

BUTTER-MAKING.

The following article on butter-making is contributed to the *Rural New Yorker* by A. D. Burt, who has taken many premiums in New York State Fairs. His views deserve general attention because a great deal of bad butter finds its way to our markets, owing to the want of correct information in making and packing it.

Mr. Burt says:—"First, I consider that it is absolutely necessary to have good, sweet pasturage, with an abundance of the best grasses, and an unstinted supply of pure fresh water, not such detestable stuff as can be found in stagnant pools, but such as you behold when you "see the rill from the mountain joyously gleam," where the cows can slake their thirst and feel invigorated. The pasture should have shade trees sufficient to accommodate all, without the necessity of disturbing each other in the excessive heat of midsummer. Then have cows suitable for a butter dairy; not those that give the largest amount of milk, but the richest, yielding a large supply of the rich orange-colored cream. The cows should be salted regularly, at least twice each week, as it will keep them in health and in a thriving condition, which is needful for profit. Always be sure to drive them carefully to and from the pasture; never allow them to be worried by boys or dogs, as it will tend to heat the milk and often cause great delay in the churning, which some will impute to witchcraft, and that correctly, but the witchery, I believe, is in over-heating the inoffensive cow and often causing injurious effects upon the poor dumb beast.

Always be regular in your time for milking, and let one person (as much as possible) milk the same cow or cows, and be sure to milk them as quickly and thoroughly as possible, for you thereby save the richest part, and often save knots from forming in the teats, or causing a milk fever, or inflammation in the udder. A clean, cool, airy and light room (the lighter the better) is the most suitable place for the pans, and racks instead of shelves, is considered the best, as the air can circulate freely around the pans, cooling the milk more evenly. A common house cellar will very seldom be found a suitable place for setting milk, and the cream or milk in a cellar should never be placed on the floor or bottom, for if there is any impure gas in the cellar it will settle to the ground, causing the cream to be bitter, and a poor quality of butter will be the result.

After setting the milk away it should never be disturbed again until it is ready to be skimmed, which should be done as soon as possible after the cream has risen and before the milk has curdled; all the gain there is in quantity after about twenty-four hours' setting you must lose in quality. Keep the cream in stone pots or jars, in a cool place in summer (moderately warm in winter). Sprinkle a little salt on the bottom of the jar. Always stir the cream from the bottom every time you add a fresh skimming of milk. Never churn until at least twelve hours after the last cream has been put into the jar.

After the cream has been churned and the butter properly gathered, it should then be washed in cold water and changed two or three times, or until there is no coloring of milk about the water; the whole of the water must then be worked from the butter, and it should be salted with about twelve ounces of the best Ashton dairy salt, well pulverized, to sixteen pounds, or three-fourths of an ounce to each pound of butter. The salt should be evenly worked through the entire mass. I differ much with many of our butter-makers in the quantity of salt, but I have taken the first premium at our county fair (in the Fall) on June-made butter that was salted with half an ounce to each pound, and packed immediately, without a second working, and that butter, when thirteen months old, was just as sweet as when first packed.

Always pack immediately, as it tends to make it streaked if it is worked a second time. It should be packed in jars, if for home use; if for market, in the best oak firkins or tubs, which should be well soaked with cold water, then scalded and steamed by pouring boiling water in, and covering to keep the steam in for a short time, say twenty or thirty minutes. Then pour off the water and scrub the firkin with salt or with soda, then wipe out the surplus, give it a slight rinse and, when cooled, it is ready for use. When the firkin or jar is full, cover the butter with good sweet brine, to exclude the air."

INDUSTRY—MANUFACTURES—COMMERCE.

The price of admission to the *Great Eastern* was reduced from one dollar to fifty cents on Monday, last week. Since that period, the number of visitors has increased from 1,500 to 6,500 daily. If the charge were reduced to 25 cents on certain days, as we have before suggested, ten or twelve thousand persons would visit her daily.

The American Photographic Society held its last meeting at the Cooper Union on the evening of the 9th inst. Papers were read on subjects connected with photography, after which the project of founding a photographic college was discussed. The necessity was urged of forming an efficient corps of photographers, employed by the government, for the purpose of taking accurate views of forts and other buildings or scenes that might be required.

It is with unfeigned regret that we announce the sudden decease of Mr. John A. Bunting, of this city. The event took place on the 6th inst. He was for several years one of the most active managers of the American Institute, and president of the Mechanic's Society, and was highly esteemed by the mechanics of this city.

