the world. One who wishes to invent an exclusive mark needs to be careful that any words which enter into it are employed in an entirely arbitrary and fanciful sense. In one case reported during the winter, the mark was the phrase "Rye and Rock," applied to a composition of whisky and candy. A very entertaining argument, which, for its humor and literary brilliancy, attracted a good deal of attention among lawyers, was made to show that this was an arbitrary phrase; but the court considered that it was somewhat descriptive of the components used—rye whisky and rock candy; and that whoever used those elements in a similar beverage, had the right to use the same descriptive phrase. Similar was the decision where a clothing merchant called his store the "Tower Palace." The court said that the phrase was in its nature descriptive of the peculiar architecture of the building; it might be exaggerated, but it was of descriptive tendency, and therefore that when the clothier moved away from the building to another stand, he could not object to his successor's continuing to use the name. So the letters "I X L" have been pronounced no trade mark, for the reason that their sound gives them a meaning, and they have been widely used upon various goods. But a cigar dealer who styled his cigars the "Pride Cigars," was sustained in his exclusive claim, because "pride" has no natural proper meaning in such connection. There have been one or two decisions that an arbitrary number—such as "523"—distinctively or fancifully printed, may be protected. There are two English decisions giving considerable support to the idea that a peculiarly woven, party-colored border or selvage of calicoes, woolen cloth, etc., may be a trade mark. The names "Family Salve," and "National System of Penmanship," have received protection to a certain extent.

Within a few years past there have been two or three attempts on the part of manufacturers whose patents had expired, to sustain or continue to control the article, by asserting the exclusive right to the name as a trade mark, but such attempts have not been successful in the courts. Another decision of this class has just been made relative to the Singer sewing machine. As every one knows, the Singer Manufacturing Company had, for a term of years, the monopoly of making the Singer machines, by virtue of the patents; but, when the patent expired, rivals entered upon the business, and, naturally, advertised theirs as Singer machines. One of them was sued by the old company, which claimed that it had the exclusive right to the name Singer as a trade mark. But the court decided that the word "Singer," as applied to sewing machines, is in the nature of a description of their kind and character; hence, whoever has the right to manufacture machines of that kind has the right to advertise and sell them under the designation common in the market. After the patents expired, any person who chose might lawfully make these machines, and, as a consequence, the descriptive name became common property.

A person need not conduct the manufacture himself in order to enjoy an exclusive trade mark on the goods. Such at least is a decision by the New York Court of Appeals. A chemist, who had devised a serviceable composition, sent the recipe to Paris, where the article was manufactured, and he imported it in quantities from time to time, and arranged for its sale by various druggists throughout the country. He had an interest in these sales. As soon as it became popular others commenced making and selling it, and they used his peculiar name for it. He sued; and the infringers contended that, as he was not the manufacturer nor the seller, he could not complain. But the court decided in his favor, saying that the advantage of a trade mark does not necessarily consist in indicating the manufacturer. It may be useful as identifying the quality of the article; and when this is the case, it may be of value to any person interested in putting the commodity upon the market, and he may be the rightful owner of it.

DEAFNESS AS A CAUSE OF RAILWAY RISKS.

Dr. Lawrence Turnbull, of Philadelphia, lately read a paper before the Pennsylvania Medical Society, calling attention to the hazards to life and property due to deafness on the part of railroad men. Locomotive engineers, firemen, and conductors, he said, are liable to affections of the ear, with decrease of hearing, such deafness appearing to be, in his estimation, more dangerous than color blindness as regards the signal code, because the latter is usually a congenital defect which can be defined precisely before the individuals are placed on active duty, while the deafness is an acquired disease, but slow in its approach and sometimes unknown to the person affected; and a cold or injury diminishes the hearing more and more, or destroys it completely, if it is not properly and promptly treated.

After citing cases which had come under his personal notice, and referring to the reports of Professor S. Moos, of Heidelberg, with respect to cases of railway accidents through deafness, Dr. Turnbull dwelt at length upon the evidence collected by Ludwig Hirt.

