Fig. 1.

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CARD DEALING MACHINE
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6 Sheets-Sheet 1
This invention relates to machines for dealing playing cards, the object of the invention being to provide an improved mechanism which will automatically and accurately deal playing cards from a pack of such cards.

A further object of the invention is the provision of a simple, comparatively inexpensive, compact and light weight card dealing machine which can be readily attached to or detached from a playing card table and, when attached, is out of the way so as not to interfere with the use of the table in the ordinary manner, and when detached therefrom will permit the storage of the machine and the table into a small space.

A further object of the invention is the provision of an improved card dealing mechanism which may be lowered and locked below the top of the table, where it is out of the way so as to permit the use of the table top, and automatically raised above the top of the table into position where it is automatically operative accurately to deal the cards to the several players.

Another object of the invention is the provision of an improved card dealing mechanism which may be readily rotated by hand into position opposite the successive dealers and then automatically driven quickly and efficiently to deal the cards from the pack to the several players.

A still further object of the invention is the provision of an improved card dealing mechanism which may be lowered and locked below the table and on the release of the locking mechanism automatically raised thereabove into position to deal the cards, the raising of which mechanism is so controlled that it is without jar and noise and then the mechanism electrically rotated accurately to deal the cards.

In the drawings accompanying and forming a part of this specification:

Figure 1 is a vertical sectional view of this improved card dealing machine attached to a card playing table, shown broken away and in section;

Figure 2 is also a vertical sectional view partly in elevation taken at right angles to Fig. 1;

Figure 3 is a side view partly in section of the machine illustrating the locking means for holding it below the card table;

Figure 4 is a cross-sectional view taken on line 4-4 of Fig. 3;

Figure 5 is a vertical sectional view of the rotary part or card dealing mechanism of the machine;

Figure 6 is a detail sectional view of the clutch mechanism for permitting the rotation of the card dealing mechanism to the different dealers by hand;

Figure 7 is a cross-sectional view taken on line 7-7 of Fig. 2;

Figure 8 is a top view of the machine, attached below the table top, a part of the dealing mechanism being shown in cross-section taken on line 6-6 of Fig. 1;

Figure 9 is a side view of the upper portion of the machine illustrating the means for detachably locking the mechanism below the table top, the section of the table being taken on line 9-9 of Fig. 8;

Figures 10 and 11 are detail views illustrating the means for holding the pack of cards and dealing the cards from the pack. These figures together with Figure 5 illustrate the successive operations of dealing the cards; and

Figure 12 is a detail perspective view of the casing for holding the pack of cards.

Similar characters of reference indicate corresponding parts in the several views.

Before explaining in detail the present improvement and mode of operation thereof, I desire to have it understood that the invention is not limited to the details of construction and arrangement of parts which are illustrated in the accompanying drawings, since the invention is capable of other embodiments, and that the phraseology which I employ is for the purpose of description and not of limitation.

This improved card dealing machine in the preferred form thereof shown comprises a suitable supporting means or casing shown in the form of a cylinder 1 adapted for attachment to a suitable table shown in the form of a card table 4. In the present instance, this machine is supported centrally of the table which is provided with an opening in the center thereof. The cylinder has a bottom 2 and is open at its top and this cylinder is held in place by suitable hangers 3 detachably connected to the table 4 in the manner hereinafter explained. Projecting into this cylinder from the top thereof is a cylinder 5 so fitted as to slide up and down within the cylinder 1. This inner cylinder 5 is forced upward by a spring 6 located in the bottom of the cylinder 1 to engage the bottom of the cylinder 5. When the cylinder 5 is shifted upward, a vacuum is created between the two cylinders for which purpose a small hole 8 admits air into the bottom of the cylinder 1. The size of this hole regulates the speed with which the cylinder 5 travels upwardly.

To relieve and prevent undue compression be-
between the two cylinders, when cylinder 5 is forced down by hand, the bottom 7 of the inner telescoping cylinder 5 is provided with a pair of relatively larger openings 9 covered by suitable flap valves 10 operative to admit air to the cylinder 5 when it is pushed down.

Located in the outer cylinder 1 is a slot 11 (see Fig. 3) through which extends a projection 12 secured to the inner cylinder 5. A bell-crank locking arm 13 is pivotally connected, as at 14, to a motor supporting bracket 15 and is provided with a beveled adjustable nose or projection 16, adjustable relatively to the bell-crank lever by means of a pair of slots and screws 17.

