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.

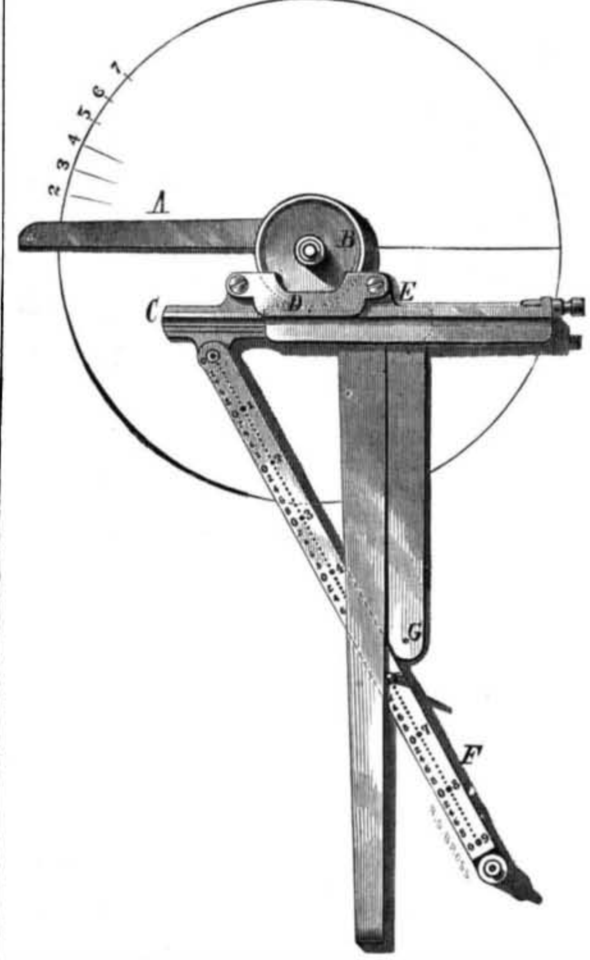
The principal entrance is to be at the middle, and at each end are two immense domes of iron and glass, surmounted by lanterns and flagstaffs. The gardens stretch out from each side of the façade between the palace and the avenues, and will contain a number of small buildings, kiosks, model farms, cottages, 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 simply 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



STOLP'S COMPLETE GEAR INSTRUMENT.

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.