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author: Gamaliel
Bradford
[1795 - 1839]

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THE
HISTORY AND ANALYSIS
OF THE SUPPOSED
AUTOMATON CHESS PLAYER,
OF
M. DE KEMPELEN,

NOW EXHIBITING IN THIS COUNTRY, BY MR. MAELZEL;
WITH LITHOGRAPHIC FIGURES, ILLUSTRATIVE
OF THE PROBABLE METHOD BY WHICH
ITS MOTIONS ARE DIRECTED.

"Inclusi ligno occultantur achiui."

BOSTON:
PUBLISHED BY HILLIARD, GRAY AND CO.
1826.

DISTRICT OF MASSACHUSETTS, *to witt :*

District Clerk's Office.

BE IT REMEMBERED, that on the sixteenth day of November, A. D. 1826, in the fifty-first year of the Independence of the United States of America, HILLIARD, GRAY, AND COMPANY, of the said District, have deposited in this office the title of a book, the right whereof they claim as proprietors in the words following, *to witt :*

The History and Analysis of the supposed Automaton Chess Player, of M. de Kempelen, now exhibiting in this Country, by Mr. Maelzel ; with Lithographic figures, illustrative of the probable method by which its motions are directed.

“ *Inclusi ligno occultantur Achivi.*”

In Conformity to the Act of the Congress of the United States, entitled “ An Act for the Encouragement of Learning, by securing the Copies Maps, Charts and Books, to the Authors and Proprietors of such Copies, during the times therein mentioned :” and also to an Act entitled “ An Act supplementary to an Act, entitled, An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts and Books to the Authors and Proprietors of such Copies during the times therein mentioned ; and extending the Benefits thereof to the Arts of Designing, Engraving and Etching Historical and other Prints.”

JNO. W. DAVIS, $\left\{ \begin{array}{l} \text{Clerk of the District} \\ \text{of Massachusetts.} \end{array} \right.$

John G. Scobie, Printer, No. 7, Congress-Street.



THE AUTOMATON CHESS PLAYER.

The arrival of this celebrated Androides was anticipated in this country with much interest. It has now been exhibited some months, and abundantly answered the expectations of the curious. Many theories have been framed to account for its operation, but all are attended with serious difficulties, and though many believe themselves to have discovered the secret, there are few who would not feel better satisfied by ocular demonstration. The subject in the mean time is one of such general interest, that a short account of the present state of our knowledge on the subject, will probably be acceptable to the public.

The machine, now exhibited by Mr. Maelzel, as an automaton, was made by M. de Kempelen, a Hungarian gentleman, and a member of the Aulic council of the German empire. According to some accounts, the idea of such a machine was suggested to him by some curious magnetic experiments, which were exhibited before the Empress. But the most probable account of the matter is, that he was excited to the undertaking, by the desire of rivalling the celebrated automaton flute player of M. Vaucanson.

The chess-player was made in the year 1769, and exhibited at Presburg, Vienna & Paris. In

1783, it was brought to London by the inventor, and exhibited during that, and the following year, to admiring multitudes.

The following account of it was published in Edinburgh, about fourteen years ago :

“ The chess-player of M. de Kempelen was a figure as large as life, dressed in a Turkish habit, and sitting behind a table with doors, three feet and a half in length, two in depth, and two and a half in height, and running on four wheels. The androides sits on a chair which is fixed to the table or commode : he leans his right arm on the table ; in his left he holds a pipe, but with this arm he plays when the pipe is removed ; a chess board of 18 inches being laid before him. The doors of the commode being thrown open, it is seen to contain wheels, levers, cylinders, and other pieces of mechanism ; and in this state the machine is wheeled about the room. The vestments of the automaton are then lifted over its head, and the body is seen full of similar wheels and levers. A little door in its thigh is opened for a similar purpose ; after which every thing being disposed in its place, the automaton is ready to play ; and it always takes the first move.

