmly fastened to the base plate 5 by screw 23. Guide pin 22 which engages a slot in the ejector plate 18 and is threaded to plate 1, maintains pins 19 in alinement with holes 9.

A multiplicity of levers 16 (eight in the present instance) are uniformly spaced around, and below, the ring disc 15 and the ejector plate 18, in order that said ejector plate can be operated by "men" in registering any bid, double or redouble desired. The ring disc 15 lies just below the holes used to register bids, doubles and redoubles so that it can be contacted by a "man" in registering said declarations. (See Figures 1 and 2.) With such an arrangement of levers, and a uniformly distributed force brought to bear on the ring disc, the ejector plate would be raised without the tilting and binding previously mentioned; and this would be accomplished regardless of the length of the collar bearing, the wear on said collar, the distance of the point of application of the lever from the center of the ejector plate and the length of the levers. In registering a bid, double or redouble a concentrated force is brought to bear on the ring disc 15, and my invention also affords means by which this concentrated force is distributed over several of the levers. The levers 16 have been made long as possible, contacting the ring disc 15 close to its outer edge. Also, said ring disc has been made considerably larger than the area covered by the three rows of holes used in bidding, doubling and redoubling, being carried well back of the outer row of holes 13 and under the wooden ring 2. The act of pressing down on "man" 14 concentrates a force at this point which falls inside the point of contact of the immediately adjacent lever with the ring disc. (See Fig. 2.) In a similar manner the registering of any bid—double or redouble—concentrates a force at a point on the ring disc which falls inside a straight line joining the points of contact of the two immediately adjacent levers with the ring disc. Thus in registering a bid, double or redouble, there is a tendency for the "man" pushing down on the ring disc to hold it down against all of the levers. If a "man" could contact the ring disc 15 at its center, in registering a bid, double or redouble, the force against it would be distributed equally over all of the levers, and regardless of the stiffness of the ring disc. Due to the more centralized location of the holes used in registering a redouble it is apparent that the distribution of the force on the ring disc, over the levers, will be much more uniform when said redouble is registered than when a bid is registered. To complete the design, for facilitating the raising of the ejector plate 18 by distributing the force concentrated on the ring disc 15 over a plurality of levers when a bid, double or redouble is registered, it is necessary that the ring disc 15 be sufficiently stiff so that little or no flexure occurs in it.

The weight of the ejector plate assembly 18, 19 and 20, riding on the long arms of the levers 16, is sufficient to keep it down under normal conditions of operation. (I prefer to use a very light, coiled, compression spring, acting between plate 1 and the ejector plate 18, which is considerably shorter than the distance between said plates and is primarily for reducing the freedom with which the ejector plate can slide on rod 21 when the machine is excessively and abnormally handled.)

Two pins are used to position the ring disc 15. They are located between the two outer rows of holes 12 and 13, diametrically opposite each other, and soldered to the galvanized iron base plate 5.

Each lever 16 is secured in place by two bent metal straps and the anchor pin 24, which passes through the lever near the bend and is fastened thereto to form a pivot for the lever. The anchor straps 25 have one end wrapped around the anchor pin 24, and the other end is soldered to the base plate 5, to position the levers. (See Figs. 2 and 3.) The long arm of the levers is twice the length of the short arm (in the present instance) so that the ejector plate is raised twice as far as the ring disc is depressed.

"Men" 10 and 14 are designed to ride freely in all of the holes—bidding, doubling, redoubling and passing holes—so that the "men" in the passing holes can be easily ejected; and so that the "men" riding on the ring disc 15, having previously registered a bid, double or redouble, will not interfere with the registering of a subsequent bid, double, redouble or pass.

The metal plate 1 (aluminum in the present instance) is sufficiently thick to provide side walls to keep the "men" erect in the holes. The "men" are cut off square at their base, and this flat surface riding on the ring disc aids in keeping them erect. The distance that the "men" travel on the ring disc is limited to the distance that the shoulder on the "men" is above the metal plate 1. When a "man" is pushed down in a hole as far as it will go the shoulder contacts the face of the metal plate 1. The metal to metal contacts made by the several parts, especially when registering bids, doubles, and redoubles, produce considerable sound that attracts the attention of the players to the fact that a declaration has been registered.

The wooden ring 2 acts as a stop for the ring disc 15 and keeps it from jumping off the levers, which might tend to eject "men" from the bidding, doubling and redoubling holes. No motion can be imparted to the ring disc in registering a pass, as the ejector plate assembly rests against the base plate 5 except during the actual process of registering a bid, double or redouble. The "men" cannot ride up and down on the ejector pins because as soon as they lose the support of the side walls of the pass holes they tumble over due to the point contact of the ejector pin

with the flat base of the "men"; also, the ejector pin does not necessarily contact the flat base of the "man" at its center.