The Secretary of the Treasury has invited proposals, till the 10th of September, for the use by the government of the line or lines of magnetic telegraph from the west line of Missouri to San Francisco, under the recent act of Congress; the lowest offer to be accepted, and guaranty given for the performance of the service.

The St. Louis Vine and Fruit-growers' Association have commenced laying-out, near that city, a grand horticultural park of 1,000 acres, to be filled with choice grapes and fruits. One hundred men are employed in planting the first one hundred acres.

It has been customary, heretofore, for the gas companies in this city to charge a deposit-fee for their meters before they would supply new customers with gas. This course they have been compelled, by law, to abandon. Mr. Peckham, the lessee of a new store on the corner of Broadway and Thirteenth-street, refused to pay this deposit, and so the gas was withheld from him by the Manhattan Gas Company. He then applied for a mandamus from Judge Ingraham, of the Supreme Court, to compel the company to furnish him with gas, and the judge granted the request of the petitioner last week. The company, therefore, has now furnished the gas without exacting a deposit for the meter.

Messrs. Gilbert & Co. have erected works for making oil from asphaltum, near Los Angeles, Cal. There is a great abundance of asphalt in that section of the country, and oil may be obtained from it as easily as from coal.

The old Kerosene Coal Oil-works, near Williamsburgh, L. I., which were sold by auction some weeks ago and purchased in the name of Peter Cooper, are again in full blast, making great quantities of the oil. None of the old company, we understand, are connected with the present management of the works.

The United States Agricultural Exhibition will be held at Cincinnati from September 12th to the 20th. The premium list amounts to \$20,000. No cattle will be received, on account of pleuro-pneumonia, but large premiums will be offered for horses, machinery, steam fire-engines, &c.

The West Washington market shanties, bordering on the North river, at the lower part of this city, were burned down on the night of the 11th inst. They covered a space of about four acres, and were filled with meats, vegetables, fruits, butter, cheese, &c. A very great quantity of provisions were destroyed; but the buildings themselves were a set of old wooden "rattle-traps"—a disgrace to the city.

Some conception of the vast consumption of wire in the manufacture of ladies' skirts may be obtained from the fact that Messrs. Washburn & Moen, of Worcester, Mass., are turning out 240,000 feet of wire daily for this purpose.

A GOOD BLACKBERRY WINE.—To make a wine equal in value to port, take ripe blackberries, press the juice from them, let it stand 36 hours to ferment (lightly covered) and skim off whatever rises to the top; then, to every gallon of the juice, add 1 quart of water and 3 lbs. of sugar (brown will do); let it stand in an open vessel for 24 hours; skim and strain it, then barrel it. Let it stand 8 or 9 months, when it should be racked off and bottled and corked close; age improves it.

TEACHING THE SCIENCES.

The *Educator*, published at Quakertown, Pa., contains the following very sensible remarks on the kind of information which should be installed into the minds of our youth in schools.

"We think the natural sciences should be taught in every school. Before the pupil commences the study of the grammar, arithmetic, or even geography, he can be made acquainted with the physical sciences; for we conceive that, if properly taught, the young mind will take them up and relish an acquaintance for them, much sooner than any of the other branches to which we have alluded. They are called the natural sciences, and so they should be, for, though not so named from the fact, yet they seem to be natural, even to the child.

"Children, when quite young, commence to reason, and to ask questions involving the principles of physics. To encourage them in this, by gratifying their curiosity will not only develop their intellect and stock the mind with useful knowledge, but it will lay the foundation for that which will be of greater utility than grammar, arithmetic, or geography, valuable as these may be. Teacher and parent, teach your children early philosophy and chemistry! We do not mean that you should employ text books, or deliver lectures in doing this. There are hundreds of opportunities presented daily in the school room, and in the family, when it can be done. Improve these occasions, answer every question involving a principle which you can explain, illustrate your remarks, perform experiments if you have apparatus, and if not make them. There are numberless experiments, which can be made in the school room, and are comprehensible, if properly explained, to the youngest pupil."