At every motion the wheels are heard, the figure moves its head, and seems to look over every part of the chess board. When it checks the queen, it shakes its head twice, and thrice in giving check to the king. It likewise shakes its head when a false

move is made, replaces the piece, and takes the move from the adversary. It generally, though not invariably, wins the game. M. de Kempelen or his substitute were always near the machine when it played, and wound it up like a watch, after it had made ten or twelve moves. A small square box was frequently consulted by the exhibitor during the game; and herein, he said, consisted the secret, which he could reveal in a moment.

M. de Kempelen's account of it was: "C'est une bagatelle qui n'est pas sans merite du coté du mechanisme, mais les effets n'en paroissent si merveilleux que par la hardiesse de l'idée, et par l'heureux choix des moyens employés pour faire illusion." He boasted that though it had been made in 1769, and exhibited at Presburg, Vienna, Paris, and London, to thousands, many of whom were mathematicians and chess-players, the secret by which he governed the motion of its arm was never discovered. The strongest and best armed loadstone was allowed to be placed upon it whilst it played, by any of the spectators.

It appears, therefore, that M. de Kempelen himself allowed, that *illusion* had a considerable share in the wonderful performances of his androides, and, in fact, the secret by which he governed its arm, seems to have been satisfactorily explained soon after the time that he exhibited it in London. Mr. Thomas Collinson, nephew to the late Peter Collinson, F. R. S. writes to Dr. Hutton, that about

the year 1790, he called on M. de Kempelen, at Vienna, but found him quite silent on the subject of the chess-player. The reason of this, he says, he found out at Dresden, where he got acquainted with a gentleman of rank and talents, named Joseph Frederick Freyhere, who was supposed completely to have discovered the *vitality* and soul of the chess-playing figure. This gentleman had written a treatise on the subject, in the German language, accompanied by curious plates, neatly coloured, with a copy of which he presented Mr. Collinson, and which he had also sent to M. de Kempelen, although that gentleman was unwilling to acknowledge that Mr. F. had completely developed his secret. "A well-taught boy," says Mr. Collinson, "very thin and small of his age (sufficiently so that he could be concealed in a drawer almost immediately under the chess-board) agitated the whole." (See Supplement to Hutton's *Mathematical Dictionary*, art. AUTOMATON.)

It must be acknowledged, however, that this explanation is rather unsatisfactory, when we compare it with the above account of the public manner in which the internal structure of every part of the machine was exhibited. Fortunately, however, we are enabled to supply the defect by the help of a curious little work, published at Paris, in the year 1785, and which contains an explanation of the structure of the most celebrated automata of modern times, as well as an account of the manner in which

the best slight-of-hand tricks of Breslaw, Pinetti, and other celebrated legerdemain performers were accomplished.* Among the rest, the chess-player of M. de Kempelen is minutely described, and in our opinion, satisfactorily explained. According to this account, the machine was put in motion by a dwarf, a famous chess-player, who was concealed in the table, or commode. He could not be seen when the doors were opened, because his legs and thighs were then concealed in two hollow cylinders, which appeared designed to support the wheels and lever; the rest of his body was at that moment out of the commode, and hid in the petticoats of the automaton. When the doors of the commode were shut, the clacks which were heard by the turning of a rounce, permitted the dwarf to change his place, and re-enter the commode without being heard; and while the machine is rolled about to different parts of the room, to prove that it is perfectly detached, the dwarf has an opportunity of shutting the trap through which he passed. The petticoats of the automaton are then lifted up, and the interior part of the body is shewn, to convince the spectators that all is fair; and the whole terminates to their great astonishment, and in the illusion, that an effect is produced by simple ma-

* This book appeared at Paris, during the time of Mr. Pinetti's performance there; and, according to report, served to hasten his departure from that city.

chinery, which can only arise from a well organized head.

It remains to be explained, in what manner the dwarf hidden in the commode can know the game played by his adversary, and can direct the arm of the automaton at his pleasure. The most probable solution is, that the chess-board was made semi-transparent, so as effectually to conceal the person within, but to suffer the entrance of sufficient light for the dwarf to perceive whatever was done without. As for the means employed to give the necessary motions to the androides, little mechanical ingenuity is required. According to our authority, this was accomplished on the principles of the pantograph; an interior lever being governed by the dwarf, and made to describe a smaller circuit, while the arm of the machine described a similar circuit on an enlarged scale".

