

large for the balloon as represented in the drawing, but that will not affect the elucidation of the proposed plan.

The vertical axis of the balloon is occupied by a mast extending to some distance below it, to which is attached a yard crossing the mast at right angles, directly beneath the car. Rope stays or braces are attached to, and connect the upper and lower extremities of the mast with the ends of the spar. To these stays and also to the mast are attached suitable blocks and other appliances for furling and extending the sails. On the spar, at about one fourth its length from either end, are blocks through each of which pass two guy ropes. One of these guy ropes passes directly to the corresponding end of a floating keel, and the other passes through a ring placed at the point where it intersects the opposite guy rope to the opposite end of the keel. By shortening or letting out these guy ropes a proper inclination is given to both the sails and the keel. The guy ropes are so attached to the keel as to have no tendency to keep it otherwise than perpendicular. The keel is composed of a hollow metallic tube which floats upon the surface of the water, with a thin plate of metal attached to its under side of sufficient depth to prevent drifting by the force of winds. Its cross section would be so small as to oppose little resistance to motion, while by the use of the guy ropes it could be made to assume such a position as to guide the balloon in any required direction. It could not probably be held so close to the wind as a well rigged sailing vessel, still my experiments have demonstrated to me that it can be brought much closer to it than I at first anticipated. The keel not only acts as a means for steering the balloon, but it also takes the place of ballast. It might easily be made to carry the materials for the generation of gas to supply leakages which are liable to occur. These materials could be separated and confined in appropriate receptacles which, by means of a stop cock with a cord attached, could be made to communicate with each other, and the gas thus generated could be conveyed by a flexible tube to the balloon. Enough of these compartments could be provided to furnish the gas in quantities as it would be required.

So confident am I that this apparatus will answer the purpose, that I am willing to undertake the voyage from New York to Liverpool provided a proper person will volunteer to accompany me, and some one can be found to furnish the means for the construction of the "air-ship" under my direction, my own resources being inadequate to meet the necessary expenses. AERONAUT.

Plan for Index Plates.

MESSRS. EDITORS:—I send herewith a plan for an index or dial-plate for a gear-cutting machine. If you or your correspondents know of a better combination, please inform me through the SCIENTIFIC. I propose to make the index-plate twenty-eight inches in diameter, the first circle of holes (commencing at center of plate) four inches diameter, and the last circle twenty-seven inches diameter. There will be sixty-nine circles in all, containing the following number of holes, and in the following order:

77	87	99	109	118	127	135	143	280	420
78	89	101	111	119	128	136	144	300	440
79	91	102	112	121	129	137	145	320	460
81	93	103	113	122	131	138	146	340	480
82	94	106	114	123	132	139	147	360	500
83	97	107	116	124	133	141	148	380	520
86	98	108	117	126	134	142	149	400	

In the above I have left out the number 75, 150, and some between them, because they are factors of other numbers used, viz:

75 is a factor of	300, 85 of 340, 95 of 380, 105 of 420, 125 of 500,
76	380, 88 " 440, 95 " 480, 130 " 440, 130 " 520,
80	" " " 480, 90 " 360, 100 " 500, 115 " 460, 140 " 380,
84	" " " 420, 92 " 460, 104 " 520, 120 " 480, 150 " 300.

All numbers below 75 are factors of the even numbers between 75 and 150. Consequently, I can cut a gear of any number of teeth below 150; above 150 I can cut as follows:

160 is a factor of	320, 190 of 380, 220 of 440, 250 of 500,
170	" " " 340, 200 " 400, 230 " 460, 260 " 520.
180	" " " 360, 210 " 420, 240 " 480.

Total number of holes in index-plate would be 12,690; number of different gear that could be cut from six teeth upwards, 169; distance from center to center of holes in four-inch circle, 0.1632 inch; distance from center to center of holes in largest circle, 0.1666+ inch; distance from any circle to next adjoining, 0.172+ inch.

Kalamazoo, Mich.

E. H. H.

Breech-loading Cannon in Russia.