In order to gain an unprejudiced opinion, Hirt traveled repeatedly on the locomotive. His longest uninterrupted journey covered 325 English miles. He notes the following causes which act on engineers and firemen when traveling: First, the violent concussion; second, the uninterrupted straining of the eye and ear; third, the cutting air (less noticeable on the engines provided with a protecting roof); fourth, the continuous erect position; fifth, the frequent change of temperature. The occasional troublesome or noxious influences are dust and irrespirable and poisonous gases. Hirt observed on himself and young firemen an increased frequency of pulse and respiration, pain in the knees and the calves of the legs, exhaustion, weariness, and excessive thirst and nausea, which, however, soon disappear. Whenever he traveled thirty-five to fifty miles without a stop, vertigo was perceived, associated with violent roaring in the ears, and he felt the urgent need of something to cling to. In addition to these symptoms, we have in the case of engineers and firemen the mental exertion of the most careful watchfulness and uninterrupted exertion of the higher organs of sense. Regarding the results of long years of traveling on the engine, Hirt says that, taking all in all, an engineer who averages seventy-five miles daily, or, in round numbers, 25,000 miles a year, may be as sound and robust after twenty years' service as he was in the beginning, providing he was then healthy and that he has met with no accidents. If we examine, says Hirt, a large number of engineers who have been long in the service we find that a majority of them are robust, sunburnt men, with well developed faculties, good digestion, and in an excellent state of health. The minority, however, in whom we see the disastrous results of their calling, must not be forgotten.

Dr. Turnbull recommended that all candidates for railway service should be examined by a competent physician, who should test them with special reference to their hearing. He also advised that the company's physician should report to the superintendent of the road every case of deafness discovered in trainmen, provision being made for the transference of men of impaired hearing to other positions where perfect hearing is less vitally important.

DANGERS OF DENTISTRY.

Usually dental surgeons take great care to keep their implements clean. Sometimes, however, the patient is disgusted with the sight of more or less ancient blood stains on forceps and other implements which are to go in his mouth.

A correspondent in Maine submits a local newspaper report of an accident to a Bangor dentist which suggests the query whether there may not be danger of blood poisoning to the hazard of the patient's life when the surgeon is not careful with respect to the cleanliness of his implements. In the case reported the accidental pricking of a finger with a sharp instrument used by the dentist while filling a tooth, resulted in a serious case of pyæmia. In this instance the dentist was the sufferer. Suppose the poisoned tool had pricked the gum of the patient? Whether the poison came from the diseased tooth then being operated on, or was due to some previous operation, does not appear, and would not much matter to a patient who should be poisoned in that way. In either case the injury might be fatal. From a moral point of view, however, it would make a great difference whether the patient furnished the poison or the dentist. It goes without saying that untidiness in the dentist's chair is dangerous as well as disgusting, and should not be tolerated.

A MUSHROOM FARM IN MAMMOTH CAVE.

BY H. C. HOVEY.

A novel proposal has lately been laid before the trustees of Mammoth Cave, Kentucky, and is now held under consideration by them with some prospect of a favorable answer. An enterprising Frenchman, who has already had experience in mushroom culture in the vicinity of New York city, complains that he finds no cellars sufficiently large for his increasing business, and also that the conditions of temperature and moisture are not uniform enough to insure the best results; and therefore seriously offers to rent a portion of the cave for the purpose of raising such varieties of edible fungi as may be found best suited to the locality.

This will not in the least interfere with the exhibition of the wonders of the great cavern to visitors. Many square miles of it are never seen by tourists at all, for the reason that their time is usually limited, and they have enough to do to follow the guides through the selected routes. The portion mentioned as possibly to be devoted to mushroom beds is what is known as "Audubon's Avenue," the first passage to the right after entering the cave, and therefore quite convenient of access. This avenue is said to be about half a mile long; and formerly cottages stood at its entrance, built for the use of consumptive patients, under the erroneous impression that the chemically pure air and the uniformity of temperature would more than compensate for the absence of sunlight and the cheerful sights and sounds of the upper world. The cottages are now forsaken and most of them demolished, and the long tunnel beyond contains little of special interest, unless it be the swarms of bats that hibernate in what is for that reason called "The Great Bat Room." The rich deposits of bat guano, that have been accumulating for centuries, lie as yet undisturbed, and if properly mixed with other fertilizers, might no doubt be used to facilitate the propagation of fungi.

