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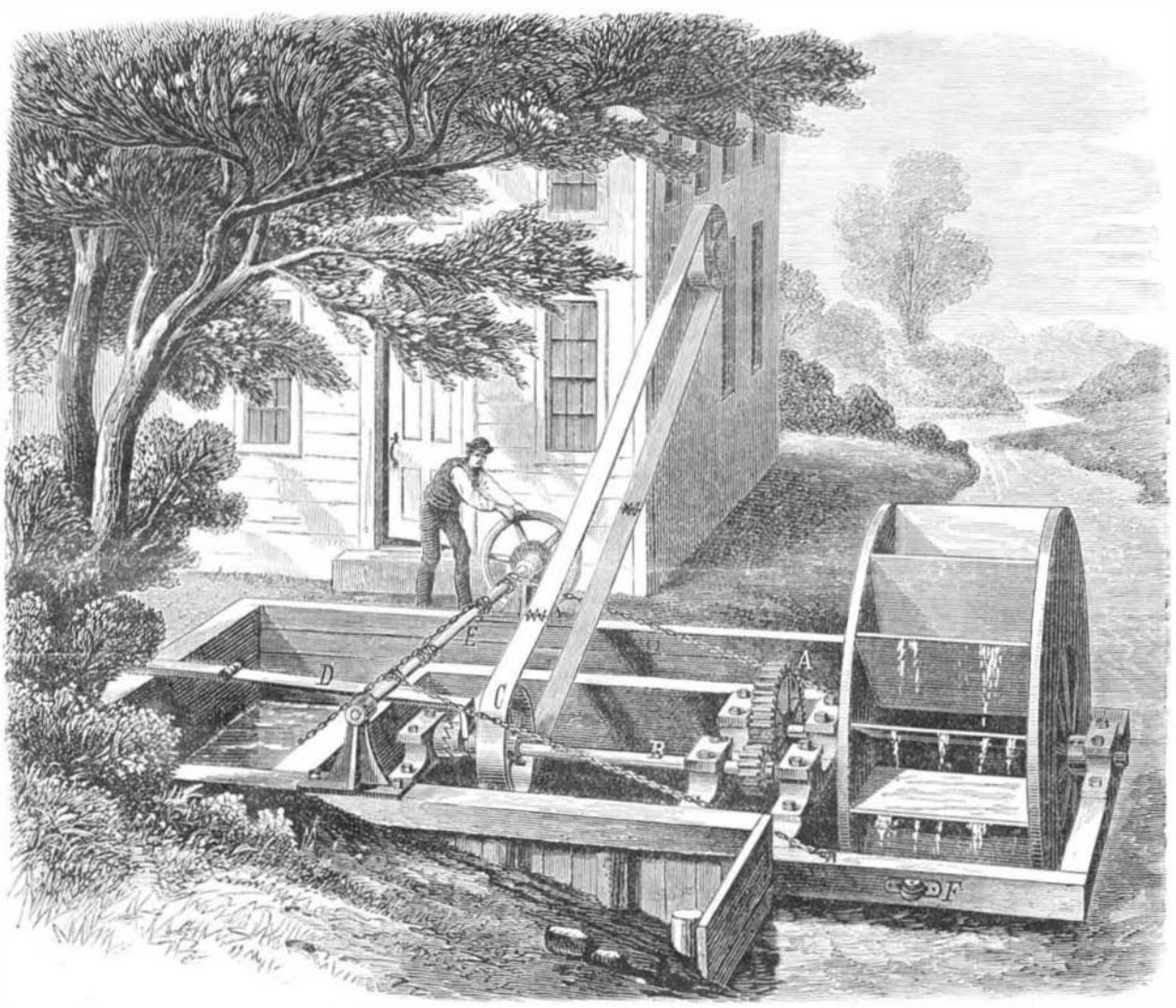
IMPROVED CURRENT WATER WHEEL.