ST. PETERSBURG, RA., July 9, 1868.

MESSRS. EDITORS:—In your number of June 27th ult., you say that Russia had adopted the Prussian system of breech-loading cannon. This is a mistake. The Prussian system, together with the Armstrong and Broadwell systems of breech-loading cannon, was elaborately tried by a Russian Commission in the presence of the undersigned. The Armstrong gun, first, and the Prussian Krupp gun, second, broke down, and could not longer be loaded or fired without cleaning; while the American system of J. W. Broadwell proved a perfect success—his gun being as fresh and quick in loading, and accurate in fire, as at the commencement. As a consequence, Russia gave up the Krupp and Armstrong guns, and bought the Broadwell patent, giving him a decoration and a large sum of money, and now uses it both in the army and navy, in large and small bores. AMERICANUS.

RICH or poor, it is every man's and every woman's duty to earn his or her own living. Everybody is a consumer; therefore, everybody should be a producer. The world's wealth is so much less by everything that is consumed or worn out. The idleness of individuals in all stations and places, makes salaries lower and bread higher; so it is the idle in any community who should be despised, and not they who labor.

THOMAS & RAYMOND'S PATENT ADJUSTABLE LADDER.

Serious injury to body or limb, if not permanent crippling or loss of life, sometimes results from the slipping of the foot of a ladder, when, on account of the unevenness of the ground, it is necessary to "block up." This is usually done by means of brick, stone, pieces of wood, etc., liable to slip at any moment. The invention here illustrated is intended to obviate any such disaster. The engraving shows plainly a simple attachment effectual, cheap, and handy, which can be



applied to both feet of the ladder, which would seem to be preferable, as it would obviate the necessity of turning the ladder to suit its changed position to the surface of the ground.

In the engraving the attachment is very plainly seen. It is a strap of malleable, cast, or wrought iron, with two slots cut longitudinally, and is secured to the ladder by means of two bolts through the ladder leg, the attachment being held in position by nuts. For better security the foot of the attachment is corrugated, and the inside surface where it meets the ladder may be similarly corrugated if deemed necessary. When lifted up, the appendage is entirely out of the way, but it may be dropped to any extent desired to suit circumstances.

The patent for this device was issued June 30, 1868. The entire right or territorial rights are for sale by Thomas & Raymond, Beverly, Mass.

Dyspepsia—Its Symptoms and Causes.

We extract from a communication by Dr. E. P. Miller to the *Herald of Health*, the substance of an interesting article on Dyspepsia, a disease which prevails to an incredible extent in this country, and which is the fruitful source of many complaints often attributed to other causes.

"In persons whose digestion is perfectly healthy, there is, during the digestive process, more or less gas accumulated. This gas is generally all absorbed and used in the system, so that in the highest state of health no gas will accumulate in the body, it should all be taken up by absorbents and used.

"Flatulence, then, is due to an excess of gas. The cause of this excess may be either a failure of the absorbents to take up what naturally accumulates in the digestive process, or to its being produced in excess. The introduction of a certain amount of air into the stomach in the frothy saliva, by mastication, and in the act of swallowing food, may be considered a physiological process. This air undergoes a change by being interchanged or mixed with the digestive fluids and gases, and in this change it gives up a portion of its oxygen, which is finally absorbed. In the dyspeptic's stomach the absorbents are not active, and this gas accumulates, giving rise to flatulence.

"The chief origin of the gases which produce flatulence, however, is due to the decomposition or putrefaction of food in the alimentary canal, and those persons who are habitually troubled with flatulence, either eat at their meals a quantity of food which is absolutely much too large for their powers of digestion, or they are taking a quality of food that is not well adapted to the diseased condition of their digestive organs.

"Some authors think that the fluids which are thrown back into the intestinal canal from the blood to be excreted, generate gases which give rise to flatulence. This opinion has not, as yet, been so clearly established. The gas in the stomach differs from that in the intestines, and that in the small intestines differs from that in the large. There is a much larger proportion of oxygen in that found in the stomach, being much more like atmospheric air than those intestinal gases.