When the inner cylinder 5 is pushed down, this catch or nose 16 will engage the projection 12 and thus lock the inner cylinder in its lowered position below the table top until the locking device is released which is accomplished by having one end of the bell-crank lever 13 in position to be engaged by a push button 17 accessible located in the table top and held in place by a spring 18, collar 19, and a bracket 20 secured to the underside of the table top.

When this push button is operated, it will shift the bell-crank lever 13 on its pivot 14 and so release the catch 12, whereupon the spring in the bottom of the cylinder will shift the inner cylinder upward to carry the rotating card dealing mechanism above the table, this upward movement being stopped by the engagement of the motor pulley 21 with a friction disc 22 mounted on and fixed to a vertical shaft 23 running in bearings 24 and 25, the bearing 25 being mounted on a cross member 27 secured or screwed to the inner cylinder, while the bearing 24 is carried by the bottom 7 of the inner cylinder 5. A spring 18 is used to return the locking lever to its locking position.

A suitable small electric motor 26 is mounted on the bracket 15 secured to the hangers 3 that support the machine from the bottom of the table and the friction pulley 21 of this motor being in engagement with the friction disc 22 rotates the shaft 23 and the card dealing mechanism or head hereinafter described thereby to deal the cards, this mechanism rotating relatively to the telescoping cylinders within which it is carried.

The motor is connected by a suitable cord 38 (see Fig. 8) with a socket and is controlled by a suitable switch or switches 39, two being shown located preferably at two corners of the table (see Fig. 8), and in practice, a plug socket 39 will also be provided at the under side of the table for the attachment of the plug secured to one end of the cord, the opposite end of which may be secured to a light or wall socket or at any other accessible place.

Secured to the bearing 25 is a disc gear 28, which being fast to the bearings, does not rotate. The shaft 23, however, projects through the center thereof and terminates in a plate or disc 30 which is freely rotatable on this shaft 23 and, therefore, independent thereof (see Fig. 2) and this plate 30 is provided with friction shoes 31 sliding on the stationary gear 28 (see Fig. 1), thereby to prove to balance the plate 30.

Driven by the shaft 23 is an upright shaft 34 and for this purpose the shaft 23 is provided with a gear 29 rotatable therewith and meshing with an intermediate or idler gear 33 pivotally secured to the rotatable plate 30, and this gear 33 then meshes with a driven gear 32 loose, however, on the shaft 34. This gear 32 has a hub passing through the plate 30 and is provided with clutch teeth 35 in position to co-operate with a similar toothed member 36 mounted on the shaft 34 for slidding movement by means of a spline or key and groove connection 38 (see Fig. 1). This tongue or key is formed as part of a collar 39 fast to the shaft 34, as is apparent from the gear and the clutch member 36 is located in a spring 40 to force the clutch member 36 into engagement with the teeth 35 of the driven gear 32 and thereby rotate the shaft 34. This construction also enables the card dealing mechanism to be turned by hand without rotating the motor driving mechanism. In other words, it enables the card dealing portion of the machine to be shifted by hand to the several successive dealing stations so as to start the deal, while the electric drive of the machine is idle, since the clutch teeth 36 will slip over the clutch teeth 35 during this hand turning movement.

While the gear 32, as before stated, is loosely mounted on the shaft 34, yet secured to the lower end of this shaft 34 is a gear 40 in mesh with the stationary disc gear 28 so that when the shaft 23 is rotated by the motor and the shaft 34 rotated through the medium of the clutches 35, 36, and spline of the fixed collar 39, gear 40 will roll around the disc gear 28 carrying with it the plate 30 thereby to rotate the pack of cards to the successive players. This mechanism, as before explained, also permits the hand turning of the card dealing part of the mechanism, since the clutch members 35 and 36 will slip relatively to each other.

The upright shaft 34 is supported by a bearing 41 (see Fig. 2) mounted on a card receiving casing 42, which casing is supported by and secured to the rotary plate 30, and by means of which this card dealing mechanism or head and its casing 42 are rotated.

