

BUILDINGS OF THE PARIS EXPOSITION OF 1878.

The engravings of the Paris Exposition of 1878, which we present this week, are a general view of the French capital, showing the location of all the exhibition buildings and a representation of the central entrance to the main vestibule of the chief structure. We have already fully described the two great edifices in which, it is now asserted, the greatest World's Fair ever known will be held. On one side of the Seine, on the Champ de Mars, is the Exhibition building proper, and on the other, on the Trocadero, the palace which will be mainly devoted to art handiwork. The total floor space covered by both buildings is 2,150,000 square feet. The palace of the Trocadero is from one pavilion to the other about 1,330 feet in length, the pavilion at the extremities being connected with the great central rotunda, from the foot of which will flow a cascade, by galleries forming segments of a semicircle. From all parts of Paris, the two immense towers, 260 feet in height, which flank the Trocadero, will be visible.

The principal entrance is to be at the middle, and at each end are two immense domes of iron and glass, surmounted by lanterns and flagstaves. The gardens stretch out from each side of the façade between the palace and the avenues, and will contain a number of small buildings, kiosks, model farms, cottages, and the like. The height of the new structure may be imagined when it is stated that that of the vestibule is 82 feet.

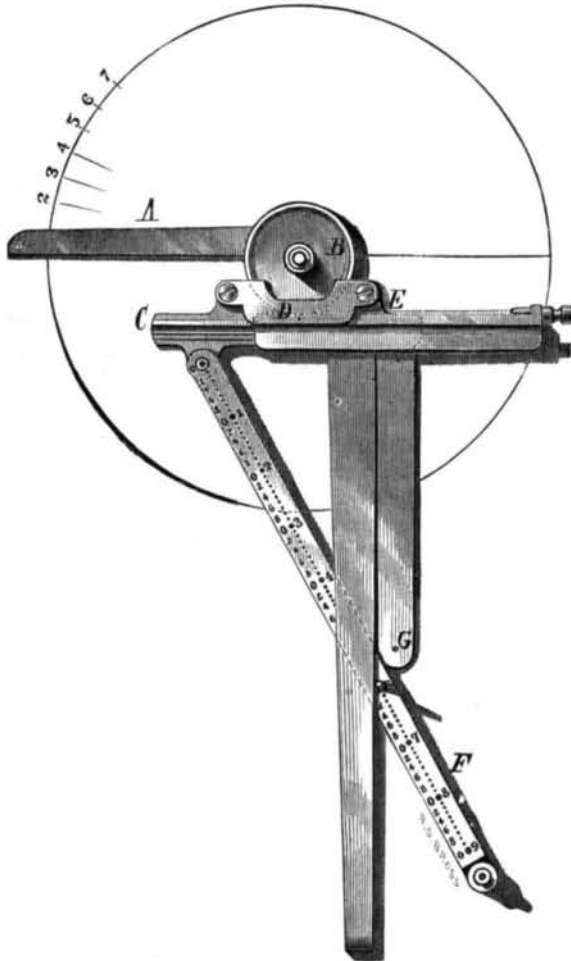
Commissioner General McCormick has opened his office at room 24, second floor of the New Post Office building in this city, and to him applications for space may now be made. The space allotted to the United States in the Main Building adjoins that given to Russia, and measures 400 by 100 feet. Of this three fifths will be given to industries, one fifth to machinery and one fifth to food products. Already over four hundred applications for space have been filed, the American Union of Paris Exhibitors having turned over all their business to the Commissioner. Printed forms can be obtained by addressing the Commissioner General as above.

STOLP'S COMPLETE GEAR INSTRUMENT.

Of the various contrivances used to transmit and modify power, toothed gearing stands second, if, indeed, it cannot justly claim the first position in the order of importance. Ready means for its correct construction should therefore be in the hands of all designers. But the great abundance of rattling machines, put in places where we ought to find truthful gearing, indicates that sufficiently simple and easy means for correct delineation are not at the hand of the majority of designers. The instrument illustrated herewith is claimed to so far remedy this evil as to leave no longer any excuse for noisy gearing. It divides the circle, or any part of it, into any desired number of equal parts or pitch spaces; finds the radius of a circle of given pitch; gives the length

and thickness of tooth according to any given rule; forms a substitute for the Willis odontograph, giving the centers for the tooth curves; or gives the lines to be used for placing in position the new templet odontograph.

