(No Model.)

H. C. KIRK.

CARDS FOR PLAYING GAMES.

No. 354,424. Patented Dec. 14, 1886.

Fig. 1.

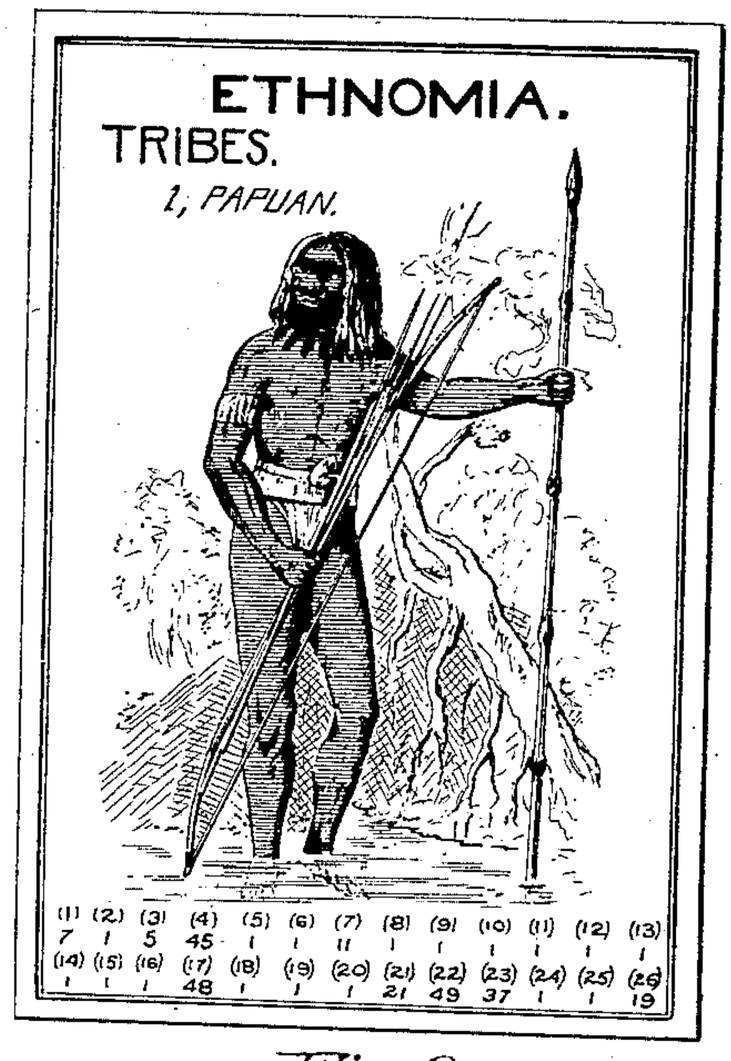


Fig. 3.

Fig. 2.

