the trap, is needed, to cause a current of air in, and thus act as a constant ventilator of all the pipes between the trap and the cowl fixed on the soil-pipe carried above the roof of the house. A separate pipe may, if thought desirable, be fixed into the chamber, and taken up above the roof of the house, to ventilate the sewer.

This form of trap would have advantages for low-lying districts, where there is danger, in times of flood or high water, of the drains returning their contents into the basement, as the greater the pressure of the returning sewage matter towards the chamber below the trap, the more tightly is the copper pan closed against the end of the soil-pipe inlet, so that no flood-water, sewage, or sewer gas could be forced past it into the house.

The action of the cowl is as follows ;—The larger end of a funnel-shaped tube (seen in the section), placed horizontally, is always directed towards the wind, and a current of air passing in there is pressed forward through the annular space between the two cylinders, and when it reaches the end of the inner one it expands all round it, and in its passage out at the smaller end of the cowl, a vacuum is created round the point of the inner cylinder, which, by what is vulgarly called suction, draws out its contents into the open air, and thus induces an upward current of air from the shaft or pipe leading from the place to be ventilated. The invention is also adapted for use in churches or schools, where a shaft would not be needed, but merely an opening at the ridge of the roof.

That the cup should be properly fixed in the first instance is of course of the utmost consequence, and good materials for the bearings and the axle are also indispensable. The apparent costliness of the trap in question is met by the statement that one trap will suffice for half-a-dozen water-closets, or indeed for any number, provided the house be not of palatial size, when two or more might be necessary ; and that the cost of D traps and their fixing, and other expensive arrangements as regards the closets themselves, may be safely dispensed with, as an inexpensive common pan-closet answers just as well, so far as security against the sewer is concerned, as the most expensive and elaborate valve-closets. These various arrangements have been in operation for two years in the patentee's house, and, as we are informed, and are prepared to believe, with undeviating good effect.

One lesson which Mr. Banner has learnt, and in his turn teaches the public, namely, that to make a ventilating pipe of constant available air it must be introduced at the bottom, is of itself a boon of value.

PATENT CASK-MAKING MACHINERY.

An invention, the results of which may hereafter have a very serious effect on the skilled labour market in certain departments of trade, was exhibited on Tuesday at the works of Messrs. Ransome and Co., sawmill engineers, King's Road, Chelsea. The invention referred to is a series of improved machines, about a score in number, constructed for making casks for beer and hogsheads for wine. The great merits of Messrs. Ransome's patent are not only an improvement upon former patents which they have pressed into their service, but the combination of their own inventions with those of previous date, and the forming of the whole into one general system. Practical illustration was given that casks for holding liquids of all kinds can be produced entirely without the aid of the skilled cooper at less than half the cost for labour, and when it is stated that one machine alone, worked by a lad, will joint in the most perfect manner six staves in a minute, while another will turn, bevel and oval a head with mathematical accuracy in less than that space of time, the great economy is at once apparent. Apart from the utility of the invention, or combination of inventions, it is a true artistic treat to witness the working of this massive clock-work machinery, and visitors who had the privilege of being present were loud in their admiration of a most interesting and, indeed, educating exhibition. From the delicate handsaw machine, like a bright revolving ribbon of steel, not binding but severing everything which its fine teeth touch, to the circular saw which cuts huge blocks of wood as if they were so much cheese, all was perfect. That this invention will have a great effect upon the skilled labour market is a matter scarcely open to question.—*Iron.*

A NEW FISH.

Mr. J. M. Hutchings, of Yosemite, is reported to have discovered in the head waters of Kern River, 10,500 feet above the sea, a new and beautiful fish, which he names the golden trout. Its color was like that of the gold fish, but richer, and dotted with a black band along its sides.

IRON FRONTS FOR BUILDINGS.

When iron fronts for building were first introduced in America, it was strenuously asserted unsafe. An examination of any of the numerous cast-iron structures which, for a number of years, have been exposed in that country to every change of atmospheric temperature without, and to the heat of steam boilers and furnaces within, will shew everything unchanged. Events have also proven in the cases of burning of storehouses, filled with combustible goods, that cast-iron fronts are absolutely fireproof, and will neither warp nor crack, nor fall down, unless the entire building falls, pulling the front with it. Only let it be remembered that, in addition to a high and intense heat, the use of a blast is required to reduce cast iron to a molten state, and the ability of iron fronts to stand heat will be readily understood. Iron fronts have stood erect in cases where the side brick walls were entirely thrown down and demolished by the elements.

A front of iron is usually laid down and fitted together complete in the manufactory previous to erection of the building. It can be transported from any distance to the place of erection and put together with wonderful rapidity, and at all seasons of the year. It takes up less space than any other material, and so enlarges the interior of the building. When it becomes desirable to tear down the building itself, to make way for other improvements, the iron front may be taken to pieces, without injury to any of its parts, and be re-erected elsewhere with the same perfection as at first. Instead of destruction, there need be a removal only.

Iron has in its favour unequalled advantages of ornament, strength, lightness of structure, facility of erection, durability, economy, incombustibility and ready renovation.

Much has been said against iron from misconception. It is exceedingly difficult in the minds of most writers and talkers who use sweeping denunciations and citations against iron, to separate wrought iron and cast iron in their respective endurances against weather. Wrought iron rapidly oxidises when exposed to the atmosphere, and goes to decay. Cast iron, on the contrary, slowly oxidises in damp situations ; rust does not scale from it, and the oxidation, when formed, is of a much less dangerous kind than on wrought iron. A coating of paint will counteract whatever tendency cast iron has to rust when exposed.

Whatever has been done in iron which deserves censure from critics, can be remedied. Let it not be forgotten that the material is not at fault, but the workmanship. Iron can be made to imitate anything perfectly. Men who have said the most against iron have been they who knew the least about it. Arguments have been made that iron is a sham, but a stone building is a greater sham, because it leads one to believe that it is all stone, when in fact it is usually nothing but a veneer set up against a brick wall.

When the public become thoroughly acquainted with the advantages iron possesses as a building material, it is confidently predicted that for superior buildings of all kinds it will receive a general preference to granite, marble, sandstone or brick.—*Iron.*

EARLY RISING A DELUSION.

For farmers and those living in localities where the people can retire at eight or nine o'clock in the evening, the old notion about early rising is still appropriate. But he who is kept up till ten or eleven or twelve o'clock, and then rises at five or six, because of the teachings of some old ditty about "early to rise," is committing a sin against God and his own soul. There is not one man in ten thousand who can do without seven or eight hours' sleep. All the stuff written about great men who sleep only three or four hours a night is apocryphal and a lie. They have been put on such small allowance occasionally and prospered ; but no man ever yet kept healthy in body and mind for a number of years, with less than seven hours' sleep. Americans need more sleep than they are getting. This lack makes them so nervous and the insane asylums so populous. If you can get to bed early, then rise early. If you cannot get to bed till late, then rise late. It may be as Christian for one man to rise at eight as it is for another to rise at five. We counsel our readers to get up when they are rested. But let the rousing bell be rung at least thirty minutes before your public appearance. Physicians say that a sudden jump out of bed gives irregular motion to the pulses. It is barbarous to expect children instantly to land on the center of the floor at the call of the nurse, the thermometer below zero Give us time after you call us to roll over, gaze at the world full in the face, and look before we leap.—*Exchange.*