

Atkinson" (the designation stamped upon the plows, although the same were commonly known as the "Calhoun plow"), to H. B. & B., who were succeeded by the firms of B. B. & Co., W. W. B. & Co., and finally by C. & P. From the time of giving up their lease in 1867, H. B. & B., now the firm of James H. Hall & Co., one of the parties to the interference, continued, without any special lease or permission, the manufacture and sale of the "Calhoun plow," and branded their plows in that manner without any opposition from Mrs. Atkinson or her lessees. The evidence further showed that not only this firm but several other business firms in various places had manufactured, without any substantial opposition, plows known by the same name, namely, the "Calhoun" plow. The said Hall & Co. and also Mrs. Atkinson filed applications for the registration as a trade mark of the word "Calhoun" as applied to plows. The acting Commissioner in refusing the registration held that the evidence on both sides clearly showed that the name had ceased to denote origin or ownership of any particular person or firm, but was used extensively by firms to designate a particular plow of a peculiar shape, and known to the public as the "Calhoun" plow, and that hence, having lost its office of pointing out distinctively the origin or ownership of the article to which it was affixed, and having become a generic term in common use as such, it could not be re-adopted by the original owners thereof, or monopolized by any one firm or person.

#### Iron Direct.

From the *Bulletin du Musée de l'Industrie Belge* we find an article on the Blair direct process of making steel and iron as improved by Mr. Blair and perfected (?) by Mr. Ireland. The main features of the process were the feeding of the broken ore and coal into an upright cylinder and applying heat externally, and as the ore became reduced to metal—de-oxidized—it was discharged continuously into an iron prolongation of the cylinder which was surrounded by water to insure rapid cooling. The improvements consist mainly in mixing a small percentage of broken carbonate of lime with the ore and coal in the cylinder, and passing oxide of carbon through and over the charge, thereby gaining about 50 per cent in operating time, and in dividing the iron prolongation of each cylinder into several small ones for the sake of still quicker cooling, and thus lessening the chances of oxidation of the metallic sponge.

A Siemens, Ponsard, or other gas generator is used, and Mr. Ireland, it is said, has worked successfully when using as fuel a poor lignite containing a good deal of pyrites, and without contaminating the sponge, an experience which seems to contradict that of others who have worked in the same line.

Other economical modifications have been made, but the most prominent features—the fundamental principles of the process—are unchanged, and herein, we think, lies the mistake, for if our judgment of the causes of the many failures to attain the object sought by Messrs. Blair and Ireland is correct, the "direct process" can never be a practical mercantile success until by some plan the ore, coal, and reagents are powdered together, so that the reduction of the ore and its required carbonization may be equal and easily regulated throughout each particle, while further economies in time and fuel are effected.

#### Communications.

##### Correcting Leading Screws.

To the Editor of the Scientific American:

Noticing in your issue of June 15, 1878, page 373, a method of correcting a leading screw, I was reminded of a plan which I employed some years ago in a similar case. I wished to cut a number of new leading screws having a pitch of 6 threads to the inch. The lathe which I was to use had a leading screw of the same nominal pitch, but on measuring 3 feet of the same I found it too short by  $\frac{1}{8}$  of an inch in that length. To make the correction, I proposed to increase the speed of the screw sufficiently to compensate for its deficiency in length. Now  $\frac{1}{8}$  of an inch in 3 feet would equal  $\frac{1}{8} \times \frac{3}{12} = \frac{1}{32}$  of the whole length; that is, each thread was too short by  $\frac{1}{32}$  of itself. Consequently if the leading screw should make  $1\frac{1}{32} = 1\frac{1}{32}$  turns to one turn of the screw to be cut, the proper correction would be made.

In order to realize this small ratio with wheels of convenient size I used two pairs of wheels arranged differentially, so that the first pair should gain while the second lost, the former preponderating sufficiently to make the desired correction. The sizes of the wheels were found as follows: Finding  $\sqrt{1\frac{1}{32}} = \frac{1}{4}$  nearly, I made two wheels of 34 teeth, one of 33, and one of 35. A 34 tooth wheel is put upon the lathe spindle or "stud," and the 35 tooth on the leading screw. A double "intermediate" is made by fastening the other 34 tooth and the 33 tooth together. Then the 34 on the spindle engages the 33 of the intermediate, and the 34 of the intermediate engages the 35 on the leading screw. The annexed diagram shows both the relative positions and number of teeth of the wheels:

34 lathe spindle or "stud."  
|  
33—34 intermediate.  
|  
35 leading screw.