The invention illustrated in the annexed engraving is an undershot wheel, which is mounted in a float or raft. The latter is inclosed in a basin made by cutting away the bank at right angles to the stream, the sides being protected by piles and planking, or by stone revetments. The length of this slip is the same as that of the float, so that, if desired, the latter, with the wheel, can be carried back therein, and thus be removed out of the current. The raft is made of proper dimensions to balance the weight of the wheel, and the slip is excavated to a sufficient depth to float the apparatus at low water.

Our engraving shows the wheel projecting into the current and into operation. Its motion is communicated through gearing, A, to a horizontal shaft, B, supported in the middle portion of the raft. On this shaft slides a loose pulley, C, on the left hand side of the hub of which is an annular recess and a clutch, to engage it when desired with the shaft, B. In hub recess enters the end of a shipper lever, D, the other extremity of which is secured to the bank. A hinge in the middle of this lever allows of its adjusting itself to the position of the raft as the latter rises and falls with the varying level of the water.



McCARTY'S CURRENT WATER WHEEL.

It will be evident from the illustration that when the float is drawn into the slip for a certain distance, the lever, D, remaining rigid, will push the parts of the clutch asunder, so that such motion as the wheel may maintain will not be communicated to the loose pulley, nor through the latter, by the belt shown, to the point at which the power is to be utilized. On the other hand, however, when the raft is moved out so that the wheel enters the current, then the lever will draw the clutch into action and the power will be again transmitted; consequently the starting or stopping of the mechanism is readily governed by the means employed for moving the float, and this consists simply in a shaft, E, supported in suitable standards on each side of the slip, around which are wound chains leading to the opposite extremities of the raft. When this shaft is rotated, by the wheel shown in the hands of the figure to the left, the raft is necessarily drawn in; and when turned the other way, the opposite movement of the latter takes place. A pawl dropping into a recess in the shaft, E, holds the wheel in proper position when run out. Rollers, F, are attached to the longitudinal timbers of the raft to take against the planking of the basin, and thus to lessen the friction between the same and the raft, in moving the latter when the current forces it into close contact.

In streams which become swollen and choked with drift wood during the heavy rains and spring freshets, the device above described will prove of especial value, since the possibility of withdrawing the wheel entirely out of the current affords an excellent means of protecting it from injury or destruction.

Patented through the Scientific American Patent Agency, September 15, 1874. For further information address the inventor, Mr. Michael McCarty, Pueblo, Colorado.

Manufacture of Oatmeal.

The manufacture of oatmeal is beginning to attract the attention of many of the milling fraternity, both on account of the increasing demand for this wholesome article of food and the large profit in its manufacture. In Canada oatmeal is a common article of diet, but in the United States, though in considerable demand, comparatively little is known of its manufacture. Although the manufacture in this country is quite limited, the method is simple and inexpensive. But little information can be derived from those who are running oatmeal mills, simply because they desire to monopolize the trade to as great an extent as possible. After the outside hull and the stratum of down or fuzz covering the kernel are removed, the clean grain is ground into meal; and being deprived of its tough outer covering, care must be taken lest it be reduced to powder. The first and most expensive apparatus required is the kiln for drying or expelling the moisture from the grain until the kernel is hard and the hull stiff and rigid. The ordinary kiln is built of brick or stone, and so arranged as to distribute the heat equally under and around the drying floor. This floor consists of sheet iron or cast iron plates thickly perforated with funnel-shaped holes, the wide end downward, thus allowing the heat and smoke to pass up, and preventing the oats and dust from passing or choking the holes. The roof is constructed like an inverted hopper, with a square opening at the top for ventilation, and surmounted by a cupola with latticed sides. The oats, which are spread upon the kiln floor, are constantly stirred, to dissipate the moisture and prevent the lower strata from being scorched until the batch is sufficiently dried. In this way, from one hundred and fifty to six hundred bushels per day are kiln-dried, according to the capacity of the kiln.