However satisfactory this explanation may have been to the writer of the above account, it seems not to have been perfectly so to the British public, before whom the Chess-player re-appeared about seven years since, under the direction of the present possessor, Mr. Maelzel.

During his retirement from public life, some material alterations appeared to have been made in the arrangement, so to speak, of the inward man, which no longer answered exactly to the foregoing description. The nature of these alterations will appear by and by. The machine was exhibited two

or three years, in England and Scotland and, afterwards, in Paris. It was brought from thence, during the last summer, to New-York, and is now going the round of the American cities. One important improvement in the androides, as now exhibited, is that it pronounces with considerable distinctness the word "*Echec*" instead of shaking the head only, as above mentioned. It may be observed, that M. De Kempelen used to exhibit, together with his chess-playing androides, a speaking figure. Both were probably actuated by the same agent, and both are now combined in the chess-player. As to the success of the figure in America, it may be added, that he still retains his superiority, and has hitherto been very seldom fairly beaten.

The first step in the investigation of the mode, in which this exhibition is conducted, is to determine who is the real player; for the interposition of some intelligence, at each separate move, must be admitted by every one who has the slightest knowledge of the game of chess. The move of the antagonist is always made, in the public exhibitions, in this country at least, on a separate board, which move is repeated by Mr. Maelzel, on the board of the androides. He has then an opportunity of setting the machinery in motion so as to produce the opposing move, and it has accordingly been supposed, that he availed himself of it to press suddenly upon the squares of the chess-board, which might be moveable cubes, connected with appro-

priate springs. But besides the excessive complication of machinery necessary, on this supposition, no chess-player, who has witnessed this exhibition, will believe this to be the case; first, because the move is repeated without any delay whatever, let the opponent be ever so skilful, and second, because the time, which elapses before the reply of the automaton, is very various. In a game played in Boston, against a gentleman of great skill and ingenuity, the intervals of this sort, were marked by a second watch. The longest delay was three minutes, the shortest only ten seconds. It is evident that it is during this interval, that the proper move is decided on, and the necessary impulse given to the machinery.

Does the exhibiter always touch the machine at some time, or other, of this interval? many persons, and among others, the writer of this account have devoted themselves, during a great part of a long game, to the examination of this particular point, without suffering their attention to be distracted by any other. And they are satisfied, that there are many intervals of this sort when no visible communication takes place between Mr. Maelzel and his machine. It is true, that he does *very frequently* place his hand upon the table at these periods, but any one, who will examine his movements attentively, while the machine is playing *whole* games, will be satisfied that he does not *always* do this. But if *one* considerable interval

in the early part of the game, passes without such communication, every skilful chess-player must be satisfied, that the following move is not produced by any bodily contact of the exhibiter; and if one move is produced without this, all may be and probably are so.

But, admitting that the eyes of the spectators are completely deceived, and that the exhibiter touches some part of the box previous to every separate move, it is certain that the touch, or pressure must be effected in the most sudden and rapid manner. But it is scarcely conceivable that the table, which, as we shall see by and by, contains a great deal of vacant space, should also contain a quantity of machinery sufficient to effect all the possible combinations of chess, arranged so that any combination can be produced by a single touch. The combinations of the rectangular movements alone amount to about nine hundred and this amount is nearly doubled, by the addition of those of the diagonal and the diagonal and rectangular united, as in the moves of the knight; So that, as each combination must require a separate spring, to be touched by the exhibiter at least, sixteen hundred such springs must present themselves at a particular corner of the box, where it is admitted, that the exhibiter must touch, if he touches at all. Some have supposed, that they were arranged, like the keys of an organ, along the moulding of one end of the box,

but this end being two feet long, it would follow, that there must be 66 to an inch, and that they must present a surface too narrow to be separately touched.

