

THERMOPHONES.

BY G. R. CAREY.

Figs. 1 and 2 represent magneto-thermophones. In Fig. 1, A is the transmitter, which consists of a highly polished thin mirror, similar to Prof. Bell's photophone transmitter; B² is a hollow iron ball which forms the pole of the magnet, D. This ball should be made very thin and covered with lampblack in order that it may absorb and radiate its acquired heat rapidly. C is an insulated helix of copper wire placed around the pole of magnet, D, and having in its circuit the receiving telephone, E. Sound waves of any kind generated before transmitter, A, will cause the reflected heat and light waves to undulate in unison with the sound waves; these undulatory heat and light rays will strike the pole, B², of magnet, D, producing corresponding variations in its strength, thereby generating magneto-electric currents in coil, C. These magneto-electric currents will correspond in time and strength with the sound waves made before transmitter, A, and will reproduce by means of telephone, E, any sound made before transmitter, A.

The operation of instruments shown in Fig. 2 is similar to that just described; the difference is mainly in the transmitter, which consists of a manometric flame apparatus, A, of the usual construction, the light and heat of the flame, B, being projected by the mirror, M, to the magnet of the receiver.

In Fig. 3 the receiver is a thermopile connected with a receiving telephone. The heat and light thrown by the reflecting transmitter, A, generate an undulating electric current in the thermopile, C, which produces audible effects in the telephone, E.

In Fig. 4, the chamber, A, of transmitter is supplied with gas by the tube, F. Speaking against the chamber, A, will produce undulations in the inclosed gas corresponding in time and strength with the sound waves generated before it, thereby vibrating the flame, B, and its emitted heat and light rays. These modified heat and light rays will generate electric currents in the thermo-electric pile, C, against which they strike, and these thermo-electric currents corresponding in time and strength with the sound waves at the transmitter, the magneto-telephone, E, being in the circuit of the thermopile, C, will reproduce any sound made before chamber, A, of the transmitter.

The Atlanta Exhibition.

The plan of the proposed Cotton Exhibition at Atlanta, Ga., next October expands rapidly with the popular demands made upon the management. The indications now are that the Exhibition will be not merely a successful cotton show, but one which will include, also, all the great industries of the South, and so much of those of the North as are tributary thereto. The Exhibition buildings have been multiplied and enlarged accordingly. The main building, which is now in process of erection, will be 750 feet long by 90 feet wide, with a transept 500 feet by 90 feet.

The Exhibition will be held in Oglethorpe Park, chiefly a flat meadow surrounded by an oblong race-course half a mile in length. Outside the race-course the ground rises and will be terraced for the accommodation of the subordinate buildings of the Exhibition.

The main building will be devoted to exhibits of textile fabrics and the machinery for producing them. Another building, 250 feet long by 100 feet wide, will be filled with machinery for preparing sugar, rice, and similar products. A still larger one will contain exhibits of all varieties of tobacco, its products, machinery, and everything connected with it. A building on the plan of that which contained the Kansas and Colorado exhibits at the Centennial Exhibition will be given up to a comprehensive display of the agricultural, the mineral, and the woods of the South. This display is to be made chiefly by the Southern railroads, which are cooperating to make it the fullest and most comprehensive ever seen. All the territory south of the Ohio River will be ransacked for suitable objects to show here, and the result is expected to be a most important display of the surface and underground wealth of the South.

An annex to the main building will be known as the Foreign Department, and will be a bonded warehouse, under charge of a Treasury special agent, for the display of such foreign exhibits as the proprietors do not wish to pay duty on. This important concession has been made by Secretary Windom, and will secure a large amount of foreign exhibits. Letters have been received from a large number of manufacturers in various European countries, who express a desire to enter machinery for exhibition, but object to paying duties on it unless it is sold in this country, which, of course, could not be promised. In addition

to the buildings mentioned there will be a large restaurant for the accommodation of visitors, and Director-General Kimball is particularly interested in "a press pavilion," which he intends putting up for the use of visiting journalists.

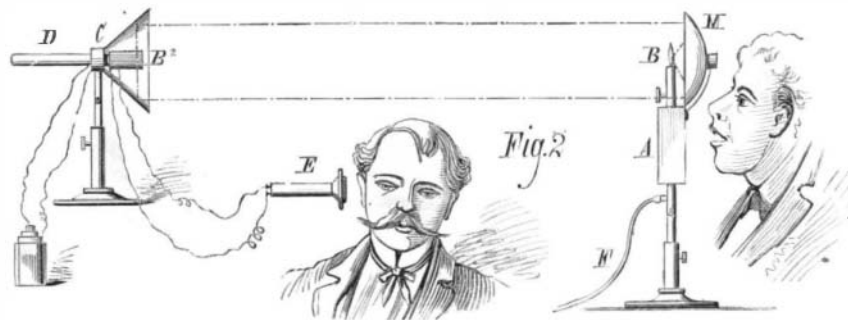
An exhibit which will probably attract the attention of more visitors than any other will be a cotton field, showing



MAGNETIC THERMOPHONE WITH REFLECTING DIAPHRAGM TRANSMITTER.

the plant in all stages of growth. Thirty acres of the park have been laid out in half-acre lots, and given to as many different planters for a competitive trial of skill in cultivation.

Pains have been taken to make this a complete display of every variety of cotton in the world. Seed has been imported from Africa, India, and other parts of the world, sometimes at great expense, a single half pound of a certain



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fare variety having cost \$200 in gold. This plantation has been already seeded, and is now being cultivated under the general direction of Mark Hardin, a well-known representative Southern planter. Material for another interesting display is being gathered by Mr. Edward Atkinson, who has charge of the foreign exhibit of fabrics and fibers, and is collecting specimens of every variety of cotton goods, fibers, and primitive machinery for treating them. He is ransacking

MISCELLANEOUS INVENTIONS.