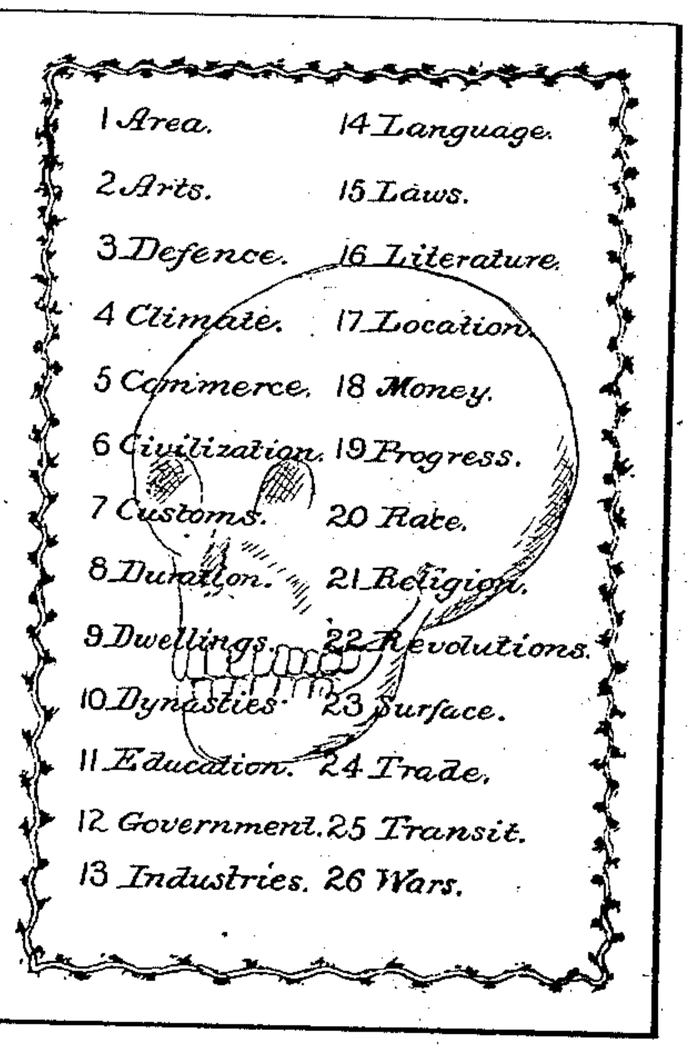
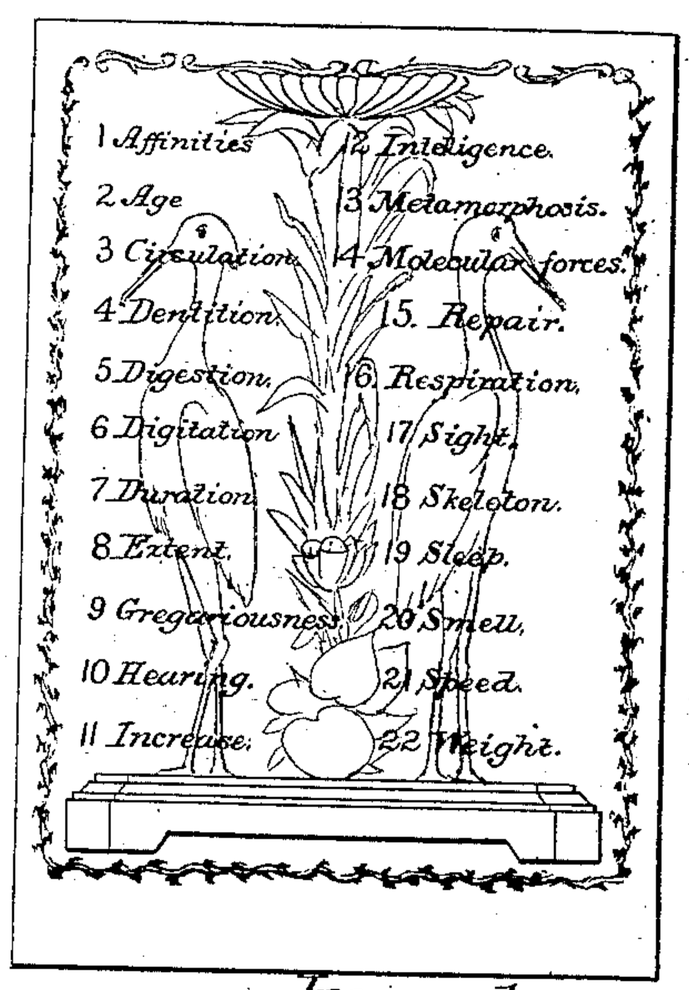


Fig. 4.



Witnesses:

Jas. F. Oshamel.
Walter S. Dodge,

Inventor:
Hyland C. Kirk,
by Dodgeson,
Attys.

UNITED STATES PATENT OFFICE.

HYLAND CLARE KIRK, OF PHELPS, NEW YORK.