CURE FOR IN-GROWING NAILS.—It is stated, by a correspondent, that cauterization by hot tallow is an immediate cure for in-growing nails. He says:—"The patient on whom I first tried this was a young lady who had been unable to put on a shoe for several months, and decidedly the worst case I have ever seen. The disease had been of long standing. The edge of the nail was deeply undermined; the granulations formed a high ridge, partly covered with skin, and pus constantly oozed from the root of the nail; the whole toe was swollen, and extremely tender and painful. My mode of proceeding was this: I put a very small piece of tallow in a spoon, and heated it over a lamp until it became very hot, and dropped 2 or 3 drops between the nail and granulations. The effect was almost magical. Pain and tenderness were at once relieved, and in a few days the granulations were all gone, the deceased parts dry and destitute of feeling, and the edge of the nail exposed so as to admit of being pared away without any inconvenience. The cure was complete, and the trouble never returned. I have tried this plan repeatedly since, with the same satisfactory results. The operation causes but little if any pain, if the tallow is properly heated. A repetition might, in some cases, be necessary; although I never have met with a case that did not yield to one application. Admitting the theory of Dr. Lorinser to be correct, the *modus operandi* is very plainly to be seen. The liquid cautery insinuates itself in every interstice, under the nail, accomplishing in one minute, without pain, all that can be effected by the painful application of nitrate of silver for several weeks.—*Medical and Surgical Journal.*

THE Tennessee State Fair will be held at Nashville, from the 10th to the 15th of September, inclusive.

RECENT AMERICAN INVENTIONS.

The following inventions are among the most useful improvements patented this week. For the claims to these inventions the reader is referred to the official list on another page:—

FILE-CUTTING MACHINE.

This invention consists in a certain mode of applying the chisel stock in a file-cutting machine, whereby the chisel is caused to operate in such a manner as to tend to throw up or raise the edge of the cut above the surface of the file blank in a similar manner to that in which it is done in cutting files by hand: also in a certain construction of the chisel stock, whereby the cutter may be caused in its operations to adjust itself to the

face of the file blank as to cut to a uniform depth all across the blank; also in certain means of controlling the force applied to the chisel to produce the cut, whereby such force is proportioned to the widths of the several parts of the blank, and consequently to the resistance offered to the cut, and hence the cuts are made of uniform depth from end to end of the file, notwithstanding its various widths; also in an improvement in the means attached to the file bed for securing the ends of the file-blank; and in an improved contrivance which presses down the blank upon the bed at a point near the chisel, but which is removed from the file at the time of the feed movement thereof; also in an improved arrangement of the file carriage in combination with the feeding mechanism, to provide for the adjustment of the carriage to vary the angle of the cut, without disturbing the feed mechanism. The credit of this invention is due to J. C. Cooke, of Middletown, Conn.

REVOLVERS.

This invention relates to revolvers of that kind which have a many-chambered cylinder rotating on an axis parallel with a stationary barrel. The principal object of the invention is to provide greater facility for the loading of the chambers at the rear of the cylinder; and to this end it consists in so applying a chambered cylinder having the chambers extended through the rear in combination with a frame opening with a hinge joint, that when the frame is opened the cylinder remains attached to and swings with the front part of the frame. It also consists in the construction of the hinge-jointed cylinder frame with chambers in its front and rear, to receive within them the entire circumference of the front and rear edges of the cylinder, for the prevention of the escape of the fire and the protection of the hand from being burnt. The inventor of this improvement is A. J. Gibson, of Worcester, Mass.

FLEXIBLE TUBE JOINT.

The object of this invention is to obtain a very simple, secure and gas-tight flexible joint or connection for gas tubes, one that will admit of a universal movement of suspended tubes to which burners are attached, and the consequent adjusting of the burners in any position most favorable to shed the light properly for the person requiring it. The ordinary single joints admit of the adjustment of the tube in one direction only. Universal joints constructed in the usual way have been employed, but they are attended with considerable expense in construction and liable to leak and get out of order. This invention consists in suspending the pendant burner-tube to the main tube by means of a chain or its equivalent to obtain a secure and flexible connection, and covering the ends of the tubes or their sockets with a tube of india-rubber or other similar substance, to form a gas-tight joint. This device has been patented to Anthony Stratton, of Brooklyn, N. Y.

FURNACES FOR SUGAR BOILING.

