

Feb. 4, 1964

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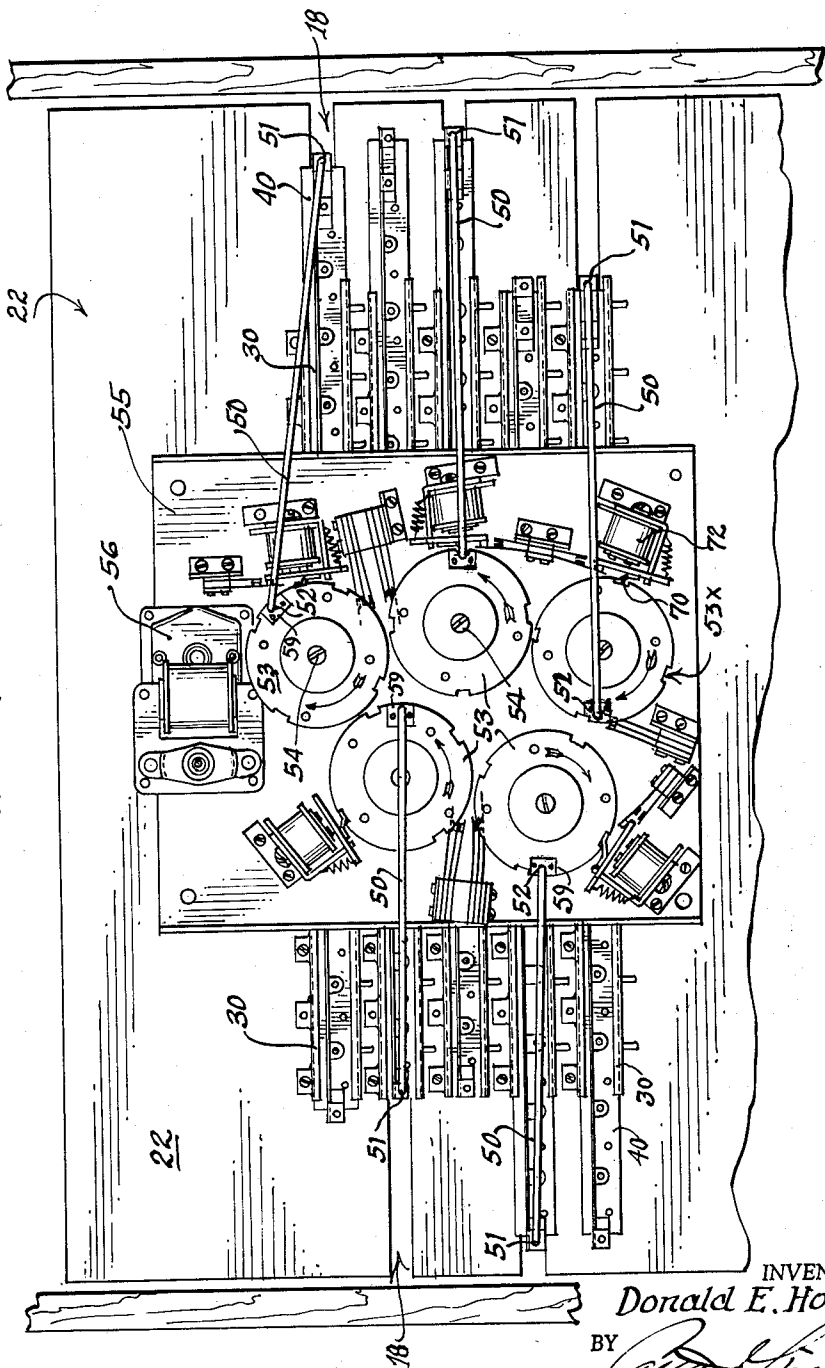
3,120,657