CARDS FOR PLAYING GAMES.

SPECIFICATION forming part of Letters Patent No. 354,424, dated December 14, 1886.

Application filed January 17, 1885. Serial No. 153,167. (No model.)

To all whom it may concern:

Be it known that I, HYLAND CLARE KIRK, of Phelps, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Games, of which the following is a specification.

My invention relates to a pack or system of cards for use in playing games, designed to also impart instruction or information, and used conjointly with a device, either in a book, upon a chart, or retained essentially in the mind, designated the "Table of Grades."

It is of course to be understood that in using the expression "retained essentially in the mind" I do not mean that the table of grades may in any case be dispensed with, for such is not the fact. It is at all times a necessary and essential part of the game, and what is meant by the above words is simply that after players become familiar with the game and acquire the information which it is designed to impart the substance or the essential part of the table of grades may be carried in the mind of such players, so that they may play without constant reference to the printed table. Such table will, however, continue to be a necessary part of the game apparatus, as even long study will not preclude mistakes, and there must be some means of settling disputed questions, and because, moreover, but few players will ever become such complete masters of any scientific classification of this kind that they can wholly dispense with the table of grades.

The games for which originality is claimed are all based upon the fact or principle that some of the examples excel in certain characteristics and other examples in other characteristics, so that a player noticing a relation or characteristic in which his cards excel, and making that the cue or basis of play, is likely to have advantage over other players, while incidentally from referring to the table of grades his knowledge of these relations is constantly increased.

As it is a principle in teaching to begin with the known, so usually we also adapt the cards to some ordinary game—as whist, authors, and solitaire—the cards being divided into groups corresponding with a classification of the subject pursued, and usually corresponding with the four suits of ordinary card-playing. Thus in general history four classes of nations are used in connection with the game Ethnomia, viz: first, barbarous or savage tribes; second, absolute monarchies; third, limited monarchies; fourth, free government, the same number of examples being selected for each class, viz: the Papuans and nineteen other tribes for the first, Persia and nineteen others for the second, Great Britain and nineteen others for the third, the United States and nineteen others for the fourth. Each of these examples is analytically graded as regards a select list of topics—such as area, climate, location, latitude, longitude, mean elevation, soil, race, religion, spoken language, written language, literature, dwellings, industries, modes of transit, money, revenue, wars, revolutions, dynasties, duration, education, scientific research, &c.

In other subjects little or no reference is made to the games of ordinary playing-cards, less or more than four suits being employed. Thus in the game of Lithonomia, pertaining to mineralogy, the minerals and their compounds are arranged in three classes—first, natives or simples; second, binaries; third, ternaries—the examples under each class being graded as regards hardness, color, luster, texture, feeling, specific gravity, clearness, cleavage, fracture, solubility, effervescence, &c., the game being arranged so that when one of these topics is named by a player as the cue or basis of play the relative values of the examples range accordingly, as shown in the table of grades accompanying the cards.

A similar method is employed in applying this device to the history and geography of separate countries, as the United States, each State and Territory being graded as regards location, area, discovery, settlement, trade, transit, mining, manufactures, fisheries, population, education, &c.

The exercises and games in the above are (preferably) arranged without reference to suits.

In other subjects of study—as biography, botany, and zoölogy—it is found most convenient to employ several packs or groups of cards corresponding to the main divisions of the subject considered. In zoölogy I prefer to employ two packs, to be used alternately, as is frequently done at present in playing whist, one pack relating to invertebrata and the other to vertebrata. The invertebrata are divided into four classes—Protozoa, Radiata, Mollusca, and Articulata—and the vertebrata

similarly divided into four groups—Pisces, Reptilia, Aves, and Mammalia. Fifteen orders, with one example under each, is found to fairly represent each class, and for a game played after the manner of whist this number is found convenient, seven tricks being required to make a book instead of six.