Besides, it is opposed to the general analogy of spring, or weight wheel-work, to suppose that this machine, thus complicated, should not require occasional winding up. And in order to comply with this natural expectation of the spectators, the process of winding is every now and then apparently performed, at some exhibitions of this machine. But it is an important fact, that this does not always take place. In two instances, at least, in this city, it was not performed at all during the whole game, a period, on one occasion, of two hours, and, on another, of one. But can it be believed that the machine sometimes needs winding every ten or twelve moves, when at others, it will go without it two hours. Is it not more probable that no winding is necessary, and that the occasional turning of the key, is merely a part of the *illusion*.

There is nothing left, on the supposition that the game is played by Mr. Maelzel, but magnetism.—But, besides the objection that M. de Kempelen allowed a loadstone to be placed upon the machine, it is scarcely conceivable that the exhibiter can play the game, and manœuvre his magnet, while he is several feet behind the figure, as he often is, while the move is made by the automaton.

That the moves therefore are really made by Mr. Maelzel seems doubtful, and it may be added, that he does not appear to a vigilant eye to be the real player. His attention is too much distracted by other circumstances, and he is far too sensible of the passage of time.

At all events there are very great difficulties attending this supposition, and these are still greater, if the machine is supposed to be moved by an assistant behind the curtain at the back of the room. At such a distance magnetism is out of the question. Communication through the floor is evidently impossible, and that by strings or wires from the roof equally so. The assistant therefore, if any where, is in the box, or commode.

Almost every individual who has only once witnessed this extraordinary exhibition, will instantly declare such a supposition to be the most absurd of all. But a second, or third examination will perhaps induce him to consider it not quite so clear, that there is not, on the whole, room enough for a middle sized individual to be thus concealed, and, if it can be shown, that this concealment is compatible with the various disclosures of the exhibition---it must be admitted to be a far more probable explanation of the mystery, than either external springs or magnetism.

The writer of this account was well satisfied by a critical examination of the mode of exhibition, that there was always, under every circumstance,

a considerable space within the commode completely hidden from the eyes of the spectators, and that the figure of this concealed cavity might be altered so as to enable an occupant of the ordinary size, to change his position, during the exhibition and thus escape the closest observation. The mode in which this was probably effected, was pointed out to many of his friends in this city. He has since met with a foreign periodical journal, in which an explanation of the same kind is given at some length, and with great minuteness. This explanation is accompanied with the annexed figures, and seems to place beyond a doubt the possibility of such an arrangement.

The manner in which this may be effected, will be better understood, if the manner in which the exhibition is conducted is first considered.

The hall is divided by a curtain, between which, and the spectators, there is an area of some width, bounded by a cord, which is stretched across parallel to the curtain, and about two feet from the floor. When the spectators are seated, the curtain is drawn aside, and the machine wheeled into the area, just without the curtain, & the exhibition commences with the opening of the left hand door (A. Fig. 3). The exhibiter then goes round to the opposite back-door (B. Fig. 2.) opens it and holds a candle through it. The cavity thus exposed appears to the spectators to be filled with machinery. The back-door is then closed and locked. The front

doors [C.C. Fig. 1] are then opened, and next, the opposite back door [D. Fig. 2]. A candle is held through this also. A large cavity is thus seen, lined with some dark-coloured cloth, and containing nothing of any consequence, except a quadrant and lever in each of the back corners. The box is then wheeled round, the vestments of the Automaton, lifted up, and a door, (E. Fig. 2.), in the back of the figure and another (F. Fig. 2.) in its thigh, successively opened and shut. Shallow cavities are thus seen filled with machinery. The box is now wheeled round again, and the front doors closed. The exhibiter next opens the drawer, (G. Fig. 1&3) takes out a set of chess, a cushion, and a small black board. The pipe is removed and carried to another part of the room. The men are placed upon the chess-board, the arm of the figure brought forward, the cushion placed beneath it, and the black board just under the fingers. The drawer is now closed, a small square box placed upon a little table, in the neighborhood, a table and board set for the antagonist, & the automaton is ready to play. After the game is over, he is wheeled back and the curtain closed. Some slight variations, in the steps of the exhibition may occasionally be made, but the general mode is, as above stated. The spectator, who perhaps came with the impression, that the story of the dwarf, above-mentioned, was well founded, finds himself staggered. The cylinders, supposed to contain the legs of the player, are not