The arrow 28 is centrally located and positioned by screw 29, about which it can be rotated to show who dealt the cards and is the first to make a declaration. The screw 29, tipped with solder, is run down against the screw 23, pressing the arrow 28 against a leather washer, which arrangement gives a good adjustment.

The scoring pins 30 and 31 are used to register points scored toward games in a current rubber. The partners have a set of two colored pins each, which are kept in unidentified deep holes. It is only necessary to place one of the scoring pins in the hole corresponding to the total points scored in the current game until game is scored; then the second pin is moved toward the game hole. In the present instance, when game is scored, a vulnerable—"Vul."—hole is used. Figure 1 shows the scoring holes given numbers for scoring at contract bridge; by using a dual set of numbers, for such a set of twenty-five scoring holes, auction bridge could be included.

The leather handles 38 are placed opposite each player; one being conveniently shown in Fig. 1. They are slipped over the screws 26 and clamped between the two wooden rings 2 and 4, which are slightly countersunk. The outer ends of the leather straps are looped and sewed providing holes for conveniently keeping the "men." (See Figure 1 showing "man" 14 dotted in.)

The divisional layout of the composite cover plate, 1, 2 and 7, is exactly symmetrical with respect to the center line 32 in Figure 1. The double line 8 encloses the passing area, which is divided into four quadrants by the radial lines 33. Each quadrant of the passing area has a passing hole 9, centrally located. Two of the passing holes lie in the center line 32 and the other two are located on a line at right angles to said line 32 which passes thru the center of the passing area. Each quadrant of the passing area is identified by a band of color 34, which corresponds to the color of the "man" used by the player on that side of the machine, or facing that particular quadrant. Seven equal major divisions, representing the ranking bids according to the number of tricks bid, are laid out on the remaining area by radial lines 35. Starting from the space 36, which is bisected by the line 32, and left blank, the major divisions are consecutively numbered, one to seven inclusive, keeping the numbers adjacent the passing area. Each major division is further divided into five minor divisions by radial lines, leaving space for the major division or trick bid numbers. (See Fig. 1.) I prefer to lay out the full 360 degrees into thirty-six minor divisions of ten degrees each; the last minor division represents the space left blank, and the thirty-five minor divisions are apportioned into seven major divisions of five minor divisions each, by lines 35. Starting from the blank space, or division 36, the five spaces of the first major division are consecutively identified by the suit characters in their ranking order—clubs, diamonds, hearts, spades and N/T, for no trump. This identification is duplicated in each major division and placed near the outside of the cover plate, leaving room for the game scoring holes, as shown by line 37 in Fig. 1. The successive bidding holes are thus formed progressively in their ranking order, i. e., the next hole in a clockwise direction represents a bid that outranks the preceding hole. The major divisions are further divided by four concentric circles, placed between the suit characters and the ranking bid numbers, producing three concentric rows of five spaces each for locating holes in which the "men" are placed to register declarations. Bids, doubles and redoubles are respectively registered in the outside row, middle row and inside row.

The minor divisions have the suit bids increasing in value in the same direction of rotation as the trick bids of the major divisions increase. This direction is preferably clockwise since bidding progresses in this direction; and is preferably the same in the major and minor divisions for simplicity and accuracy in making sufficient or legal bids as will be explained. No trump is a suit bid as far as ranking bids is concerned; and it is obvious that a greater or lesser number of major and minor divisions might be provided to score games other than bridge.

The wedge shaped blank space 36 is used as an arrow and points north, to the "N" shown on the cover plate. This establishes compass points on the machine by which the players are also identified. By maintaining the bidding machine in one direction, the arrow pointing north, the location of the ranking suits and bids is not altered when the players change their positions at the card table.

After the inking in is completed on the Bristol board 7 it is given several protective coats of clear lacquer, which produces a durable and ivory like finish. The main division lines on the aluminum plate 1 are grooved and filled with colored lacquer.

