

Road Locomotion by Steam.

On page 226, No. 15, current volume, SCIENTIFIC AMERICAN, we published accounts of the performances of a new steamer for traversing common roads and drawing trains of loaded wagons, the principal peculiarity of which is the use of vulcanized rubber tires on the wheels, by which the jolts and obstructions owing to unevenness of surface of the roadway are avoided and overcome. The trials, which appear to have been very satisfactory tests, were made at Edinburgh and Leith, Scotland, in the first instance by drawing a train of coal carriages over paved roads, up and down steep inclines, and around curves and corners; and in the second case the locomotive running over a grass field and over loose earth, lightly laid to the depth of from twelve to twenty-four inches. The weight of the machine used was between four and five tons, yet in passing over the loose earth the weight compressed it so little that a walking stick could easily be pushed down in the track of the wheels, without marked exertion.

The accompanying engraving we copy from the London *Mechanics' Magazine*. The boiler, A, is an improved vertical boiler evaporating 4.68 lbs. of water to one pound of inferior Scotch coal, for 3.66 lbs. to one pound of the same coal in the ordinary upright boiler. B is the casing of the engine, C the water tank, and D the coal bunker. E is the steering wheel, with a rubber tire twelve inches wide by four and a half inches thick. The main driving wheels, F, connected to the engine by suitable gearing, have tires of rubber fifteen inches in width by five inches thick.

A number of trials have lately been completed, with a pow-

erful road steamer, which has been constructed for hauling wagons loaded with coffee over the hilly roads in the island of Ceylon. This steamer has two cylinders, each seven and a half inches diameter by ten inches stroke, and a vertical boiler three feet diameter by seven and a half feet high. The engine is arranged with gearing to make either six or fifteen revolutions to each revolution of the driving wheels. The machine weighs, with water and coal for two hours' work, about eight and a half tons. It was intended to haul twelve tons gross weight up gradients of one in sixteen. It was found, however, on trial that it was capable of doing a great deal more than the stipulated amount of work.

Bleaching of Tissues.

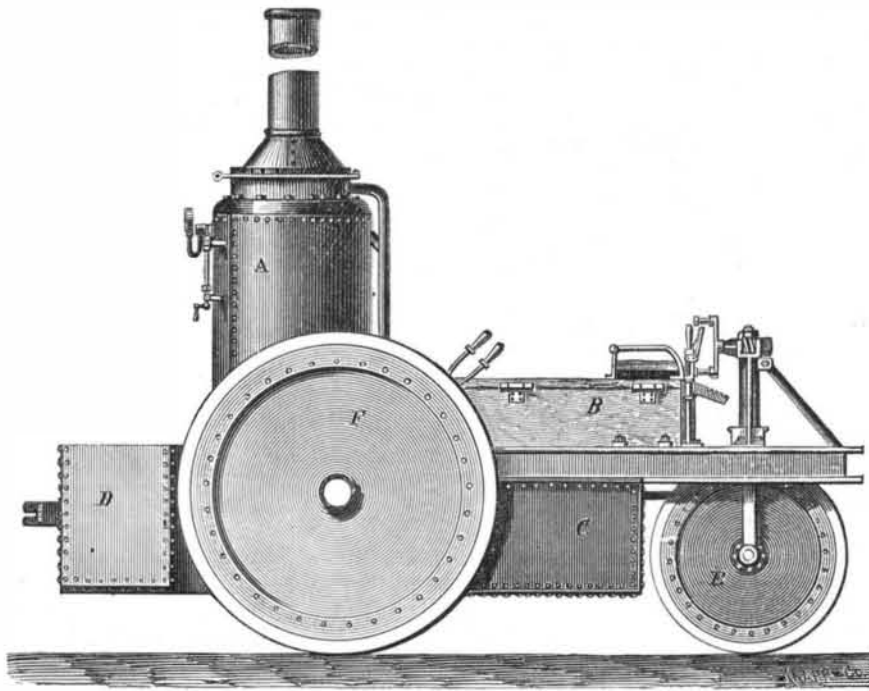
Some recent researches by M. Kolb on the bleaching of tissues will be found of interest to those engaged in this department of the arts. We give a condensed account of these experiments as contained in the London *Chemical News*.