A is an arm or straight edge attached radially to a central wheel, B, so as to swing with it, to any position on the arc

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to be divided. B is mounted upon a hollow taper stud, which projects up from an extension from the main frame or bed piece, C. A centering pin is passed through the hollow stud into the drawing board, to center the instrument, and a second pin is attached in the end of the arm, G, to be pressed down to fasten the instrument in position. A T square, E, fits to slide nicely in dovetailed groove in bed piece, C. A clip, D, holds the T square properly in the groove. A steel wire attached at one end of the head of the T square, passes around the wheel, B, and is there fastened

to it. A second wire is secured to the opposite end of E, passing in the opposite direction around B, and there made fast. A thumb screw takes up the slack. Now when B and A revolve around the center stud, the T square is made to slide in its groove by the wires winding and unwinding from B. It is evident that, when A thus swings through equal angular spaces, the long arm of the T square will be displaced laterally by equal spaces.

Now if any scale of equal parts be placed under the arm of E, to be used as a guide in turning A, it is plain that equal spaces or angles will be laid off on any circle concentric with B, also if the scale be inclined more or less, say like the bar, F, these inclinations will result in different angles at A. Hence if, for instance, any scale be set at such an angle under E that 50 divisions are passed over by E while A moves through 180°, the semicircle will, of course, be divided into 50 parts; in like manner any arc may be divided into any number of parts, also any angle can be laid out.

But ordinary scales will require careful sighting. Each instrument is accompanied with one or more scales formed by drilling holes in a bar, F, into which a pin is set at the desired places, thus forming a stop for E; one end of F is jointed to C, and the other is secured to the drawing by an adjusting pin.

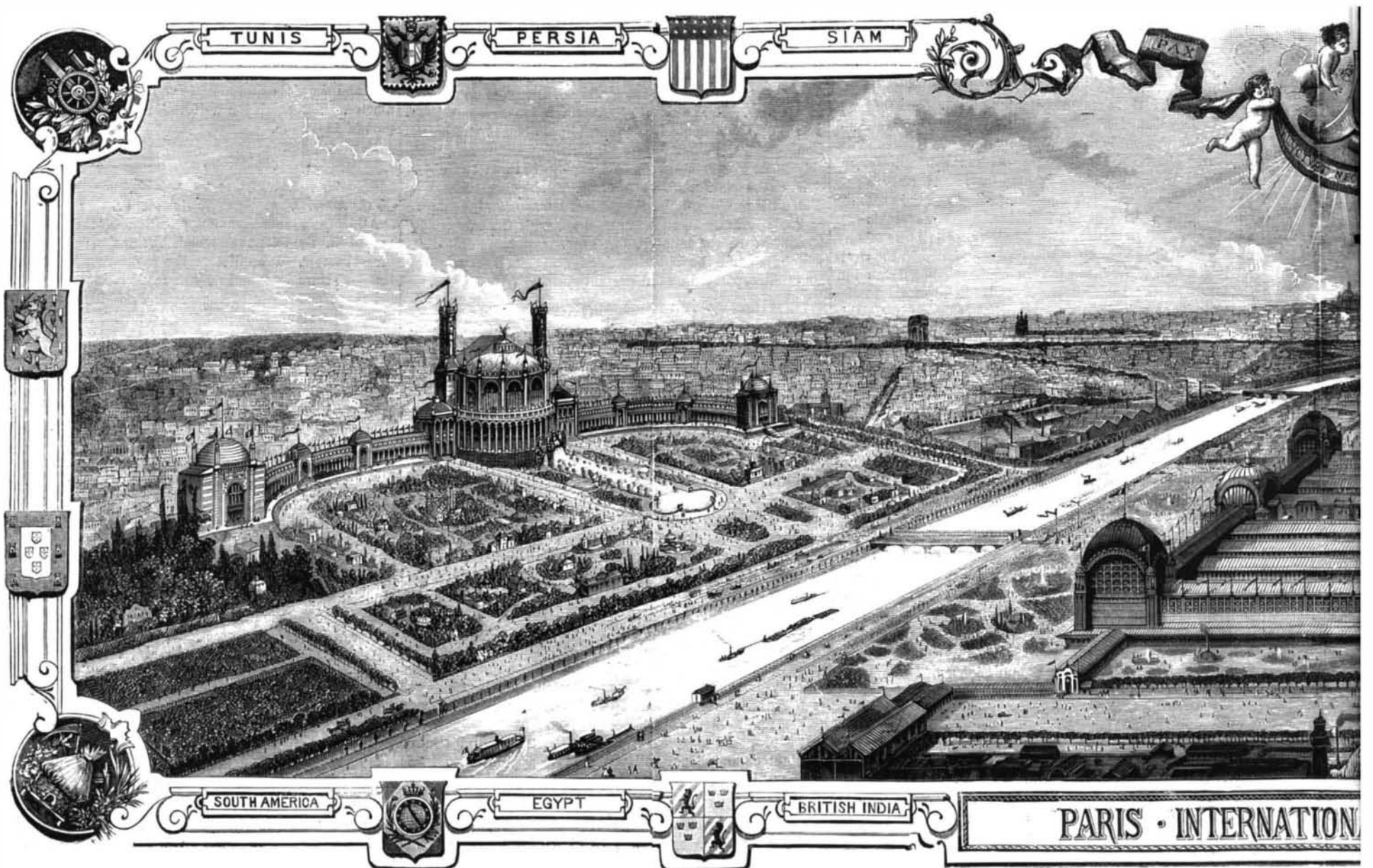
Now, for the first operation above named, center the instrument and place the pin in F at its zero point; then with F against the pin, place A at the initial point of the arc, secure bed plate, C, by pressing in pin, G, into the board; then remove A to the other end of the arc to be divided, at the same time placing pin in F at the hole whose number equals the number of divisions required in the arc or circle to be divided. The points of division are then noted by a pencil or scribe while E rests against the pin for each position in F. The arc divided at one fixing of G may be 180° or less. To divide the other half of the circle, place G at a new position distant 180°, and proceed as before. The operation is the same for an odd number as for an even number of divisions.