to be seen, they have been removed, and the idea, of his being sometimes without, and sometimes within the cabinet, as above stated, he sees to be impossible, as the machine is wheeled round, with its doors all open. The chess-player is followed by a trumpeter, and other figures, which crowd his mind, with new ideas, and render those concerning the interior of the cabinet, so confused, that he is quite uncertain of what he has seen, and, perhaps, retains only a general notion, that this interior was completely and entirely displayed, at one, and the same time. Repeated, and careful examination, however, will show, that there is, in all this, nothing incompatible with the idea of a person being concealed within the commode; this may be accomplished by the arrangement now to be detailed.

The drawer [G. Fig. 11.] does not reach to the back of the commode, but leaves behind it a space [O. Fig. 11.] which is below the level of the apparent bottom of the cabinet. The back, which is false, of the larger apartment, [which contains the quadrants,] and part of its bottom, may be pushed forward as in Fig. 11, leaving behind them a space S. communicating with the space O. This allows the occupant to take the position, marked by the dotted outline, in Fig. 3. In this state of things, the machine is introduced, and the doors A. & D. (Fig. 1 & 2) opened; it is obvious, that no part of the body of the internal agent will appear to a person

looking through the cavity thus disclosed. The cavity appears to be filled with machinery, but this is illusive. The machinery occupies only a part of it. The profile of this machinery is shown in Fig. 6. It leaves behind it the space K. and is ingeniously complicated so as to serve as a sort of close grating, which conceals the deficiency behind. The back-door B. in closing, closes at the same time the screen I. represented in profile in Fig. 6., The occupant then assumes the position indicated in Fig. 5—and replaces the false back with the quadrants &c. of the larger apartment. In order to enable him to do this, the exhibiter makes more or less delay, before he opens the doors C.C. He also carefully locks the door B., for, as the head of the occupant is now very near this, it would be an awkward accident to have it fly open.

The danger of discovery is now over; every thing else may be opened with perfect safety. If the observer, at this stage of the exhibition, looks, through the door A., at the left hand cavity, he perceives that it is opaque, and that a person may be sitting there, for any thing that he can see.

The doors C.C.&D. are now opened, and, of course, nothing is seen but a cavity nearly empty. The machine is wheeled round, the doors in the body of the figure opened &c.; but no part of the spaces O & K is ever again displayed. The occupant may therefore sit at his ease till called on to commence his operations.

In this situation he may see what passes without, through the chess-board, which, for this purpose, may be semi-transparent, as suggested above; or the same object may be obtained by means of a common camera-obscura apparatus, of which the lens is in one of the eyes of the automaton, the mirror being situated within the head, at such an angle as to reflect the rays of light towards a plate of ground glass placed in the back of the box, and near the occupant. The arm may be guided by wires, or strings, or by means of a pentagraph.

The author of the 'Attempt to analyse the chess-player of M. de Kempelen,' the work above alluded to, supposes that both the last objects are attained by the occupant ascending partially into the body of the automaton, for which purpose a part of the body is left vacant. According to his statement, when the door is opened in the back of the figure, only a part of the real cavity is shewn, as at E. The remainder N., separated from E. by a diagonal partition, communicates with the space S. behind the false back. After the doors of the cabinet are closed, the occupant raises the false back, elevates himself into the space N. and thrusts his arm into that of the automaton. His eyes are thus raised above the level of the chess-board, which he can see through the chest of the figure. This position is represented in Fig. 7 & 8. To enable him to take this position, it is necessary that the drawer should be opened, and suffered to remain

open a short time, which is accordingly done. In order to enable him to thrust his arm into that of the figure, the latter is placed in an awkward posture, that is, drawn backward. The spectator supposes this position of the arm to be necessary for the accommodation of the pipe; and this is the use of this article. When all is prepared, the arm is brought forward, and placed upon a cushion. No machinery is required, except a simple string, for the movement of the finger. The right hand of the occupant, being at liberty may serve to direct the movements of the head and right hand of the automaton.