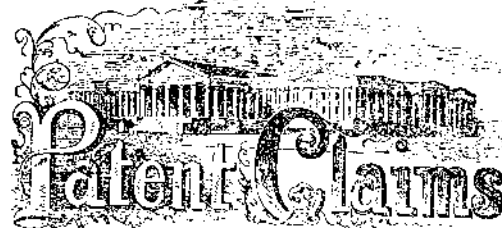
This invention consists in the employment for the purpose of supporting the kettles, of double arches supported partly by the side walls and partly by pillars or piers between the kettles, by which means the canal or flue may be made much wider than when single arches extending all across the canal or flue are used, as in the ordinarily constructed kettle furnace, and to obtain more room for the circulation of the flame and heated gaseous products of combustion at the sides of the kettles and an increased heating effect on those parts. This improvement was designed by John P. Henderson, of Franklin, La.

CARRIAGE TOPS.

This invention consists in a certain novel means for attaching and detaching or shifting carriage tops to the seat rail, whereby the top may be taken off or put on with great ease and facility, and also, so that the attachment may be made rigid and secure. The invention consists in the use of hooks and eyes, and bolts that are peculiarly applied and arranged so that the top may be slipped on to it, and off from it at pleasure. The patentee of this invention is John S. Belcher, of Albany, N. Y.

SKATE.

This invention consists in making the sole plate conform to the shape of the shoe sole, and of one piece of thin steel, and in fixing a runner or skate iron to said plate, having a slip joint immediately behind the ball of the foot. Jeremiah Heath, of Providence, R. I., is the inventor, and the claims was published in our last issue.



ISSUED FROM THE UNITED STATES PATENT OFFICE FOR THE WEEK ENDING JULY 10, 1860.

[Reported Officially for the SCIENTIFIC AMERICAN.]

* Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MERRILL & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

29,043.—Allan Agnew, of Chester county, and William Morrison, of Chadd's Ford, Pa., for an Improvement in Cultivators:

We claim a cultivator composed of a stem and branches and teeth projecting from the ends thereof, and secured and made adjustable thereon, as set forth, the whole being constructed and arranged substantially in the manner and for the purposes described and represented.

29,044.—S. M. Andrus, of Bellevue, Mich., for an Apparatus for Protecting Buildings from Fire:

I claim connecting the valve, I, with a tilting and distributing arrangement of water, substantially in the manner as described, so that when an explosion occurs, an alarm will not be given, but water will be discharged almost simultaneously on and around the spot, where the fire first communicated with the fuse.

29,045.—George Arrowsmith, of Lockport, N. Y., for an Improvement in Grain Separators:

I claim the construction and arrangement of the separating chamber, B, consisting of the alternate series of angular dividing partitions, f, and opposing inclined planes, g, g, with the blast orifices, h, h, and i, operating in connection with the fan, A, and secondary chambers of separation, D, D, substantially as and for the purposes set forth.

29,046.—Samuel Avery, of Pisgah, Mo., for an Improvement in Corn-planters:

I claim the main shaft, operated by gearing, b b', connected with the driving wheels, B, B, and the brakes, P, for regulating the motion of said driving wheels, so that the same shall rotate alike, and be under the control of the operator, as and for the purposes set forth.

I also claim the lime boxes, G, mounted on the frame, A, and provided with ratchet wheels, H, said ratchet wheels being operated by means of pawls, J, on each end of a slide bar, I, said slide bar receiving its motion from the main shaft, D, by means of the cams, c, acting on the lever, K, all arranged and operating substantially as shown and described.

[This invention consists in an arrangement of gear wheels operated by the driving wheels which support the machine, and connected with a shaft that transmits motion to the various parts of the machine. These gear wheels serve to regulate the two driving wheels, so that each shall make the same number of revolutions in a given time, thus obviating side draught. It also consists in the application of brakes to the driving wheels in such a manner as to control their revolutions when passing over uneven ground. It further consists in the arrangement of boxes for holding lime or other white substance, which is caused to be deposited at stated periods, in such a manner as to serve as guide marks by which to regulate the machine in its transit across the field.]

29,047.—M. H. Bacon, of Mystic, Conn., for an Improvement in Machines for Dressing Millstones:

I claim, first, The combination of the loose joint, B, reversible wiper, E, and reversible cutter bar, G', or their respective equivalents, on the hinged frame, A, C, so that the path of the cutters may be adjusted to all the lines required upon the face of the stone, substantially as described.

Second, I claim operating the hook, M, or its equivalent, by the same motion which graduates the force of the blow or by a continuation of such motion, substantially as set forth.