Before assembling the parts making up the bridge bidding machine, the anchor straps 25, positioning levers 16, and the pins 17 are soldered to base plate 5; the guide pin 22 is screwed in plate 1, and the clamping nuts 27' are countersunk in the wooden ring 2 before glueing on the Bristol board 7. The central rod 21, with the ejector plate assembly 18, 19 and 20 slipped on it, is now screwed tightly to the base plate 5 while firmly pressing the ejector plate assembly down against the base plate. The beveled face of collar 20 aids in centering said bearing rod 21, by positively contacting some of the levers during the tightening process. Thru slits in the felt 6 screws 26 are slipped thru holes in the base plate which register with holes 27 in wooden ring 4. The wooden ring spacer block 4 is next put in place. The ring disc 15 is slipped over the guide pins 17 and down on the levers 16. The leather handles 38 are slipped in place over screws 26. The cover plate is laid on the spacer block 4 being sure that the guide pin 22 engages the slot in the ejector plate 18; holes for engaging the screws 26 also register with holes 27 in the wooden ring 4. The arrow 28 with its leather washer is put in place and the screw 29 screwed down lightly. Screws 26 are then lightly screwed in clamping nuts 27'. To secure a good adjustment, of the ejector pins 19 with the pass holes 9, a "man" is pressed down against the ring disc 15 causing the ejector pins 19 to engage the pass holes 9. The cover plate can be strained one way or the other against the clamping action of the screws 26 to give the proper adjustment. Screw 29 is now screwed down tightly to hold the cover plate in the adjusted position, using a thick washer under the screw 29 if necessary. Screws

26 are then tightened, clamping the cover plate, wooden spacer block 4 and the base plate 5 firmly together. The freedom with which the arrow 28 can be moved is adjusted by turning screw 29.

In Figures 1 and 2, two "men", 10 and 14, are shown in registering positions. The colors shown on the four color band 34 identify "man" 10 as these West player, and "man" 14 as the South player. As previously mentioned, the bidding machine, or "bridge bidding board", is given compass points. The central arrow 28 points to the black section of the four colored band 34, or to the West player. This shows that the "man" 10 dealt the cards and is the first to make a declaration. "Man" 14, the South player, has registered a bid of two spades which ejected the "men" registering previous passes. No other "men" are shown as having registered anything but passes, so that at least two passes just preceded South's bid of two spades, and were ejected from their respective passing holes by said bid of two spades; and "man" 10, the West player, registered the pass shown in Figures 1 and 2, after the said bid of two spades. After the first four declarations "men" not appearing on the "bridge bidding board" in registering positions must have previously passed and been ejected by a subsequent bid, double or redouble. The bidding machine thus shows a record of at least the last four declarations whether or not all of the "men" are actually visible. A complete record of all the bidding, doubling, redoubling and passing can be registered and retained until the hand is played, if the players have the necessary number of "men." To establish a bid, three "men" must be actually visible registering passes. If the bid of two spades by South is doubled by East, then East would place his "man" alongside of South's "man" 14, and in the middle row of holes 12. If North now redoubles his partner's doubled bid of two spades, he places his "man" in the hole, in row 11, which is alongside of East's doubling "man." To establish the bid, whether doubled or redoubled, three "men" must be visible registering passes at the same time. As previously stated the partners have a set of two colored scoring pins. In Fig. 1 the East and West partners, using the black scoring pins 30, have a score of 60 points toward the first game, shown by one of the black scoring pins occupying the hole designated 60 on their side of the machine. Their other scoring pin 30 occupies one of the unidentified deep holes. North and South partners have no score toward the first game as shown by both of their scoring pins 31 occupying the deep unidentified holes.

Having described my invention, I claim:—

1. A bridge bidding board having several separate bid and pass indicators each operable at will to indicate bids and passes, and means in association with said board operated by an indication of a bid to remove all previously made indications of passes.

2. In a device of the character described, a board having a first group of designated marker receiving spaces, a second group of marker receiving spaces, markers adapted to be selectively placed in the several spaces, and means to eject markers from the first group of said spaces by virtue of placement of a marker in any one of the other group of spaces.

3. A bridge bidding board having several separate declaration indicators each operable at will to indicate declarations, and means in association with said board operated by an indication of a declaration to remove selected ones of previously made indications.

4. In a device of the character described, an apertured recording board having a first group of recording holes and a second group of recording holes, markers adapted to be selectively inserted in the recording holes and to project beneath the board, and means beneath the board to eject markers from holes in the first group when a marker is placed in a hole of the second group.

5. In a device of the character described, an apertured recording board having a first recording hole and a second recording hole, markers adapted to be inserted selectively in said holes and to project through the board, and means to eject a marker in the first hole by inserting a marker in the second hole; said ejecting means comprising a pin mounted beneath the board to move toward and away from the first hole, a lever for moving the pin toward the hole, and lever operating means actuated by inserting a marker in the second hole.

6. In a device of the character described, an apertured recording board having a first group of recording holes and a second group of recording holes, markers adapted to be selectively inserted in the recording holes and to project beneath the board, and means beneath the board to eject markers from holes in the first group; said ejecting means comprising an ejector plate mounted for movement toward and away from the board, pins on the plate in alinement with the holes of the first group, and lever means for operating the ejector plate, said operating lever means being actuated by insertion of a marker in a hole of the second group.

