MEDIÆVAL IRON WORK.

Some of the most interesting relics of the middle ages are to be found in the specimens of metal work which adorn many old mansions in Europe. It is astonishing to see the beauty of proportion and detail, the adaptation of the object to its purpose, and the elaboration of the work, and then to reflect that the whole design was the creation of the smith who performed the labor, who thought out the graceful form at the time he wielded the hammer. Schools of art, so called, there were none in those days; but every workman received, unconsciously, an art education. In Germany, especially, the apprentice traveled from place to place, learning the art, and improving his mind as he went. He saw the church of St. Sebald, in Nuremberg, with its shrine or tomb, on which Peter Vischer and his five sons labored 13 years; he saw the wonderous cathedral of Munich, the Church of the Apostles at Cologne, and the wonderful gothic minster at Antwerp. And in nearly every city he visited, he found articles of every day use fashioned with rare skill and pure taste; and so he acquired the art of construction and ornamentation at the same time, and learnt that use and beauty are, in all true art, inseparable.

We illustrate herewith a wrought iron window grille or lattice, made in the sixteenth century and now to be seen in a house at Ratisbon in Bavaria, a city which can boast numerous works of art industry from the hands of mediæval artists. The design is remarkably graceful, and the elaborate workmanship shows skill in handicraft of the very highest order.

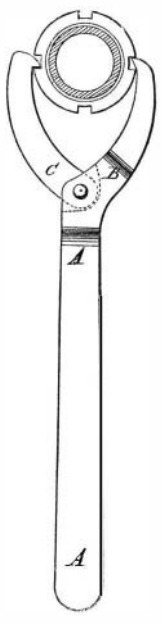
WINDOW GRILL AT RATISBON, BAVARIA.

Rheumatism.

The *Journal des Connaissances Médicales* contains a review of certain curious observations made by Dr. C. Esbach on the conformation of the fingers in various diseases. In persons that perspire easily, or in the case of disorders that induce profuse perspiration, such as rheumatism, typhus fever, etc., the transversal curvature of the nail is increased to exaggeration. This symptom, which scarcely ever fails to present itself in rheumatic subjects, has led Dr. Esbach to establish, by a statistical method, the sudoral etiology of that affection, and in the immense majority of cases he has found the following result: A man who perspires easily, and who inhabits a ground floor, becomes, sooner or later, rheumatic; if, on the contrary, he lives in a dry apartment, he is never troubled with that malady. On the other hand, a man who is not subject to perspiration may live in a damp room with impunity. Rheumatism appears thus to be placed on its real ground; dampness may be the cause of it, but only in such habits as perspire freely.

IMPROVED SPANNER WRENCH.

Mr. A. Frank Skinner, of Plattsmouth, Neb., has patented (March 30, 1876) through the Scientific American Patent Agency, a novel improvement in spanner wrenches, which we illustrate herewith.



It consists in providing a nut wrench with two equal arms, of which the rigid one has a pushing point slightly curved, while the pivoted arm has a drag hook on on its end.

A is the handle of the wrench, the forward part of which is curved outward and forward, and is pointed to form the rigid jaw, B, the said jaw and handle being thus formed in one piece. C is the movable jaw, upon the outer end of which is formed a hook, and its inner end is inserted and pivoted in a socket formed in the angle at the intersection of the jaw, B, and handle, A, as shown in the figure. In forming the wrench the handle, A, and jaw, B, are forged in one solid piece, and an eye or socket is punched in it to receive the loose jaw, C, which is then formed and pivoted in the said eye or socket. In this way a very convenient and effective instrument is produced, having great strength and power, and adapted to fit any spanner nut.

A New Way of Allaying Dust.

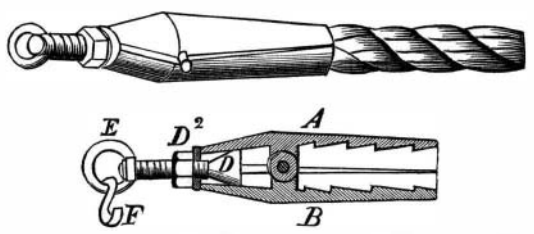
Mr. A. Houzeau has recently suggested to the French Academy of Sciences a mode of preventing dust on roads, etc., which, if experience demonstrates its practicability, will be found both simple and useful. He proposes simply to mix with the water, wherewith the thoroughfares are sprinkled, a small quantity (amount not stated) of chloride of calcium. This, he thinks, will form a patina or crust of considerable resisting power, which will last for several days and which will hinder both the drying of the soil and its disintegration by vehicles, etc. At the same time it will prevent the growth of weeds, and thus, on private roads and walks, prove labor-saving. A similar application of salts in solution was made in London three years ago, with complete success.

Vegetable Leather.

A new utilization of sea weed is suggested in the manufacture of a fabric named as above. Sheets of carded wadding are placed on hot polished metal plates, and coated with a concentrated decoction of sea weed, lichen, pearl moss, or other mucilaginous vegetation. The sheet is then dried quickly, thus giving to the surface applied to the metal plate a gloss like that of leather. Rolling and compressing between heated cylinders follows, and then a coating of boiled linseed oil is applied. Afterwards a thin coating of vegetable wax is given, and another rolling to soften the sheet finishes its preparation, when it is ready for bronzing, or any other treatment.