"Hydrogen is formed in much larger proportion, however, in the gases of the intestines than in those of the stomach. This hydrogen is not found in the blood to any great extent, and is not extracted from the blood into the intestines, so that it must arise from the chemical changes going on in the food after it leaves the stomach. This chemical change is doubtless due to obstructions in the function of the liver. MM. Bidder and Schmidt have tried repeated experiments upon dogs, by tying the duct which conveys the bile from the liver to the intestines, and they have invariably found that rapid chemical changes took place in all sorts of food when this was done. When animal food was fed to these dogs the feces smelled like carrion; there was a continual rumbling in the abdomen, and an evacuation of fetid air.

"From the experiments made, it is supposed that one of the functions of the bile is to act as an antiseptic, and prevent the putrid decomposition of albuminous food, and also to check the acid fermentation of vegetable foods. Dr. Chambers states 'the condition produced in dogs by mechanically stopping the functioning of the liver, answers exactly to the intestinal flatulence of dyspeptics in our species.'

"Flatulence of the small intestines generally occasions the greatest annoyance. There is usually considerable difficulty in this gas passing the ilio-colic valve into the large intestines, and for this reason it often rolls about in the abdomen, causing a very distressing rumbling noise, sometimes remaining several days without being able to escape or to be absorbed. In addition to this rumbling and motion, it often greatly distends the abdomen, causing severe pain in the side and other distressing symptoms. At times, when there is but slight pain or discomfort, it occasions much inconvenience by preventing sleep.

"When gas is expelled by the mouth, that has a strong odor of sulphureted hydrogen, it is intestinal gas that has passed up through the pyloric orifice into the stomach. When gas is belched up that has neither taste nor smell, it usually comes from indigestion of starchy food; when it is fetid with the odor and flavor of sulphureted hydrogen, or rotten eggs, it is from the indigestion of albuminous food. Flatulence arising from the indigestion of albuminous food is often attended with diarrhea, while that caused from starchy food is attended with constipation. Flatulence of the colon or large intestines is not near so troublesome as that of the small intestines. It is readily distinguished from that of the small intestines by percussion, by the absence of rumbling, and by its passing off more readily from the bowels.

"Constipation is one of the obstinate and very troublesome symptoms accompanying dyspepsia. It is often so formidable as to be almost the only symptom complained of. Patients often say: 'Doctor, if I could only get my bowels to move freely, I should be all right; but I can't get them to move at all without I first take something to start them.' This taking 'something to start them' is very often the sole cause of their extreme constipation. There are tens of thousands of dyspeptics in the country who have almost ruined the mucous coats of the alimentary canal by the constant habit of resorting to physics to cure them of every slight indisposition they may have.

"If people would only realize that in every dose of physic they swallow they are taking into their systems an irritant and dangerous poison, which the vital instincts hasten to expel from the body by this rapid purging, and that this poison must leave its damaging effects in the blood, on the nerves, bones, muscles, and particularly on the mucous membrane of the alimentary canal, it seems to me they would see a reason for not being in quite so much haste to defile the beautiful bodies God has given them.

"Constipation and costiveness are usually regarded as synonymous terms, yet some authors make the distinction, that in costiveness there is less fecal matter formed than in constipation. In both there is a default in the repulsive power of the bowels, allowing the fecal matter to accumulate, but in costiveness there is less accumulation than in constipation. In this difficulty there is evidently a great deficiency of expulsive power in the lower bowels. The causes of course are various. Purgative medicines, I think, should head the list. Imperfect digestion of the food before it reaches the colon; sedentary habits; acute diseases, which confine the patient to the bed for a long time; general debility; neglect to attend to the natural call to evacuate the bowels, thus keeping them too long dilated or distended; imperfect mastication; eating indigestible and insoluble articles of food, such as skin, gristle, stones and seeds of fruits, and half-cooked vegetables, highly seasoned food, new bread, starchy food that is imperfectly digested, alcoholic stimulants, tobacco, vinegar, and whatever interferes with the healthy action of the liver, will produce constipation.