Flax was the fiber chiefly experimented with, alkalies being the reagents whose effects were studied, the object being to fix precisely the nature of the substance which passes by the name of resin, gummy matter, gum-resin, saponifiable matter, etc. Elementary analysis gave no information; it gave figures which closely approached the percentage composition of cellulose. The employment of various solvents used in organic chemistry, on the contrary, led to certain conclusions by a chain of facts. The fiber after treatment with alkalies furnished strongly colored lyes, which had a certain tendency to mold; this result suggested the idea of a saponification, and led to the examination, as solvents, of alcohol, ether, and essential oils. The yellow coloring matter is completely insoluble, and these liquids only remove from the fiber a white fatty matter and a green essence, the penetrating odor of which is found slightly perceptible in bleachers' lyes. The whole only constitutes 48 per cent of the weight of the fiber, and is the portion really saponifiable in caustic alkalies; the alkaline carbonates leave this fatty matter in the fiber, which becomes at the same time, more supple. After exhaustion by alcohol, the fiber, boiled in weak potash, soda or ammonia solution, gave, in three cases, a loss in weight of 22 per cent. Carbonate of soda possesses exactly the same solvent power, but it acts more slowly. The brown lyes thus obtained, neutralized by hydrochloric acid, give a brown gelatinous precipitate; but the coloration of the liquid still indicates the incompleteness of the precipitation. Neither acid in excess, nor lime of baryta, will precipitate that which remains of the coloring matter in solution. This soluble portion varies according to the amount of alkali, and especially according to the duration of the ebullition; thus twelve hours' ebullition with ammonia suffices for acids to cause no precipitate in the solution. The fiber treated by boiling water, loses at the end of a week 16 per cent of its weight, and 18 per cent when pressure intervenes; the matter dissolved is acid to litmus, colors the water slightly, and possesses the singular property of browning by simple contact with alkali.

Considering these first characters, it is difficult to admit the presence of a resinous matter. Caustic alkalies or alkaline carbonates do not act as simple solvents, for in boiling the fiber with determinate amounts of carbonate of soda or sulphide of sodium, it was found that after eight hours' ebullition no trace of carbonic acid or hydrosulphuric acid re-

mained. Resins do not give similar results; they saponify equally well with sulphides and alkaline oxides. Lime does not precipitate this substance dissolved by the alkalies; the fiber boiled with milk of lime loses the same weight as in soda, a soluble combination being formed with lime, containing 48 parts of this oxide for 100 of the coloring matter; chalk gives the same result, although more slowly. The treatment by chalk and lime presents this particular—that the solutions obtained remain colorless, and that the precipitates obtained are white. Analysis assigns to the substance, soluble in alkalies and re-precipitated by acids, the following numbers: Hydrogen, 5.0; carbon, 42.8; oxygen, 52.2.

The research has led to the establishment of the following facts: The gummy substance which adheres to the fibers



THE THOMPSON ROAD STEAMER.

of flax is nothing else than pectose. The soaking or steeping of the fiber appears to have for its object the determination of the pectic fermentation, and the pectic acid which results remains fixed on the flax, either mechanically or in part, in the form of pectate of ammonia. The caustic alkalies in the cold form gelatinous pectates, which preserve the fiber from being completely attacked. Pectic acid being weak, the alkaline carbonates have in the cold only a feeble action upon the fiber. Ebullition, on the contrary, transforms pectic acid into an energetic acid—metapectic acid, the carbonates are then strongly attacked, and their employment becomes as efficacious as that of caustic alkalies. The carbonate of soda, even in large quantity, is not a cause of the weakening of the fiber, which loses more strength from the employment of caustic soda, especially when the lye is concentrated. The employment of lime, even in the cold weakens the fiber considerably. But the chief cause of the destruction of the solidity of the fiber is too long digestion, particularly with caustic soda. M. Kolb says, that, after having proved the existence of pectose in the unsteeped flax, and of pectic acid in the same flax after steeping, it is to be hoped that the attention of chemists will be drawn to the pectic fermentation, well known doubtless as a scientific fact, but of which no one suspected an industrial application of so high importance

The Mechanics of Spiritualism.