In this arrangement, it is necessary that the player should use the left hand, an inconvenient circumstance, for which no good reason appears. It is said, that the use of the left arm by the figure arose from a mistake of M. de Kempelen, but this is certainly not so probable as the supposition, that it is connected with some internal arrangement of the player, who instead of rising into the automaton's body, continues to sit in the cabinet, and moves the hand by means of a pentagraph. He is thus enabled to use his right hand, which as he sits, is towards the audience, and may be moved with more freedom than the left. The consequence of this may be seen by trying the experiment with a common pentagraph. The movements of one arm of the instrument are in directions opposite to those of the other. The motions of the hand, moreover, very

much resemble those of the pencil of the pentagraph, and the pieces are not always grasped with accuracy ; which would not be so likely to happen, if the player's arm was actually inserted into that of the figure A.

It is not necessary, however to point out the exact manner in which the motions are effected, it is sufficient to show the possibility of the concealment of an individual of ordinary size, which probably will, be admitted, by every one, who considers the measurements of the space, supposed to be thus occupied. The length of the united cavities, K. and S. to admit such an individual, in the position represented in fig. 5, should be between five and six feet. But the length of the cabinet, is three feet, and a half, and its height, two and a half, or six feet in all. For the same purpose, the width of O, and the lower part of K, should be fourteen inches. This leaves ten inches, for the drawer, and the cylinder, or barrel V. The upper part of K, above the barrel, may be somewhat wider, to admit the shoulders. The cavity O, should be about eight inches deep, and it is evidently as much, and, probably somewhat more. It may be deeper behind, than before, or what amounts to the same thing, the floor of the cabinet may be an inclined plane, rising towards the back ; an inch. or two, would thus be gained, without the inclination being very obvious.

The space thus absolutely concealed from the spectators, while the cabinet is apparently open, is long, wide, and deep enough to accommodate an adult as in Fig. 5. It is obvious that when the left hand cavity only is open, he can assume the position represented in Fig. 3. merely by bending the body and knees, and thus bringing the former a little forward. As he cannot however go very far, the barrel V. was necessary to screen the lower part of his body. He may be introduced into the cabinet in the first instance through a sliding pannel, U.

To this concealment, therefore, all attentive examiners are obliged to resort, as a probable explanation, while every other is attended with apparently insuperable difficulties. This also is not without its objections, which are either physical, or moral. As to the first, it seems to many to be scarcely possible, that the player should never indicate his presence by involuntary coughing, or sneezing. A strong effort however would controul any such inclination, at least long enough to enable the exhibiter, at a given signal, to wheel off his machine, under pretence of some part being out of order.

Another objection, however, is more important, namely, that a secret, which must have been disclosed to several persons, in the course of half a century, should still continue to be a secret. It is to be remembered, however, that secrets may be kept, where it is for the interest of the individual, or individuals, to keep them, and in this case, it is

most clearly so. As to the suspicions, or demonstrations of the spectators, whether verbal, or published, they amount to little, so long as the exhibiter continues to open his cabinet, and by skilful manœuvres, to persuade nine-tenths of the spectators, that every inch of the interior is displayed before their eyes.

There is much hear-say evidence abroad, which goes, either to confirm, or refute the explanation, above given. The business of this pamphlet, however, is merely with what is publicly done, and shown by the exhibiter, from which every one has a right to draw his own inferences. Whether the secret will be completely exposed, in our time, is uncertain, but whether it shall turn out, to be a mere machine, directed by springs and wheel-work set in motion, by the exhibiter, or an assistant at a still greater distance; or a mere puppet, moved by a player within, who has, for half a century, eluded the observation of thousands of eagerly watchful spectators, it must be admitted to be one of the most ingenious, & completely successful contrivances, which has ever been offered to the public; instead of satisfying, it seems continually to excite curiosity, and the more one goes to see it, the more desirous he becomes, to visit it again.

