

**A NEW WATER ENGINE.**

We illustrate herewith a novel water engine, which may be used as a motor and also, if desired, as a pump. A is the cylinder, which is mounted in bearings of a case, D, on trunnions. It has a circular valve, E, formed on the lower end, with one port, F, and fitted to the correspondingly shaped valve seat, G, in which is the inlet, H, and the exhaust, I, also the exhaust, J, for the waste from the interior of the case, D. K represents passages cored out in the cylinder, from the upper end down to the interior of the waste water case, to conduct any water leaking past the piston, L, into the case, to be discharged through the exhaust. A cap, M, screws on to the top of the cylinder, for a guide to the piston rod, N, and these passages, K, enter the cylinder, above the piston, under this cover. The oscillation of the cylinder in the case alternately opens the supply and exhaust passages.

Patented through the Scientific American Patent Agency, September 5, 1876, by Mr. George Wells, Montreal, Canada.

**A Machine for Making Cab Drivers Honest.**

The latest invention for securing "machine honesty" is the exceedingly ingenious registering device which is to be placed on the new line of street cabs shortly to be established in New York city. It is the invention of Mr. Louis Von Horen, late of Vienna, Austria, and it serves the dual purpose of preventing the cabman pocketing any share of the fares and also of indicating to the passenger the length of time he occupies the cab, so that there is no room for dispute as to how much the latter should pay. The charge is to be at the uniform rate of 50 cents per hour or the same sum for a single trip occupying less time; and the apparatus is of course adjusted with reference to this tariff.

There is a metal circular case about eight inches in diameter, on the face of which are two graduated circles. The inner circle is pointed off similarly to a clock face, only instead of a twelve hour mark there is a zero. On the outside circle there is a simple graduation of units and tenths, so that dollars and cents by it may be registered. The hands on the inner circle are controlled by clock mechanism in the case; the hand on the outer circle must be moved by the driver. From one side of the clock case extend wire rods which carry a sign on which are the words "to hire;" on the same side, and between the rods, there is an extension in which a watch is placed. The whole is pivoted to the front of the cab, just in rear of the driver's seat, in such a manner that, when the "to hire" sign is turned uppermost, it stands above the cab roof, and is plainly visible. Right in face of the passenger in the cab, there is an opening, empty when the sign is turned up as described, but allowing the watch face to be seen through it when the sign is turned down.

Now, when a cab is hired, the driver is obliged to turn his sign down. If he does not, the passenger will demand it, because otherwise the passenger cannot see the watch which is to be consulted in determining the time he has occupied the cab. The driver, in turning the apparatus, thereby sets the clock going, which, supposing the trip to be the first one made that day, registers hours and minutes from 0 o'clock. When the passenger leaves the vehicle he pays his fare, and this the driver registers after the bell punch fashion on the outer dial already described. The driver then must turn his sign up. If he does not, his clock will continue running, and he will have to account for the time in money. The next passenger is registered in the same way—the clock, however, starting at the point at which it left off before—so that at the end of the day, when the inspector comes around, he sees from the two dials, first, the number of hours the cab has been used, and second, the amount received. On the back of the clock, which, on its face, has these dials, is still another dial visible from within the cab. This is simply an index moved forward one degree each time the sign is turned, so that from this the aggregate number of trips made can be learned. The dial is covered and locked up so that the driver has no access to it; and it obviously prevents the driver from taking advantage of the short trips, less than an hour in duration, but charged for as a full hour. By noting the number of trips and of hours employed, the inspector can determine the exact sum due from the driver, which amount ought to be accurately shown on the face of the register.

The device, while somewhat difficult to describe intelligibly, is really very simple, and as an invention it certainly is the best thing of the kind we have ever seen. It neither incommodes passengers as do turnstiles, nor does it fasten a disagreeable badge on the conductor or driver like the bell punch, nor does it place such implicit reliance on the honesty of the average passenger as is involved in the use of the fare box now in use in all our omnibuses.

**How to Settle a Dispute.**

The Centennial Judges and Commissioners catch severe scoldings from exhibitors who have received no awards, and from those who do not monopolize all of the praise bestowed on classes of articles. The former think the medals and certificates of no value, on the sour grapes principle; the latter regard them as too cheap and commonly distributed to be worth much. There is only one way to test the soundness of these depreciatory opinions. The Commissioners do not publish the language of the decisions. Perhaps, in justice to the contributors, they ought to do this,

and acquaint the whole world with the official result of the competition. As this is not done by the Commissioners at the expense of the Fair, the winners of the prizes have no option but to do it for themselves. Let the unprejudiced public be the arbiter in these disputes about the practical worth of the awards. The test is easily made. A reasonable amount of advertising in the papers would tell everybody what the judges said of any particular article and where it can be found. People would then hunt it up and see for themselves whether it tallies with the judges' descriptions or not; and at the same time the successful exhibitor would learn from this *experimentum crucis* exactly what the award is worth to him. There is no other possible

