

The St. Gothard Tunnel.

The machine piercing of the Swiss tunnel through the Alps commenced last month. The cost of the preliminary arrangements, plant, etc., is estimated at about \$400,000. The compression of the air for the rock-boring machines and the machine work of the shops will be effected by hydraulic motors of a combined power of 500 horses. At the northern extremity of the tunnel, there is an available fall of water of about 95 feet, close to the entrance, which will be utilized for turbines. At the southern end the waters of the Tremola, with an available fall of 984 feet, will be turned to account with turbines or by a hydraulic machine with vertical column of water. It is expected that upwards of 100 yards at each end of the tunnel will be driven each month, or considerably over a mile by the end of the year.

The *Swiss Times* says: The first monthly report with reference to the state of the works of the St. Gothard line has just been published. This report, which has already been communicated to the governments interested, shows that on the 31st of December the tunnel at the Göschenen end has been pierced 60 feet, at the Airolo end 336 feet, or nearly 400 feet altogether. At Airolo 43 feet of the masonry of the arch has been completed. The average number of workmen employed during the month of December was 272—171 at Airolo, and 101 at Göschenen. In addition to the work already executed on the tunnel proper, about 60 feet of the cutting at the opening of the tunnel have been completed. At this side the boring has hitherto been entirely through hard granite. At Airolo, although softer descriptions of stone have been met with, operations have been carried on with extreme difficulty, on account of the water filtering very abundantly through the rocks. Strata of dolomite and mica-schist, with veins of quartz, have been met with.

BRIDGE OVER THE MISSOURI RIVER, NEAR LEAVENWORTH, KANSAS.

There is no branch of engineering in which the native genius of America is more effectively displayed than the construction of bridges. The almost illimitable West presents, in its rivers, gorges, and mountain sides, localities difficult enough to trouble the ingenuity and numerous enough to weary the patience of any ordinary mortal. But these things are to our engineers merely opportunities to display their skill and perseverance, and the clever devices and fertile invention of our railroad constructors have always been equal to the occasion, and have elicited the admiration of the civil engineers of the old world. Our present instance is a bridge for both railroad and highway traffic, erected over the river Missouri at a distance of 1½ miles north of Leavenworth, Kansas. It is entirely of iron, and very substantial; and it presents a fine appearance. The funds required to construct it were principally raised by bonds, which nearly all the prominent citizens personally pledged themselves to redeem, and which were thus negotiated in New York.

Work on the approach was commenced on July 20, 1869, but the piers were not started until October following. On October 20 the first column was placed in position, and on July 1, 1871, the whole substructure was completed. The bridge would have been completed fully twelve months

earlier, had not many vexatious delays occurred. The total weight of wrought iron in the bridge is 2,093,300 lbs., and of cast iron 700,417 lbs., making a weight of iron per lineal foot of 2,812 lbs., exclusive of the floor. The bridge consists of three spans, the western and middle being each 340 feet, and the eastern, 314. Being intended for both railway and highway traffic, a single railway track is laid in the middle of the roadway, and the top course of floor planks is laid even with the top of the iron rails, so that wagons can pass freely from one side to the other. The western railroad approach may be considered as extending from the end of the bridge to a point where any railroad desiring can connect with it. This point is about 1,500 feet from the bridge, and is reached by a cutting through a hill, with a maximum depth of 50 feet. The eastern railroad approach commences at the bridge, with a substantial wooden trestle 50 feet high, decreasing in height to 35 feet in a distance of 1,600 feet; it is then continued by an earth embankment 2,400 feet further, to a point where the grade is but 10 feet above the natural surface, and where all desired railroad connections can be easily made.

The most remarkable feature about the bridge, and the one which, by its comparative cheapness and peculiar adaptation to the conditions of the Missouri river, enabled the work to be undertaken and completed, is the use of pneumatic iron columns for piers. In no case had this principle been carried to such a depth or to so great a height. How successful the experiment has proved is best seen and appreciated by an inspection of these graceful and substantial piers.

The total cost of the bridge was \$800,000. The whole work was planned by the engineer in chief, General W. W. Wright, under whose personal supervision it has been executed.

Rather Foggy.

There often appears in Europe and in some parts of America, a peculiar kind of dry fog which is visible during the early morning of summer days, and is regarded as a presage of fine and warm weather. It is of a reddish tinge and is hardly visible except through distances of several miles, when it appears near or above the horizon in proportion as the dryness and heat of the atmosphere are less or more augmented.