LAMP BANK AND SELECTIVELY SHIFTABLE CONTACT MEANS

Filed Dec. 1, 1958

4 Sheets-Sheet 1

FIG. 1



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4 Sheets-Sheet 2

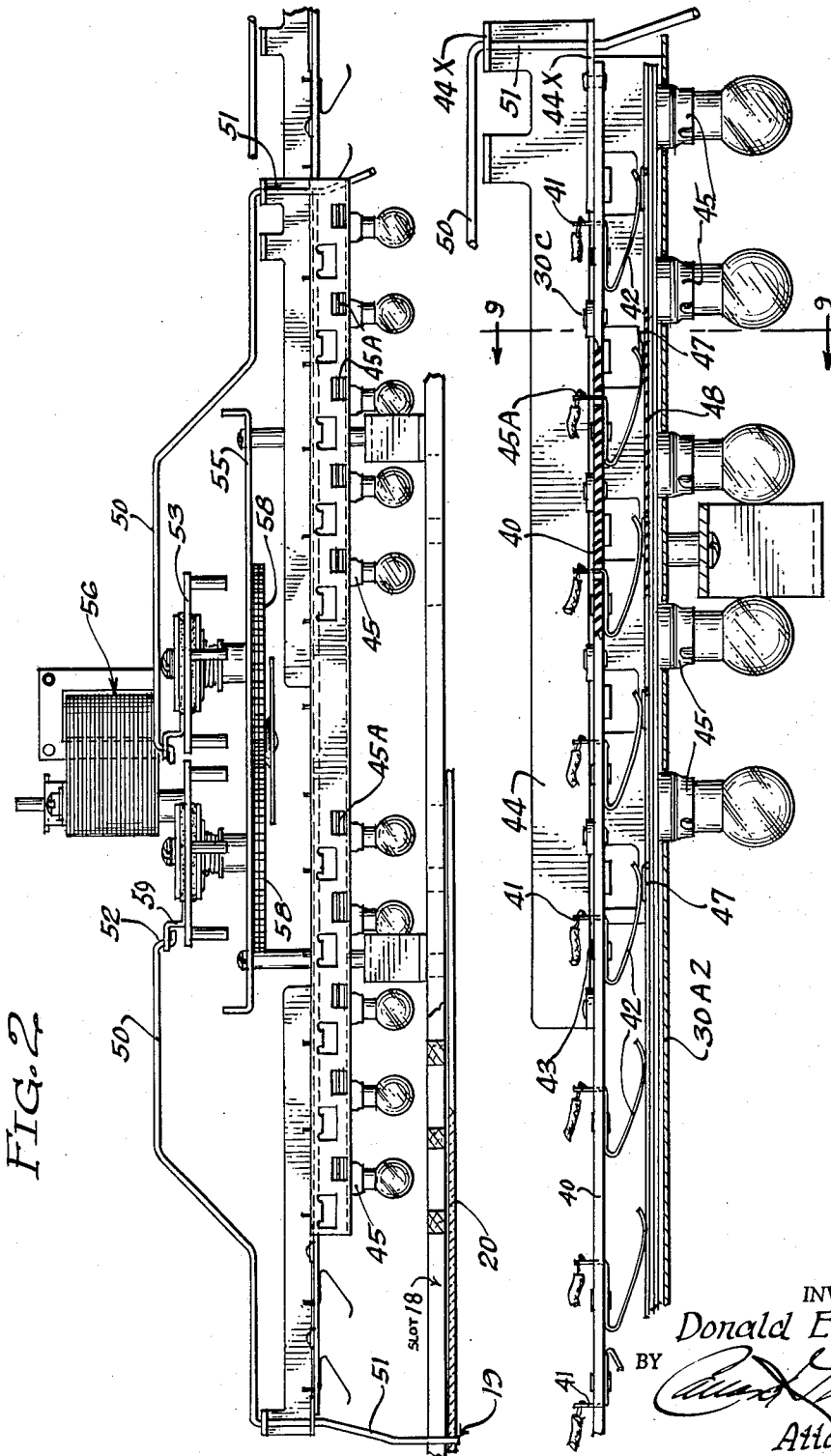


FIG. 3

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LAMP BANK AND SELECTIVELY SHIFTABLE CONTACT MEANS

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4 Sheets-Sheet 3

FIG. 4

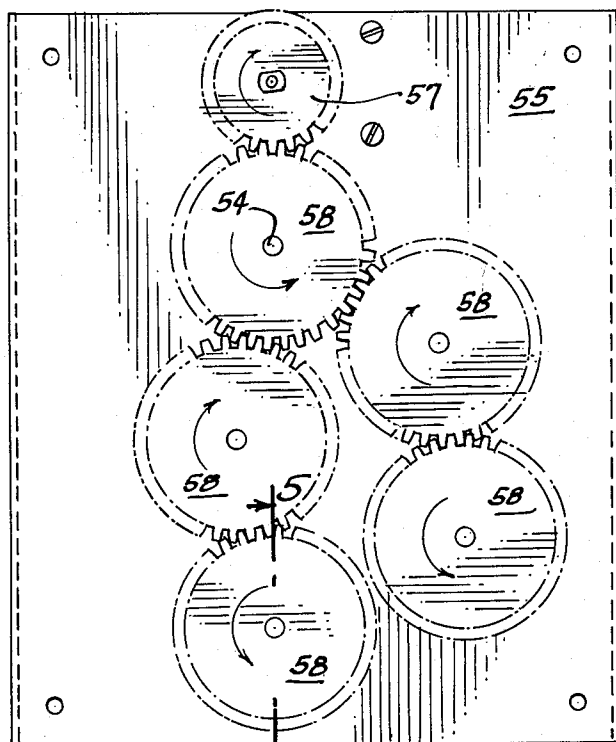


FIG. 5

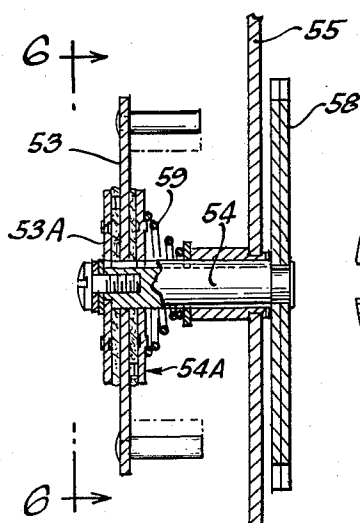
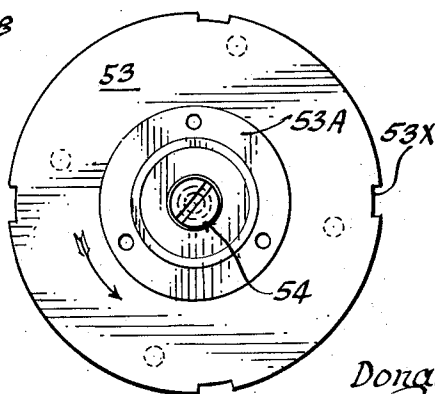


FIG. 6



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1

3,120,657

LAMP BANK AND SELECTIVELY SHIFTABLE CONTACT MEANS

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5 Claims. (Cl. 340-378)

This invention relates to improvements in a shiftable lamp bank system and driving means therefor useful in conjunction with score-indicating mechanisms, display devices, annunciators, and the like, and in its broadest aspects, the novel lamp system includes sets of linearly-arranged lamp sockets each having aligned in parallel relation therewith a contact carrier which is shifted back and forth relative to stationary contacts on the sockets, whereby the lamps may be cut in and out of circuit.

A further feature of the mechanism is the provision of shiftable number panels and motor driven means for shifting the same in step with a corresponding contact carrier.