It will readily be seen that the first pair of wheels gain in the ratio  $\frac{34}{33}$ , and the second pair lose in the ratio  $\frac{34}{35}$ .

The product or resultant of these two ratios is  $\frac{34}{33} \times \frac{34}{35} = 1\frac{1}{35}$ , which is practically identical with  $1\frac{1}{32}$ .

In the case of the Pratt & Whitney lathe mentioned by Mr. Rose, the error was  $\frac{1}{16}$  of an inch in 24 inches. Then  $\frac{1}{16} \times \frac{24}{12} = \frac{1}{4}$ , and  $\sqrt{\frac{1}{4}} = \frac{1}{2}$  nearly; so the two pairs of wheels would be  $\frac{4}{3} \times \frac{4}{5} = \frac{16}{15}$ , which agrees with the desired ratio,  $\frac{16}{15}$ , to six places of decimals.

As thus described, the device would be useful only for cutting screws of one pitch. To apply the same idea so as to use the ordinary change wheels for various threads, I would furnish the leading screw with a sleeve which slips over the blank end of the screw and rotates on the same. The outer end of the sleeve is fitted to receive the change wheels, while its inner end carries (in my case) a 34 tooth wheel. Close to this wheel, but fixed to the screw, is the 35 tooth. The double intermediate, 33-34, revolves on a stud fixed to the lathe bed. The annexed diagram shows the relative position and arrangement of the wheels and other parts:

—Lathe spindle or "stud."  
|  
change wheels.  
|  
Sleeve—34 35—screw.  
|  
33—34—intermediate.

This method seems to me simpler, both as to construction and calculation, than the one before published.

D. L. F. CHASE.

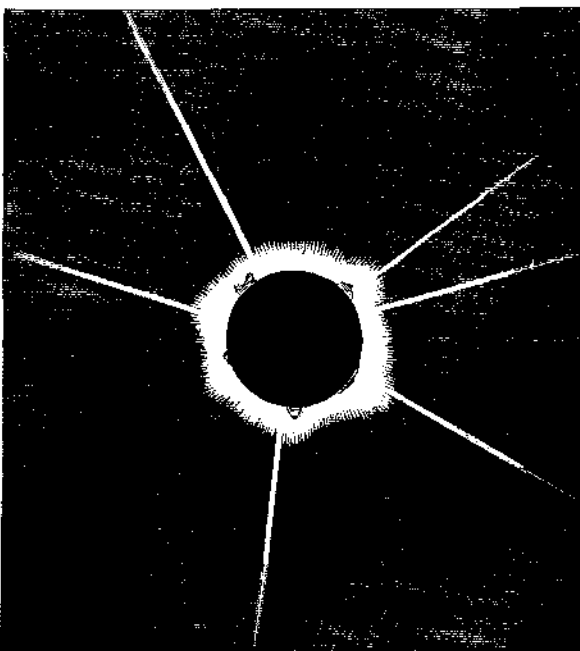
Boston, July, 1878.

#### Eclipse of the Sun.

To the Editor of the Scientific American:

As your paper is more in the hands of scientific people than any other, I beg to send the following for publication, trusting it may reach observers of the coming eclipse in good time to be of service.

One phenomenon connected with total eclipses of the sun often escapes notice from the fact that, in order to its detection, the eye must have been rendered very sensitive by previous confinement to entire darkness. I refer to the pencils of light shooting off into space through the crevices in the moon's profile. In 1869 there were but three in our party, under Professor Abbe, at Sioux Falls, Dakota, who observed these rays of delicate light.



The drawing I inclose is designed to show the general effect of these rays, not their exact positions, for I made no sketch on the spot. It is always well in eclipse observations to have one or more of the party shut up in total darkness for 15 minutes at least until the instant of the sun's disappearance. I trust some may feel sufficient interest in the appearance here named to give special attention to making drawings of these threadlike rays shooting off into space, like the supporting rays of a spider's web; or rather like silver threads hanging in the heavens the marvelous brooch of a moon of jet set in a corona of purest silver.

A caution given to the writer by Professor Alexander will always be useful to those who are for the first time to observe a total eclipse of the sun—not to let the grandeur of the scene as a spectacle draw their attention from a strict performance of their duties. All who have witnessed such an eclipse will appreciate both the temptation and the necessity for guarding against it.

W. CURTIS TAYLOR.

Philadelphia, July 16, 1878.