EXPLANATION OF THE PLATES.



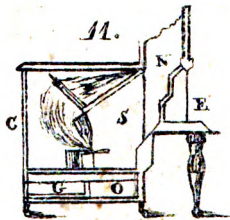
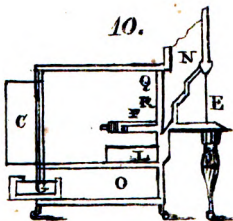
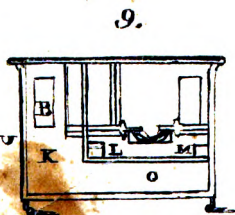
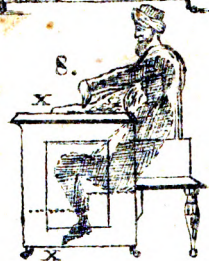
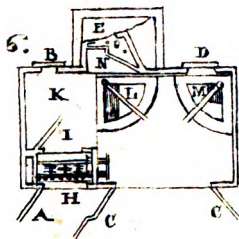
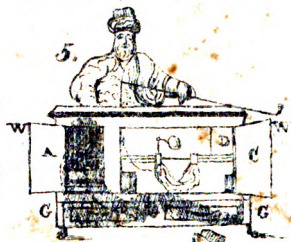
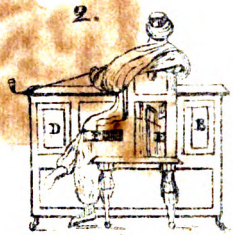
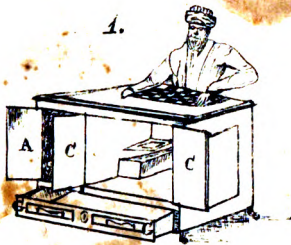
- Fig. 1.** A perspective view of the Automaton, seen in front, with all the doors thrown open.
- Fig. 2.** An elevation of the back of the Automaton.
- Fig. 3.** An elevation of the front of the Cabinet; the dotted lines representing the player, in the first position.
- Fig. 4.** A side elevation, shewing the player, in the same position.
- Fig. 5.** A front elevation, shewing the second position.
- Fig. 6.** An horizontal section, through the line. W. W. Fig. 5.
- Fig. 7.** A front elevation, shewing the position of the player, in the body of the Automaton.
- Fig. 8.** A side elevation of the same.
- Fig. 9.** A vertical section, through the line KX. Fig. 8.
- Fig. 10.** A vertical section through the line, Y. Y. Fig. 7. shewing the false back closed.
- Fig. 11.** A similar section, shewing the false back raised.

The following letters of reference, are employed in all the figures.

- A. Front door of the smaller, or left hand cavity.
- B. Back door of do.
- C C. Front doors of the larger cavity,
- D. Back door of do.
- E. Door and cavity, in the back of the figure.
- F. Door in the thigh.

- G G.** The drawer.
- H.** Machinery in front of the small cavity.
- I.** Screen behind this machinery,
- K.** Opening, caused by the removal of part of the floor of the small cavity.
- L.** A box, which serves to conceal an opening in the floor of the large cavity, made to facilitate the first position; and which also serves as a seat for the third position.
- M.** A similar box, made to receive the toes of the player in the first position.
- N.** The inner chest, filling up part of the trunk of the figure.
- O.** The space behind the drawer.
- P Q:** The false back turning on a hinge, at Q.
- R.** Part of the partition, formed of cloth, stretched tight, which is carried up by the false back, to form the opening between the chambers.
- S.** The opening between the chambers.
- T.** The opening connecting the trunk and cabinet, which is partly concealed by the false back.
- U.** Pannel, which is slipped aside to admit the player.
- V.** The cylinder, or barrel, which assists to conceal the player in the first position.

The Chefs Range.



Samuel Butler