In practice I prefer to give the scientific name of the class or division, followed by an abbreviation of the name of the author who first adopted such name, then the meaning of the name in common terms, and an example of the order with its common and scientific name. This will be better understood from the following table, showing the subdivisions of the first and lowest class:

PROTOZOA (V. S.)

(First animals.)

Sub-class.	*Order.*	*Example.*
Rhizopoda (Du.) (root-footed)	Protoplasta (Hæ.) (first mold)	1. Amæba (E.)
	Gregarinida, (Duf.) (gregarious parasites)	2. Gregarina.
	Foraminifera (D'O.) (bearing holes)	3. Lagena.
	Radiolaria, (little rays)	4. Podocystis.
Flagellated (M.J.) (whip filament) Infusoria (Le.)	Rhizo-flagellata (Ke.) (with pseudopodia)	5. Mastigamæba.
	Flagellata (M. J.) (whip filaments only)	6. Euglena.
	Choano-flagellata (Ke.) (with collar)	7. Monosiga.
	Myxo— (mucus) / Calcis— (lime) / Silico— (silex) / Kerato— (horn) } Spongida.	8. Common sponge.
	Cilio-flagellata (C. & L.) (with cilia)	9. Asthmatoscilliaris.
Ciliated (P.) (eyelash) Infusoria.	Holotricha (S.) (all hair.)	10. Paramæcium.
	Heterotricha (S.) (unlike hair)	11. Stentor.
	Hypotricha (S.) (hair under)	12. Chilodon cucullulus.
	Peritricha (S.) (wreathed hair)	13. Vorticella.
Tentaculated (H.) Infusoria.	Suctoria (C. & L.) (suctorial tentacles)	14. Podophrya.
	Actinaria (Ke.) (adhesive tentacles)	15. Ephelota.

As classifications are only valuable to aid the memory after a subject is somewhat thoroughly understood, the scientific terms as classes, sub-classes, and orders, it should be born in mind, are placed upon the cards largely as a matter of convenience and for study, after a due familiarity with the examples and their chief characteristics has been obtained.

Though the list of topics may be varied indefinitely in the various subjects to which this device is applied, in zoölogy I prefer to use the following characteristics:

1. Shape.	15. Sleep.	28. Metamorphosis.
2. Skeleton.	16. Repair.	30. Increase.
3. Affinities.	17. Defense.	31. Duration.
4. Habitat.	18. Dwellings.	32. Molecular forces.
5. Mouth.	19. Locomotion.	33. Economic uses.
6. Dentition.	20. Digestion.	34. Nervous system.
7. Prehension.	21. Greatest age.	35. Communication.
8. Food.	22. Greatest extent.	36. Smell.
10. Absorption.	23. Greatest weight.	37. Taste.
11. Circulation.	24. Greatest speed.	38. Hearing.
12. Respiration.	25. Origin.	39. Sight.
13. Secretion.	26. Incubation.	40. Intelligence.
14. Excretion.	27. Infancy.	

In zoölogy, which may serve to illustrate the application of this plan or device, the branch of science or study taken as a basis for the game or method being immaterial, all of the one hundred and twenty examples are graded in an accompanying table under each one of the above topics. Thus the gradations of the topic "Dentition" are as follows:

Dentition, graded as to size and number of teeth.—I. Teeth wanting: Protozoa, 1 to 15; Radiata, 1 to 13, 15; Mollusca, 1 to 8; Articulata, 1, 2, 4, 11, 13, 14; Pisces, 1, 8, 10; Reptilia, 5 to 8; Aves, 1 to 15; Ant-eater.

II. Triturating-plates or mandibles, Sea-urchin; Sea-hare; Articulata, 3, 5 to 10, 12, 15; Mammalia, 1, 5.

III. Teeth very minute: Mollusca, 9, 10, 12 to 15; Pisces, 2, 6, 7, 14; Reptilia, 1, 3, 4, 11.

IV. Teeth medium or large, not exceeding the typical number 44: Pisces, 4, 5, 9, 12, 15; Reptilia, 2, 9, 10, 12, 15; Mammalia, 2, 4, 6 to 15.