7. In a device of the character described, an apertured recording board having a first group of recording holes centrally located on the board and a second group of recording holes surrounding the first group, markers adapted to be inserted in selected recording holes and to project beneath the board, and means beneath the board to eject markers from holes of the first group by inserting a marker in a hole of the second group; said ejecting means comprising an ejector blade mounted for movement toward and away from the board, pins on the plate in alinement with holes of the first group, a plurality of separate levers extending radially from the ejector plate, the inner ends of the levers being adapted to operate the ejector plate, a disk ring arranged beneath the holes of the second group and supported by the outer ends of said levers so that insertion of a marker in a hole of the second group depresses the ring and levers to effect operation of the ejector plate.

8. In combination, an apertured bridge bidding board for registering successive declarations having a centrally located pass hole for each player and a plurality of holes for registering bids, doubles, and redoubles arranged in concentric circles about the pass holes, markers for insertion into the holes to register declarations, and ejection means whereby markers are ejected from the pass holes by insertion of a marker in a bid, double, or redouble hole.

9. In combination, an apertured bridge bidding board for registering successive declarations having a centrally located pass hole for each player and a plurality of holes for registering bids, doubles, and redoubles arranged in

concentric circles about the pass holes, markers for insertion into the holes to register declarations, and ejection means whereby markers are ejected from the pass holes by insertion of a marker in a bid, double, or redouble hole; said ejecting means comprising an ejector plate mounted for movement toward and away from the board, pins on the plate in alinement with the pass holes, and lever means for operating the ejector plate, said operating lever means being actuated by insertion of a marker in a bid, double, or redouble hole.

10. In a bidding board of the character described, a marker ejection means comprising a bearing post, an ejector plate slidably mounted on the post, a hub on the plate having a beveled lever contact face, and a plurality of levers radiating outwardly from the ejector plate and adapted to slide the ejector plate on the bearing post, said levers having a contact face at one end beveled to conform to the contact face of the hub.

11. In a bridge bidding board of the character described, a marker ejection means comprising an ejector plate mounted for movement toward and away from the board, a plurality of levers radiating from the ejector plate and adapted to actuate said plate, and an annular plate supported near its periphery on the outer ends of said levers, said annular plate being adapted to receive ejection effecting thrusts at a plurality of points and to transmit the thrusts to the levers, the contact points between the plate and levers being positioned so that thrust receiving points on the plate are inside of a straight line between any adjacent two of said contact points.

12. A bridge bidding board of the character described having a plurality of declaration indicators operable to indicate declarations, means in association with the board for indicating the declaration status, said means comprising a pointer mounted on the board, and means in association with said board, and operated by an indication of a declaration, to remove selected ones of the previously made indications.

13. A board for recording successive bridge bid declarations, said board having a plurality of card-suit denominators, a plurality of bid-denominators of progressively increasing value, and a plurality of spaces each identified with one of said suit-denominators and one of said bid-denominators, and player-identifying markers selectively cooperating with said spaces to register bid declarations; said denominators and spaces being progressively arranged circumferentially of the board in consonance with the ranking order of card-suit values and bid values.

14. A bridge-bidding device for recording successive declarations, including: a board having declaration-recording spaces arranged circumferentially thereof in circumferentially adjacent groups, indicating means associating each space of each group with a given card-suit, indicating means associating each group with a given bid-denominator, said bid-denominators being of progressively increasing values, and player-identifying markers selectively cooperating with said spaces to register bid declarations; the spaces in each group being progressively arranged circumferentially of the board in consonance with the respective increasing suit values, and the respective groups being progressively arranged circumferentially of the board in consonance with the increasing value of the respective bid-denominators.

15. A board for recording successive bridge bid declarations, said board having a plurality of card-suit denominators, a plurality of bid-denominators of progressively increasing value, a pass-recording space for each of four players, and a plurality of bid-recording spaces each identified with one of said suit-denominators and one of said bid-denominators; and player-identifying markers selectively cooperating with said spaces to register bid declarations; said pass-recording spaces being arranged about the board one in each of the respective player-positions, and said denominators and bid-recording spaces being progressively arranged circumferentially of the board in consonance with the ranking order of card-suit values and bid values.

F. B. WATKINS.

CERTIFICATE OF CORRECTION.

Patent No. 2,004,513. June 11, 1935.

FREDERICK B. WATKINS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, second column, line 49, claim 7, for "blade" read plate; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 3rd day of March, A. D. 1936.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.