

**Improved Sawing Machine.**

In the use of the ordinary cross-cut saw, a great waste of muscular power occurs. The weaker muscles of the shoulders and chest are chiefly employed in the propulsion of the saw, while the stronger muscles of the back, hips, and thighs are exerted to maintain the bent and fatiguing position of the body. Nor is this all, the muscles of the shoulders, chest, and arms are employed to great disadvantage on account of the leverage being all against them.

The device shown in our engraving has for its object, first, to relieve the muscles from supporting the body, and second, to add their force to those of the chest, arms, and shoulders in driving the saw, so that the power expended shall all be applied to useful work, except that necessarily absorbed by friction.

The muscles are relieved from supporting the body by seating the operator upon a suitable inclined bench, as shown, having a foot-board against which the feet rest; the position and motion of the body being precisely that of rowing. The hands grasp a cross bar upon one end of a handle or connecting rod, which is hinged to a planet-wheel, at the other end, the sun-wheel around which it revolves being keyed to the shaft of a fly wheel. The proportions of this gearing are such that four revolutions of the sun-wheel to one of the planet wheel are secured.

The fly wheel carries a crank wrist, from which a pitman passes to the saw, and gives it reciprocating motion. The vertical position of the saw in starting is secured by means of a staple driven into the log over the back of the saw, the legs of which support the saw laterally, and give it the proper direction.

The log is moreover connected to the frame of the fly wheel and sun and planet wheels by means of a timber brace having a metallic eye, through which a metallic pivot pin is driven into the timber. The machine is thus supported while it can be moved to cut at any desired angle across the log.

This description definitely applies to the saw only when used for vertical cutting. A slight modification of the parts upon which we need not dwell, adapts it to horizontal cutting in felling timber, etc.

Patented, May 3, 1870, by Addison Smith, of Perrysburg, Ohio, who may be addressed for further particulars.

**THE "FARMER" FOUNTAIN.**

Our engraving shows an ornamental design for a fountain for the parlor or conservatory, patented by an inventor who has made many improvements in this field.



In form it is an oval vase, 25x19 inches, the base forming a flower-pot, properly drained, in which vines may be planted, and trained up and around it by tying them to the projecting berries, provided for that purpose. The handles are represented by a young lady in an arbor, offering to shake hands.

There are two basins; the upper one of flint glass, shell-shaped, and flat on the bottom, to allow the fishes to sleep; the lower one of metal, rests, by an overlapping curtain, on the rim of the vase.

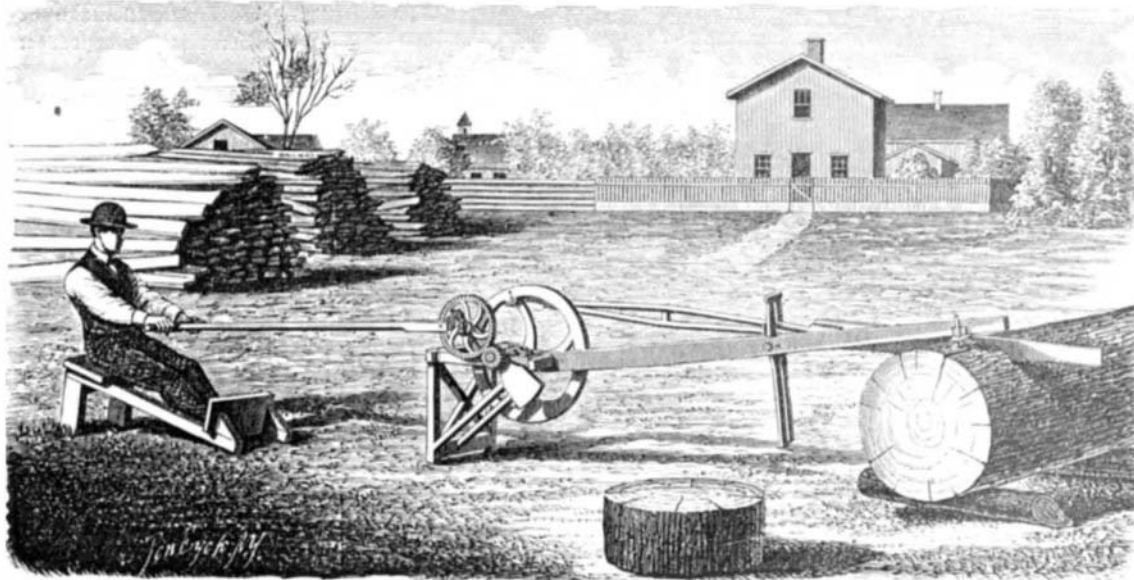
The pipes supplying the water pass through the stem of