We have not space to describe in detail the other operations of the instrument, full particulars regarding which may be obtained by addressing the inventor as below.

In addition to its capabilities already noted, the device gives the correct shape for the cutters of a gear cutter and the size of the blanks to be cut. It is easily worked and understood, and is claimed to reduce the tedious and difficult operation of laying out correct gearing to a very simple proceeding.

Patented by M. G. Stolp, Civil Engineer of Aurora, Illinois, who may be addressed for further information.

M. J. SCHUMEISTER has recently experimented on the heat-conducting power of silk, cotton, and wool. That of air being taken as unity, he finds that of cotton to be represented by the number 37, of silk 11, and of wool 12.



Bell's Telephone.

At a recent lecture by Professor Bell on the speaking telephone, Sir William Thomson introduced the lecturer to the audience by the following remarks:

"That evening there was to be brought before them one of the most interesting of the scientific inventions that had been made in this century, or that had ever been made in the history of science—(applause)—the conversion of the quality of speech into motions of electricity, and the reproduction of the effect in audible sound. (Renewed applause.) They might have heard of telephones before that which was now to be brought under their notice. There were telephones before that of Mr. Graham Bell, but those telephones differed from Mr. Bell's in the same sense as a series of claps of the hand differed from the human voice. The previous telephones were in fact electric clappers. (Laughter.) They were instruments in which, by electric action, a succession of shocks, produced by stopping and starting the electric currents suddenly, were produced. Mr. Graham Bell conceived the idea—the wholly original and novel idea—of giving continuity to the shocks, and of producing currents which would be in simple proportion to the motion of the air produced by the voice, and of reproducing that effect at the remote end of the telegraphic wire—reproducing that effect at distances of a few miles, or of scores of miles, with a motion as nearly similar to the motion of the air caused by the voices as that not only was the articulation of the voice heard distinctly, but the different qualities of different voices are heard—(applause)—so that through the telephone, at a distance of 50 miles, one could not only tell what the words were that were being spoken, but they could tell who the person was that was speaking of all the 900,000,000 people living on the earth."

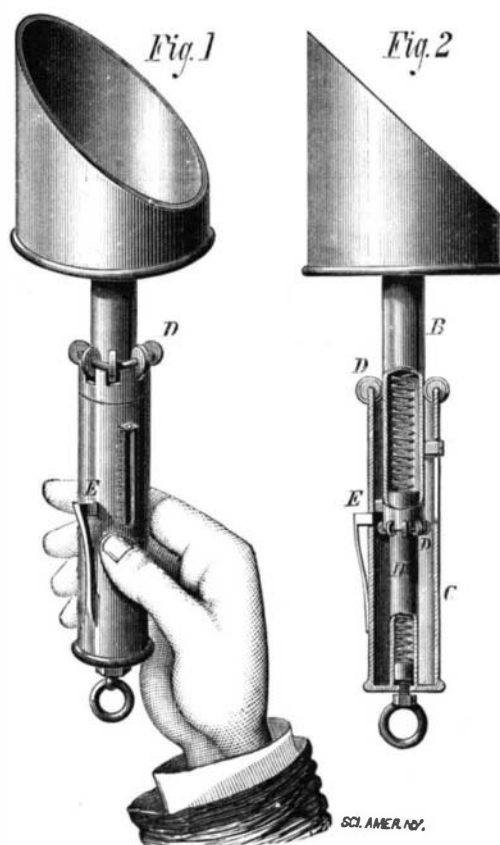
Iridescent Glass.