"Too highly concentrated food is often a cause. A certain amount of innutritious material seems necessary to complete digestion, and thus, while we should not exclude the innutritious entirely, we should avoid the extreme of swallowing too much of the coarse and indigestible. The exclusive use of fine flour bread is a prolific cause of constipation. It prevails more among Americans than any other class of people; the reason for this being, they use more concentrated food, take more physic, and less exercise. Old people are most liable to constipation."

OUR Secretary of the Navy within a few days past, has sent in a communication to the Senate in reference to the acquisition of the Midway Islands, belonging to the West Indies group, and the opinion is expressed that the acquisition will prove a highly important one. The principal harbor is said to be equal to that of Honolulu, the soil is good and fish are abundant in the bays.

The Aniline Blue—An Instructive Lesson.

It is an old maxim that "Fortune favors the brave." It might be appropriately added that it also favors the persevering. Many important discoveries have been made in consequence of the dogged perseverance of men, who, when they have asked from nature a revelation of her mysteries, would not accept a negative answer, until it would seem that almost on account of their very persistence they were rewarded by success. An interesting treatise on Aniline and its Derivatives, from the pen of M. Reimann, contains the following anecdote of the way in which the fugitive blue formerly considered as practically of no value, was rendered permanent. It presents a marked contrast to an instance of good abilities wasted on account of unfixeness of purpose, which we give in another column:

"A dyer, like all others of his craft at that time, was busily occupied experimenting with the aniline dyes. Amongst other things, he tried a reaction described by M. Lauth, viz., that of aldehyde on a sulphuric solution of aniline red. In this reaction, a substance is produced which gives to solutions an extremely evanescent blue color. M. Lauth had given up all idea of utilizing this blue color in practice; and M. Cherpin endeavored to fix the same color on silk or wool with similar want of success. His attempts, although fruitless, were incessantly renewed, exhausting his purse, but not his patience. One day, however, discouraged at the want of success attending some recent experiment on which he had founded great hopes, he was on the point of relinquishing the attempt at conquest over this fugitive blue, when the idea struck him to confide his troubles to an old friend, a photographer. 'A trouble shared is a trouble halved,' says the proverb. Cherpin proceeded to test this saying, and experienced the reward of his perseverance and his confidence in the consolations of friendship. He found his photographic friend, and confided to him the history of all his hopes, his experiments, and his fruitless results. 'Fix the blue?' said his friend. 'Is that the only difficulty? Why it's the easiest thing in the world! Have you tried hyposulphite of soda?' 'Hypsulphite of soda? *Mon Dieu*, no! Do you think it will fix my color?' 'Of course it will. Don't you know that hyposulphite of soda is the fixing agent *par excellence*, and that when we want to fix anything in photography, that is the substance we always employ.'

"Happy is he who possesses faith! Cherpin tried hyposulphite of soda, and his joy and admiration of the chemical knowledge of his friend may be imagined when he saw his blue color metamorphosed into a splendid green, this time perfectly stable. It is scarcely necessary for us to add, that the mode of action of action of hyposulphite of soda in this case is entirely different from its photographic action, and that it would be quite impossible to predict the one by knowing the other.

"This anecdote contains a moral. It shows, in our opinion, not the result of chance, for that is common to all the world,—for where is the discovery to which chance has not more or less contributed?—but it shows the power of will, the power of perseverance. Chance only favors two kinds of persons—those sufficiently instructed, or endowed with talents eminent enough to observe it, to seize it, and to profit by it; and those who, by patience, perseverance, and the power of their will, force it in time to become useful to them."

What a grand moral this ludicrous episode ought to convey to our students if they will only read it aright?

Editorial Summary.