#### Microphone and Telephone.

To the Editor of the Scientific American:

Having put a microphone (one of Hughes' form) in circuit with telephone and battery, I found that when the microphone was submerged in a bucket of water, the ringing of a bell in the water, or the dropping of a nail on the microphone, could be heard clearly and distinctly in the telephone; rubbing on the sides of the bucket, or a slight

commotion in the water, near the microphone, could also be heard in the telephone.

During a thunder storm recently, on putting my ear to the telephone (using earth connection), I could hear a peculiar sound, somewhat similar to small sounds transmitted through the microphone every time a current of electricity passed from the clouds to the earth, and *vice versa*; so that the moment the lightning indicated to the eye the passage of the current, the telephone indicated the same to the ear. Breaking and closing the circuit by means of a key, could be heard in the telephone, as when a battery is used, although none was connected with it. On bringing the microphone in circuit, it worked as though a battery was connected with it, but, as previously mentioned, none was used.

The latter phenomena continued throughout the following day, which was partially cloudy. Wm. S. ALDRICH.  
Burlington, N. J., July 9, 1878.

#### The Sutro Tunnel.

The telegraph reports that on the night of July 8th, at 11 o'clock, connection was made between the Sutro Tunnel and the 1,650 foot level of the Savage mine; that a strong draught of air at once poured into the mine, and, heralded by this welcome breeze, Mr. Sutro himself entered from the tunnel, and a general jollification ensued. The recent agreement between the Sutro Tunnel Company and several leading Comstock mining companies, though it does not, as we understand it, include the mines now producing ore, is a very important and auspicious arrangement for all parties. Nothing is more certain, if we may judge of the future by the past, than that every mine on the Comstock will sooner or later be obliged to pass through another period of non-production and costly and difficult exploration. At the present depth and temperature of operations the Sutro Tunnel will be a necessity to every mine in that condition, and in most cases the companies will have to make terms with Mr. Sutro or abandon their work. From this time he commands the situation. We congratulate him on the triumph, which is so largely due to his individual energy and perseverance. The only pity is that the great adit has been delayed and rendered more costly by discord among the parties who should have been most deeply interested in its success from the beginning. The mines should have controlled the tunnel. Now it looks a little as if the tunnel were destined to control the mines.

By the way, how would some of our friends among the Comstock superintendents like to peruse again the testimony they gave on this subject, a few years ago, before the Committee on Mines and Mining of the House of Representatives? Are we dreaming, or did we not hear, on high practical authority, that the Sutro Tunnel would never be completed; that it would do no good if completed; that it would not be needed for drainage, because there was so little water in depth; that it would not assist ventilation; that ventilation was good enough, anyhow; that it could never transport ores, etc., etc.?

It is a long road still, and we will not say an easy one, to the fulfillment of all Mr. Sutro's hopes. Whether ores will be taken through the tunnel, to be concentrated and reduced on the Carson, is a question involving many complicated interests, as well as technical difficulties. Of the latter, one of the most serious appears to be that if the tunnel proves greatly useful in ventilating the deep workings and reducing the temperature, it may not be thought advisable to impair its efficiency in this respect by choking it with trains of cars. It still remains to be determined in what way it can be made most useful, and how many functions it can successfully discharge at once. But there can be no doubt that, in one way or another, it will be the salvation of the deep workings on the Comstock lode.—*Engineering and Mining Journal*.

#### New Agricultural Inventions.

George Washington Grimes, of Bluffton, Indiana, has patented an improvement in the Combined Drill and Planter, for which letters patent No. 199,200 were granted to him January 15, 1878, which makes it more convenient, more effective, and better adapted for different kinds of planting.

Hazen R. Underhill, of Derry, New Hampshire, has patented an improved Double Mould Board Side Hill Plow, which is so constructed as to be available in any ordinary plowing. It is easily adjusted to turn the furrow in either direction.

Charles Daniel, of Virginia, Missouri, has patented an improved Plow Colter, that is adapted to reversible or hill side plows. It consists in a cutting wheel that is journaled in a swiveled support and attached to a sleeve on the plow beam, said sleeve being provided with a latch that engages a notched collar on the beam.

John A. Perry, of Carthage, Alabama, has patented an improved Churning Apparatus, which may be used with ordinary churns without any change whatever in said churns. It is effective in operation, bringing the butter quickly, developing all the butter there may be in the milk, and gathering the butter so that it can be readily removed.

