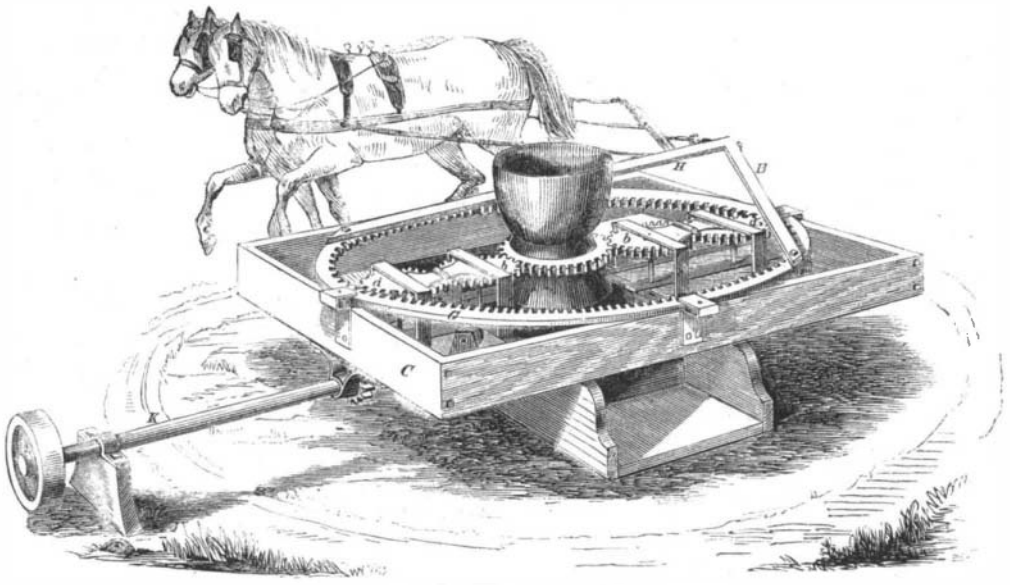
ORTON'S IMPROVED HORSE-POWER.

Inventions for the application of animal power promise to rival in number those for the application of the other two great powers made subservient to the use of man—steam and water, or, to go back to the original forces, heat and gravitation. The novelties in the horse-power here illlustrated will be readily understood by inspecting the cut.

A gear wheel, G, of the usual construction with teeth upon the inner edge of its rim, is properly suspended upon and between friction rollers in the frame, C. To this wheel are secured the sweeps, H H, at the ends of which, where they meet, the team is attached. Pinions, *d d*, mesh into the gears in the wheel, G, and these pinions mesh into the other two, *b b*, which drive the mill in the centre. When other work besides driving the mill is to be done, the shaft, K, is connected by a bevel gear with the shaft of the nearest pinion, *d*, and this is so arranged as to be readily thrown out of gear when the mill alone is to be driven. If, on the other hand, it is desired to run the shaft, K, and its connections without the mill, the bars or supports which confine the pinions, *b b*, are loosened, and turned back on the hinges carrying these pinions, over the pinions, *d d*. The advantages claimed for this horse-power are its compactness, lightness and the general convenience of its arrangements.



ORTON'S IMPROVED HORSE-POWER.

The patent for this invention was procured (through the Scientific American Patent Agency), on March 13, 1860; and further information in relation to it may be obtained by addressing the inventor, B. E. Orton, at Lyndon, Ill.

AN INGENIOUS DENTAL INVENTION—AN ARTIFICIAL PALATE.

Inventions which simplify the operations of machinery or add to the increase of manufactures are undoubtedly of a very beneficial character, but they do not afford such cause for congratulation as those which alleviate sorrow and relieve distress. An invention which provides for a bodily defect in any of our more unfortunate fellow-mortals is beyond all price and praise. We have lately had the pleasure of examining one of this character, which was constructed by Dr. Norman W. Kingsley, of No. 28 East Twentieth-street, this city, which consists of a very original and ingenious artificial palate that performs the functions of the natural one in a most surprising manner. To use plain language, let us suppose the case of a person having what is called a "hair-lip," and such a congenital defect that the roof of the mouth is open, devoid of a palate. In such a case, in attempting to speak, the voice will pass through the nose, just as it would through the broken pipe of an organ, and no well-defined sound or word will be produced. In speaking, we require some of the sounds to pass partially through the nasal passages and some through the mouth entirely, A natural palate possesses wonderful inherent power to slightly rise and fall to close and open the passages to the nose; it has also lateral contracting and expanding movements to direct substances from the mouth to the throat.

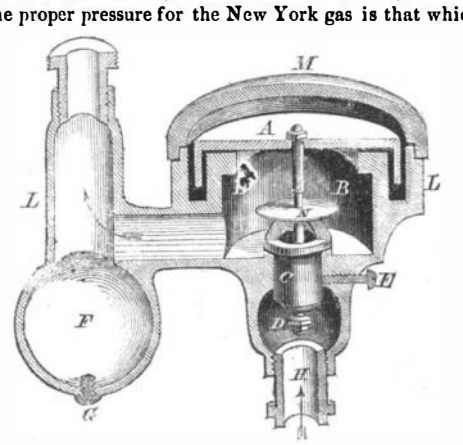
The artificial palate to which we have made reference was invented by Dr. Kingsley for a young lady who now enjoys the pleasures of uttering cultivated speech, while, prior to its application, she was unable to articulate distinctly, and had not the power to swallow without great effort. Her acquirement of speech is certainly a great triumph of mechanical and artistic skill. The front part of this artificial palate is composed of *hard* india-rubber, and the six upper teeth are set to it. This portion also forms part of the roof of the mouth, and the *velum* or soft palate is secured to it by a pivot, and it extends back like the natural one, which it imitates in all its functions. This part is composed of flexible vulcanized india-rubber, and it opens and closes the nasal passages and expands and contracts with perfect freedom, to direct the sounds out in speaking and the food back in eating. It has a flexible groove and bearings on each side, by which it dovetails, as it were, on the gums and in recesses above the jawbone, and it is very easily sprung into its place, to which it adheres gently but securely.