Secured to the upper end of the shaft 34 is a bevel gear 43 in mesh with a similar gear 44 having a gear 45 attached to it. This gear 45 drives a pair of gears 46 and 47 (see Fig. 1), pivotally supported by a bracket 48 (see Fig. 5) secured to the top of the casing 42. These gears 45 and 47 respectively mesh with gears 51 and 52 secured to shafts 49 and 50 whereby the shafts are rotated or driven by the gears 51 and 52. The opposite ends of the shaft 50 are supported by upright members 59 carried by the casing 42 (see Fig. 12) while the shaft 49 is supported by the bracket 48 and a similar bracket 48' (see Fig. 2) located at the opposite side of the casing 42.

Located on the shaft 50 are a pair of rubber covered rollers 53 (see Figs. 5, 10, and 11) and shaft 45 also carries a pair of rollers, which rollers, however, are so constructed as to have what is herein termed rubber fingers 54.

Below the shaft 50 is another shaft 55 flexibly supported by the casing 42, this shaft also carrying a pair of rubber covered rollers 56 which rollers are held in frictional engagement with the rollers 53 by springs 57 mounted on suitable posts 58 carried by the rotating plate 30. These rotatable rollers 56 together with the roller 53 constitute the delivery rollers for feeding the cards and delivering them successively in front of the several players.

The top of the casing 42 (see Fig. 12) is provided with a pair of slots 42' for the passage of the finger rollers 54. Inside of the casing 42 is a brass plate or card follower 62 which is connected with a shaft 63 by means of pivoted links 64 and arms 65. To the shaft 63 is also fixed an
arm 66 to which one end of a spring 67 is connected, the opposite end passing through a wall in the casing 42 to a pin 61' and by this means a pack of cards is pushed upward against the top of the casing 42 so that the top card will always be in position to be engaged by the finger rollers 54 passing through the slots 42' as the plate 62 is upward pressure at all times exerted on the bottom card of the pack. To the shaft 63 is secured a hand lever 68 by means of which the follow up plate 62 may be lowered when it is desired to insert the pack of cards between the follow up plate 62 and the top of the casing 42.

The front wall 69 of this casing 42 terminates below the top of the casing so as to form a slot 70 which is about one and one half (1½) times the thickness of a card so that but one card at a time can pass through this slot.

The ratio of the gear mechanism is such that the fingers 54 will rotate four times for each revolution of the rotatable disc or plate 30 thus delivering four cards for each revolution of the dealing mechanism or rotatable head of the machine and as each card is shifted forward from the top of the pack by means of the finger rollers 54, it passes through the slot 70 of the casing 42 into position to be engaged by the delivery rollers 55 and 56. After the shifting of forward this top card, the further rotation of the finger rollers 54, carries the next succeeding card slightly forward (see Fig. 11) so that its rear edge is brought into position to be engaged by the finger portions of the rollers 54 on their next complete rotation, (see Fig. 10) so that after the first card is shifted from the pack the finger roller 54 engage each successive card of the pack at the rear edge thereof and positively shift it forward sufficient to be engaged by the rollers 53 and 56 (in the manner shown in Figs. 10 and 11).

Whereupon as before stated, the rollers 53 and 55, running faster than the finger rollers 54 pull the card away from the finger rollers and shift it forward to be delivered as the delivery mechanism is rotated, four cards being delivered each time the dealing mechanism is rotated.

The fixed cylinder or casing 1 is detachably supported by the table 4 and for this purpose it has a bayonet joint connection therewith which in the present instance, comprises a set of lugs 72 secured to the under side of the table for the reception of hooks 73 formed at the upper ends of the hangers 3 and which hooks or outwardly bent ends 73 of the hangers 3 may be shifted into the lugs 72 when the cylinder 1 is given a slight turning movement. Suitable guides 74 carried by the table hold the cylinder 1 centrally located as it is turned into the lugs 72.

For securing the cylinder against premature displacement a suitable locking device 13 (see Fig. 9) is provided. This comprises a hooked lever pivoted in a position and spring held to engage one of the hooks 73 of the hanger 3. Pressing down the nose of this locking lever against the action of its spring 15 releases the cylinder and permits the hooks 73 to be turned out of the lugs 72 and thus to be readily detached from the table to be stored away so that the legs of the table can be folded up in the usual manner and it, likewise, stored away in a small space.

