Spiegeleisen), is melted and run into the decarburized iron. At this excessive temperature—not less than five thousand degrees—the oxygen and other impurities that make the iron red-short, come out of it with great commotion, and enter into the carbon and manganese thus added, forming an intense flame and copious slag. A part of the carbon combines with the iron, thus producing steel. All this is the work of a moment, and the thorough reaction is due to the excessive temperature. The oxygen which is removed by the carbon (or chiefly by the manganese), was produced by the oxidation of some of the iron, by the blast of air. This, and the sulphur, and some other impurities, now removed by the manganese, were what made the product red short before recarburization. The steel is now cast into ingots, which are malleable at a high heat.

But Mr. Bessemer's troubles did not end here. The product was still uncertain, though often uniform and excellent. Some subtle impurity was still lurking in some obscure corner—now appearing and now retiring. To find it, Mr. Bessemer put every iron and material employed, through a costly and thorough course of chemical analysis, and so discovered phosphorus to be the arch-enemy. And to this day, irons containing above two hundredths of one per centum of phosphorous cannot be employed to advantage. Experiments to remove or neutralize it are in progress, and greater obstacles than this have been overcome. Mr. Bessemer also determined the amounts of other materials—silicium, sulphur, etc.—that affected his process, and with Mr. Mushet's assistance (satisfactorily acknowledged) has presented to the world, not merely a theory, but a perfected process and adequate machinery, for carrying it out. It will thus be observed, that however greatly the public is indebted to Mr. Bessemer's inventive powers, it owes still more to his indomitable pluck.—*Troy Times.*

BURYING ALIVE—EXPERIMENTS WITH VESTER'S PATENT BURIAL CASE.

The idea of being buried alive is one that fills the mind with horror, and the accounts which have from time to time appeared in the public prints, describing such occurrences, have always attracted the attention of a sensation-loving public. It may safely be assumed, however, that a very large proportion of the stories of the exhumation of bodies which gave signs of having moved in their coffins, are rehashes from old romances, or have their origin in the awkwardness of those who were intrusted with the interment of the remains; the indications of convulsive efforts to escape death; and other sensational details, being purely imaginative. The chances at this age in a civilized community, observing the decent rites of burial, that living bodies should be interred by mistake, is so small, that it is practically unworthy of consideration. In Germany it has long been the practice in many places to deposit the dead in mortuary houses erected for that purpose, until the commencement of decomposition shall have absolutely proved the death of the bodies deposited in them. Our editorial letter from Strasbourg, page 202, vol. XVII, contains the following description of this practice, as we saw it at Frankfort-on-the-Main, and at Munich:

"In a building at the entrance to the cemetery, the bodies are placed upon iron cots in a recumbent or half-sitting posture, and upon the wrists are fastened rings, which connect with wires and alarm bells hung in the adjoining rooms of the watchman. Each cot is numbered to correspond with the number fastened under the bell, so that in case there should be the slightest motion of the body an instant alarm would summon the watch to the spot. In an adjoining room there is a bed carefully prepared, a bath-tub, electric apparatus, and restorative medicines to be employed in cases of resurrection.

"At the time of my visit I counted the bodies of eight infants, and eight adults, all serenely reposing in a profusion of flowers, and watchmen were sitting in solemn silence awaiting the click of the bell. In Frankfort not a single case of resurrection has yet occurred, but at Munich they had a case many years ago; so they say."

At Wentz, the surgeon, during a course of forty-five years, had only one alarm. It occurred from the body of an old man whose abdomen having subsided from the discharge of a large quantity of fluid, allowed the arms to fall lengthwise beside the body.

There are numerous and generally reliable tests for determining whether death has actually occurred previous to the commencement of decay, which are familiar to most people. Granted that in extremely rare cases, it is possible these should fail, it is difficult to perceive how the device of Mr. Vester is an improvement upon the German method. It consists of an ordinary burial case or coffin with a tube at the head, containing a ladder and a cord to enable the resuscitated individual to return to the upper air, provided he has strength to do it, which we think would in most cases be doubtful.