An improved Field Roller has been patented by Thomas B. Rice, Jr., of Medora, Ill. The invention consists of a field roller made of one, two, or more independent sections, that turn by end gudgeons in slotted holes of the supporting frame, and in chain supported center links. Each roller section is connected by chains or belts with pulleys of the frame, so as to run lighter by the action of the chains.

Aaron Rosier, of Sussex, Wis., has patented an improved

Double Tree Clevis, which is so constructed that should one of the horses of a team get behind the other the clevises will adjust themselves automatically to give the rear horse an advantage of leverage to enable him to regain his place at the side of the other horse, when the draught again becomes equal.

Charles R. Polen, Sr., of Hazel Dell, Ill., is the inventor of an improved Machine for Pulverizing the Soil to prepare it to receive seed, which is simple, convenient, and easily kept in repair. It leaves the soil level and smooth, and in good condition to receive seed.

Ira O. Childs, of Shreve, Ohio, has patented an improved Hedge Fence, which is close and thick in its lower part, so as to prevent the passage of small animals, and which may be allowed to grow to any desired height, and may be trimmed in any shape.

#### NEW POWER PRESS.

We illustrate herewith a new inclined double eccentric press made by the Stiles and Parker Press Company, of Middletown, Conn. This press is designed especially for such work as the tops and bottoms of large square cans, such as are used for packing kerosene oil. Two tops or two bottoms are made at the same time, one at each side of the press. The workman puts in one piece with each hand, and, as the press is inclined, the finished articles drop out of their own gravity.

The transverse section, Fig. 2, is taken through the slide and guides, showing the manner of gibbing the slide to take up wear.

Owing to the inclination of the guides, the slide tends to wear on the rear or under side. To keep the slide always true with the bed the gibs are located on the lower side, and can be adjusted to compensate for wear by means of the set screws in the guides. The part of the slide, A, that is fitted to the ways, B, is beveled, and the triangular gib, C, is fitted to the ways and slide, and is adjusted by the set screws in the ways. This arrangement is said to work very satisfactorily.

Another important feature in this press is the device for simultaneously adjusting both pitmans.

The manufacturers state that all of the bearing surfaces are scraped to a fit, and that the workmanship and materials are of the best quality throughout. For further particulars address the manufacturers as above.

#### No Credit.

Thirty-seven firms, located in different parts of the oil country, and embracing all those engaged in the manufacture of oil well tools from the upper to the lower district, believing, from their vast experience and observation, that the credit system is alike disastrous to both the producer and manufacturer, announce that on and after to-day (June 10) they will sell their goods only for cash on delivery. Commenting upon this the Titusville *Herald* says: "There is no break in their ranks and no dissenting voice. The evils of the credit system are so widespread that this step had become necessary, and the cash system will work good not only to the trade, but to the producer as a class. The facility of giving and getting credit has stimulated production and offered a premium not only to financial looseness, but to actual dishonesty. The cash system will make all more conservative in their operations, and if dealers can avoid bad debts and doubtful credit, prices will in the end decline to a level consistent with legitimate business profit, and the whole country will be the gainer."

#### Decline in the Price of Petroleum.

Great consternation has been caused in the oil regions of Pennsylvania by the recent decline in the price of petroleum to less than a dollar per barrel. It is generally admitted that these ruinous prices are a natural and unavoidable result of the immense overproduction, and in some quarters the belief is expressed that if there is no other way of curbing the desire to sink new oil wells more rapidly than new markets can be found, a still further decline will in the end prove beneficial by warning all whom it may concern of the folly of glutting the market with excessive quantities of such a product as petroleum.—*Railway World*.

#### New Inventions.

Silas S. Crocker and Albert Wilcox, of Clarence, Iowa, have invented an improved Foot Bath for Horses, by means of which a horse's feet may be bathed while he is standing in a stable, so as to prevent his feet from being injured by remaining too long dry.

Albert Ferguson, of Brooklyn (E. D.), N. Y., has patented an improved Sportsman's Lantern, which may be secured in a substantial manner to the hat of the sportsman, so that it will not restrict his movements, and will throw the light directly forward upon the game, leaving the sportsman in the shade.

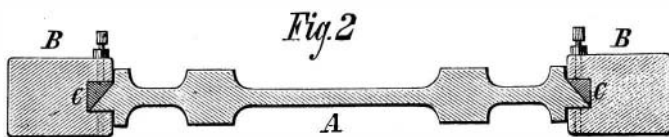
Henry S. Cate, of Millerstown (Barnhart's Mills P. O.), Pa., has patented an improved Chair Seat and Back, which

consists in a piece of elastic rubber placed between the seat or back and the chair frame. The rubber is continuous, and gives a degree of spring that furnishes a comfortable yielding support to the body, is more economical than springs or stuffing as usually employed, and is withal of sufficient strength to be very durable.