The soil, which at present is extremely dry, might be easily moistened to any desired degree, as was done in working the saltpeter mines in former days, by conducting water through pipes from the cascade at the mouth of the cave.

The idea of thus turning caverns to profitable account for the cultivation of mushrooms, though new in America, has long been a familiar one in France, and has been demonstrated to be entirely practicable. One of these caves, at Montrouge, is said to have six or seven miles' run of mushroom beds, and the daily yield of marketable fungi is about 400 pounds weight. Another such cave, near Frepillon, is reported as sending, on favorable days, as many as 3,000 pounds of mushrooms to the Paris market, from beds aggregating sixteen miles in length. Still another, at Mery, and belonging to M. Renaudot, is said to have had under cultivation in 1869, over twenty-one miles at once, and afforded employment to a large class of laborers, who devoted themselves wholly to the business of raising mushrooms, not only for the French markets, but also for exportation. One house alone reports 14,000 boxes of preserved mushrooms as sent to England in a year.

The special advantage of subterranean over open air culture lies in the fact that, owing to the uniformity of temperature, which in Mammoth Cave hardly varies from 56° Fah. either winter or summer, the business can be pursued with equal success at all seasons of the year and in all kinds of weather.

It is the supposition that when choice mushrooms are known to be raised by responsible parties, and with every guarantee of freedom from the admixture of poisonous fungi, they would find a ready market in Louisville, Cincinnati, and other Western and Southern cities; or, if not, they could be hermetically sealed or made into catchup and easily sent to more distant markets, where such esculents are appreciated. The business has become highly remunerative in England as well as France; a fact brought out lately in the trial of the Metropolitan Railway Company, for taking possession of a mushroom nursery, showing that this curious branch of horticulture yields from 150 to 200 per cent. One witness is quoted as saying that, "if $250 were expended, in twelve, or possibly in six months, the sum of $1,000 would be realized."

It is probably an error to regard the economic value of fungi as of unimportant character; and it is worth considering, in these days, when so much has been said on the importance of multiplying the materials of cheap and wholesome food, whether such immense quantities of nutritious fungi ought to be annually lost, either by reason of ignorance of their excellent esculent qualities, or through fear of serious consequences arising from eating those kinds that are unfit for food. Caution should not degenerate into prejudice. And really the difficulty of telling edible from poisonous fungi is no greater than that of discriminating between the poison ivy and harmless ampelopsis, or between the wild and cultivated parsnip. A very little attention to the subject will enable any one to tell at sight a few of the best and most common varieties as readily as he now tells the vegetables from the weeds in his garden. It may be added that, in fact, the cultivation of the mushroom has been mainly restricted to a single species, so that most people who are fond of it, will hardly recognize any other as fit for food; while there are many varieties of esculent agarics known to the mycophagists, some of which, no doubt, might be found by experiment to be as suitable for cultivation as the common *Agaricus campestris*.

Our knowledge of American fungi is known to be extremely meager, being mainly limited to the results of researches in the Carolinas, Texas, and Cuba, made by Curtis and Ravenel; and a wide field of investigation is open to any competent person who will specially devote himself to this branch of botany.

Increased Importance of Iridium.

Mr. Holland's process for fusing and moulding iridium enormously widens the scope of the useful applications of iridium, and gives increased importance to any natural sources of the metal that may be discovered. The *Standard*, of Portland, Oregon, states that certain heavy black particles associated with gold in that State, and hitherto supposed to be iron, have been found to be iridium. The *Standard* says that the iridium appears as a black shiny sand in the gold washings, in particles a little coarser than blasting powder, and adds: "There are portions of this State and the adjoining Territory where this metal may be found in abundance. So that we have in our midst an undeveloped source of wealth that may outshine anything ever before known."

Moth Preventive.

A correspondent of the *Furniture Gazette* recommends the following remedy for exterminating moths in carpets and furniture: After some years of experience with the troublesome pests, says the writer, I found a sure preventive of moths in pitch paper, the same as roofers use. The moth will live and grow on cayenne pepper and tobacco, while I never could see that the use of these articles kept the moth miller out. The plan for the furniture dealer or housewife is to cut the paper in slips and place about the room, under and behind sofas, chairs, etc.; this should be done as early as the middle of April, and in warm climates earlier. If the dealer wishes to make parlor suits moth proof, he should place on the inside of backs of chairs and seats, small strips of the pitch paper, and rest assured that the miller will not select these places to deposit eggs. It is the miller that is the foundation of all the mischief.