An experiment with this apparatus was made by the inventor on the 1st instant, at Newark, New Jersey, in the presence of a large number of people, and is thus described in the New York *Tribune*:

"At the hour named the inventor made his appearance and laid himself in the coffin, the lid of which was fastened by four screws, two on each side. This coffin was of the ordinary description, with the exception of a wire screen immediately at its head. The coffin was then ornamented with a cross and a quantity of leaves and white flowers, and the whole—man, coffin, cross, and flowers—lowered by straps into the grave. A large box, rather larger than the customary ones, with a hole two feet square at the head, directly over the coffin screen, was then lowered into the grave. Another box, about two feet in width and seven feet high, was placed in an upright position, one end fitting exactly into the square hole in the coffin box. The earth was thrown upon the box, around the upright, and all was ready for the test. In the upright box was a flight of stairs, by which the ascent to the "upper crust" was to be made. One curious individual looked down the upright, and, seeing the inventor wiping the perspiration from his brow, asked if it was "warm down there?" He narrowly escaped being put from the grounds by the excited Germans present. About an hour after the "burial," Mr. Vester pulled himself from his coffin by means of ropes attached to the lower portion of the upright, and ascending to the stairs, again appeared upon the earth. He was greeted with kisses and other manifestations of warm approval by a number of his ardent admirers. The exhibition passed off very successfully. Those who witnessed it are divided in opinion as to the utility of the invention. The inventor proposes to place a sort of alarm upon the upright, that the person interred can attract the attention of parties in case assistance is need, and also intends to place shelves in the upright, within reach of the party buried, on which stimulants may be placed. The invention is claimed to be of inestimable service where parties have been interred while in a trance, as well as to relieve persons of the sorrowful thought that perhaps their friends have been buried alive."

MANUFACTURING, MINING, AND RAILROAD ITEMS.

A FACT OF IMPORTANCE TO TOURISTS.—At this time, when many persons are about to make a European tour, it may be interesting to learn that so great are the facilities of communication between London and Switzerland, that a traveler leaving Charing Cross Station at 8:30 A.M., can arrive at Geneva on the following morning.

ILLINOIS AND ST. LOUIS BRIDGE.—The total cost of the great Illinois and St. Louis Bridge, including structure, land, and approaches, is set down at $4,500,000. The engineer-in-chief estimates that the work will be completed in 1870, or 1871, and that in the last named year the receipts of the bridge will be $1,136,260.

THE CANARSIE RAILROAD.—The Canarsie Railroad Company contemplate an extension of their track northwesterly to Greenpoint; thus having two water fronts, and furnishing facilities for travel from East New York to Greenpoint and the upper part of Manhattan Island.

THE MONCRIEFF GUN-CARRIAGE.—Experiments were conducted last month at Shoeburyness, for the purpose of testing the Moncrieff Gun Carriage, the construction and operation of which were fully described in a late number. The gun mounted was the ordinary 7-inch land service, fired first with 14 lb. powder and 115 lb. shot, and afterward with full battery charge of 22 lb. powder and 115 lb. shot. The result was very successful.

FRENCH RAILROADS.—According to official documents, there are at present in working order in France 9,666 miles of railroad, and it is proposed to have 14,699 miles completed before 1878. The cost of construction per mile is estimated at about $145,000 gold.

SLEEPING CARS FOR EUROPEAN RAILROADS.—An American firm has sent an agent to Europe to negotiate with various railroad companies for the introduction of sleeping cars upon their lines. The firm offers to build the carriages and hand them over to the companies on condition of being permitted so collect extra fares, for the accommodation thus furnished, from such travelers as may avail themselves thereof. The adventure will likely prove a success on the long continental lines.

OUR STREET DEPARTMENT.—The President of the Citizen's Association charges the Street Commissioner, in a lengthy letter, with expending $40,000 per annum for blank books and stationery and $50,000 for repairing roads and avennes contrary to section 38 of the city charter, which provides that no expenditure exceeding $250 shall be made except in pursuance of contracts. There would seem to be a necessity of mending ways in a metaphorical as well as in a literal sense.

Recent American and Foreign Patents.

Under this heading we shall publish weekly a list of some of the more important recent home and foreign patents.

COMBINED SHEARS AND BOLT AND RIVET CUTTER.—Thomas Smith, California, Mo.—The object of this invention is to furnish a neat and convenient tool for the use of persons who work in sheet metal, blacksmiths.

SELF-ACTING WAGON BRAKE.—Thomas Smith, California, Mo.—In this invention the friction blocks are adjustable in order to accommodate them to to different wheels, and are directly attached to and supported by the springs of the brake. The apparatus is also made adjustable to horses of different sizes.

CULTIVATOR.—D. McNeely and C. J. Cady, Spurgeon, Ind.—This invention has for its object to produce a cultivator which will be convenient and effective for plowing corn, cotton, tobacco, potatoes, and other vegetables, and which can be readily and easily adjusted for shallow or deep plowing, as circumstances may require.

CHURN.—J. W. Thompson, Bureau Junction, Ill.—This invention relates to that class of churns in which the dasher has four motions, viz: up, down, right, and left, and consists in effecting such motions by means of a new and greatly simplified device, which can be attached to any churn at a trifling expense, and which is convenient and easy of operation.