Abe O. Kaplan, of Cincinnati, O., is the inventor of an improved Satchel Desk, having an interior casing that is subdivided and provided with a hinged and folding desk portion, and with sliding and swinging corner receptacles for inkstands and similar articles. The folding desk closes the casing, and is covered by the lid of the satchel, to the center bar of which the handle is applied, the lid being locked at both sides and strapped to the body of the casing by suitable locking devices.

William A. Bowen, of Ridgeway, Iowa, has devised an improved Heating Drum for attachment to stove pipes, which will also serve as a stove shelf. It consists in two conical end sections and a flat middle section connected with the end section by short pipes, leaving a space between the sections for articles to be heated.

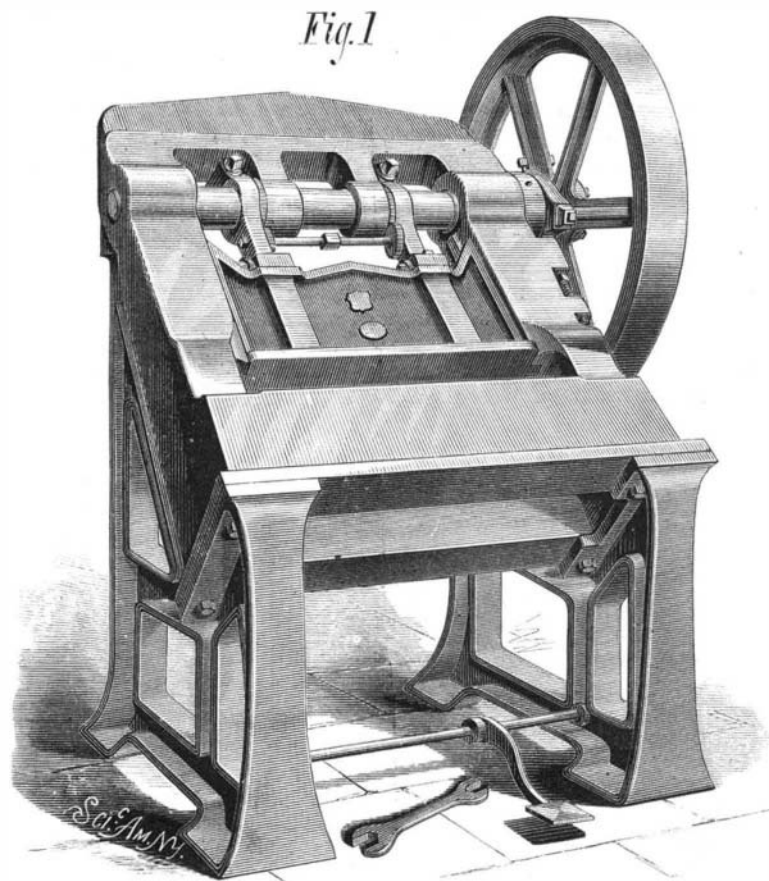
William M. Ryerson, of Newton, N. J., has patented an improved Harness Saddle-tree, which prevents the saddle from injuring the horse's back or coming in contact with his back.



INCLINED DOUBLE ECCENTRIC PRESS.

bone, so that his back will not be made sore, and will be allowed to heal while he is in daily use, should it have been previously injured.

Frederick Buehrig and Charles Buehrig, of Fort Madison, Iowa, have patented an improved Lamp Burner, that combines the advantages of a common lamp burner with those of a night lamp, and furnishes either a flame of the usual size or a night light, admitting the changing of one light to the other in an instant without the use of a match or the handling of the chimney, the night light being, furthermore,



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protected by the chimney, so as not to be blown out when being carried about.

An improved Vapor Bath has been patented by Mrs. Carrie A. Munro, of Salt Lake City, Utah Ter. The invention consists in a box of peculiar form, having neck apertures for both the sitting and reclining postures, and containing a removable cot, a stool, and vaporizing apparatus, which cannot be clearly described without engravings.