The Journal of the Franklin Institute says: "Dr. Peper, of the Polytechnic Institution in London, so well known for his ingenious inventions of the ghost, the floating head, etc., has for some time past employed himself in the development and exhibition at the above named institute of sundry contrivances, by which all the wonders of spiritual manifestations have been not only paralleled but exceeded. One of the most remarkable of these consisted of an arrangement by which various objects and persons were caused to rise in the air, and remain there suspended under conditions, which implied the impossibility of any supporting wire however fine and invisible.

"When, however, we mention that in the patent by which these contrivances are secured to their inventors' use a large plate of glass figures as the 'invisible means of support' of these light characters, the wonder of the thing will be somewhat diminished, while the simplicity and ingenuity of the idea may well claim praise. In a foreign scientific journal we see some tricks of the Davenport Brothers are described and are declared inexplicable, and yet we have repeatedly seen performances, involving every important feature of these super-human developments, made by an amateur in the arts of legerdemain in the presence of many spectators, and defying all their ingenuity of detection. Yet to those initiated, these feats are as easily reduced to the domain of nature and mechanics as Dr. Peper's wonders when the glass is recognised."

Nothing if not Scientific.

Forney's *Press* tells a good story about bones, which illustrates the power of science in dealing with extraordinary phenomena: In company with a distinguished member of the American Association for the Advancement of Science, we were recently examining the grounds of an Illinois horticulturist. Our horticultural friend evidently had great respect for the *savant*, and received his every word with almost reverent admiration. Picking up an old bone, the learned sci-

entist remarked: "This is the bone of a horse." The farmer looked doubtingly, but did not express dissent. Soon after our learned friend lifted another, and remarked: "This is the bone of an ox." The farmer was astonished, and asked: "Please tell me how you can so easily distinguish one bone from another? Why is this an ox bone?" "Why don't you see," observed the philosopher "where the butcher sawed a steak off of the bone?"

It was well for our learned friend that he was not in a region of horse meat food, or he might have been confounded in his wisdom. As it was, the farmer had only to exclaim that "learning was a wonderful thing;" and for some minutes he was lost in reflection on the astonishing mysteries displayed by the aid of "science."

The Atmosphere.

The Academy of Sciences, in France, has published the result of observations of the atmosphere, made by Camille Flammarion in an extended series of balloon ascensions. The first chapter of the report establishes a law of variation of the watery vapor in the air, and asserts that the invisible moisture accumulates to the maximum zone of humidity and then decreases until it finally disappears. The second chapter shows that the solar radiation increases in the upper regions in proportion to the diminution of the moisture and of the temperature of the air. The third chapter treats of the circulation of the atmospherical currents. The fourth establishes the diminution of the temperature according to the latitude. The fifth gives very curious observations on the altitude of clouds of different forms, their variations, and physical construction. The sixth gives several problems on optics, acoustics and general physics, of which the definite solution is not completed.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

A Novel Steam Canal Boat.

MESSRS. EDITORS:—In your issue of September 23, you copy an article from the Rochester papers about the new steam canal boat, *Edward Backus*, and as it does not seem to give in all respects a correct idea, I will endeavor to explain it. The boat, *Edward Backus*, was built with the view of overcoming the obstacles that have heretofore made steam on the canal a failure.