Another feature is the provision of a motor drive means having a simple motor common to a plurality of lamp sets and associate number carriers, and selectively operable clutch means for causing a shift of a desired contact carrier and number panel.

Still further objects relate to details of construction and operation of a novel lamp socket and indicia-panel carriers and certain contact means and slide-bed means therefor, all of which will appear more fully as the following description proceeds in view of the annexed drawing, in which:

FIG. 1 is a rear elevation of a selective drive mechanism and shiftable lamp bank assembly;

FIG. 2 is a top plan view of the same;

FIG. 3 is a fragmentary horizontal sectional detail through one of the shiftable lamp sets;

FIG. 4 is an inside elevational detail of the motor-drive panel;

FIG. 5 is an enlarged vertical sectional detail through one of the selective clutch units looking along lines 5-5 of FIG. 4;

FIG. 6 is an enlarged elevational detail of one of the clutch control discs looking along lines 6-6 of FIG. 5;

FIG. 7 is a top plan view of one of the lamp contact carrier strips;

FIG. 8 is an elevational view of the lamp socket strip of FIG. 7;

FIG. 9 is an enlarged cross-sectional detail through the lamp-socket and contact carrier assembly taken along lines 9-9 of FIG. 3;

FIG. 10 is a partial front elevational view of the apparatus shown in FIG. 1, parts being broken away.

