

The Lyman-Haskell Multicharge Gun.

Work has been begun, in the pattern room of the Reading Iron Works, on the first Lyman-Haskell accelerating or multicharge cannon. The gun will be twenty-five feet long and have a bore six inches in diameter. Along the bore four pockets will be located, in each of which a charge of powder will be placed, with the view of accelerating the speed of the ball after it leaves the chamber of the gun and during its progress through the bore. The charge of powder will be 130 pounds, and the weight of shot 150 pounds. It is calculated that a shot from the gun will penetrate through two feet of solid wrought iron. The expected range of the gun is ten or twelve miles.

NEW BENDING MACHINE.

The common method of bending wrought iron bars practiced in many shops is to make a cast iron form, around which the heated bars are bent by hand. In the way, uniform shapes are produced at a slow rate, and with severe and exhausting labor, and without requiring considerable skill on the part of the workman.

We illustrate a bending machine to which cast iron forms are attached, between which the work is bent by power with great rapidity and accuracy, requiring no skilled labor in the operation. Its capacity is limited only by the amount of work that can be heated and placed in or removed from the machine.

The engraving shows a pair of dies or forms attached for bending iron plow beams, and at the side of the machine a plow beam after it has been bent is also shown.

There is hardly a crooked piece of wrought iron about a plow, wagon, thrashing machine, engine, mining or railway car, reaper, seed drill, or other machine, using bent pieces of wrought iron that cannot be bent on this machine with a great saving of time and labor. Much of the work that has been done on punching and drop presses is being done on this machine. It covers an area four by thirty-six inches.

The cross head moves seventeen inches and gives one stroke, while the tight and loose pulleys make forty-eight revolutions, thus giving a great leverage. Its weight is five thousand pounds.

We are informed one purchaser of this machine has over forty different patterns of dies or forms. It is manufactured at the Moline Iron Works, of Williams, White & Co., and is used in many of the largest works in the country.

Coal in Manitoba.

The people in Manitoba are rejoicing over the discovery of an important bed of coal, twenty-five miles northwest of Emerson. The bed is six feet thick, for two-thirds of its thickness very pure. Prof. Tilley describes it as a first-rate coal for general purposes. The bed is nine feet below the surface, under a stratum of red fire clay. It is thought to extend over a large area, and great advantage to Southern Manitoba is anticipated from it.

NEW PUMPING ENGINE.

In many cities and villages the water supplied by the public works is unsuitable for toilet, potable, and culinary purposes, because of its hardness or the presence of earthy or vegetable impurities, and many families continue to use rain water from reservoirs or tanks placed in the attic, and others would prefer to do so but for the labor of pumping. Generally these reservoirs are supplied by pumping by hand from a cistern in the basement—a laborious operation, affording an unreliable supply, because it is frequently neglected by the person having it in charge.

The engine shown in the engraving is designed to do this work by using the hydrant water for power. It will be noticed that the apparatus has two cylinders, one being a hydraulic or water engine, operated by the water from the street mains, and conveying power through the piston rod to the other cylinder, which is a pump, taking water from the cistern and discharging it through suitable pipes into the reservoir above. It can be set in motion or stopped by hand, or it may be automatically controlled by a float in the reservoir arranged to open or close a valve in the service pipe.

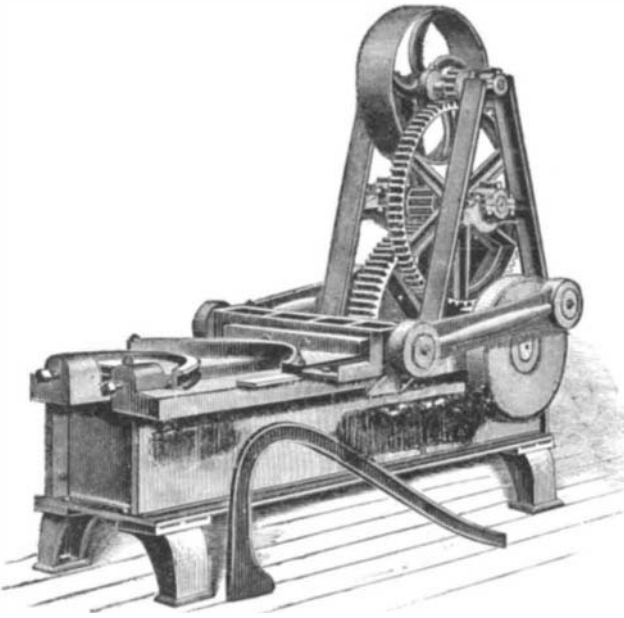
The water from the engine may be used for irrigating lawns, or other purposes that do not require it to be raised to any considerable height. A number of these engines have been in use for one to two years, with the most satisfactory results.