As it is usual to cover the top of the card table 5 with a cover, as 17, of some kind the opening in the top of the cover is provided with a finishing ring 76 and a suitable embroidery ring 76' may be used to secure the turned in margin of the cover against the ring 76 and thus provide a neat appearance thereof while firmly holding the margin of the cover in place.

The top of the casing 42 supports a circular closure plate or cover 78 which is pivotally secured to the casing, as at 89, by means of downwardly projecting lugs pivoted to the lugs 50 of the casing 42, this cover being fastened by screws 81 to an upright projection 81' carried by the casing 42. This cover closes the opening in the table when the mechanism is pushed down out of the way so that the table may be used in the usual manner for the card game and also permits ready access to the mechanism.

In practice, the under side of the table will be suitably wired, (see Fig. 8), which wiring will terminate in a socket connected with the motor for the reception of the cord plug, the wiring also terminating in a pair of switches of any suitable form for starting the motor. In the operation of the machine, when the card dealing mechanism or head is above the table, a pack of cards may be inserted by the dealer between the follow up plate 62 and the top of the casing 42 by merely lowering the follow up plate by means of the hand lever 68, this being done while the motor is idle, thereupon, after rotating, by hand, the head into proper position, then by operating either of the switches, the dealing mechanism will be rotated to deliver a card to each of the four players.

In practice, however, it may be preferable to first turn the dealing mechanism into such position that the dealer can slip a pack of cards into the casing 42 with his right hand while lowering the follow up plate 62 with his left hand. When the pack of cards has thus been placed in position the first card will be dealt out to the first player to the left of the dealer and then the mechanism is pushed down until the top of the table, whereby it is locked by the locking device 13 hereinbefore described.

If two decks of cards are being used, the game is played with one of the decks dealt by a previous dealer and when the hand is finished and the cards gathered into the pack, the dealer merely pushes the button 17 thereby releasing the locking device 13, thus enabling the spring to shift the inner cylinder upward to carry the card dealing mechanism into position to deal the cards whereby on manipulating either of the switches the motor is started and the cards are successively dealt to the four players. Thereupon the switch is disconnected and the previously dealt cards are inserted into the machine and the head pushed downward as before.

In the operation of the machine, it has been found that it takes about ten seconds to deal the cards and the whole operation, including the raising and lowering of the mechanism, requires about fifteen seconds.

It is to be understood that by describing in detail herein any particular form, structure or arrangement, it is not intended to limit the inven-
In a card dealing machine, the combination of a card dealing mechanism, means for automatically dealing the cards from a pack thereof, card...
the opening into position above the table, means for automatically rotating the card dealing mechanism, means for successively dealing the cards from a pack during the rotation thereof, means for controlling the lowering of said card dealing mechanism and means for locking the card dealing mechanism in position.

18. In a card dealing machine, the combination of a table having an opening in the top thereof, a rotatable card dealing mechanism carried by the table, and means for elevating it above and lowering it below the table top.

19. In a card dealing machine, the combination of a table having an opening in the top thereof, a rotatable card dealing mechanism carried by the table, means for elevating it above and lowering it below the table top, and driving means for operating said dealing mechanism and including means whereby the card dealing mechanism may be manually rotated.

20. In a card dealing machine, the combination of a table having an opening in the top thereof, a rotatable card dealing mechanism carried by the table, and means for elevating it above and lowering it below the table top and electrically operated means for rotating the card dealing mechanism.

21. In a card dealing machine, the combination of a table having an opening in the top thereof, a rotatable card dealing mechanism carried by the table, and means for elevating it above and lowering it below the table top and having means for limiting the elevation of the card dealing mechanism.

22. In a card dealing machine, the combination of a card table having an opening in the top thereof, a rotatable card dealing mechanism supported below the top, means for elevating it through said opening, said rotatable card dealing mechanism including an independently rotatable card dealing head having a card receiving means, a follow-up means for the cards, a rotatable card shifting and delivering means, means for operating said delivering means four times to each rotation of the card dealing mechanism, and electrically operated means for rotating said card dealing mechanism.

23. In a card dealing machine, the combination of means for holding a pack of cards and comprising a casing having a slot sufficiently wide only for the passage of a single card, means co-operating with the top card to feed the card through the slot and from the casing, means in advance thereof for grasping the card and feeding it into feeding position, means for successively dealing the cards from the pack, and means for automatically rotating said card dealing means.

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