CHICAGO was visited July, 21st, by countless numbers of the sand-fly, an insect about the size of the gallinippers which infest the Southern swamps. Their advent was sudden, and many of the saloons on the north and south sides were compelled to close up in order to prevent their ingress. Whenever a light was placed the flies gathered around it in millions, and covered the glass in the windows so as to render it almost an impossibility to see the gas jet. The street lamps were besieged, and in many instances the streets were as dark as if no gas were employed. The sidewalks were covered, and many were crushed to death beneath the feet of pedestrians. But still they increased, and about 10 30 o'clock they covered everything. They then commenced to disappear, and at two o'clock in the morning scarcely one was to be seen. This is about the usual time for their annual visit, but never before were so many seen at any one time at a particular point.

AN IRON MOUNTAIN IN WEST VIRGINIA.—The *Pittsburgh Gazette* says: "We are informed by Hon. D. D. T. Farnsworth, State senator from Upshur county, West Virginia, that an iron mountain exists in the upper portion of that county, of greater extent and purity than any other known body of iron in the world, not excepting the famous iron mountain of Missouri; and that under this vast body of iron there is a vein of bituminous coal, measuring on the face, where the Buchanan river cuts through, twenty-five feet in thickness. He declares this ore to be so pure that a blacksmith took a piece and forged a horse-shoe from it. This deposit is up the west branch of the Monongahela river, and can be reached from this city by a railway not exceeding one hundred and fifty miles in length."

In the southeast corner of the Territory of Wyoming is situated Cheyenne. This, the "Magic City," was laid out by General Dodge, on the 20th and 21st of July, 1867. In one short year it has gained a resident population of over five thousand, having had, perhaps, in the flourishing times of gamblers, roughs, and prostitutes, as many more. The citi-

zens now are mostly of a very respectable class, though, like all the western towns, it has a full quota of rum-shops and their patrons.

THE solvent power of glycerin upon several substances commonly used in medicine and the arts, is as follows: One part of sulphur requires 2,000 parts of glycerin; iodine, 100 parts; red iodide of mercury, 340 parts; corrosive sublimate, 14 parts; sulphate of quinine, 48 parts; tannin, 6 parts; veratria, 96 parts; atropia, 50 parts; hydrochlorate of morphia, 19 parts; tartar emetic, 50 parts; iodide of sulphur, 60 parts; iodide of potassium, 3 parts; sulphide of potassium, 10 parts.

A COMMUNICATION to the Royal Society gives an account of some observations upon the small comet discovered on the 13th of June by Winecke. The spectrum of this comet is resolved into three broad bright bands, corresponding to the spectrum of carbon in the combustion of olefiant gas. From this it is not improbable that carbon will hereafter be determined to be a general constituent of cometary matter.

A WRITER in the London Quarterly Review urges the construction of the Euphrates Valley Railway by the British Government. It is probable that the demands of commerce will soon cause the construction of a railroad from the Caspian to the Indus valley by way of Muhad, Herat, and Candahar, that is to say a route through Russian territory and opening the way for Russian armies to India. Such a road, too, would compete with our Pacific Railroad for the commerce of Eastern Asia.

A METHOD of refining sugar has recently been submitted to the French Academy. It consists merely in adding milk of lime to the sirup, mixing intimately in quantities dependent on degree of impurity. The lime is afterward separated by a current of carbonic acid (passed as long as the liquid is alkaline), followed by boiling for a short time to decompose the resulting bicarbonate. The filtered and decanted liquid yields pure white sugar. The quantity of lime varies from four per cent. upward.

THE boxes in Boston post office have been provided with metallic doors and patent bank locks. The advantage of this innovation is that each box-holder can have access to his box at all times, and on any day. The lock is the property of the box-holder, and, on the box changing owners, the lock is removed, and a new and different one substituted.

ANILINE poisoning can be detected as follows: Macerate the contents of the stomach with water containing a little sulphuric acid, add an excess of solution of potassa, and distil; add a little sulphuric acid to the distillate and evaporate. If aniline is present, a purple or red margin will be formed at the top of solution where it touches the vessel.

M. LARTET, at the last session of the *Sociétés Savantes*, presented an account of some human bones discovered by him in Dordogne. The bones of the limbs were of remarkable size and prodigious strength. Three skulls were found also of great size. The age of these bones is judged to be equal to the mammoth, and they are considered to belong to the same geological period.