One commercial embodiment of the invention is adapted to use in a "Bingo" type of amusement game having changeable number "cards" C_1 , C_2 , arranged on a glass score panel 23 shown in FIG. 10.

Each score card has located behind the glass panel on which it is delineated five parallel, horizontally-shiftable, translucent indicia or number-bearing panels 20, each panel being slidable in its own track 21 attached to the front face of a lamp backboard 22 located behind said glass panel, the latter also having delineated thereon various other indicia and legends relevant to the playing of the particular game in question.

Each of the so-called Bingo "cards" C_1 , C_2 comprises 25 scoring squares laid out in square array with appropriate score numbers made to appear in each square. Scoring in this type of game is achieved by getting a complete set of five numbers in a straight line, either across, upward, down or diagonally, on a single "card." In the present embodiment, electric lamps will be variously il-

2

luminated behind each scoring number as a result of playing the game, and the illumination of five lighted lamps in a line, as aforesaid, will achieve a winning score.

The score numbers displayed on the shiftable corner panels 20 are scrambled as to numerical sequence or value, and by sliding these panels back and forth the number pattern can be varied for purposes having to do with the playing of the game and operation of game mechanisms not elaborated upon herein, since the present claims of novelty relate more particularly to the score-display apparatus and means for shifting the number carriers and changing certain lamp contacts to alter the scoring set-up, as will now more fully appear.

FIG. 1 shows the reverse side of the score backboard 22 to which is affixed the shiftable score mechanism including five slide beds 30 in each of which is a slidable contact carrier or slide strip 40 movable back and forth in the appertaining slide bed by means of a long crank wire 50 having one end 51 offset to enter a lug hole 44X in the corresponding contact slide strip 40, the opposite end 52 of each said wire being offset for crank engagement with a cleat 59 on one of a plurality of corresponding clutch discs 53 rotatable on clutch spindle 54 journaled on the chassis plate 55 of the drive and control unit.

A single motor 56 with built-in reduction gear (FIG. 1) is adapted through motor gear 57 (FIG. 4) to drive a train of clutch gears 58, of which there are five, one for each of five clutch discs 53.

The motor 56 runs continuously and thereby rotates all five of the clutch spindles 54 continuously; however, as depicted in FIGS. 5 and 6, the clutch discs 53 float on their respective spindles 54 as long as they are latched-in or restrained, but when released from latched condition, a clutch plate 53A, fast on the spindle bears against the disc 53 and turns the latter owing to pressure set up by a spring 59 bearing against a clutch presser plate 54A (FIG. 5).

Normally, each clutch disc 53 is latched at rest by its own electromagnetic latch means (FIG. 1) including a latching armature having thereon a latching lug 70 adapted to seat in any one of four peripheral latch notches 53X (FIG. 6, also) spaced about the corresponding clutch disc. Energization of the corresponding electromagnet 72 withdraws the latch lug and permits the clutch disc to be driven through the appertaining slip clutch means 53A, 54A, 59, with a resultant displacement of the corresponding crank wire 50, and the associated contact slide 40, as well as the corresponding translucent number strip 20, this latter action being achieved by having the outer offset end 51 of each crank wire extend through a long horizontal slot 18 in the backboard 22 and enter a coupling hole 19 (FIGS. 2, 10) in the corresponding number strip 20. Thus, as each crank wire reciprocates its associated contact strip 40 it shifts the corresponding number strip 20 in step therewith.

The aforesaid clutch-released shifting of any contact carrier strip 40 and its associated number strip 20 will change the number pattern for the score "cards" C_1 , C_2 , as well as circuit connections needed to effectuate the scoring operation of the changed cards.