HAY FORK.—C. S. Ambruster, Woodstown, N. J.—The object of this invention to provide a neat, cheap, and convenient hay fork, by which the hay can be grasped securely, and firmly held, while being elevated, and can be instantly released when arriving at the place where it is desired to deposit it.

POTATO DIGGER AND SEPARATOR.—Wm. Green, Holly, Mich.—In this invention, a new and improved device is employed for separating the vines from the potatoes, whereby the work is more rapidly and effectually accomplished than in other machines, and in connection with this, a new apparatus is used for adjusting the working parts of the machine, and throwing them into or out of gear.

COMPOSITION FOR ROOFING.—Benjamin Stephens, Wheeling, W. Va.—This invention is an improved composition of matter for roofing which is of such a nature, that it will prevent the paper from cracking, and will form a fire proof and water-proof covering for the building.

SELF-FEEDING ROD MACHINE.—Frank Douglas, Norwich, Conn.—In this invention, the knives which reduce the stick to a round rod, are so arranged that one of them scores directly into the stick, and, at the same time, draws it along and feeds it to the cutter, while the others shave off the corners of the rod and round it to the proper size. A new guide plate is also employed together with a new device for holding the rods when they shall have passed through the guide plate.

FLOUR BOLT.—H. N. Shultz, Sabillasville, Md.—The object of this invention is to provide a simple and inexpensive device which can be used in connection with any form of flour bolt, and applied to the old ones now in use, and by which the bolt can be jarred or subjected to a series of sudden shocks during each revolution, so as thereby to be cleansed and kept free from the accumulation of flour. The device is so arranged that it can be readily adjusted to impart any required degree of violence to the shocks, or to allow the bolt to run smoothly, if desired.

BASE BALL TALLY BOARD.—Thos. L. Canary, Brownsburg, Ind.—This invention relates to the game of base ball, and consists in an arrangement of pins and in the use of colored balls thereon, and in a slate or other equivalent marking surface in combination therewith, whereby the game of the contending sides may be accurately kept, as well as that of each individual player.

MACHINERY FOR TURNING, CROSING, AND FINISHING BARRELS.—Saxton J. Arnold and Amos F. Clark, Raymondsville, N. Y.—This invention relates to improvements in machinery for turning, crosing, and finishing barrels, and consists of a device for holding the barrel in a convenient position for the performance of these operations.

SHUTTLES.—Edward Baggett, Fall River, Mass.—This invention consists in a secondary spring interposed between the spring commonly used, to take the wear off from the shoulder of the spindle, and in constructing the shoulder of the spindle in a form adapted to the application of the said secondary spring.

RAILROAD CHAIRS.—Samuel T. Alexander, Pittsburg, Pa.—This invention consists in a bed plate which is to be fastened to the tie, provided with grooves for seating clamping pieces which support the rail and with lugs for preventing the said clamping pieces from being thrown out of the grooves wherein they rest; and also in the said clamping pieces.

CHECK VALVE FOR PUMPS.—Wm. R. Malone, Mason, W. Va.—This invention consists in providing a hollow tapered seat having a downward projection for supporting the valve stem, which is provided with jam nuts to regulate the amount of lifting of the valve, which is seated upon the top of the valve seat, the latter is arranging to be fitted into a box or cylinder and secured in the well tube at any desired point.

STOVE DRUM.—G. S. Walker, Erie, Pa.—This invention consists of a hollow radiating cylinder or drum made of sheet metal and suitably arranged to be applied to a stove in any desired manner, and having pipe connections for securing and discharging the product of combustion, and provided with an internal apparatus for conveying the said product around and exposing it to the shell of the drum in a manner to extract the heat therefrom.

ADHESIVE PLASTERS.—John Lynch, Columbia, S. C.—This invention consists in attaching to the backs of such plasters one or more springs, stays, or flexible rods or bows, which not only prevent the plaster from crumpling or wrinkling, but serve as additional support to the muscles.

CARRIAGE COUPLING.—Alfred S. Johnson, Waupun, Wis.—This invention relates to an improvement in the method of coupling the thills of buggies or the poles of carriages to the

PUNCH FOR BELTS AND OTHER PURPOSES.—David M. Weston, Boston, Mass.—This invention consists of an improved construction of the jaws of a common hand punch, whereby the distance of the hole to be punched from the edge of the material may be readily gaged, and the material disengaged from the punch after the hole has been formed; also, an improved arrangement of the spring for opening the jaws.