It has been demonstrated that a screw or paddle wheel, in as small a water way as the canal, and shoving a boat of the present style of canal boats at the speed of two miles an hour, has a "slip" of about seventy-five per cent; and as this causes a consumption of about two tons of coal, every twelve hours, and requires a large boiler and engine in proportion to the work done, thereby lessening its carrying capacity, it cannot compete with horses, having direct hold on the ground, and no loss of power. Now, it occurred to me, that if I could run a wheel on the solid ground, at the bottom of the canal, thereby saving this enormous loss of power by slip, and making the amount of power necessary to drive a canal boat conform nearer to the power of two horses on the towing path, I could propel a boat cheaper than with horses. With this object in view, I constructed a boat with a "well" in the center, running through the boat like a box for a center board in a vessel, sixteen feet long, and twenty inches wide, and placed therein a traction wheel eight feet in diameter, and one foot thick. This wheel is hung in a frame, which is hinged at its forward end, allowing it to rise and fall eight feet below the boat; and as the boat, when loaded, draws six feet of water, this wheel can drive the boat when the water is fourteen feet deep; and the frame being hinged three feet above the bottom of the boat, it gives the traction wheel a backward motion as it rises, and as it revolves only seven or eight times a minute, it rolls over stones or other obstructions very easily, and without jar. The back end of the well is enlarged, so as to receive a screw wheel four feet in diameter, for use in deep water, which can be connected with the engines readily, and lowered below the bottom of the boat, the traction wheel lifting and guarding it from injury. This whole machinery occupies no more room than a horse stable, and adding but little weight above that of a team. The boat has made two short trips, and one long one, running the entire length of the canal, and I find nothing in the bottom of the canal to prevent the general adoption of this principle. The boat can be run from Buffalo to Albany, without using the screw wheel more than twenty miles of the entire distance.

The *Backus* has a carrying capacity of two hundred and fifteen tons, and uses one half a ton of coal in twelve hours, running from two and a half to three miles an hour, and of course making no wash to the banks.

EDWARD BACKUS.

Better Roads Wanted.

MESSRS. EDITORS:—I am inclined to offer a premium of my best good will, at least, to you, or some of your learned contributors, for remarks on the best system of roads and road making.

Can the iron trackway for common roads be made available and practicable to our country at large, or will its great cost prove it, as a scheme, abortive?

If we *must* go on with our common earth roads, "up hill and down," can we not induce travelers to use wide tired vehicles to save them in as good condition as possible?

Will some one give a scientific estimate, through the SCIENTIFIC AMERICAN, of a track in a common road seven feet wide, and of sufficient thickness for all traffic, made of broken

or gravel stones, and duly combined with coal tar or asphaltum, and his opinion of it?

It seems to me that roads are of importance equal to any material interest of our great country, and should share the attention of the press, and of able men, to a greater extent.

All you have done, or can hereafter do, to aid such enterprises, will have the gratitude of at least one of your numerous readers. PATHMASTER.

SPEED OF RAILWAY TRAINS.

A correspondent writes upon the subject of higher speed for railway trains in the United States. His opinion seems to be that the present rates of speed are generally too low to meet the wants of the public; that much higher rates are already talked of, and will shortly be demanded; while he also thinks the machinery of locomotives, and the structure of the rolling stock, too slight to endure an increase of speed with safety.

While it is undoubtedly true that a demand for greater average speed exists on the part of the traveling public, and also that the speed of American trains is generally much lower than the standard of English roads, our correspondent errs in supposing that this is owing to any inferiority in the structure of American locomotives or quality of the rolling stock. Both the locomotives and passenger cars of American manufacture are equal in strength, elegance, and efficiency to any made in the world. Indeed, it may reasonably be doubted whether our passenger cars are equaled by those made in any other country. Our roadways are, however, very inferior to those of England and France, and, until this fault is remedied, the present rates of speed can never be greatly increased with safety.

Foreign railroads are superior to ours in the following respects: First, the roadways are much more firmly constructed at the outset, and are less likely to be injured by frost. Second, there are fewer intersections of railways with each other and with common roads than is the case with us, the practice of undermining being pre-erred. Third, the lines are kept under a more strict surveillance; they are better fenced, barred and watched than the majority of American roads. Fourth, their bridges are, in general, much more substantial and permanent structures than ours.