In explanation of this phenomenon, M. Collas, in *Les Mondes*, advances the theory that it is due to the combustion of aerolites or shooting stars. These bodies, coming within the sphere of attraction of the earth, are precipitated to its surface at a speed which is considered to exceed twelve miles per second. By this great rapidity, they are heated, inflamed, and finally volatilized. The vapor thus produced is rapidly condensed into particles so extremely small that they may be regarded as the last limit of the divisibility of solid matter. These descend to the earth with great slowness on account of their tenuity, and are scattered, by the winds, to various quarters where they appear as the dry fogs.

Ruins of the Boston Fire.

Although it is some months since the great fire, the rains and snows of winter have not succeeded in entirely quench-

ing it. In many parts of the burnt district, dense columns of smoke are still ascending, and bright flames dart out from beneath piles of brick and granite. The influence of heat upon various kinds of merchandise found among the ruins has afforded, says the *Boston Journal of Chemistry*, examples of metamorphosis interesting and curious in a high degree. Huge piles of leather in some cases were precipitated into cellars, and so covered with *débris* as to undergo a kind of dry distillation or fusing, out of contact with air. The resultant mass resembles a dry gum, with a clean vitreous fracture, upon the surfaces of which are seen the lines between the hides, like thin strata in a mass of silt. We have a lump of coke, produced from clover seed, which closely resembles cannel coal. It came from a mass of two thousand bushels which tumbled into a cellar, and was subjected to dry distillation under the bricks and mortar. Many other substances have undergone curious changes, and we may allude to some of them at a future time.

The Bar at the Mouth of the Mississippi.

A correspondent, E. B. B., of Cal., refers to the report of Mr. C. W. Howell, U. S. engineer, on the value of the screw dredging machines employed. He states that between December, 1868 and May, 1869, a channel originally 12 feet in depth was dug down to 17 feet at mean low tide, and nearly to 18 feet at high tide; and to show the efficiency of this apparatus, he mentions that the channel began to fill up when the screw ceased working. In another instance, 22,400 cubic yards of earth was dug out in 28½ hours; a channel was cut to a depth of 19 feet and another to 18 feet 10 inches. The work was done so thoroughly that, during one year, all vessels drawing not more than 19 feet water went over the bar, and one ship of 20 feet draft passed over; and he avers that there has been a depth of from 17 to 19 feet on the bar for three years and more, for proof of which he refers to the official reports of the government engineers.

He quotes these facts to show that Mr. Stewart's statement that costly dredge boats can hardly keep a channel open to a depth of 14 feet is erroneous. The work which he describes was done with Bishop's submarine screw, with spiral boiler-iron scrapers.

Novel Life Preserving Apparatus.

M. Tellier, in *Les Mondes*, proposes a new method for saving shipwrecked persons. His apparatus consists in a life preserving vest, a balloon of a few cubic yards capacity attached to the belt of the swimmer, and a receptacle for holding liquefied ammoniacal gas which is fastened to the life preserver. When the vessel strands, the person to be saved turns a cock which allows the gas to flow through a long rubber tube and distend the balloon. As the latter rises, he jumps overboard. He is then buoyed up by his life-preserving waistcoat and also by the balloon which, being acted upon by the wind, tows him to the shore. By this means, it is suggested that a person might carry a line from the wrecked vessel to the beach, or an apparatus might be devised to contain several individuals who could thus be drawn ashore in safety.



THE GREAT KANSAS AND MISSOURI BRIDGE.

Glycerin in Boilers.

At the last *séance* of the Society of Civil Engineers, Paris, M. E. Asselin recommended the use of glycerin to prevent incrustation in steam boilers.

Glycerin, soluble in water in every proportion, increases the solubility of combinations of lime, and especially of the sulphate; it appears, besides, to form with these combinations soluble compounds. When the quantity of lime becomes so great that it can no longer be dissolved, nor form with the glycerin soluble combinations, it is deposited in a gelatinous substance, which never adheres to the surface of the iron plates. Moreover, the gelatinous substances thus formed are not carried with the steam into the cylinder of the engine.

M. Asselin advises the employment of one pound of glycerin for every 300 or 400 pounds of coal burnt, fifteen days supply being introduced at once. From trials made with boilers fed with bad water, it was proved that the glycerin combined with all the salts, and left the plates perfectly clean.

Sewing Machine Sales.