A process for making glass iridescent has been patented by M. Clémandot. Beautiful effects are produced. The main feature of the process is the application of acids to the glass, under a pressure of from two to five or more atmospheres. Water containing fifteen per cent of hydrochloric acid is used to bring out rainbow tints like mother-of-pearl; and artificial gems of various sorts are have thus been manufactured. The glass is prepared by these processes is quite as iridescent as is that which antiquaries so much value, the pressure and the acids hastening a result that the ordinary agencies of the atmosphere would take centuries to produce.

THE steamer City of Berlin, which became disabled on her last voyage from New York to Liverpool, was lately put on the dry dock. An examination shows that the screw shaft was not broken as was supposed, but that the key of the propeller had given way and the screw became loose on the shaft.

MERY'S WEIGHING SCOOP.

The annexed illustration represents a novel combination scoop and weighing device. The scoop has its movable stem, B, Fig. 2, sliding in the handle, C, and outside the spring case, H. The rollers, D, serve to keep the stem in position, so that the stem may work free; also to prevent friction while weighing. A similar set are fixed to the lower end of the stem, so as to work between the outer and inner case. A



spring stop, E, is so arranged on the handle as to be directly under the thumb when the handle is grasped, and a slight pressure of the thumb on it when the scoop is thrust in any material, prevents the stem from being pressed back. A spiral balance spring plays within the case, H, and is made fast to the inside lower end of the handle. A nut and thimble at the lower end adjust the tension of the spring. A graduated scale is fixed on the handle. When the material to be weighed is raised up in the scoop, the stop is released, and the balance being free to act, the weight of the material will show on the scale. This arrangement of the scoop and scale gives

two useful articles in one, and is very serviceable where a large amount of material has to be divided by weight into small quantities. The arrangement of the thumb stop protects the spiral balance from damage, and facilitates the scooping up of any hard, unyielding material. It is an article which will meet with much favor in the household. Patented October 16, 1877. For further information, address the inventor, Michael L. Mery, Chico, Cal.

New Inventions.

In a Car Coupling patented by Warren Montfort, of Eminence, Ky., the drawhead has a top recess tapering rearward and downward. The top shoulder has a lateral recess forming a shoulder. A hook-shaped drop pin, tapering downward, fits into the recess of the drawhead. The entering link pushes the hook back, raises it into an inclined position, and finally passes far enough back so that the hook, by its own weight, drops into the link. It is simple and effective.

Washington Wilson, of New York city, has patented a Standing Collar which has sectional bands, starting from the center of the collar and continuing, with a graduated curve, to and beyond the ends. It produces a saving of material and hugs the neck band in superior manner.

A Nut Lock invented by Madison Calhoun, of Ocate, New Mexico Territory, consists in the combination of a plate, having its ends bent down and an oblong hole in its center, and another plate with a screw hole formed through its center, and provided with points susceptible of being bent down with the nut and the flattened end of the bolt. It is convenient in use and effective in operation.

A Washing Machine has been patented by J. C. Smith, of Ashton, Ill. By moving crossbars back and forth, two rubbers move over each other, rubbing and pressing the clothes between them, and making them clean in a very short time. The action is similar to hand rubbing, the rubbers always moving in opposite directions.

An Adjustable Ladder patented by George Crawford, has a curved arm and pivoted bar for catching in trees and holding the ladder firm. Notched plank rest on transverse rods, secured by a simple device. It is of much value to painters and carpenters.

A Cooking Stove invented by G. A. McFadden, of Jordan Station, Ky., has a damper at the forward end of the oven, with a flue extending along the top, down its rear side, and connecting with a flue at its lower rear corner, and also a flue extending down the forward side, along its bottom, and connecting with a flue at its lower rear corner. Heat may thus be sent in equal quantities above and below the oven.

A Book Support patented by Almon Clarke, of Sheboygan, Wis., had a double supporting arm, which is adjustable as to height and angle of inclination on a screw post of the chair by a toothed clamp and guide device, the book rest being adjusted by a second toothed clamp device at the upper end of the supporting arm. It is a cheap and convenient article.