V. Exceeding the typical number 44: Pisces, 3, 11, 13; Reptilia, 13, 14.

In the game Zoönomia, when a player makes the cue or basis of play Dentition, the cards rank as indicated above, the Ichthyosaur, No. 14, Reptilia, being the highest in rank; but when the topic Circulation is cue, the Manatee being highest in rank, the cards rank as follows:

Circulation, graded as to complexity of organs.—I. No heart or blood-vessels: Protozoa, 1 to 15; Radiata 1, 3 to 11; Mollusca, 1, 2.

II. Musical cavity and vein: Radiata, 12, 13, 14, 15.

III. Alternate circulation in the same vessels: Sertulalaria, Tunicata.

IV. Dorsal and ventral tube without valves: Earth-worm.

V. Dorsal vessel with numerous segments and valves: Insecta.

VI. A pyriform vesicle, a muscular heart of one chamber, or short dorsal vessel: Brachiopoda; Articulata, 2 to 8; Lancelet.

VII. Heart of two cavities, circuit incomplete: Mollusca, 7 to 13.

VIII. Heart of two cavities, circuit complete: Pisces, 2 to 14.

IX. Heart of three cavities: Cephalopoda, Mud-fish; Reptilia, 1 to 14.

X. Heart of four cavities, but arterial and venous vessels united: Crocodile.

XI. Heart of four cavities relatively weak: Mammals, 1, 2, 3, 5 to 15.

XII. Heart of four cavities relatively strong: Birds, 1 to 15.

XIII. Heart of four cavities strong, with deeply-cleft septum: Manatee.

The faces of the cards will preferably bear an illustration or picture of the particular example which the card represents in its class in certain subjects, with the name simply attached, and in others with a full classification, including the scientific names and the significations of such names in common terms.

Figure 1 represents the actual front of a card of the fourth class in Ethnomia, or Historical Game of Nations; Fig. 2, the reverse side of the same card. Fig. 3 represents the front of

the card illustrating Order No. 1 of the class Reptilia in the Game Zoönomia; and Fig. 4, the reverse side of the same card.

I am aware that games have hitherto been devised in which instruction has been combined with amusement by classing the cards under headings representing different divisions of some scientific or educational subject—as races of mankind, divisions of the animal and vegetable kingdom, &c. I am not, however, aware that any one has hitherto proposed to grade the cards of the several divisions according to the peculiarities or characteristics of the representatives of each class, and thereby to make each card represent a value corresponding to the position which the example represented by it occupies in the class or family to which it belongs. The fact that while each example may stand above or below others in value, considered generally, it may not do so as to certain points or matters in regard to which it is graded, adds vastly to the value of the plan for educational purposes, and enlarges the scope of the game greatly.

It is particularly to be observed that the gradation is not arbitrary and meaningless, but that it is based directly upon a careful and scientific analysis of the main classes and of the minor divisions of such classes.

Having thus described my invention, what I claim is—

1. A game apparatus consisting of a pack of cards each bearing a list of topics or trump subjects, with reference-characters annexed thereto, and a table of values having corresponding reference-characters, and showing the values of the cards under each of the trump topics or subjects which the cards bear.

2. A game apparatus consisting of a pack of cards each bearing a list of topics or trump subjects, the value of the cards varying according to the topic or trump subject selected, and a table of topics or grades showing the relative values of the cards.

3. A game apparatus consisting of a pack of cards and a table of values, the cards being provided with a list of topics or trump subjects, under each of which topics the values of the individual cards vary, and the table of values showing the value of each card under each trump subject or topic.

HYLAND CLARE KIRK.

Witnesses:
WM. H. C. NEIGHBOR,
JOHN H. ROY.