The sales of sewing machines in 1872, just reported, show, says the *New York Sun*, the following remarkable results:

	Machines
Singer Manufacturing Company sold.....	219,758
Wheeler & Wilson Manufacturing Company sold...	174,088
Howe Machine Company (estimated) sold.....	145,000
Grover & Baker Sewing Machine Company sold.....	52,010
Domestic Sewing Machine Company sold.....	49,554
Weed Sewing Machine Company sold.....	42,444
Willcox & Gibbs Sewing Machine Company sold....	33,639
Wilson Sewing Machine Company sold.....	22,666
Amer. B. H. O. & Sewing Machine sold.....	18,930
Gold Medal Sewing Machine Company sold.....	18,897
Florence Sewing Machine Company sold.....	15,793
B. P. Howe Sewing Machine Company sold.....	14,907
Victor Sewing Machine Company sold.....	11,901
Davis Sewing Machine Company sold.....	11,376
Blees Sewing Machine Company sold.....	6,053
Remington Empire Sewing Machine Company sold..	4,982
J. E. Braunsdorff & Co. sold.....	4,262
Keystone Sewing Machine Company sold.....	2,665
Bartlett Reversible Sewing Machine Company sold..	1,000
Bartram & Fanton Manufacturing Company sold....	1,000
Secor Sewing Machine Company sold.....	811

DURING the recent session of the National Academy of Science, at Cambridge, Mass., Professor Mayer gave some interesting information regarding the effect of magnetism on iron: He states that he has discovered, by means of the Saxton comparator, that rods of iron suffered a permanent elongation by magnetization of one hundred and fifty millionths of an inch. English refined iron gave the maximum of elongation, scrap iron, the minimum. Whether the current was gradually increased in intensity, or whether it was sent full charge at once, it produced the same degree of elongation. With one cell the elongation took place in six tenths of a second; with 25 cells it took place in two tenths of a second. Professor Pierce thought if the elongation of iron under magnetization were true, it might make its effect on the earth in an appreciable difference in the length of the day. This could be detected by astronomy. A change in the day of seven hundredths of a second would be perfectly easy to discover now.

A CORRESPONDENT, C. B. of Newark, N. J., thinks, when he pays a few cents for a copy of our journal (which, he says, is worth ten times its price), that he can lighten our labors by sending us information occasionally. He states that our recent article on the experimental canal boats has caused an excitement in Newark, where it is stated that the Baxter is the only boat that has fulfilled the legal requirement, having made three full trips each way, with a cargo in excess of the stipulated tonnage, at a rate of over three miles an hour through the canal. The Newarkers claim the prize for her. He also states that Mr. H. M. Paine has returned to Newark, and is engaged on an electro-motor for sewing machines. Another item of interest is an account of the re-invention of the engine with its cylinders curved longitudinally, a form applied on the U. S. frigate Princeton, thirty years ago. A Newark firm has constructed such an engine to order, and is patiently waiting for the "inventor" to fetch it away.

ROSE CUTTINGS.—The most certain way of rooting rose cuttings is by bending the shoots and inserting both ends into the ground, leaving a single bud uncovered at the middle and on the surface of the ground. The cuttings are about ten inches long, and are bent over a stick laid flat on the ground, holes being dug on each side of the stick for the reception of the ends of the shoot. The roots form only at the lower end of the shoot, but the other end, being buried, prevents evaporation and drying up.

THE London *Times* says that the recent transmission of the Queen's speech throughout England evidenced some very rapid telegraphing. The document contained 858 words, and reached York, a distance of about 200 miles, in six minutes and a half. Wheatstone's automatic instruments were used. The above is at the speed of 132 words per minute.

THE Atlantic cable companies and also the Western Union Telegraph company have, we learn, consented to the free transmission of dispatches relative to astronomical discoveries to and from the Smithsonian Institute in Washington. The object of telegraphic communication is to avoid the difficulties which might supervene from the change of position of the observed bodies during the interval required for postal correspondence.

A number of very severe tests were recently applied in England, to dynamite with a view of showing that it could be safely transported on one of the principal railroad lines. It is stated that no explosion occurred when a box containing five hundred weight of sand was dropped from a height of forty feet upon a mass of cartridges, although the latter were badly crushed and broken. It was also proved that a fire in a railway train containing dynamite need not cause any more anxiety than would be experienced from a conflagration of ordinary timber or similar material. A fifty pound box of the substance thrown into a bonfire burned with a powerful flame for two or three minutes, but no explosion took place. Loose cartridges laid upon rails exploded when run over by cars, but loose dynamite sprinkled near them was unaffected.