An improved axle box, patented by Mr. Willis Jones, of Brooklyn, N. Y., is designed to secure perfect lubrication of the journals and boxes of the axles of vehicles, securing as collateral advantages the exclusion of dirt, sand, or other abrading material from the bearing surfaces of axles and boxes.

Messrs. Robert Dodsworth and John W. Holdsworth, of St. Louis, Mo., have patented an improved mouth-piece for speaking tubes and telephones, which consists in combining an electric circuit closing device with the cover of the mouth-piece of the tube or telephone in such a manner that when the cover is opened the circuit shall be momentarily closed to give the signal.

An improved vertically swinging gate has been patented by Messrs. John Flinner and Jacob Hollinger, of Millersburg, Ohio. This invention consists in a peculiar arrangement of a locking mechanism for holding the gate down and preventing it from being raised, except when it is to be raised by the working levers.

Messrs. Frank Baldwin, of New York, and Howard Selvage, of Brooklyn, N. Y., have invented a scarf, so constructed that it can be folded in different ways, and will present a fresh wearing surface each time.

Messrs. John B. Grégoire and Hubert Hebert, of Lake Linden, Mich., have patented an improved bedstead. This bedstead has a horizontal frame supported by suitable legs, and provided with a series of transverse or longitudinal spring slats, upon which blocks supporting a like spring slat frame rest, this latter frame being provided with springs on both sides and with a hinged adjustable head rest.

An improved heat reflector for fireplaces has been patented by Mr. John Southward, of Mount Sterling, Ohio. This invention relates to certain improvements on the invention for which letters patent No. 197,205 were granted to William J. Cox and to the present inventor, under date of November 20, 1877.

An improved fabric for the manufacture of packages in which to put up ground coffee, spices, baking powder, and other substances which deteriorate by exposure to the air or to moisture, and which will serve to preserve their aroma or other desirable qualities for a long time, has been patented by Mr. Henry

C. Crocker, of Milwaukee, Wis. The improvement consists in a paper fabric formed of one layer of waxed paper inclosed within two layers of common paper, whose edges project over that of the waxed paper and are pasted together.

Mr. Edward Birmingham, of Brooklyn, N. Y., has patented a shirt ironing board having a projection and rounded shoulders upon its forward end to fit the neck and shoulders of a shirt, and having slotted arms upon its rear corners, a pair of rollers for holding the shirt, and a handle for turning the rollers.

Mr. Friedr. Adolf Reihlen, of Stuttgart, Württemberg, Germany, has patented a process of making wine from grapes, which consists in exposing for a few minutes to a water bath kept at a temperature of 212° Fahr. the mass of seed, flesh, and skins remaining after expression of the must; also macerating them in water or grape juice, and in mixing them with the must.

A spring cushion support for carriage seat backs has been patented by Mr. Charles C. Bailey, of Wellsburg, N. Y. This support is for the cushions of carriage seat backs between the seat backs and the lazy backs, to

hold the cushion out against the backs of persons riding in the seats and prevent the cushions from sagging.

An improved travois or horse litter, especially designed for military purposes for the transportation of the sick and wounded, has been patented by Mr. Thomas M. McDougall, of Fort Yates, Dakota Ter. The novelty consists in pivoting the forward ends of the bed frame to the long shafts between which the draught animal is attached, and in providing hinged and adjustable legs or supports for the rear end of said frame, whereby it may be supported at different elevations; also, in providing an elastic or yielding socket for such supports.

An improved engineer's level rod has been patented by Mr. Michael L. Lynch, of Cameron, Texas. This invention relates to the class known as "self-reading level rods," and is distinguished from others by the peculiar manner of marking the scale upon the face of the rod, whereby the readings of fractions of a foot may be readily made without the use of a sliding target.

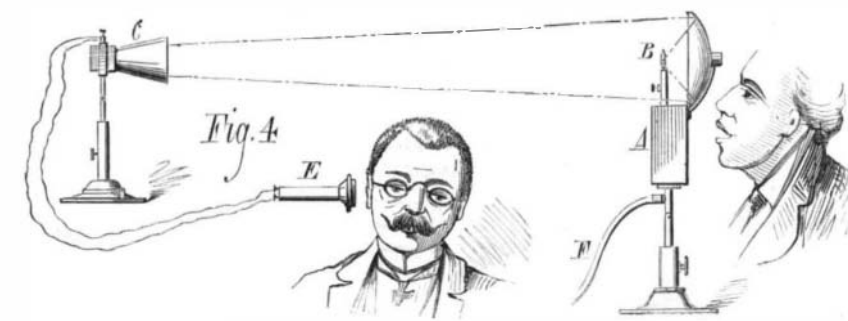
Mr. Charles A. Schneider, of New York city, has patented a lamp wick impregnated with a compound consisting of phosphate of ammonia, biborate of soda, sulphate of ammonia, and chloride of lithium.



THERMOPHONE WITH THERMO-ELECTRIC RECEIVER AND REFLECTING DIAPHRAGM TRANSMITTER.

every portion of the world to make his gathering complete. A full display of agricultural implements will also be made.

There will also be a number of special exhibits of horses, cattle, hogs, etc. There will also be poultry and bench shows, and an agricultural and horticultural fair.



THERMOPHONE WITH THERMO-ELECTRIC RECEIVER AND MANOMETRIC FLAME TRANSMITTER.

The management of the Exhibition has been committed to H. I. Kimball, Director-General, with twelve chiefs of departments, several of whom have already been appointed.