Third, I claim reversing the position of the wiper, E, and arm, G', substantially as described, to allow of dressing stones which turn in opposite directions.

29,048.—B. O. Ball, of Greensburgh, Ohio, for an Improved Self-heating Smoothing-iron:

I claim, first, The arrangement of the pipes, F, F, the wick tubes, a, a, the wire conductors, c, c, with the partitions, H, H, on the body of the iron, the same being used substantially as and for the purpose specified.

Second, The arrangement of the flanged lampstand, the lamp provided with tubes, F, F, tubes, a, a, and partitions, H, H, the partitions, H, H, and the dampers, e, the whole being used substantially in the manner and for the purpose specified.

29,049.—J. S. Belcher, of Albany, N. Y., for an Improvement in Attaching Movable Carriage Tops:

I claim the mode of securing shifting carriage tops to their seats by means of the hooks, F, eyes, E, and the keys or pins G, described, so that the tops can be put on or removed with facility and ease, as set forth.

29,050.—F. H. Bell, of Washington, D. C., for an Improvement in Hat Ventilators:

I claim a new article of manufacture, to wit, a portable hat ventilator, consisting of the narrow spring, i, knobs, m, anti-absorbent network, O, slotted attaching strips, e, and buttons, a, the whole constructed in the manner and for the purpose set forth.

[This invention provides a neat light ventilator for all kinds of hats. It is sold in the stores as an article of manufacture independently of the hat, and can, in a moment, be applied to a straw, felt or silk hat, as may be desired. When applied, it gives a neat finish, and dispenses with the use of a sweat leather, as it is anti-absorbent. The construction is very simple, and the cost is but trifling. Everybody who wants to keep his head cool and his hair in a healthy state ought to purchase one of these ventilators, for they certainly are just the thing needed during this hot weather.]

29,051.—John Bell, of Harlem, N. Y., for an Improved Method of Operating the Cutters in Dovetailing Machines:

I claim the combination of rotating cutters and a tilting table, when one is made to pass the other vertically, in addition to its other movement, substantially as described, the object being to cut dovetails on wood, as stated.

29,052.—Levi Bissell, of North Bergen, N. Y., for an Improved Churn:

I claim the combination and arrangement of the oppositely inclined sets of dasher wings, L, L, following each other on their respective shafts, while those of one dasher alternate and intermesh with those of the other dasher, and the intermediate horizontal dasher wings, M, M, substantially in the manner and for the purpose specified.

29,053.—C. B. Brinckerhoff, of Batavia, N. Y., for an Improvement in Harvesters:

I claim, first, The peculiar construction, location, and arrangement of the back action rake, the gearing, and the mechanism for connecting them, in combination with the driving wheel, platform, and main frame, substantially as described.

Second, The arrangement of the compound elongating levers, ff, operated by the eccentric on the shaft, B, in combination with the platform and the back-action rake, or its equivalent, in the manner and substantially as described for the purpose specified.

29,054.—A. C. Brown, of Philadelphia, Pa., for an Improvement in Condensers:

I claim the employment of a perforated refrigerating conductor, G, in combination with the discharge-pipe, B, of the still or retort, A, substantially as and for the purpose shown and described.

[This invention facilitates the refrigeration or cooling of the vapor rising from the still of distillatory apparatus of any description, to condense the same whilst passing from the still to the room tub, by keeping the main pipe or that between the worm tub and still as cool as the worm in the tub, as will be fully understood by the above claim.]

29,055.—C. F. Brown, of Warren, R. I., for an Improvement in Wheels for Gun Carriages, &c.:

I claim binding the groove, a, with a shoulder, b, of greater depth than the shoulder, c, which binds the other side of the groove, a, so that a support and guide for the central plate, D, will be provided during the shrinkage of the tire upon the plate, as set forth and described.

[This invention relates to the construction of wheels wholly of wrought iron or of wrought and cast iron combined. It consists in a certain novel, simple, and very secure mode of combining a wrought iron rim with a wrought iron plate which forms its connection with the hub; also, in a certain construction of the hub and mode of combining it with the plate.]

29,056.—Thomas Byrne, of Baton Rouge, La., for an Improved Method of Cooling Water:

I claim the combination of a subterranean reservoir, e, with a feed-pipe, b, and a discharge pipe, a, when constructed, arranged and operated in the manner and for the purpose set forth.