An improvement in Chills for Hubs has been patented by Patrick H. Burns, of Indiana, Pa. This invention relates to chills for chilling the hubs of wheels, more particularly the hubs of car wheels, such as revolve on their axles; and it consists in a cylindrical chill having end pieces for chilling the cheeks of the hub, and having a portion at the middle reduced in diameter and grooved circumferentially to receive an annular core, which forms a chamber in the hub. The chill is provided with several transverse and longitudinal vent holes for the escape of gas generated in the core.

Martin Entenmann, of New York city, has patented an improved Game Apparatus, which consists in the combination of a stationary horizontal disk provided with series of numbered perforations, and a concentric subjacent rotating wheel

provided with a vertical rim, and having projections arranged to dislodge, by rotation, a number of balls resting in the holes of the said disk.

Francis P. Cummerford, of Wilmington, Del., has patented a Protecting Helmet for the use of firemen, shipwrecked and other persons. It is made of rubber, or other elastic material, that closes tightly to the neck, but fits loosely on the head, it being provided at the upper part with a ventilating device, and with a mouthpiece and closing device to admit of speaking.

Jonathan Hill, of New York city, has patented an improved Take-up for Twine Holders, which will raise the free end of the twine from the counter after it has been detached from the bundle being tied. It consists in a tube having at its upper end a ring, by which it is suspended, and having at its lower end a ring for supporting the twine basket or holder, and containing a sliding weight, which is provided with an eye that receives the twine, which passes through eyelets in the opposite sides of the upper end of the tube.

Edward L. Witte, of White Mills, Pa., has patented an improvement in Methods of Labeling Bottles, which consists in first burning the colors into the label and then melting the label into the bottle.

Elida M. Capen, of Charlton Depot, Mass., has invented an improved Index Tag for Books. It consists in a metal tag which is split lengthwise, so as to form two clamping jaws, that are caused to gripe the edge of the leaf of a book by means of a prong or rivet.

Henry S. Wood, of Rob Roy, Ark., has patented an improved Lap Ring, which consists of a lapping made of two sections, which are open at one side, and provided with

grooved center pieces at the opposite side, that fit into the openings, so as to firmly interlock when connected with each other.

David H. King, of New York city, has invented an improved Newspaper File for securing the parts of a paper or several papers together in such a way that they may be conveniently handled and read without getting out of place, and which at the same time may furnish a means for hanging them up, if desired.

An improved Horse Brake has been patented by Israel Spitz, of Chicago, Ill. The object of this invention is to furnish an improved device for controlling or braking horses, so as to prevent them from running away, and bringing them instantly, in case of danger, within the power of the driver or rider.

Frederick G. Hunter, of Moncton, New Brunswick, Canada, has patented an improved Seal Lock for railroad cars, mail bags, and other purposes, which may be applied to the hasps quickly and conveniently, so as to lock the same securely, without any chance of being tampered with, the seal lock being readily used again after the tin seal is cut and the lock opened.

John Edgar, of New Bloomfield, Pa., is the inventor of an improved School Desk, which consists in a book box pivoted to slides and having means for adjusting and fastening it; having also a shelf or adjustable top, and levers and sectors and catches for holding the parts in position.

Ernest T. Gennert, of New York city, is the inventor of an improved Drying Kiln, which is designed especially for drying beets for sugar making, but which may be used with equal advantage for drying various other substances.

John Homrighous, of Royalton, Ohio, has patented an improved Burial Casket, which may be adjusted to any length, so as to enable the undertaker to keep on hand a full stock without being obliged to keep on hand as many caskets as are required by the present sizes.

Silas Robbins, of Monroeville, O., has patented a Bag Holder for holding grain and other bags to allow them to be conveniently filled. The device is in the nature of a bracket having such construction and provided with such devices as adapt it to be readily attached to and detached from a suitable support. The bag is held by friction with a hoop which is pivoted to the bracket.

Moses M. Rice and Jesse Labar, of Slatington, Pa., have patented an improved Desk Slate Holder. It consists in a desk having a divided and hinged top, in which there is a recess containing a hinged frame, in which is pivoted the slate.

William Haas, of Walla Walla, Washington Ter., has invented an improved Mop Wringer, for attachment to the side of a tub, pail, or bucket. It is constructed to enable the mop to be easily, quickly, and thoroughly wrung out without its being necessary to wet or soil the hands by touching it.

Michael W. Scannell, of Williamsport, Pa., has invented an improved Kitchen Sink, that is arranged in such a manner with a strainer and plug as to be used either as a sink or as a basin to hold water for washing dishes, etc. The strainer is so arranged as to be readily removed for cleaning, while the overflow is conducted off through suitable openings and exterior pipe.