the vase. The other parts of the design show sufficiently for themselves.

Patented, July 12, 1870, through the Scientific American Patent Agency, by John Hegarty, of Jersey City, N. J., and manufactured by Eldridge & Co., New Haven, Conn., and 120 Nassau street, New York city, who may be addressed for further information.

**What do Your Children Read?**

We commend to parents the following from the *Working-man*: "A bad book, magazine, or newspaper is as dangerous to your child as a vicious companion, and will as surely corrupt his morals, and lead him away from the paths of safety. Every parent should set this thought clearly before his mind and ponder it well. Look to what your children read, and especially to the kind of papers that get into their hands, for

**SMITH'S HAND-POWER SAWING MACHINE.**

there are now published scores of weekly papers with attractive and sensuous illustrations, that are as hurtful to young and innocent souls as poison to a healthful body.

"Many of these papers have attained large circulations, and are sowing broadcast the seeds of vice and crime. Trenching on the very borders of indecency, they corrupt the morals, taint the imagination, and allure the weak and unguarded from the paths of innocence. The danger to young persons from this cause was never so great as at this time; and every father and mother should be on guard against an enemy that is sure to meet their child.

"Our mental companions—the thoughts and feelings that dwell with us when alone, and influence our action—these are what lift us up or drag us down. If your child has pure and good mental companions he is safe; but if, through corrupt books and papers, evil thoughts and impure imaginings get into his mind, his danger is imminent.

"Look to it, then, that your children are kept as free as possible from this taint. Never bring into your house a paper or periodical that is not strictly pure, and watch carefully lest any such get into the hands of your growing-up boys."

**Hollow Railway Axles.**

A recent railway disaster occurred on a railway train at Newark, England, caused by an axle breaking on a freight car, whereby some eighteen persons were killed and a large amount of damage done to property and person. The axle had been in use eighteen years at least; it was 3 1/4 in. in diameter at the center; up to the boss, 4 1/2 in.; inside the boss or through the wheel, 3 1/8 in., and the shoulder was turned up square. The fracture was at the shoulder, showing another instance of the viciousness of the practice of thus turning up axles or other bearings to a sharp shoulder. They should all be rounded off smoothly, thus allowing no chance for the slightest check to be made in the metal. The English press have been discussing the cause of the accident as though it were an entirely new question, but in the United States we have long since discarded the square shoulders to axles and other heavy bearings. Sir Joseph Whitworth, in discussing the question of the best method of detecting unsoundness in railway axles, says: "The best method that can be adopted for the purpose is that of drilling a hole through the center of the axle, throughout its length, thus opening up to inspection and examination that part of the material which, in the case of ordinary manufacture, is most subject to unsoundness. The hole should be about one inch in diameter, and, with suitable mechanical arrangements, might be drilled at an average cost of about 1s. 6d. per axle. With the outside turned, and the inside thus exposed to view, a serious flaw in an axle, which is only about 4 1/2 inches in diameter, could hardly escape discovery. The plan would also diminish the tendency of the axle to get heated, and by removing the material near the neutral axis, would, under the circumstances, reduce the internal strains and render the axle safer. It is of great importance both to give proper diameters to every portion of the length of the axle, and to avoid all approach to sudden change of diameter."

The suggestion is a good one, and we commend its practice to our engineers and mechanics.—*Railway Times*.