It is estimated that fire in the woods, this season, has destroyed in the Ottawa District, standing pine lumber, to the value of \$4,000,000, and the woods are still burning. The boats on the Montreal route, it is said, are seriously detained by the smoke on the river.

ON the Erie Canal, a boat has been placed, which is propelled on a new principle. The propelling power is a wheel in the centre, fixed upon a frame which allows it to rise and fall according to the depth of water, and permits the circumference always to come in contact with the bottom of the canal. Satisfactory results are said to be obtained.

A RESIDENT of Martigny, Switzerland, has lately organized a considerable trade in ice at Lausanne. The ice from the glaciers having been sawn into regular cubes of small volume and perfect transparency, is placed in boxes and sent off by fast trains to various centres of population in France, and arrives with very little waste.

THE boundaries of the new territory of Wyoming are as follows: On the north is situated Montana; on the south, Colorado; on the east, Dakota and Nebraska; and on the west, Montana, Idaho, and Utah. It lies between the 27th and 34th meridians of longitude west from Washington, and the 41st and 45th parallels of latitude.

No doubt the cheese factories of the country add much to the cheese product in the market; neither is there any doubt that the quality of the article decreases as the quantity increases. The rich productions which once made Goshen and Herkimer county famous, are now buried beneath the leathery and tasteless productions of the cheese factories.

THE parallel rod of the first locomotive run over the Boston and Providence road in 1834 is preserved in the Company's workshop at Boston. The parallel rods of their engines now in use weigh 249 pounds.

A NEW tunnel under the Thames is contemplated, at a point near the Tower of London, to be lined with blue brick and iron, and with hydraulic lifts at the ends to raise a carriage and ten passengers.

THE Reporter estimates the shoe business at Lynn, for the past year, at \$17,000,000.

NATURE was thoughtful in her arrangement of coal and iron. Generally, wherever she laid down a stratum of iron ore, she accompanied it with a layer of coal to smelt it.

THE largest sawmill in the world, but one, is at Clinton, Iowa, and when under full way employs 1,000 men. Its engine is of 900 horse power.

A MAN in East Thompson, Conn., is building two tenement houses, framed like ordinary buildings, but which are to be covered, sides and roof, with Manilla paper instead of boards.

APPLES carried from this country to China, packed in ice, sell at Hong Kong for \$2 a dozen, gold.

BET sugar cultivation is a growing interest in the Western States. At Montgomery, Ill., a company has purchased this season 500 acres, on which they are raising beets for sugar.

NEW ELGIN, Ill., is a forest of pine and birch, the trees 20 feet high, and "raised from the seed," where ten years ago was only a shrubless prairie.

THE Foreign Associateship of the French Academy of Sciences, vacant by the death of Sir David Brewster, has been filled it is reported, by the election of the eminent mathematician, Professor Krummer, of Berlin.

A PHYSICIAN of Illinois reports a case of blindness of the right eye completely cured by the extraction of the first bicuspid of the upper jaw. The tooth was carious, and its interior was filled with pus.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

THE WORKING PEOPLE.—*The Labor Exchange*, at Castle Garden, N. Y., makes the following report of the first twelve working days of July: Applicants for employment, 1,804; consisting of males, 1,182; females, 622; orders, for employes, 2,012; males, 1,390; females, 622; persons employed, 1,804; males, 1,182; females, 622. Among these were 41 families comprising 134 persons. Average number of orders each day, 168; average number of applications for employment, 150; average rate of monthly wages paid to the males, \$25; average rate of monthly wages paid to females, \$9. Classification of the applicants: Males, mechanics, 129; agriculturists, 1,053; females, skilled labor, 24; unskilled labor, 598. Males able to read and write, 877; not able, 305; females able to read and write, 456; not able, 166.

A distinguished experimental chemist of Paris announces that he has taken advantage of the property possessed by fluoride of calcium (common fluor spar) of dissolving alumina at a high temperature to obtain magnificent crystals of corundum (sapphire, rubies, &c.) He promises shortly to give a full account of the experiment.

