

The group is designed in the graceful Ionic style, accentuated at the main entrance of the central building by a Corinthian order of majestic proportions, thus giving the structure the characteristic appearance of an art building. To the centre of the main building rises a pedimented construction to a height of 40 feet. The architect of the three larger structures is Cass Gilbert, of New York, while E. L. Masqueray designed the Sculpture Pavilion.

The Palace of Agriculture is 1,600 feet long, 500 feet wide, and covers 20 acres. It cost \$529,940. It was designed by E. L. Masqueray. The fronts of the building are practically a successive series of windows, each 75 feet long and 27 feet high, each window being placed 14 feet from the floor, so as to allow the use of the wall space inside for exhibits. Triangular monitor windows supply skylight, while they cut off the direct sunlight, which would quickly spoil many exhibits which this building will contain. The grand nave, 106 feet wide, which runs through the entire 1,600 foot length of the building, rises to a height of 60 feet and supplies what is here regarded as the grandest vista of installation space of any building ever designed for exposition purposes. Some idea of the immensity of this building is obtained when it is known that the Madison Square Garden, of New York, covers only two acres, and that the Palace of Agriculture is ten times as large, and that this palace also covers twenty times as much ground as the hotel Waldorf-Astoria, forty times the space covered by the Planters' Hotel, in St. Louis, and is more than three times the size of the Coliseum of Rome.

The Palace of Horticulture, designed by E. L. Masqueray, is 800 feet long, the main central section being 400 feet square. The east wing of the building is a conservatory 204 by 235 feet in area and 40 feet high, the west wing having the same proportions.

The exhibits of Forestry, Fish and Game are in a building having a frontage of 300 feet north and south, and 600 feet east and west. This building and those devoted to Agriculture and Horticulture are in line south of the Administration Building.

The Palace of Mines and Metallurgy is 750 feet long, and 525 feet wide, and covers about nine acres. It is 60 feet high to the cornice. It cost about \$500,000. It was designed by Theodore Link, of St. Louis, the designer of the St. Louis Union Railway Station. This building is situated in the southwest portion of the grounds, and is the largest structure provided, thus far, for mining exhibits at an exposition. The entrance shows Egyptian style, but the building in its entirety is an expression of the modern Renaissance. The building is divided into eight oblong parts almost equal in area.

The building for the exhibits of the United States Government is the largest structure ever built by Governmental authority for any exposition. In size it is 800 by 250 feet, and \$450,000 were set aside for its construction. It occupies a commanding site in the extreme eastern part of the World's Fair grounds. Southeast of it lies the high plateau on which are situated various State buildings. The Government building faces to the northwest, overlooking the main picture of the Fair. On the terrace in front of the building a flight of steps, 100 feet from side to side, leads through a flower garden to the main entrance. The general style of the building is Pseudo Classic. The central pavilion, surrounded by a broad dome, is connected with pavilions on the ends with a colonnade of Ionic columns five feet in diameter and 45 feet high. The central pavilion, with the colonnade on either side, forms a portico 15 feet wide and 524 feet long, 50 feet above the level of the other buildings. An attic 15 feet in height, embellished with statues, surmounts the colonnade of Ionic columns. The dome surmounting the central pavilion is 100 feet in diameter, and is designed after the Pantheon at Rome. The top to the quadriga, which surmounts it, is 175 feet above the ground. The building was designed by James Knox Taylor, supervising architect of the Treasury Department. He also designed the Government Fisheries Pavilion, situated south of the Government Building, and connected with it by a grand stairway. This pavilion, 135 feet square, is a reproduction,

line for line, of a Roman dwelling house of the Pompeiian type.

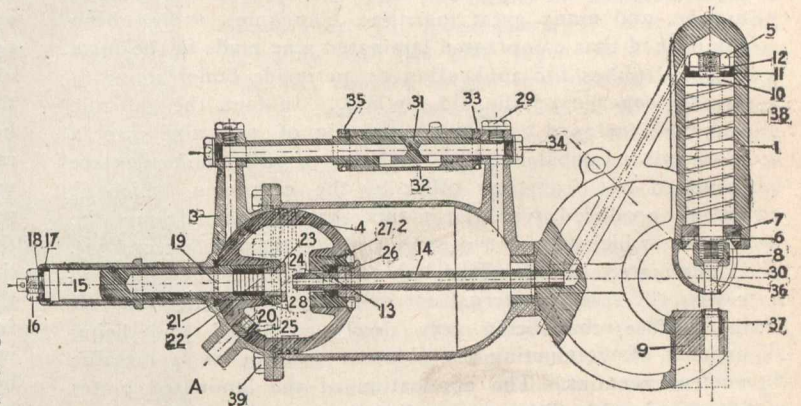
The various magnificent Palaces of the Louisiana Purchase Exposition are all part of a harmonious scheme worked out by the architects assembled together as a commission. The style adopted is described as "A free treatment of Renaissance."

A half million dollars is being spent for the sculptural adornment of these buildings and the grounds, and the genius of the architect and the sculptor and the painter will be fused into one harmonious picture—the greatest exposition achievement of all time to open the twentieth century.

A. C. CANTLEY.

CASKEY PNEUMATIC PUNCH.

This device, recently placed on the market by the Chicago Pneumatic Tool Co., 1010 Fisher Building, Chicago, is another of the constantly increasing examples of the successful application of compressed air to mechanical work. The first Caskey punch ever built, while of crude design and entirely different from the finished product of the market to-day, actually punched 90 per cent. of the holes in two torpedo boat destroyers. It was not until two years later that these machines were placed on the market, and the interim was devoted to perfecting and improving them. Their legitimate field is apparently unlimited, but they are of particular value in the machine shop, and a glance at the illus-



tration will bring to the mind of the engineer, foreman, or superintendent, numerous cases where such a punch would prove economical. Portability, speed, accuracy, lightness of weight, and convenience are a few of the numerous advantages they possess. The method of operation is as follows: The ball piston, No. 4, carrying tail rod or intensifier 15, is seen in extreme rearward position, the extremity of the stationary hollow rod 14, being at the approximate centre of the ball piston, when the piston begins its stroke, impelled by the constant air pressure from A, the rod 14 telescopes into tail rod 15, and by this movement effectually seals all communication between the tail rod and the interior of the piston proper. As the piston and rods 14 and 15 are kept filled with oil, it will be apparent that the entire air pressure back of the piston is concentrated upon the column of oil contained in rod 14, and the passages leading to the punch ram chamber. Further, the volume of oil so moved at each stroke being just sufficient to depress punch 36 the proper distance, as soon as the hole is punched no further downward motion is possible. It will be clear that all jarring and undue strain on the parts are thus prevented, and a steady, yet positive action gained. When the piston has completed its working stroke, a slight turn of the valve 32, admits the air to the other end of the cylinder, thus equalizing the air pressure on both sides of the piston; but the area of the stationary rod 14 being less than that of the tail rod 15, the ball piston is forced back into position for another stroke. A great saving in air consumption is effected by this arrangement, the same air being utilized to drive the piston in both directions. Owing to the peculiar construction and arrangement of the ball piston and parts co-acting therewith, it is impossible for any air to get into the high pressure passages, unless the oil level in piston is