The disk, *J*, prevents the stopcock from being turned more than enough to open and close it by engaging with the pin, *g*. The pipe, *i*, for street washing, is provided with a nipple, *G*, formed on the plate, *D*, and provided with a cap, *h*, and to which the hose is attached for street washing. When the street washer is not required, the pipe, *i*, nipple, *G*, and accompanying devices may be dispensed with, and the pipe, *B*, may run horizontally into the house. When this improvement is used, it is claimed that heaving by frost is obviated. It is impossible for it to become clogged, as there is no channel by which anything can find its way into the lower parts of the device. It is not easily tampered with, as it is impossible to remove the caps without the key or wrench.

**How Loggers Live.**

Three hundred men will cover and cut a section of about three miles square, taking off over 60,000 logs, which would measure about 10,000,000 feet, each season. Work begins at daylight and ends at dark; and when the days lengthen or the moon favors a longer twilight or earlier morn, the men get the benefit in longer working hours. On the river when the drive is started, work begins at three o'clock in the morning and ends at nine in the evening, the men having five meals; breakfast at six, lunch at nine, dinner at twelve, supper at five, and tea at nine. The meals consist of pork and beans, corn bread, molasses cake, and tea or coffee.

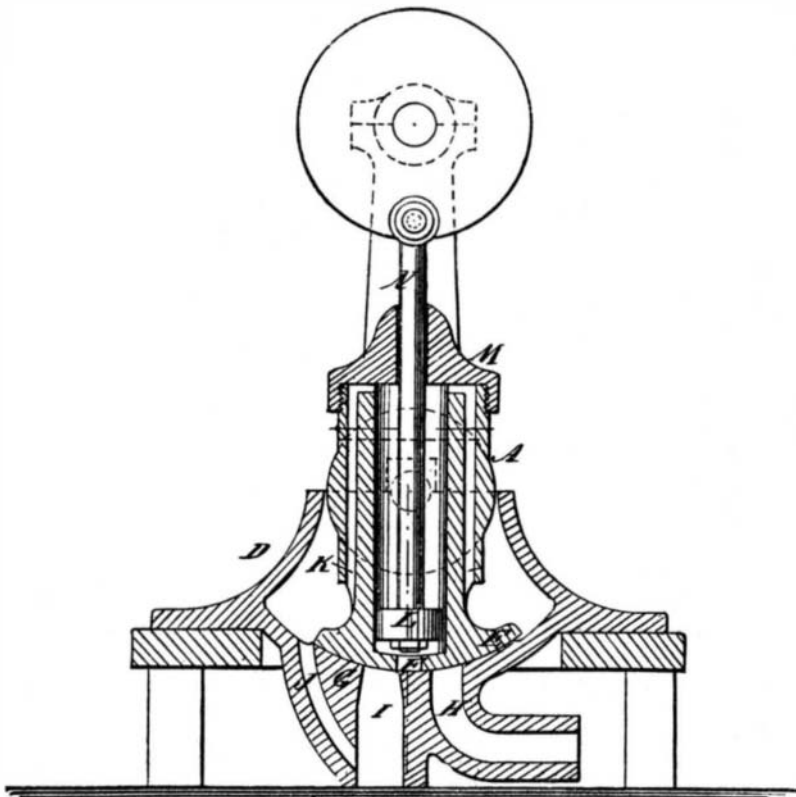
No stint is given to a man's appetite. The fare, such as it is, is abundant, monotonous, nutritious, and cheap. A cook is provided for every fifty men. The beans are generally the large white bush, parboiled in pots holding half a bushel, then ten pounds of pork is set in the middle of the beans in the pot, a quarter of a pint of molasses poured in, and then the pot is set in a hole surrounded with hot ashes and burning charcoal, the top covered with a stone, over which a heavy wood fire is built; and here they stay from five to eight hours, coming out a most palatable dish. All the baking is done in rudely built stone ovens, which are heated, before the dough is mixed, with a good wood fire. The loaves of biscuit or cake are set upon the hot stones, and are cooked quickly and thoroughly.

A camp of three hundred men will consume daily four barrels of beans, one half a barrel of pork, one barrel of flour, half a barrel of meal, one quarter of a barrel of sugar, and five gallons of molasses. The men are encamped in tents, making their beds of boughs, while their extra clothing, a pair of duck overalls, woolen shirt, and two pairs of woolen socks, is kept in an old grain sack and used as a pillow at night.

The Sabbath in the woods is always a day for sharpening axes, mending sleds, repairing boots and clothes, setting out a new tenting spot handier to the cutting in the woods, and all the odd chores which would grow out of the congregation of so large a body of men. All well regulated camps exclude liquor. The work being usually fifty to two hundred miles from any settlement, and the men not being paid until the end of the season, there is little inducement for any speculator to peddle rum through the woods, or for the men to straggle off in search of it.