These are the reasons why a higher rate of speed is compatible with safety on English roads than is possible with us. Still when grave doubts exist in England whether the rates of speed now maintained on her roads are not too high, and when such men as George Augustus Sala take up the pen to advocate their reduction, sustaining their position, by considerations both of public safety, and comfort, and profit to the companies themselves, it may well be doubted whether upon the inferior railways of the United States a much higher rate is either practicable or desirable. That our railroads cannot be improved so as to approximate in stability the English railways, we do not of course assert. That a speed, under any circumstances, of over from thirty to thirty-five miles per hour, should be made the standard for fast trains we think unreasonable to expect or to demand.

Editorial Summary.

THE oldest house in the United States is believed by some to be a stone edifice in Guilford, Conn. It was built in 1640 the stone being brought on hand-barrows from a ledge at some distance from the site of the building. The cement with which the walls were laid up is said to be harder than the stone itself. The first wedding in Guilford took place in this edifice, the supper provided being pork and peas.

If storms cannot be predicted, their progress can be communicated, so that preparation can be made for their approach. The latest proposal is to telegraph to various stations throughout the country the state of the weather, and announce it to the agricultural population by pre-arranged signals, of the discharge of cannon.

CAPITAL OF RAILWAYS.—During the forty-one years which have passed since Stephenson ran his first train on the Stockton and Darlington line, the railways of Great Britain absorbed £500,000,000 of capital, and extended over more than 14,000 miles. In 1865, the length of lines was 13,289 miles, of which more than a third were single lines, and the rest double; this was an increase of 500 miles over the preceding year.

A STEAMER is building in Boston designed to transport molasses from the West Indies. She is to be built in compartments, so as to bring the molasses in bulk, instead of hogsheads as is now the custom, and will have a carrying capacity of eight hundred hogsheads. It is estimated that this method will make a very large saving in the transportation of this article, and if it proves successful, will be generally introduced.

AN avalanche of rocks recently occurred near the Watch House, on Mt. Mansfield, Vt. One huge rock, of a hundred tons weight, moved its way through the dense timber for a thousand feet, and only stopped within ten feet of the house. Other enormous fragments rushed through the timber in various directions, their force being shown by the large number of shattered and prostrate forest trees.

A SINGULAR eclipse of the sun will take place on the fifth of November. This is no less than an eclipse of the great luminary by the planet Mercury, of course it will be invisible except to eyes armed by telescopes, and to these only in favored localities of which Paris is one. That city will how-

ever have to forego the sensation of the great solar eclipse of 1869, while it be visible in many parts of the United States.

A STATUE of the celebrated Hans Sachs, bootmaker and poet, is about to be erected at Nuremberg. In order to secure the funds necessary, for the inauguration a lottery is organizing under the direction of the boot and shoe makers of that city, in which all the prizes are to consist of foot gear.

NEWS from Spain is now received at Paris by means of carrier pigeons, telegraphic communication having been interrupted.

WE notice that the cultivation of silk is attracting increased attention in Southern California. This is right; there are no natural conditions wanting to make California as thrifty a silk growing district as exists upon the face of the earth.

THE Zouave Jacob, who made such a stir some time since by his mesmeric healing in Paris, has been called to Berlin by the King of Prussia to treat one of the royal family.

THE largest manufactory of shoe pegs in the United States is said to be at Burlington, Vt. It every day transforms 4 cords of wood into 400 bushels of shoe pegs.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

THE PACIFIC RAILROAD EXTENSION.—The Vice President of the Union Pacific Railroad has written a letter to the President of the United States, in which he says:—"The Union Pacific Railroad Company has been informed of the appointment of a special commission to re-examine their road. If this commission includes all roads receiving similar subsidies and bonds, this company will regard the appointment with satisfaction, but if no other road is included, it becomes evident that the Government has listened to representations unfavorable to the character of our work, and which justice requires that I should contradict. I think it my duty, therefore, to assure your Excellency that the Union Pacific Railroad is at least equal to any of these other lines in construction, appointments, and permanent improvements, and that you can easily ascertain the thoroughness and excellence of the work by reference to Generals Grant, Sherman, and Sheridan, who have lately been over the line, and from many other eminent practical railroad men. I respectfully request that the commission be instructed to include all these roads in the examination, and to report in detail the comparative qualities of each."

