

Ordinary steam engines burn from eight to ten pounds of coal per horse-power in one hour. By common engines we mean those constructed rudely, with improperly made and set valves, and in a bad state of repair, as nearly all engines used in warehouses are. At present prices of coal—\$12 per tun—one horse-power would, therefore, cost 16½ cents per hour, exclusive of engineer's wages. A competent engineer ought to receive \$3 per day at least; this would make a horse-power nearly \$5 a day, without waste, packing, oil, repairs, supplies, or any incidental expenses whatever. This power must be maintained, ready for use, at all times, whether needed or not at the moment. It increases the rate of insurance, and is a continual source of anxiety.

It seems quite reasonable to deduce from these facts that it would be a saving to pay the Croton, or Cochtuate, or Fairmount Water Works, ten times the amount they charge for one horse-power to users of steam. By the use of water-power the wages of an engineer would be saved, no repairs of any moment would be needed, the rate of insurance would remain the same as in other buildings, there would be no liability of explosion, no great depreciation in value as there is by using a steam engine and boiler; and, what is of great importance, the power would be ready at all times, and could be managed by any person.

Of the means by which power is to be applied it is not necessary to speak. A stand pipe suggests itself as a simple and safe reservoir of power where head enough could be had to fill the pipe. From such a pipe a water engine or turbine wheel could be driven with no more gearing or mechanical fixtures than are in use at present.

In some places there are printing presses running, driven by small turbine wheels. The New Haven *Palladium*, we are told, is printed on a press driven by a small turbine wheel; the supply pipe is one inch; the head we do not know.

This matter is worthy of attention by those principally interested.—*Scientific American*.

ARTIFICIAL STONE.

To obtain a factitious stone which may take the place of the ordinary Turkey, Water of Ayre, and Arkansas stones used for sharpening cutting tools, and for kindred purposes, is the object of an invention recently patented by Mr. E. Parnacott, of Leeds. To this end he prepares a compound which will admit of being molded to any required form, and which when molded may be hardened and brought to the consistency of stone. In carrying out the improved manufacture, the chips and dust obtained in preparing lithographic stones are reduced to fine granules, emery powder, borax, and saltpetre are added, and the whole thoroughly mixed in a mill. The mixture thus obtained is molded to any required shape—for example, cutting and polishing tools; the same is first submitted to hydraulic pressure, and then to furnace heat, whereby the hardness and consistency for stone is imparted to the molded articles. The following proportions will produce a good result, viz.:—pounded lithographic stone twelve ounces, borax two ounces, saltpetre half an ounce, and very fine emery two ounces. Place these substances together in an

ordinary incorporating mill with edge runners [such as is used for preparing and mixing mastic and sand], the pan of the mill being heated by means of steam or gas, and subject the substances to the action of the mill until they are well mixed and incorporated. Then remove the compound thus formed, and place it in strong iron molds for the purpose of being submitted to pressure. These molds are made of various shapes, to suit the purposes for which the artificial stone is to be used.

The pressure necessary to effect a proper consolidation of the compound may be conveniently given by means of a strong hydraulic press. The amount of pressure which has proved satisfactory is about twenty tons per square inch of surface of the molded article. When the requisite mechanical consolidation of the molded article is subjected to a white heat in any suitable construction of furnace, or to such a heat as will serve to fuse the borax and saltpetre and effect the binding together of the granules of stone and emery. The time required for attaining this object will in general be from half an hour to one hour. To prevent the warping and running of the molded compound under heat, it is clamped in molds made of plumbago, fire-clay, or other like heat-resisting material, before being placed in the furnace. When it is required to produce cutting or polishing wheels, hones, or other like articles with a less cutting power than those made from the before-named mixture, ordinary chalk is substituted for a portion of the lithographic stone granules. The proportions of the chalk and the granules should be half of each to produce a good result, the proportions of the other materials being retained.—*Mechanics' Magazine*.

PATENT WINDOW CLEANER.

An ingenious instrument for cleaning windows of every description has been lately invented in England. It consists of a long wooden rod, with an elbow joint, and the person using it has no need to stand or even to sit on the window sill. The long arm is supplied with a nut and double cord, and the short arm has a movable bolt on it, to which may be attached a brush, sponge, or wash-leather; and by moving the nut up and down, the brush or other article on the short arm is brought in contact with the window panes. The instrument seems to answer its purpose admirably. It is light, portable, adapts itself to any angle and any sized window; and what is most important of all, its manufacture will not cost at the utmost more than \$2 50. The inventor and patentee is Mr. Smeaton, of Birkenhead, opposite Liverpool.

A NEW FIRE ANNIHILATOR.

A number of scientific gentlemen in England have been witnessing experiments at Mr. Whilling's premises, King's Cross, with a new fire extinguisher, the patent of Dr. Carlier and Mr. Vignon. A huge fire was lighted three times, each more powerful than its predecessor, and a man with one of the machines, it is said, completely mastered the conflagration in a few seconds. The machine is portable, and costs from £4 to £6. It is always charged, may be slung upon a person's shoulders,