M. Delabarre, a French surgeon of distinction, constructed an artificial velum or soft palate of india-rubber about the year 1820, in which the use of laminæ of a flexible substance was first proposed; but after records speak of it as a failure. The only other notice of any similar attempt was the one made by Dr. C. W. Stearns, surgeon (now of this city), who went to London about 1842 to introduce his invention (*vide* "Harris' Principle and Practice of Dental Surgery"), who seems to have adopted Delabarre's principle, and met with better success from having a more perfect material. In the last case, the fissure under treatment was one of the soft palate, instead of being complicated with a fissure of the bones, the loss of teeth and a double hair-lip, as was the case which Dr. Kingsley had under treatment.

Any person having a congenital defect similar to that described, can now be provided with such an artificial palate. The invention of Dr. Kingsley has been examined by the most eminent surgeons and dentists of this city, and pronounced a complete success.

THE "STERLING" GAS REGULATOR.

Illuminating gas burns more economically, that is, yields more light to the square foot at a certain pressure than it does at any greater or less pressure. This is no mere supposition but has been positively ascertained, like almost everything else connected with the manufacture and burning of gas, by careful and thorough experiment. The proper pressure for the New York gas is that which



is exerted by about half an inch of water. As the pressure of gas at the burner is subject to constant fluctuations, from the varying pressure in the mains, from the constant changes in the quantity drawn through the pipes of any district, and from other causes, it is found necessary, in order not to have the gas extinguished entirely, to burn it at a pressure much above that which is most economical. In order to avoid this wasteful consumption of the gas, many efforts have been made to cause it to flow at a constant and proper pressure from the jet, but none of these have yet been generally introduced. We can see no reason why the regulator which we here illustrate will not accomplish the object perfectly.

The regulator consists of a case, L, inclosing the gasometer, A, the chamber, B, the movable valve seat, C, held by the set screw, E, the valve, D, and the mercury cup, I. F, is the dish or receptacle for water condensed in the pipes, and other impurities. The regulator is attached to the pipe leading from the gas meter by the coupling, H, and to the pipe leading to the burners by the coupling, I. In the mercury cup floats the gasometer, A, from which is suspended the valve, D, working upon the lower end of the valve seat, C, and set at such a point that sufficient gas at a proper pressure may enter to supply the burners. An increased pressure of gas elevates the gasometer, A, by which the valve, D, is raised, more nearly closing the valve seat, C, thereby diminishing the quantity of gas that would otherwise enter. The pressure being diminished, the gasometer and the valve seat fall, and the passage opens to admit the necessary supply of gas. It will be seen that the regulator is self-adjusting to the varying pressure of the gas, and affords a uniform supply to the burners and maintains a steady light.

Further information may be obtained by addressing the Wheeler & Wilson Sewing Machine Company, No. 503 Broadway, this city. An advertisement in relation to this invention may be found on another page of our paper.

LIGHT WITHOUT HEAT.

Great heat without much light is produced by the combustion of hydrogen gas; and this fact has been successfully applied in the arts to the reduction of metals. Still, we think that if the case were reversed, and great light produced without much heat, a boundless field would be presented for its application to the most useful purposes. In deep mines, for example, when the danger arising from explosions by common lamps is most imminent, this cold light would at once revolutionize the whole art of mining. Such a light could be employed in powder magazines, the holds of ships, and also in warehouses and manufactories containing combustible materials. Light and heat are different in their nature, and science seems to have settled the question that, under certain circumstances, they may be separated; but, for practical purposes, artificial light without heat has not yet been applied. The fire-fly emits a soft and beautiful light without its being apparently accompanied with equivalent heat. May not some mode be yet discovered for manufacturing independent light without heat, and rendering it applicable to the purposes we have pointed out?

In a lecture delivered before the Royal Society, London, by Professor J. Tyndall, F.R.S. (in November last), some very curious information was imparted on the phenomena of light. He stated that if a spectrum from the electric light was thrown upon a screen, it was to the eye what an orchestra was to the ear—the different colors were analagous to notes of different pitch. But beyond the visible spectrum in both directions there were rays which excited no impression of light. Those at the red end excited heat, and the reason why they failed to excite light, probably, was that they never reached the retina at all. These obscure rays were discovered by Sir Wm. Herschel.

GLOUCESTER, N. J., has become quite a manufacturing village. The Washington Mills, located there, are very extensive; hey present a frontage of 800 feet on the Delaware river; 650 persons are employed in them; they run 38,000 spindles and make 8,000,000 yards of cotton cloth annually. These mills are the property of Philadelphia merchants, and have been very successful. They were erected in 1858.