A SIMPLE ROPE CLAMP.

A simple clamp, by which a rope's end may be tightly secured, was patented January 4, 1876, by Mr. Levi H. Page, of Chicago, Ill. The clamping jaws, as shown in the engravings, are formed by two semi-tubes, A and B, made with teeth on their inner faces to hold the rope and prevent its slipping out. A pin, C, passes through lugs on each to form a hinge joint. This pin may be removed to attach the end of the rope by placing it on one jaw, when the other is laid upon it and the pin inserted. An inclined groove is cut in the solid ends of the clamping jaws, above the hinge, to receive a wedge, D, which is formed on the edge of the spirally threaded stem, on which is a nut, resting against a washer. E is a swivel ring on the end of the stem, D, and F a hook on the ring for attachment of the weight to be



lifted, or whatever else the rope is to be fastened to. When the rope is inserted between the serrated jaws, and they are connected by the pin, by turning the nut, D^2, the wedge, D, acting against the inclined faces of the recesses, the jaws will be forced against, and the teeth into, the rope, holding it firmly.

THE weight per yard of cast iron pipe in lbs. is found by subtracting, from the square of the outside diameter in inches, the square of the inside diameter in inches, and multiplying the remainder by 7·35.

The Great Suspension Bridge over the East River, between New York and Brooklyn.

The towers and anchorages of the East River bridge are now about completed, and the work of constructing the bridge proper will shortly begin.

The plan of operations, as given by the engineer, is as follows: A steel rope, three fourths of an inch in diameter, will be temporarily fastened to the New York anchorage, thence conveyed over the top of the tower and the coil conveyed to Brooklyn by means of a scow. The rope will then be passed over the Brooklyn tower and to the anchorage, but will be left slack and under water until late at night or early in the morning, when few vessels are passing, when it will be pulled taut. This steel rope will be also temporarily secured to the Brooklyn anchorage and the coil borne back to New York by the scow, and the ends connected, thus forming an endless rope, working on pulleys at each anchorage and on each tower, and worked by machinery on the Brooklyn side. By means of this endless rope other similar ones will be put up as required for the further construction of the bridge. First, two steel wire ropes, 2⅝ inches in diameter, will be carried across and made secure to temporary fastenings at each anchorage. These will be 3½ feet apart, and placed a little to the south of the middle of the tower, running over the top. They will be used for the construction of a temporary bridge for the use of the workmen. Oak planks, 1½ inches in thickness, will be laid upon the ropes, with spaces of about half an inch, both for the purposes of economizing material and to lessen the effect of the wind upon it. They will be fastened by strips running lengthwise across the ends, which will be bolted to the ropes by U-shaped clamps.

The bridge will be completed by stretching small ropes on each side about 3 feet above the flooring and secured to every ten feet. It will be rendered firm by guys.

Three other steel ropes, of the same magnitude as those used in the construction of the foot bridge, will be stretched across the river over the tops of the towers—one 27 feet south of the foot bridge at the edges of the piers, one over the north edges, and one midway between the north rope and the foot bridge, with a space between the north and south ropes of 81 feet. The object of these last-mentioned ropes is to support small cross bridges, technically called cradles, and necessary for the construction of the other portions of the bridge.

There will be five of these cradles, one in each land span between each tower and its anchorage, and three at equal distances in the river span. They will project 10 feet beyond the outside cable, and will support pulleys for the endless ropes. The whole temporary structure will be 200 feet above high water at its center and lowest point, so that no water craft will be interrupted by it. After this work is completed, the construction of the bridge proper will be proceeded with, and the first step will be the stretching of the main cables, which will be put up at the same elevation as the temporary bridge and lowered. These cables will be composed of nineteen strands, each strand being made up of 330 wires, No. 7 gage—that is a little more than ⅛ of an inch in diameter. The material used will be the best quality of steel wire. The ropes of the temporary bridge will not be taken down, but finally incorporated into the superstructure of the bridge.

A NEW INSECT POWDER GUN.

This is one of those simple little devices which frequently prove very remunerative to the inventor. It is a substitute for the numerous more costly syringes, bulbs, and spring powder ejectors, now employed for throwing insecticide powder into crevices of furniture, etc.

It is simply an elongated rubber bulb or nipple, the forward part of which is tapered to a point, and is curved to one side, as shown. The other end of the bulb is open, is inclined, and has a collar formed upon it. By this inclination of the collar, when the rubber is applied to the neck of a bottle and is held in a horizontal position, a quantity of the powder will rest in the belly of the bulb, and can be projected upward by compressing the said bulb.

The device may be made with its pointed end closed so that it may be applied to the neck of a bottle containing the powder, and sold with said bottle. In this case the buyer cuts off the point of the bulb with a pair of shears. It was patented through the Scientific American Patent Agency (May 30, 1876) by Mr. C. B. Dickenson, of Brooklyn, N. Y.