Another style of kiln is also in use. This consists of two or more perforated sheet iron cylinders placed in the furnace one above the other, and so inclined that the oats gradually move from the higher to the lower end. The oats, after passing through the upper cylinder, are deposited into the upper end of the second, and from the lower end of the second into the upper end of the third, and so on; the number of cylinders, their length and velocity, being governed by the capacity required. This is, undoubtedly, much superior to the old style kiln, as it has a regular feed and dries the oats much more evenly and thoroughly. After the oats become cool, they are ready for shelling.

The stones best adapted for shelling are a coarse free sandstone, usually imported from England. The bedstone is faced perfectly true, but the runner has a bosom of about three sixteenths of an inch around the eye and running back to nothing at about two thirds of its diameter. The outer third is dressed to a true face corresponding to the bedstone. The faces are picked or roughened as for ordinary grinding, but have no furrows. The runner is set upon a stiff ryne, keyed to the spindle. The ryne has three or four arms which are let into open grains cut into the stone. The faces of the stones are not allowed to run very close to each other, being about a kernel's length apart. The duster and fan for removing the hulls and dust are simple and easily constructed. The grinding is sometimes done on the hulling stones, but it is generally advisable to use much smaller stones, furrowed, and having a smoother and much less grinding surface. The apparatus for bolting and sifting is very simple in construction, being a series of inclined sieves placed one above the other. These sieves are usually made of tin or zinc, into which are punched round holes of suitable size and sufficiently far apart to allow the hulls to slide over. The meal passes through these sieves while the bran passes over it at the lower end of each.—*American Miller.*

Composition for Picture Frames.

1. To make composition ornaments for picture frames: Boil 7 lbs. of the best glue in 7 half pints of water, melt 3 lbs. of white resin in 3 pints of raw linseed oil; when the ingredients are well boiled, put them into a large vessel and simmer them for half an hour, stirring the mixture and taking care that it does not boil over. When this is done, pour the mixture into a large quantity of whiting, previously rolled and sifted very fine, mix it to the consistence of dough, and it is ready for use.

2. Dissolve 1 lb. of glue in 1 gallon of water; in another kettle boil together 2 lbs. of resin, 1 gill of Venice turpentine, and 1 pint of linseed oil; mix together in one kettle, and continue to boil and stir them together till the water has evaporated from the other ingredients; then add finely pulverized whiting till the mass is brought to the consistence of soft putty. This composition will be hard when cold; but being warmed, it may be molded to any shape by carved stamps or prints, and the molded figures will soon become dry and hard, and will retain their shape and form permanently. Frames of either material are well suited for gilding.

Phosphorus and Phosphates in Putrefaction.

It has been shown by Pasteur and others that the presence of calcium phosphate accelerates the decomposition of gelatin and other animal matters, and they consider it is because the salt furnishes the necessary elements for the development of the sporules suspended in the air. These sporules fix themselves upon moist surfaces, and by producing mucidinea and microzymes accelerate decomposition of animal matters. Animal secretions, such as urine, which naturally contain a considerable quantity of calcium phosphate, do not putrefy more quickly by the addition of calcium phosphate, because they naturally contain enough of the salt to nourish the microzymes developed by means of the albuminous substances. Flesh which contains much calcium phosphate decomposes more rapidly than that which contains less, or in which the phosphoric acid is combined with an alkali. It is well known that the flesh of fishes alters more quickly than butcher's meat. According to Von Bibra, the ash of perch and carp yields 44·34 and 42·20 per cent of earthy phosphates, while the ash of beef and veal furnishes only 20·60 and 16·40 per cent; but, on the contrary, the latter are one third richer in alkaline phosphates than the former.

The muscular flesh of sea fish and mammalia contains the following percentages of phosphoric acid: Skate, 0·514 mackerel, 0·532; beef (fillet), 0 395; veal (ditto), 0 374; pork (ditto), 0·430. The animal ferment, like the vegetable ferment, has then an indispensable want of earthy phosphates, and especially of calcium phosphate, for its multiplication, and this want is so strong that the microzymes attack the most insoluble phosphates. Flesh begins first to putrefy in the part nearest to the bones.—*J. Lefort.*