The size of cylinders must be in proportion to the pressure in the service pipe, and height of reservoir above the cistern. A safe rule is to calculate that one pound pressure on the engine will raise the cistern water one foot, the two cylinders being of equal size. Unless otherwise ordered, cylinders of equal dimensions, 8 inches diameter by 4½ inches stroke, are supplied. This size will pump from 75 to 100 gallons per hour from the cistern into the reservoir, and will require about the same quantity of hydrant water for power. Larger sizes for hotels and factories are made to order.

The Holly Manufacturing Company, of Lockport, N. Y., are makers of this pumping engine. New York office, 157 Broadway.

The Sub-Treasury Gold Wagon.

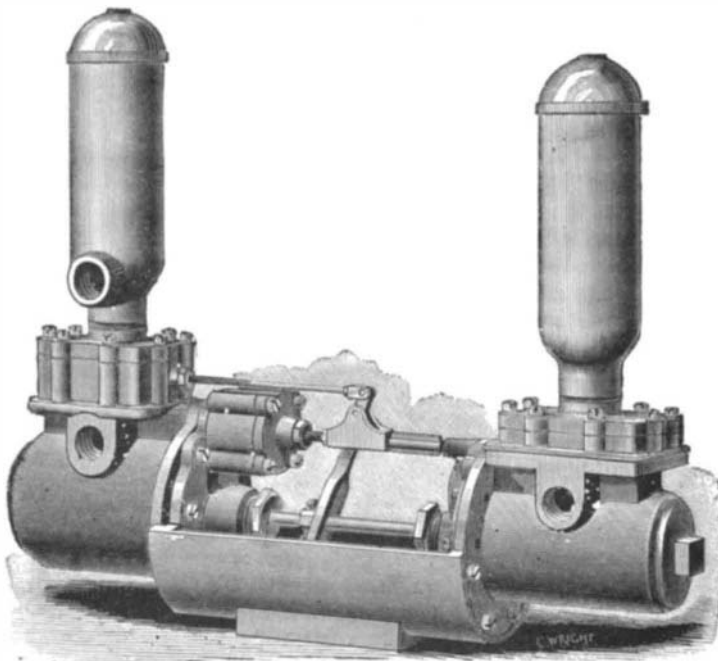
The little dingy-looking "gold wagon," which has been used for twelve years past to carry the money received for duties from the Custom-house to the Sub-Treasury, has been retired from service. Sometimes it made as many as a dozen trips daily, carrying as much as \$80,000 in glittering gold coin each time. The money was usually put up in bags of \$20,000 each, which were placed in heavy oaken boxes with massive rod-iron handles. These boxes were then put into the wagon-box, and a lid with clamps of iron was locked down over it. The wagon was pushed like a hand-cart by two Custom-house porters, accompanied by an armed watchman, whose duty it was to see that the load of treasure was not interfered with by thieves. The little used-up wagon has carried in its time probably not less than \$500,000,000, or about 4,500 tons weight in gold, and the dead weight and strain of the precious freight had rendered it rather

**BENDING MACHINE.**

rickety and unsafe. In its place a new wagon has been purchased, with solid wheels girt with iron tires half an inch thick, painted a deep blue color, and marked with the sovereign letters "U. S." in front.

When Men are at their Best.

Dr. Beard states that from an analysis of the lives of a thousand representative men in all the great branches of the human family, he made the discovery that the golden decade was between forty and fifty; the brazen between twenty and thirty; the iron between fifty and sixty. The superiority of youth and middle life over old age in original work appears all the greater when we consider the fact that all the positions of honor and prestige—professorships and public stations—are in the hands of the old. Reputation, like money and position, is mainly confined to the old. Men are not widely known until long after they have done the work that gave them their fame. Portraits of great men are delusions; statues are false! They are taken when men have become

**GASKILL'S HYDRAULIC PUMPING ENGINE.**

famous, which, on the average, is at least twenty-five years after they did the work which gave them their fame. Original work requires enthusiasm. If all the original work done by men under forty-five was annihilated, they would be reduced to barbarism. Men are at their best at that time when enthusiasm and experience are almost evenly balanced. This period, on the average, is from thirty-eight to forty. After this the law is that experience increases, but enthusiasm decreases. Of course there are exceptions.—*Christian Intelligencer.*

MISCELLANEOUS INVENTIONS.