THE NEW POSTAGE STAMPS.—The Postmaster General has just awarded the contract for the supply of stamps to the department for the ensuing four years to the National Bank Note Company of New York. The new stamps will be somewhat smaller than those in use at present, but they are of a superior style and finish, with a novelty in design. The two-cent stamp contains an engraving of a postboy on horseback in full speed. The three-cent has a locomotive under full head of steam, the great carrier of our domestic service. The five-cent stamp contains a head of Washington. The ten-cent, the most of all in design and execution, has a miniature engraving of the Declaration of Independence, executed with such delicacy and precision that the picture suffers nothing under an ignifying glass. The twelve-cent stamp has an ocean steamship, and the thirty-cent has a finely executed engraving of the surrender of Burgoyne. When it is considered that over a million stamps are issued daily the importance of this contract is at once evident.

Mr. Jason Clapp, a well known carriage manufacturer at Pittsfield, Mass., died at his residence on the 19th inst., at the age of 85 years. Carriages of his make have been sent to Germany, one to the King of the Sandwich Islands; and the very beautiful one, presented to President Pierce, while in the Presidential chair, by the citizens of New York was built by him.

The cannon foundry of Krupp, in Essen, Prussia, extends over 920 acres, 246 of which are occupied with buildings. It has 12 miles of railroad, 6 locomotives, 150 wagons, and 50 horses. There are 9,000 jets of gas, consuming about five millions of cubic feet per day; 10,000 men are employed in the foundry; 1,200 at the mines and forges. The wages amount to 3,100,000 tralers per annum. The motive power consists of 160 engines of 6,000-horse power each. The daily consumption is 13,000 bushels of coal, 32,500 bushels of coke and coal, and 200,000 cubic feet of water.

A hydrographic survey of Vermont is talked of. The highest point on the Pacific Railroad is 8,362 feet above the sea. The rolling mills of Philadelphia pay annually for wages the sum of \$1,000,000.

The only glassworks in Indiana are situated at New Albany where larger quantities of bottles are made. A single firm in Philadelphia employs in the manufacture of gas fixtures 750 hands. Another employs 400 hands.

The extension of the Horicon branch of the Milwaukee and St. Paul Railroad has been formally opened at Winneconne.

It is stated that the reduction in prices of freight over the three trunk lines to the West is the result of general understanding, and is intended to run off the various fast freight lines.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

CONDENSER.—Wm. L. Winans, England, and Thomas Winans, Baltimore, Md.—This invention relates to surface condensers of steam engines and consists in the means for preventing the surface of the condenser and the valves of the air pumps in surface condensing engines from being charged, coated, clogged, or obstructed with grease, tallow, or other extraneous matters which may be carried over with the steam from the cylinder into the condenser.

OPERATING WINDOW BLINDS.—Levi W. Swafford, Edward Butler, and John R. Hess, Muscatine, Iowa.—This invention relates to a new and improved method of operating window blinds, whereby the same are opened and shut and the movable slats of the same are adjusted, and blinds are more securely fastened without the necessity of raising the window for that purpose.

HORSE POWER HAY ELEVATOR.—Amos B. Hunt, Matteson, Mich.—The object of this invention is to provide the means of elevating hay from the wagon and storing the same in the bay or mow of a barn (or lifting hay from the stack and loading the same on a wagon) in a rapid and easy manner with the aid of only two attendants and a horse or other draft animal. It consists in general terms of a swinging crane or sweep bar provided with a lifting rope, pulleys, and catch and tripping devices, together with other devices perfecting the whole.