The John Leland cheese factory, at Cheshire, used up 1,046,210 pounds of milk, last year, producing 104,976 pounds of cheese, or a pound of cheese for each 9 $\frac{9}{10}$ pounds of milk. The receipts were \$12,786, and the stock pays 9 per cent in dividends.

Inventions Patented in England by Americans.

[Compiled from the Commissioners of Patents' Journal.]

From February 4 to February 10, 1873, inclusive.

ENGINE VALVES, ETC.—G. F. Blake, Boston, Mass. (Two patents.)
 FIRE ARM.—H. Berdan, New York city.
 HAT.—R. Eickemeyer, Yonkers, N. Y.
 HEAT DISTRIBUTOR.—D. Shedd, New York city.
 HOE.—M. Cookerly, Baxter Springs, Kan.
 KILN.—A. Morand, Brooklyn, N. Y.
 LINING BOARD, ETC.—G. S. Levy, New York city.
 MAKING SCREWS.—J. A. Ayres, Hartford, Conn.
 PENCIL AND ERASER.—J. Reckendorfer, New York city.
 PRESS, ETC.—B. G. Martin, New York city.
 SEEDING RAISINS.—C. Dixon, New York city.
 SCREW PROPELLER.—J. L. Cathcart, Washington, D. C., J. S. Negley, Pittsburgh, Pa.
 TREADLE MOTION.—G. B. Kirkham, New York city.
 UNIVERSAL TOOL.—W. L. Grout, Boston, Mass.

NEW BOOKS AND PUBLICATIONS.

THE ILLUSTRATED ANNUAL OF PHRENOLOGY AND PHYSIOLOGY FOR 1873. By S. R. Wells, Publisher of the "Phrenological Journal" and the "Science of Health." 25 cents. New York: Samuel R. Wells, 389 Broadway.

A neat little book, the character of which is indicated by its title and place of publication.

BREAD-AND-CHEESE AND KISSES. By B. L. Fargeon. Illustrated. Harper & Brothers, Franklin Square, New York.

A pleasant story, beautifully told. The publishers have hardly done justice to its merits, as the illustrations are simply execrable.

Recent American and Foreign Patents.

Improved Snow Ram for Railroads.

William C. A. Frerichs, Tottenville, N. Y.—The invention consists in a tunneling snow ram for railroads. The forward end of the ram is made wedge-shaped, and the top is curved and extends up to or a little above the top of the body of the ram. The sides of the hood project so that the said hood may form a tunnel larger than the body of the ram. In the rear part of the body is placed a suitable engine to drive fan blowers. In the forward part of the body are placed two furnaces into the upper parts of which the blast from the fan blower is introduced, to be heated and driven out through pipes which pass into the space beneath the hood. The furnaces are surrounded by an air-tight space into which the blast from the other fan blower is introduced. This air circulates around the furnaces, becomes heated and is designed to keep the outer surface of the hood sufficiently heated to prevent the snow from sticking to it, and to cause the snow to pack. The smoke stacks are hinged so that when the ram is at work they may be turned down out of the way. The bodies of the cars readily pass through the tunnel formed by said ram. To the sides of the car bodies are attached plates which project down nearly to the track to guard against any snow slide passing in beneath the cars and clogging them. The spaces between the platforms of the adjacent cars, at the sides and top, are shut in by plates overlapping each other, and connected with each other and with the cars by springs, to give them the necessary elasticity for passing around curves, etc.

Improved Car Starter.

James J. Wheeler, Grinnell, Iowa.—This invention consists of a small frame of two legs, connected together by suitable cross bars. Each leg has a clamping foot adapted for clamping the head of a rail—one acting when forced downward, and the other when raised upward. On said frame is a drum and crank, with a rope or chain for hitching to the car, which is thus moved by winding the chain or rope on the drum. The frame is confined on the rail by the clamps, which are caused to hold fast to the rail by the one next to the car being forced down on the rail by the strain upon the rope or chain, and the other by being forced upward by the said strain.

Improved Truck Barrow.