An improved saw tooth has been patented by Mr. Elisha S. Snyder, of Snyder's Mills, W. Va. This invention is designed to protect saws from all unnecessary wear; it consists in an expansible concavo-convex steel plate, which is inserted endwise between the ribbed edge of a slot cut in the periphery of a saw and the grooved edge of a false tooth which is keyed in the slot.

An improved vehicle spring brace has been patented by Mr. Zachariah T. Bush, of Stanton, Mich. This invention relates to that class of vehicles in which the springs are arranged at the sides instead of parallel with the axletrees. It consists in a brace of novel construction combined with the side springs and with reaches extending from the axletrees.

Mr. Louis E. De Grand-Val, of Jersey City, N. J., has patented a simple and efficient jar for the package and transportation of fresh milk, but which may also be used for other purposes; and the invention is embodied mainly in the device for clamping the cover thereon.

An improved life raft, which is made of very few parts, can be folded and disconnected for storage, or built up for use very easily, and is so constructed that either side will serve as a top, has been patented by Mr. Frederick S. Allen, of Cuttyhunk Island, Mass. The life raft is formed of two like frames, which are attached to empty casks by means of clamps, and thus form a double raft supported by three casks. A series of guide rods pass from one frame to the other and through a sliding floor, which can be drawn to either frame by means of ropes, thus permitting the raft to be thrown overboard without regard to its position, as the sliding floor is drawn to the upper frame as soon as the raft has been launched. Oars, masts, etc., are attached to the ends of the sliding floor. Bars or rods are pivoted to the ends of each of the frames, and are connected at their outer ends by ropes, thus forming railings when erected.

Mr. James Forsyth, of New York city, has patented a currycomb so constructed that it can be readily adjusted for combing the manes and tails of horses and scraping sweat, dust, and mud from the animals. The invention consists in a currycomb with a reversible comb upon its back, projecting arms to support the comb, and a spring catch for holding the reversible comb in either position.

Mr. William A. Roos, of New York city, has patented a simple and convenient attachment to a chair. The device is so contrived that a slight movement of a pedal will operate the fan.

An improved double-acting force pump has been patented by Mr. Andrew J. Hopkins, of Richmond, Ind. It is of the class of submerged force pumps in which a single double-acting cylinder is used. The object of the improvement is to provide a pump which shall be simple and efficient in its action, and at the same time so constructed as to avoid the inconveniences incident to freezing.

Messrs. William H. Leininger and Oliver H. P. Cornelius, of Salem, Oreg., have patented an improvement in whiffletrees. The invention consists of springs set about the drawing bolts in the ends of the double and single trees.

Mr. Joseph D. Paldi, of Brockway, Mich., has patented a cheap, simple, and efficient means for fastening two parts of a rope together, no matter whether this rope be of a fibrous character or made of wire. The invention consists in a strong flattened tube of wrought or malleable iron, through which the two parts of the rope are passed. In this tube are combined two metal wedges, which are driven in at opposite ends of the tube, so as to pass between the two sections of the rope and crowd it tightly against the sides of the tube, to firmly hold the two parts of the rope and the tube together, the wedges being so arranged that the pull on the two parts of the rope always tends to draw the wedges more tightly into the tube.

An improved window guard for the safety of persons engaged in cleaning or repairing windows, has been patented by Mr. George Neu, of Cincinnati, O. The invention consists in a bar having a swiveled fork attached to one end, and a screw passing into a fork attached to the other end, to lock this bar in the window frame, so that it can hold the person by means of a strap passing around the bar and attached to a belt passing around the person engaged with the window.

An improvement in rowing gear has been patented by Mr. Fred D. Smith, of New Carlisle, Ind. The object of this invention is to provide a device by means of which a boatman may pull a boat in the direction in which he is facing.

A mill especially designed for grinding feed, operating with a reciprocating motion, and adapted to be attached to the pump rod of a windmill, has been patented by Azel H. Bell, of Belle Plaine, Iowa.

An improvement in nose feed-bags has been patented by Mr. Charles J. Gustavson, of Salt Lake City, Utah Ter. The invention relates to improved seams for uniting the sides and bottom of a nose bag, and also to a ventilator formed in the bottom of the bag and provided with a hinged cover to tightly close the bag when it is to be used for holding water or chop-feed.