ROTARY STEAM ENGINE.—Levi F. Goben, Spring Hill, Mo.—This invention relates to certain improvements in rotary engines.

PAPER CUTTING MACHINE.—Hervey Law, Cnatham, N. J.—This invention relates to a new and improved machine for cutting paper, and is more especially designed for the use of book binders.

BEEHIVE PROTECTOR.—Alfred S. Johnson, Naupun, Wis.—This invention relates to a simple and economical device for protecting beehives from the cold of winter and the heat of summer.

CHIMNEY CLEANER.—Michael J. Lourentz, Leavenworth, Kansas.—This invention relates to a new and simple method of cleaning the chimneys of lamps, and it consists in combining two wires or rods with buttons or heads thereon.

PROCESS OF, AND COMPOSITION FOR TANNING LEATHER.—G. Z. Dpe, New York city.—This invention relates to a new tanning composition, which is so compounded that the leather can be completely tanned in a few days, while heretofore it took months to do it.

STEAM BOILER.—R. W. Humphreys, Clarksville, Tenn.—This invention consists in forming a steam boiler of an annular ring or tube in which are placed tubes or flues for the passage of the products of combustion, and in attaching to the same a fire-box or furnace and a smoke stack.

SUGAR-PAN DERRICK.—J. D. Ayers, East Greensboro, Vt.—The object of this invention is to provide a simple and effective derrick for lifting sugar pans off and on the furnace arches. It consists in the combination of lifting pulleys with a pan frame, which is arranged to slide on a horizontal arm which is raised and lowered by the pulleys, the said arm forming a movable attachment to a rotary upright.

WROUGHT IRON AND STEEL COLUMNS.—George Walters and Thomas Shaffer, Phoenixville, Pa.—This invention has for its object to furnish an improved column, which may be made of wrought iron or steel, which shall be firm, rigid, strong, and neat in construction, adapting it for use in those parts of a building or structure where neatness of appearance, combined with strength, is required.

CORN PLANTER.—C. W. Thiessen, Effingham, Ill.—This invention relates to a new corn planter, which is so arranged that the wheels contain the seed box and the dropping apparatus, whereby a very secure and regular distribution of the seed is obtained. The invention consists in such an arrangement of adjustable slides, that work on the face of the wheel, in boxes projecting from the face of the wheel, and in such a combination of the same with a seed box secured to the inner of the wheel, that the requisite quantity of seed is dropped during each full, half, or other partial revolution of each wheel, and that each seed is, by such revolution of the wheel, not only dropped, but also securely imbedded in the soil.

REAPING MACHINE.—Miletus J. Wine, Long Glade, Va.—The object of this invention is to provide a simple and more efficient means for removing and depositing the gavel.

COMBINED VISE AND ANVIL FOR CIRCULAR SAWS.—David Huffman, Luray, Va.—This invention consists of an anvil and a vise combined, in a neat and portable shape for the purpose of treating saw teeth.

GATE FOR SCUTTLING SHIPS.—John Hail Marshfield, Mass.—The object of this invention is to construct and attach to vessels a gate which can readily be opened for the purpose of scuttling them, and which can, afterward, be as readily closed, when it is desired to pump out and raise the vessel.

ROTARY ENGINE.—Geo. W. Goodwyn, Petersburg, Va.—The object of this invention is to furnish a rotary steam engine which shall be simple and cheap in construction, and shall economize the power of the steam to the greatest possible extent.

CAR BRAKE.—W. W. Babcock, Harmar, Ohio.—This invention has for its object to furnish a more simple and powerful car brake than any hitherto employed, and to this end consists in a peculiar combination of the screw with a toggle-joint lever whereby the brakes can be at any time applied by a child with so great force as to instantly stop the wheels.

MOLD BLACKING MACHINE.—Ben. S. Benson, Baltimore, Md.—This invention is an improvement in machines for blacking the molds used in casting metallic pipe, and consists in a new arrangement of the mechanism by which the blacking is fed to the brush through the stem that holds the latter, and is thrown against the walls of the mold from among the bristles of the brush.