A Heavy Mississippi Tow.

The towboat Oakland left St. Louis for New Orleans May 15, with the heaviest tow yet taken seaward that way, namely, eight barges carrying freight as follows: 160,000 bushels of wheat, 140,000 bushels of corn, 5,000 barrels of flour, 3,000 sacks of bran, 6,000 sacks of oats, 5,000 packages of general freight. The total tonnage exceeded 10,000 tons. Most of the grain was for export.

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 withal 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.

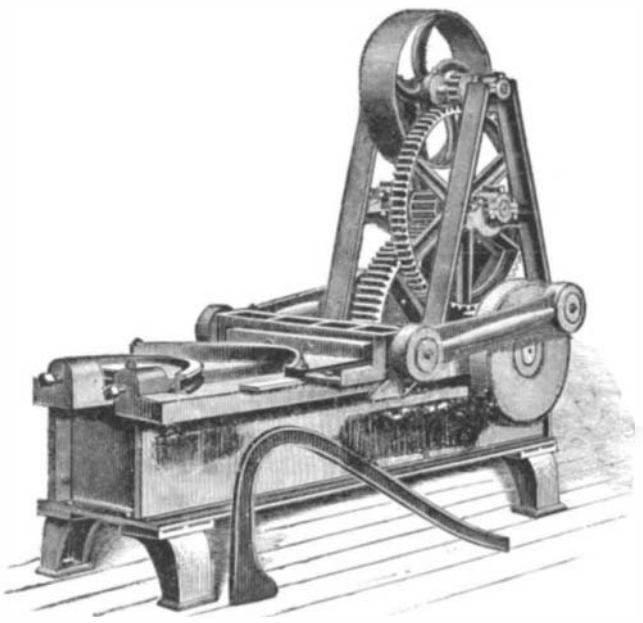
The water from the engine may be used for irrigating lawns, or other purposes that do not require it to be raised to any considerable height. A number of these engines have been in use for one to two years, with the most satisfactory results.

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, 3 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

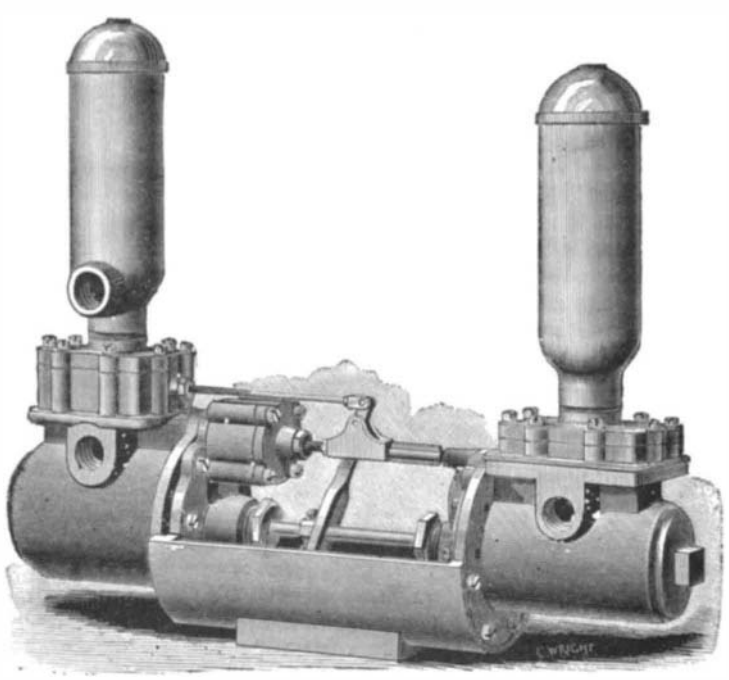


BENDING MACHINE.

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 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.*



GASKILL'S HYDRAULIC PUMPING ENGINE.

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. Zachriah 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. Gustaveson, 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.