The roof of the Metropolitan station, now being erected for the Midland Railway at King's Cross, London, is to ordinary roofs what the Great Eastern was to ordinary vessels. Its span is 210 feet, and the height of the central portion of the arch from the level of the rails is 99 feet. It covers eleven lines of rails and four acres of cellars.

The statistics of cigar manufacture show that Great Britain and her colonies and the United States consume half the crop of the world, and that Cuba produces one-third of the whole supply of the world.

The descent of the Union Pacific railroad from the Black Hills to Laramie Plains, is every way sensational. The grades 90 feet to the mile, so winding that 24 miles are traveled to reach a point 12 miles distant, and Medicine Bow Mountain, capped even in the summer time with snow, appears at the right of the traveler one minute, and at the left a minute later.

The Winsted Hoe Company which was employed wholly in the manufacture of hoes for southern plantations, has shut up shop for want of orders. The scythe factories of the same place have also a dull season, a circumstance with which the mowing machines may have much to do.

The Pacific slope intends to provide itself with iron. San Francisco has built a rolling mill, and Oregon has sent down 1,000 tons of pig iron to start with.

The patent on Hoe's rotary presses expired on Friday, 24th July. An application for its extension for seven years was not acted upon by Congress owing to the lateness of the time at which it was introduced.

Recent American and Foreign Patents.

Under this heading we shall, in our weekly issues of some of the more important recent home and foreign patents.

BUILDING MATERIAL.—Thomas J. Lowry, Conneautville, Pa.—The nature of my invention relates to improvements in the composition of matter for forming building material and in molds for forming the same.

LEVELS.—Wm. P. Cutter, Chelsea, Mass.—This invention consists in an ordinary stock of wood which is provided with a circular metallic ring made in two parts and inserted within a central circular opening on the said stock within the said ring a weighted pendulum is suspended upon a central axis and provided with arms which swing between cross arms of the ring, and always maintaining a vertical position no matter what position the stock may be in.

INDICATOR FOR BOILERS.—Robert Berryman, Philadelphia, Pa.—This invention relates to a new indicator, which is to be attached to steam boilers, and its object is to produce a perfect safety guard against all accidents that may arise from having too much or too little water or too high or too low a pressure of steam in the boiler.

DEVICE FOR HOLDING TOOLS AGAINST GRINDSTONES.—Edwin Fernald, Turner, Me.—This invention relates to a device by which tools having a long cutting edge, can be held against grindstones, and can be sharpened; the device being so arranged that the bevel formed on the tool will be entirely uniform, and that its edge will be ground perfectly straight.

CARRIAGE.—Job Whitehead, Ames Station, Iowa.—This invention consists in the arrangement upon the frame-work of the body or box of a carriage of one or more coiled springs which may be wound up with a crank and arranged to transmit motion to the axle of the hind wheels and belts.

TREATMENT FOR VETERINARY PRACTICE.—Richard Jones, New York City.—This invention and discovery relates to a composition designed for healing purposes in the treatment of horses, cattle, and other domestic animals, and which may also be used with good effect upon the human body for the cure of wounds, bruises, and for other purposes.

WATER WHEEL.—La Fayette Lyons, Bennington, Vt.—This invention consists of a horizontal wheel provided with vertical curved buckets against which the water flows in a right angled direction and is discharged through two or more openings in the cover into a circular chamber of the diameter of the wheel, from which lateral tubes convey it away out of the chamber through the curb which supplies the water to the wheel.

DUMPING CAR.—Phalander Daniels, Jackson, Mich.—This invention consists in the arrangement on the platform of a car, of a dumping bed fixed on wheels and provided with racks and pinions, whereby the operator by turning a crank may move the said bed over the edge of the car until it will dump by the action of momentum and gravitation, the said bed being provided with staples which are caught by hooks suitably placed at the edges of the car and to hold it as on a pivot to be restored to a level position by the oper-