29,057.—G. W. Clark, of Mount Washington, Ohio, for an Improvement in Seeding Machines:

I claim the combination of the harrow, A, seed-box, C, and drag, F, constructed, combined, and operating in the manner and for the purposes set forth.

29,058.—G. H. Clemens, of Cincinnati, Ohio, for an Improvement in Saw-mills:

I claim, first, The combination of the setting screw, y', clamp nut, w', double eccentric, x', and weighted lever, g', constructed and operating in connection with the head block of a saw-mill, substantially as and for the purpose set forth.

Second, A joint in a saw-mill dog near its spike end, or at it, substantially as described and for the purposes specified.

Third, The arrangement of two or more head blocks with one end of each upon a single carriage sill, and at their opposite ends, each resting upon an independent truck, substantially as described and for the specified purposes.

Fourth, The combination of the levers m and q, mandrel, c, steady pins, a, and adjustable rod, o, said parts being constructed and operated in the manner and for the purposes set forth.

Fifth, The combination of the equal feed pulleys, f, u, lever, f', and pulleys, b, w, and z, constructed and operating in the manner and for the purposes explained.

29,059.—Ebenezer Clemo, of Toronto, C. W., for an Improvement in the Manufacture of Paper Pulp:

I claim the mode or process of treating straw and other fibrous substances in the manufacture of paper stock, substantially as described.

29,060.—Jacob Closs and I. N. Pyle, of Decatur, Ind., for an Improvement in Water Wheels:

We claim the arrangement of the wheels, F, D, and their shafts, B, E, in combination with the openings, e, e, H, and gates, m, o, as shown and described, so that one or both wheels may be operated as desired—all as set forth.

[This invention relates to an improvement in horizontal water wheels, and consists in combining two wheels in such a manner that both may be used and made to operate conjointly by the action of the same volume of water in passing through both, or one of the wheels used separately, as occasion may require.]

29,061.—Wm. Compton, of New York City, for an Improvement in Bridges for Pianos:

I claim the arrangement of the bars, d, g and h, with their flanges, to form up-and-down bearings for the strings at the sounding board bridge, in the manner and for the purposes set forth.

I also claim the arrangement of a series of bars having up-and-down bearings at the wrest plank bridge, in the manner shown, when such bars are separate from the wrest plank plate and attached to the wrest plank so as to be removable in sections, in the manner and for the purposes specified.

And I also claim the perforated bar box, f or m, when combined with an up-bearing rest, 4 or n, and fitted so as to be removed from, or attached to, the wrest plank, for the purposes set forth.

29,062.—G. W. Corson, of Corson's Post-office, Pa., for an Improved Machine for Sawing Bevels on Laths:

I claim the combination of the oblique saw, C, the adjustable carriage, B, on inclined block, D, with plane saw, C, adjustable guide piece, g, shaft, S, and band, b, operating substantially as and for the purposes set forth.

29,063.—Thomas Courser, of Princeton, Ill., for an Improvement in Machines for Binding Grain:

I claim the knotting apparatus, composed of the several parts specified, when the said parts are constructed and arranged for joint operation in the manner and for the purposes described.

29,064.—J. A. Davis, of Portsmouth, Va., for an Improvement in Lowering and Detaching Ships' Boats:

I claim, first, Constructing a trip hook, for attaching boats to, of three parts, to wit: a hinge, a catch and a ring, when the said parts are combined and arranged, in relation to each other, in the manner and for the purposes described.

Second, The relative arrangement of suspension ropes, a, a', trip ropes, b, b' and c, c', pulleys, d, d', and trip hooks, k, l, m, o, p, substantially as and for the purposes set forth.

29,065.—Zina Doolittle, of Perry, Ga., for an Improvement in Cotton-seed Planters:

I claim, first, The arrangement and combination of the hinged oscillating hopper, D, vibrating curved fingers, G, and pin wheel, B, constructed and operating substantially in the manner and for the purpose specified.

Second, The combination, with the vibrating curved finger, G, of the curved slotted seed passage-way, F, constructed and operating substantially as and for the purpose set forth.

Third, The arrangement of the thumb screw, m, in combination with the vibrating curved fingers, G, operating substantially in the manner and for the purpose described.

[This invention consists in the arrangement of a pin wheel, in combination with a hinged oscillating hopper and with vibrating curved fingers, in such a manner that, by rotating the wheel, motion