PRINTING PRESS.—Royal Cummings, Newport, Vt.—This invention relates to a new and improved printing press of that class in which the paper is printed from a continuous roll, and both sides of the paper at one operation, or during a single passage of the paper through the press.

CORN PLANTER AND CULTIVATOR.—Charles Dyer, Coal Run, Ohio.—This invention relates to a new and improved corn planter and cultivator.

CULTIVATOR.—Jacob H. B. Kelser, Chambersburg, Pa.—This inventor relates to a new and improved cultivator and it consists in a novel construction of the same whereby the device may be used in a rough or stony ground without the liability of breaking or injuring it.

TRACE FASTENING.—James Brown, Mattewan, N. Y.—This invention has for its object to furnish an improved fastening for securing the traces to the whiffletrees, which shall be simple in construction, easily attached and detached, and not liable to become accidentally detached.

WASHING MACHINE.—E. F. O'Neill, Prairie du Chien, Wis.—This invention has for its object to furnish an improved washing machine, simple in construction, easily operated, and effective in operation, doing its work quickly and well, and in such a manner as not to injure the clothes or break the buttons.

BUT HINGE.—Lorenz Maschauer and Wm. Frankfurth, Milwaukee, Wis.—This invention relates to a new and useful improvement in but hinges of that class which are provided with a removable or detachable pin to admit of a door, shutter, or gate being unhung without unscrewing either leaf of the but.

PHOTOGRAPHING ROOM.—George K. Proctor, Salem, Mass.—This invention consists in constructing a room or apartment for photographing purposes, in such a manner or of such a form that the rays of light from a lamp placed within said room or apartment will be reflected and concentrated upon the person or object to be photographed, so that photographing may be successfully performed at night by artificial light, or other than that of the sun.

GRAIN DRILLS.—John T. Lynam, Jeffersonville, Ind.—This invention relates to a new and useful improvement in grain drills.

SWAGE FOR UPSETTING SAW TEETH.—Warren P. Miller, New York city.—This invention relates to a new and improved swage for upsetting saw teeth, bringing the cutting edges of the same to a proper cutting edge and at the same time spreading or expanding the edges of the teeth to a necessary width to insure a free cut of the saw and the ready expulsion of saw dust from the kerf.

SPRING BED BOTTOM.—Thomas J. Gaffney, Detroit, Mich.—This invention has for its object to improve the construction of spring bed bottoms, so as to make them stronger and more durable in construction and more convenient in use.

SCHOOL DESK.—John Mealey, Fairville, St. John, N. B.—This invention has for its object to furnish an improved desk, designed for use in school rooms, lecture rooms, public halls, etc., which shall be simple in construction, strong, and durable, and which shall be convenient for use, being easily adjusted for use as a desk, table, or seat simply, as the occasion may require.

STITCHING HORSE.—Thomas Depp, San Marcos, Texas.—This invention has for its object to improve the construction of the stitching horses used by harness makers, saddlers, etc., so as to make them more convenient and satisfactory in use.

SOLDERING GALVANIZED IRON.—Patrick B. Bonner, New York city.—This invention has for its object to improve the manner of soldering galvanized iron, so that the solder may not crack or break off, and will make the seam perfectly tight.

SPRING.—Frederick Cajar, New York city.—This invention consists in constructing the springs of corrugated metal and arranging the plates or strips so as to take the strain in the direction of the breadth of the same.

COMPOUND FOR PROMOTING THE GROWTH OF THE HAIR.—Benjamin F. Atwood, New York city.—The object of this invention is to provide a vegetable hair dressing, which will strengthen the hair and promote its healthy growth. It has been found by ample practical tests to promote the growth of hair wherever the same has been lost from fever, and in other cases where the hair follicles are not completely closed.

ARTIFICIAL LIMB.—Geo. B. Head, Albany, N. Y.—This invention consists in the construction and arrangement of the parts by which the necessary movements are produced, but relating more particularly to the method of operating the knee joint.