According to the construction of the contact carriers, as depicted in FIG. 3, the strips 40 are formed of insulating material, such as Bakelite, and suitably punched at intervals to receive the lug tails 41 of wiper contact fingers 42 riveted in place, as at 43 (see FIG. 9, also). Angle brackets 44 (FIGS. 3 and 7) are attached to each strip at opposite ends, each bracket having a pair of pierced lugs 44X to receive the traversing offset parts 51 of the crank wire.

As shown in FIG. 7, each contact carrier 40 has its complement of contact wipers 42 pitched reversely from

its mid point, half one way and the remainder oppositely, to balance the load better in reverse travel.

The slide bed 30 (FIGS. 8 and 9) comprises two formed stampings 30A, 30B, assembled by screws 30C whereby to form a long channel assembly with formed slide grooves 30X at the outer open side thereof, and a bottom or back wall 30AZ, punched at intervals along its length to receive lamp sockets 45 which in turn are secured to an insulating strip 46 (FIG. 9) with connecting tails 45A projecting as one terminal of the corresponding socket. Connection to the remaining (center) terminal of each socket can be effected through one of the carrier-strip spring wiper fingers 42 by engagement thereby with a contact piece 47 (FIGS. 8 and 9), carried on a companion insulating strip 48 and projecting through slots in the latter and strip 46 into contact with the central terminal of the lamp in the corresponding socket 45.

All lamp terminal lugs 45A will generally be connected to a common power terminal while each of the wiper finger lugs 41 will be connected to other switching mechanisms (not shown), such as relays, stepping switches, or commutating switches, which will selectively control the completion of power circuits through the various wiper fingers 42 to different lamps, depending, for instance, upon scoring operations in the particular game apparatus with which the shiftable score cards may be employed.

In general, the shifting of carrier strip contacts 42 will serve to connect one or another lamp in each set to different energizing and control circuits (not shown) which, if the latter become effective as a result of playing the game, will cause the wiper-connected lamp to be energized.

It will be apparent that a wide choice of schemes of electrical operating connections may be made to the several lamp terminals 41-45A; and a variety of operating and control connections may be made to the electrically actuated and controlled driving motor and clutch means 56, 72, to produce different light-up and display effects from the several sets of lamps.

The present disclosures relate to subject matter of analogous character disclosed in applications Serial Nos. 478,992, now Patent No. 2,932,517, April 12, 1960 and, 570,931 now Patent No. 3,034,790, May 15, 1962 and, apart from obvious structural and functional differences, distinguish over the prior improvements by making possible a considerably wider scope of permutations or combinations of displayed score numbers and lamp circuits with less equipment.

I claim:

1. In an annunciator, an elongated slide track, means mounting a set of lamp sockets spaced serially along said track; means providing a stationary contact for each lamp socket exposed in said track; an elongated contact carrier slidably shiftable in said track and having a plurality of contact fingers spaced therealong for shiftable contacting engagement with said stationary contacts depending upon the shifted positions of the contact carrier; means providing electrical connection with said contact fingers; an elongated translucent indicia carrier and track means mounting the same for longitudinal shifting movement in a plane before said series of lamp sockets in parallelism with the plane of movement of said contact carrier and having indicia spaced therealong for alignment with individual lamps depending upon the shifting position thereof; means for establishing electrical connection with each lamp socket for energization of a lamp therein cooperably with a connection effected by one of said carrier contacts shiftablely positioned for operative engagement with the appertaining one of said stationary contacts; motor means drivingly connected with said carriers for simultaneously shifting the same in step back and forth into and out of positions of alignment of different indicia on the indicia carrier with certain lamps, with certain contacts on the contact carrier establishing connection with the corresponding lamp socket; and means for se-

lectively starting and stopping shifting of the carriers by said motor means.