The consumption of axes and handles is enormous, an ax lasting a month, and a handle about three weeks. The axes are sharpened daily, some camps having regular sharpeners, while others require each man to keep his own axe in order. The old axes are never collected for the junk dealer, the distance to ship them being almost too great to make it an economical measure. Woodsmen generally consider spruce harder on axes than either birch or pine. The gum which runs out of the spruce tree is often found hard enough to chip the edge of the axe when striking through it. The styles of axes differ with nationalities, a Canadian chopper preferring a broad square blade with the weight more in the blade than elsewhere, the handles being short and thick. A down-east logger, one from Maine, selects a long, narrow head, the blade in crescent shape, the heaviest part in the top of the head above the eye. New York cutters select a broad, crescent-shaped blade, the whole head rather short, and the weight balanced evenly above and below the eye, that is, where the handle goes through. A western backwoodsman selects a long blade, the corners only rounded off, and the eye holding the weight of the axe. The American chopper, as a rule, selects a long straight handle. The difference in handling is that a down-easter takes hold, with both hands, of the extreme end, and throws his blows easily and gracefully, with a long sweep, over the left shoulder. A Canuck chops from directly over his head, with the right hand well down on the handle to serve in jerking the blade out of the stick. A Westerner catches hold at the end of his handle, the hands about three inches apart, and delivers his blows rather direct from over the left shoulder.

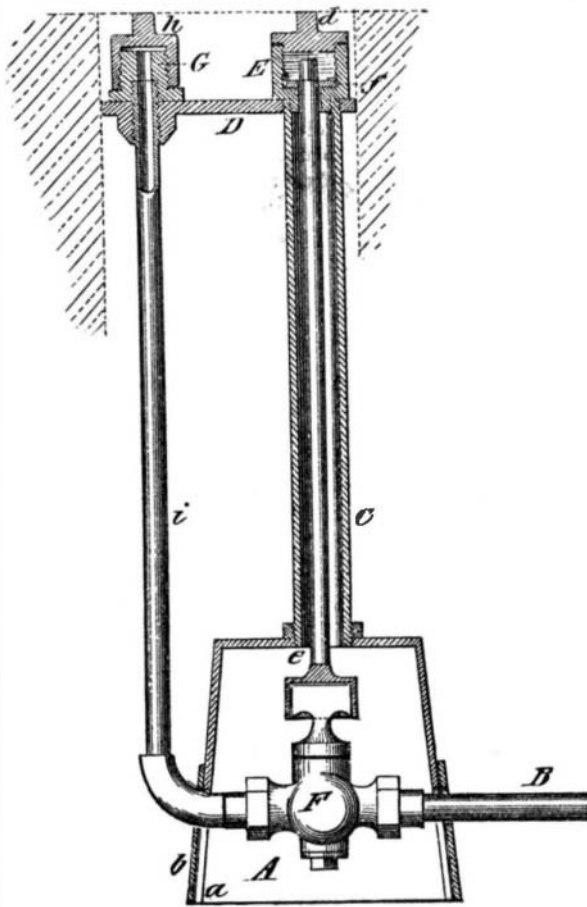
In fact, an expert in the woods can tell the nationality or State a man has been reared in by seeing him hit one blow with an ax. It is, however, an interesting fact to know that a Yankee chopper, with his favorite ax and swinging cut, can, bodily strength being equal, do a fifth more work in the same time than any other cutter, and be far less fatigued. This in a very large degree will account for the greater percentage of Maine men who will be found each year in the woods of northern New England and New York. *Northwestern Lumberman.*

**WELLS' WATER ENGINE.**

settlement of the controversy, but by advertising. We still adhere to the opinion that the prize system adopted by the Fair managers is the best under all the circumstances; and the recipients of the certificates have it in their power, by judiciously advertising, to turn them into money.—*Journal of Commerce.*

**IMPROVED STOPCOCK AND STREET WASHER BOX.**

Mr. George B. Hooton, of Williamsburgh, N.Y., has patented through the Scientific American Patent Agency, September 5, 1876, a novel improvement in stopcocks and street washer boxes. It consists of a box, of cast iron, provided with slots, *a*, in opposite sides, to receive the water pipe, *B*. These slots are closed by the doors, *b*, which are pivoted and



notched to receive the pipe. C is a tube of suitable length, screwed into the center of the top of the box, A, and also screwed into the plate or guard, D. E is a socket formed on the upper surface of the plate, D, and provided with the screw cap, d. F is a stopcock in the box, A, the plug of which is provided with an elongated stem, e, which runs upward through a hole in the plate, D, and is squared to receive a notched disk, f, and the key by which it is turned