James J. Richardson, Marlton, S. C.—This invention relates to an improvement in barrows or trucks of the class in which the wheels are arranged under the body of the truck; and it consists in the arrangement of a cross bar to scrape the wheels of the barrow and connect its sides. The wheels are arranged to revolve on a stationary shaft secured on the under side of handle rails. The front posts mortised into the upturned ends of the handle rails support the removable front boards and the forward ends of the side boards. A cross piece standing edgewise is provided by which the bottom ends of the posts are connected, and the wheels scraped. This arrangement raises the bottom and allows the weight or load on the barrow or truck to rest directly over the wheels. This allows the barrow to be used as a truck, the load in either case being discharged over the front end when desired. In handling cotton bales and other heavy articles the side boards are removed, and such articles are loaded and discharged as when a truck is used. Braces and straps of iron are applied wherever necessary to strengthen the connections, and add to the durability of the combined articles. Thin pieces of sheet metal are attached to the forward cross piece opposite the wheels, the design of which is to scrape the tires or peripheries of the wheels, and thus keep them clear of mud, mortar, or other adhering matter.

Improved Bottle Stopper.

Herman F. Reiner, Blairsville, Pa.—This invention has for its object to furnish a stopper for bottles which shall be so constructed that the influx or efflux of liquids is rendered possible without the removal of the stopper from the bottle. The invention consists in the employment of a stopper composed of a metallic tapering tube which is provided with a horizontal central flange and with a bayonet slot for receiving and securing the vertical stem of a conical disk valve, by the movement of which stem the valve is opened or closed to admit of the induction and discharge of liquids.

Spring Attachment to Car Windows.

George Cornwall, Brooklyn, N. Y.—This invention relates to a spring attachment to the sashes of car windows, and more particularly to such sashes as are let down into boxes of the car frame when opened. The invention consists in the application to each upper end of the sash of one or more U-shaped inverted springs, whose ends are fastened to the faces of the sash, while their upper rounded parts project above the sash and come in contact with the frame of the window to prevent rattling either in closed or open positions of the sash, and to adapt them to serve as handles for raising and lowering the sashes.

Improved Cultivator.

Amos B. Colver and John Priest, Albany, Oregon.—This invention consists of a triangular cultivator with an adjustable device for varying the depth of the furrows by shifting and maintaining it at different heights on a truck of two wheels at the rear, and a caster wheel at the front; for raising it above the ground, and supporting it for moving it on the road.

Improved Sewing Machine Cover Hook.

John C. Egly, Philadelphia, Pa.—This invention relates to a new means of applying a hook fastening to the cover of a sewing machine table, so that if the wood of the cover or table should shrink or warp the fastening may be readily adjusted to the change. It consists in making the hook adjustable in a recess of the table, and in combining it with a slotted plate, whereby it is held in place. The shank of this hook is made in the form of a flat rectangular plate, to fit a mortise in the table, wherein it has backward and forward play. A plate is fitted to the table as a cover to this mortise, and is fastened by screws so that it bears upon the shank. The hook proper projects through a slot of this plate. When the desired position has been assigned to the hook, the plate is firmly screwed down, and bears upon the shank so as to hold the hook in place. If the table or cover should shrink so as to require the readjustment of the hook, it is only necessary to slightly loosen the plate, reset the hook, and then refasten it. This invention also makes it convenient to fit covers to tables when either is not of the exact size required.

Improved Dish Washing Machine.

Joseph Usher, West Albany, N. Y.—This invention has for its object to furnish an improved machine for washing dishes, which shall be so constructed as to wash the dishes quickly and thoroughly. In using the machine, the dishes to be washed are arranged and secured in a frame, and placed in a metal case which rests on gudgeons which pass through holes and revolve in bearings in an outer box. A quantity of water, or soap and water, is then placed in the case and the door is closed and secured. The case and its contents are then revolved a few times—first in one direction and then in the other—which quickly cleans the dishes. The door is then unfastened, and the case is turned, allowing the water to run off. A quantity of clean water is then poured into the case and the dishes are rinsed in the same manner as they were washed, after which the rinsing water is emptied out in the same manner as washing water, and the frame and the dishes are removed and placed in a drawer beneath. When the dishes are to be used they are removed from the frame and wiped with a clean cloth.

Improved Wood Pavement.

Mary H. Alexander, Newark, N. J.—This invention consists in making a pavement of a series of wedge shaped blocks, flat on top, notched across one of the upper ends, and driven into the soil at right angles to each other, so that each one may be supported by another, braced lengthwise against each of its opposite ends. The object of the corner notch is to bring the filling spaces in small zigzags or right angled triangles, and thus afford good foot hold without the necessity of cutting away the block too much or wasting the filling. This would seem to be an important improvement and advance in wood pavements.

Improved Paper Box.