2. A plurality of elongated parallel slides tracks, a plurality of lamp sockets arranged in sets serially along a length of each track; an elongated contact carrier slidably shiftable in each track and having spaced lengthwise therealong a series of contact fingers; means in each slide track mounting stationary contact means at spaced intervals therealong for cooperative contacting engagement by certain of the contact fingers on the appertaining one of said slidably shiftable contact carriers; each said stationary contact corresponding to one of said lamp sockets and each said contact constituting a lamp terminal for the appertaining socket; means providing electrical connection with the carrier contacts and the stationary contacts for connection with an operating circuit for energizing and deenergizing the appertaining lamps, depending upon the position of shift of the slide carrier relative to the stationary contacts; and elongated translucent indicia carriers and means supporting same for reciprocating travel before each set of lamp sockets, and means drivingly connecting each indicia carrier with a corresponding contact carrier by shifting movement with the latter.

3. Shiftable indicating mechanism comprising: a motor driving a plurality of crank members each through a corresponding slip-clutch means; electromagnetically releasable latch means normally restraining said crank means from actuation by the motor means; a plurality of slide beds mounted in a plane adjacent said crank means and a slidably contact carrier reciprocable in each slide bed; means mounting a linear series of lamps before each slide bed and carrier with a corresponding lamp-energizing terminal exposed to said carrier; means mounting a translucent indicia slide to reciprocate coplanarly with each carrier before the appertaining series of lamps; means providing a driving linkage common to each carrier and appertaining indicia slide and connecting the same for joint reciprocation by one of said crank members; a plurality of serially spaced lamp-terminal wiper contacts on each carrier and exceeding in number the number of lamps in the appertaining series, there being a corresponding set of serially spaced indicia designations on the appertaining indicia slide with each indicium aligned with one of the carrier contacts, such that selective positioning of any carrier to energize any particular lamp in the corresponding series will also position certain corresponding indicia in alignment with said particular lamps; said clutch means having a plurality of clutching positions with each appertaining crank member with each said position corresponding to a selection of certain lamp and indicia selection; and means for completing energizing circuits through said wiper contacts for selected lamps.

4. A shiftable display lamp bank comprising an elongated carrier bed having mounted thereon a longitudinally-extensive series of lamp receptacles and primary contact means for one terminal of a two-terminal lamp retained thereby, the second terminal of each said lamp being exposed for engagement by a secondary contact; means providing a long contact carrier slidably longitudinally in said bed and having thereon a series of secondary slide contacts exceeding the number of lamps retained by said sockets; means providing a power connection to each said secondary contact; and means for sliding said carrier in said bed to establish and disconnect power connections to the second terminals of certain of said lamps depending upon the position of slidable displacement of the carrier and secondary contacts relative thereto, together with an elongated translucent display carrier having display areas defined at certain spaced intervals along the length thereof; means mounting said display carrier to slide in a plane spaced in parallel to that of the contact carrier; means linking said carriers for joint movement in step back and forth in the direction of their length; said lamps being disposed in the space between said carriers to illuminate said display areas, and drive means operable to move

5

one of the carriers in steps equal at least to the distance between adjoining display areas.

5. In a changeable display device of the type in which individual display lamps illuminate individual display areas, the combination of a pair of elongated members and means mounting the same one in front of the other to shift lengthwise in parallelism; means operatively interconnecting said members for joint shifting displacement; means on a first one of said members defining display configurations spaced at predetermined intervals therealong and arranged and constructed to be illuminated from the rear of such member by lamp means in the space between said pair of members; a plurality of lamps and means mounting the same in said space stationary relative to the shiftable members and spaced apart serially in predetermined correspondence with the spacing between said display configurations; contact means spaced along at least a portion of the second one of said pair of shiftable members for energizing engagement with a certain number of lamps less than the total thereof in each shifted position occupied by said member; circuit means connecting energizing power to said lamps and contacts to effect completion of energizing circuits to the certain number of lamps in any said shifted position of the second shiftable member; and electrically actuated means operable to cause joint shifting movement of said pair of shiftable members to align certain of said configurations with certain of said lamps.

6

tion occupied by said member; circuit means connecting energizing power to said lamps and contacts to effect completion of energizing circuits to the certain number of lamps in any said shifted position of the second shiftable member; and electrically actuated means operable to cause joint shifting movement of said pair of shiftable members to align certain of said configurations with certain of said lamps.

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