HAND LOOM.—Edwin Lowe, Burrows, Ind.—This invention consists in connecting to the lay, pawls suitably arranged to give intermittent rotary motion to a tappet shaft, which in turn operates the treadles and picker staves.

GATE.—J. H. McKnight, Oakland, Mich.—This invention has for its object to furnish an improved gate, simple in construction, strong, and durable, and which may be conveniently operated to open or close it, without its being necessary to get out of the carriage for that purpose.

ORGAN PIPE.—Geo. H. Brock, Huntington, N. Y.—This invention relates to a new manner of constructing organ pipes, and consists in making each pipe of a curved plate, held between two disks. In this manner a more substantial, solid, effectual, and a cheaper pipe is obtained than could ever be produced according to the old plan now in use.

SEGAR PIPE.—Henry E. Doster, Bethlehem, Pa.—This invention relates to an improved method of smoking tobacco, whereby all the advantages of a fine segar may be enjoyed without incurring the expense, and whereby the objections to the vulgar pipe are obviated.

CHURN.—N. P. Chaney, Potsdam, N. Y.—This invention relates to improvements in churns, the object of which is to provide a churn having beaters provided with air passages to convey the air down into the cream while it is being agitated, and scrapers for scraping the cream off from the underside of the cover, all arranged in such a manner as to scrape it away from around the opening for the shaft, and thereby preventing it from oozing up through the cover around the shaft.

SLEIGH.—Lewis A. Spickler, Clear Spring, Ind.—This invention consists in the location of the point of attachment of the shafts with the sleigh behind the front or bent part of the runners and the metal plate, permitting this improved location of the same.

RAILROAD CAR SEAT.—F. F. Wagner, Harrisburg, Pa.—This invention consists chiefly in attaching projecting lugs to the axles, by which the swinging arms, holding the chair backs, are secured to the seat frame, said lugs being attached to that side of each axle which is opposite to that from which the arms project, so that if the arms are turned down, the lugs will project from above the axle, and will raise the seat on that side on which such arms are folded down.

DISTILLING APPARATUS.—Duby Green, New York city.—This invention relates to a new apparatus for distilling alcohol directly from the mash, and consists in a new construction of the boiling apparatus, which contains six chambers, one above the other, all communicating with each other, and all producing vapors from the mash contained in them; the lowest chambers, which have the weakest mash, receiving the greatest amount of heat, and the highest the least. The invention also consists in the arrangement of a new stirring device, which receives its heat from the vapors that arise from the boiling apparatus, while heretofore direct steam had to be used for that purpose.

VENTILATING SASH OPENER.—W. C. Stickney, and James McGee, Steubenville, Ohio.—This invention has for its especial object to furnish an improved device for opening and closing ventilating sash-doors, or transoms of railroad cars, which shall be simple in construction, easily operated, and which will hold the sash securely in any position to which it may be adjusted.

CIRCULAR SAW CARRIAGE.—John Orm, Paducah, Ky.—This invention has for its object to improve the construction of the carriages of circular sawmills, so as to make them more convenient and effective in operation.

LIFE AND SURF BOATS.—John R. Grace, Brooklyn, N. Y.—This invention has for its object to improve the construction of the improved and surf boat, patented by the same inventor, March 6th, 1860, and numbered 27,362, so as to make it more convenient and safer in use.

VELOCIPEDE.—Andrew Christian, New York city.—This invention has for its object the construction of a velocipede, in such manner that the axle will always be under complete control of the operator, the dead point being readily and completely overcome. The invention consists in so connecting the two operating levers with the connecting rod of the crank, that the dead point of one will readily be overcome by the movement of the other.

WATER WHEEL.—Joseph Hathaway, Woodstock, Vt.—This invention relates to a new and improved water wheel, of that class which is attached to a vertical shaft, and works within a cylindrical case, and has an internal discharge.

CORN PLANTER.—S. O. Campbell, Leavenworth, Kansas.—This invention relates to a new and improved corn planter, which also, when desired, may be readily converted into a cultivator. The invention consists in a novel construction and arrangement of parts whereby corn may be dropped with great accuracy, and properly deposited in the hills; the kernals or grains being left at the desired distance apart, and the device placed under the complete control of the operator or driver.

CHURN DASHER.—A. T. Bleyley, Conception, Mo.—This invention has for its object to furnish an improved churn dasher, which shall be so constructed and arranged as to bring the butter in a very short time, while at the same time it may be used for gathering the batter, and for removing it from the churn.

CHURN.—Joseph Watts, Brazil, Ind.—This invention has for its object to furnish an improved churn, which shall be simple in construction, easily operated, and effective in operation; bringing the butter quickly, developing