Moses W. Dillingham, Amsterdam, N. Y.—The object of this invention is to provide convenient and efficient means for holding the covers to paper boxes without tying them, and it consists in pieces of pasteboard or other suitable material attached to the box and to the cover. On the outside of opposite sides of the box, or on one or two of the corners and one of the ends or sides, are attached strips of pasteboard at or near the upper edge. On the inside of the cover are also attached similar pieces, arranged to correspond in position with the pieces on the box and so that there shall be a recess for each piece on the box, and so that any two of such pieces—one on the box and one on the cover—shall engage with each other, and thereby hold the cover securely to the box.

Improved Horse Power.

Zachariah P. Landrum, Columbus, Miss.—The invention consists in a new mode of applying the levers to horse powers so that the length of power arm to that of weight arm can be increased without requiring any greater space for the sweeps, thereby giving great leverage and enabling one pair of horses to do easily what heretofore two have done with difficulty. This invention affords a very convenient and smoothly working horse power, which has been practically tested and received by the public with great favor.

Improved Corn Coverer.

John Tweedy, Vernon, Ind.—The invention consists in combining a clod mover with a lever and pair of covering plows, and in the means of attaching and holding it in position. The plows are inclined inward so as to throw the soil into the furrow and cover the corn. The end parts of a semicircular or arched mold board are attached to the lower parts of the standards, and are so formed as to round up or ridge the soil over the corn so as to prevent the corn from being carried off by the crows, and to prevent the soil from being washed away by the rain. The sod mover or lever is formed by attaching two side plates, at their upper edges, to the side edges of a small triangular top plate, which meet in a sharp inclined edge, so that the said device may be V-shaped in its horizontal section. The clod mover may be adjusted forward or back, as may be desired, and moves along the top of the ridge and pushes off the clods, sods, and other obstructions that might impede the corn in coming up, and thus leaves the top of the ridge in proper condition.

Improved Sugar Cane Cultivator.

Alcide Troadet, New Orleans, La.—A wood or metal cylinder is provided or set with teeth having sharp or curved arrow-shaped points. The cylinder revolves around an axle, which is mounted or journaled in levers that are pivoted at their forward ends to the frame bars, and are adjustable vertically at their rear ends. The bars with the cross bars, constitute the frame proper of the machine, which is supported on runners made in the form of ordinary sled runners. Horizontal bars or rods are provided for cleaning the teeth of the cylinder. Before the machine can be used the stubble is barred off by running a plow on each side of the row. A shaver or slides is then run in the furrows to shave or slice off the stubble to an even length. This machine is then run in the same furrows, and the hook teeth of the cylinder enter between the stubble stalks and grub or pick out the earth. The cylinder is adjusted vertically to correspond to the condition of the soil or stubble.

Improved Glove.

Edwin V. Whitaker, Gloversville, N. Y.—The invention relates to gloves made with leather palms and cloth backs, and consists in cutting a glove with the thumb and all the forefingers, except for middle finger, in the same piece with the palm. The purpose is to economize the material, give the exact relative quantity of leather to each, and make the forefingers seamless at the points between the fingers. A much smoother and more accurate fit may thus be given to gloves, while the durability is also greatly increased.

Improved Meat Chopper.

Jesse Battey, Manchester, N. J.—This invention consists of a novel contrivance of pawls and a shifting device with a ratchet bar having two sets of ratchet teeth, reversed as to each other, for moving the chopping box and reversing it from one direction to the other. The invention also consists of an intermittingly reciprocating square chopping box, combined with a vertically moving blade and a carrier for the box, in such manner that the box can be turned a quarter of a revolution, and thereby be presented to the blade so that the meat will be chopped crosswise.

Improved Inkstand.

James B. Thurston and Frank M. West, New York city.—The invention relates to an improvement in the class of inkstands or holders in which two or more receptacles are arranged to be revolved around a central axis to bring them successively or at pleasure under an opening in a cover; and it consists in suspending the ink receptacles by their upper edges from a perforated disk or plate adapted to revolve in contact with the under side of the cover of the inkstand, and in the arrangement of a spring and lug or projection of the cover for locking the revolving disk.

Improved Paper File.

Emanuel Motz, Woodward, Pa.—This invention relates to an improved device for holding newspapers or other papers filed, and consists in the combination of a rod with a binding string and winding pin, the bar furnishing the rigid back for the papers filed, while the string ties the papers together and to the file, the pin holding the string in proper tension.