**The Mystery of Life.**

It is a simple matter of fact and of every day observation that all forms of animal work are the result of the reception

and assimilation of a few cubic feet of oxygen, a few ounces of water, of starch, of fat, and of flesh. In a chemical point of view man may be defined to be something of this sort. That great authority, Professor Huxley, has lately been discussing what he calls "protoplasm," or "the physical basis of life." He seeks for that community of faculty which exists between the mossy, rock-incrusting lichen, and the painter or botanist that studies it; between "the flower which a girl wears in her hair and the blood which courses through her youthful veins." Mr. Huxley finds it in the protoplasm, the structural unit of the body, the corpuscle, the spheroidal nucleus, which, in their multiples, make up the body or the plant. But unless his statement is limited and guarded some color for materialism may be afforded by it. These make up the body, but, nevertheless, they are not the body. Suppose, to illustrate, we take the letters of the alphabet, a, b, c, d, w, might similarly argue that because these letters occur in mathematics, metaphysical writings, and in comic songs, there is therefore something essentially mathematical, metaphysical, and comical about these letters. Again, Professor Huxley has not proved, and it is impossible for him to prove, that these protoplasm may not have essential points of difference. The facts of organic life cannot be interpreted by the ascertained laws of chemistry and physics. Physiologists cannot tell us how it is "of four cells absolutely identical in organic structure and composition, one will grow into Socrates, another into a toadstool, one into a cockchafer, another into a whale."

**ANDERSON'S OIL SAFE.**

Our engravings illustrate a device for the safe keeping and storage of oils or other inflammable liquids, patented, by G. D. Anderson, September 1, 1868, and which, we are informed, has come into extensive demand. It is intended to supply a want long felt in retail stores for a suitable receptacle to contain kerosene and other inflammable liquids.

Fig. 1 is a perspective view, and Fig. 2 a section of the safe. The construction is very simple. The general appearance is that of a refrigerator. The oil is contained in a metallic vessel, which is inclosed in a wooden case. The interior vessel is of zinc with double-soldered joints. The bottom is made to incline from each end toward the middle into a groove, from the lowest point of which the faucet issues. This structure prevents all clogging and deposit of sediment.

Fig. 1.

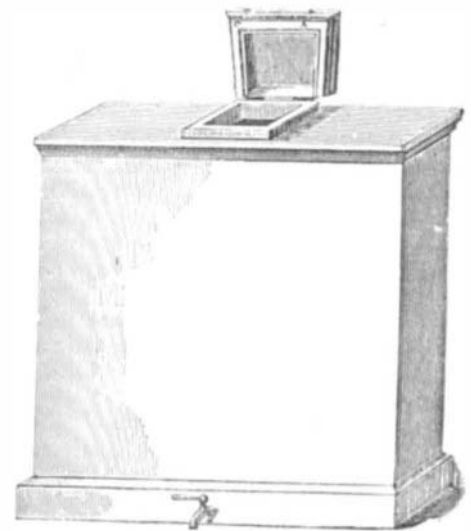
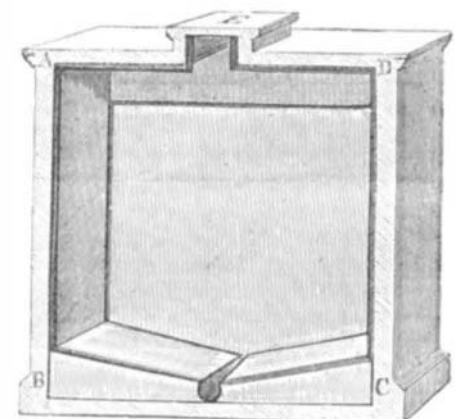


Fig. 2.



An airtight lid is hinged to the top of the safe, so packed as to prevent egress of vapor, and easily opened and closed.

It will be seen, by reference to an advertisement in another column, that the inventor offers to sell the right for all the States except Ohio, Illinois, Indiana, and Michigan. For further information address G. D. Anderson, Peekskill, N. Y.

MORIN says a man cannot perform more than a work of 53 foot-pounds per second, on an average.