

RECENT INVENTIONS.

Farm Gate.

An inexpensive metallic barbed wire gate, the wires of which are self-tightening, is shown in Fig. 1 in the annexed drawing. The gate is provided with a novel and efficient means for opening the gate from either side and for locking the same when closed. A is a bent rod or bar, the upper and lower ends of which are turned outward and enter the post as shown. One end of each of the barbed wires is wrapped around this rod at its bends and is adapted to slide slightly upon the rods when the gate is opened and closed. The forward ends of the wires are secured in an upright piece, which is braced by a diagonal rod that reaches from the upper end of the bar to the lower end of the bent rod, and the short brace which reaches from the center of the upright bar to the diagonal brace. The lower end of the diagonal rod is formed into an eye that surrounds the rod, A, and between this eye and the lower end of the rod is placed a coil spring, which causes the rear end of the gate to move upward upon the rod when the gate is opened. The rear ends of the barbed wires are tied together by a stiff wire looped around them all, so that when the gate is opened all the wires will be caused to slide upon the bent rod, and to prevent bending of the rod, A, from the weight of the gate, wires are wrapped around the rod at different points and secured to the gate post. The upright bar at the front end of the gate is triangular in form, and on its side toward the gate post is a rod formed with a loop on the upper end that fits over a staple in the top of the post, and at the lower end is a projection which rests upon a yoke which is hinged to the post, and by these and connecting devices the gate is held to the post and released and the barbed wires are kept taut. This invention has been patented by Mr. S. S. Durbon, Junction City, Kan.

Gas Heating Stove.

A new gas stove for heating purposes has been patented recently by Mr. John H. Baumgardner, of Lancaster, Pa., and is shown in Fig. 2 in the accompanying cut. A series of tubes, closed at the top and bottom, are secured in a vertical position in the top of a rectangular case, the tubes having an enlargement preferably made tapering directly below the cover of the base. An elongated Bunsen burner passes longitudinally through the base below the enlarged parts of the tubes. The tubes may be arranged in any desired form, and any desired number may be used. It is preferable to arrange the tubes parallel in two rows, with the burner between them so that the outwardly inclined flame will strike the enlargements of the tubes. The gases of combustion pass out of the base through an opening, and may be permitted to escape into the room or may be conducted to a flue. Each tube contains a quantity of water, and in the rest of the tube is empty. A vacuum is obtained by raising steam in the tubes until it escapes through an aperture in the top of each tube; the apertures are then closed by close fitting plugs, and when the steam is condensed the vacuum is created. By this means a rapid production of steam is secured. The tubes may be covered by a top plate or screen in the same manner as steam heating radiators.

Freight Car Door.

The object of the invention shown in Fig. 3 of the accompanying engraving is to provide for railroad cars, which are used both for carrying grain and other merchandise, a door that can be easily opened when the car is loaded with grain, and can be moved and held out of the way while the car is being filled with other freight. The invention has been patented by Messrs. Thomas McNally and William H. Glasgow, both of St. Louis, Mo., and it consists in a door made shorter than the width of the doorway, and provided with a sliding plate operated by a lever for locking and unlocking the door, the door being adapted to swing bodily outward when unlocked, from the pressure of the grain against it. The door is suspended from a long rod placed inside and near the top of the car, by ropes or chains and sliding blocks, the blocks being adapted to slide on the rod for moving the door to one side of the doorway, and the ropes or chains are used for elevating the door. In use, if the car is loaded with grain, to open the door it is only necessary to raise the locking device and throw the lever back, thus disengaging the holding plate from the door and leaving it free to be forced bodily out of the doorway of the car by the weight of the grain inside, thus obviating the task of lifting the door with the weight of the grain against it. If the door is to be put out of the way while the car is being loaded with other freight than grain, it is first elevated by the chains in the sliding pulleys, and then pushed to one side on the sliding rod, where it is retained out of the way.

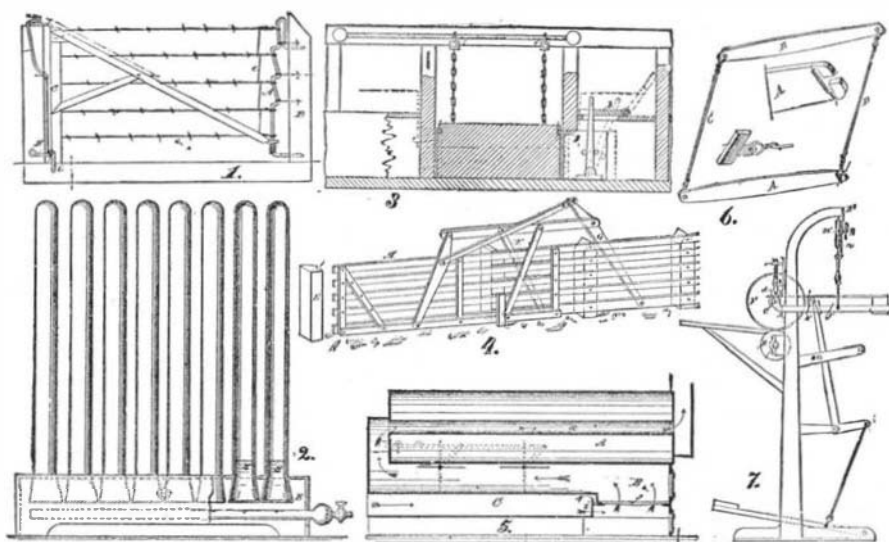
An Improved Farm Gate.

The invention shown in Fig. 4 of the accompanying engraving is a new sliding gate that is simple in construction and can be opened and closed without great exertion. The

gate can be made of boards or slats as may be desired, and is designed to slide parallel with the fence. To guide the gate in this movement a guide post is provided between which and the fence the gate slides. The outer end of the gate fits into a vertical slot in the gate post, E. Two bars, F and G, are pivoted at their lower ends to the bottom of the fence, the bar, G, being of greater length than F. These bars are connected by a longitudinal bar that is pivoted to bar, G, a short distance from its top, and to the top of the bar, F, and extends beyond it. Two suspension bars attached to the bottom of the gate are pivoted to the longitudinal bar, one at its outer end, and the other between the pivots of the bars, G and F. An inclined connecting bar is pivoted to top of the bar, G, and to the front suspension bar, a short distance below its end, so that it crosses the longitudinal bar as shown in the engraving. When the gate is drawn back it is raised upon the suspension bars and slides back easily. For further information address Messrs. Nicol & Watson, Owen Sound, Ontario.

An Improved Boiler Furnace.

The object of the invention shown in Fig. 5 of the engraving is to obtain perfect combustion of fuel in furnaces, and consequently to insure economy of fuel. The waste heat of the furnace is used to heat the air supplied to the fire box, and the gases and smoke are detained until they are consumed. This is the invention of Mr. Girard R. Ricketts, of Proctorville, O. A is the boiler, which is of ordinary construction, and B is the fire box connected by a flue beneath the boiler with the smoke box, and provided with doors, grate bars, ash pit, as usual. The furnace shell is surrounded by an outer casing, by which a flue, C, is formed at the sides and bottom of the furnace, communicating at the front with the ashpit, where the inlet is narrowed by a bridge, and at the rear end is open for the free admission of the air. In operation the doors of the fire box and ash pit are kept closed except



1. Durbon's Farm Gate.—2. Baumgardner's Gas Heating Stove.—3. McNally and Glasgow's Freight Car Door.—4. Nicol and Watson's Farm Gate.—5. Ricketts's Boiler Furnace.—6. Gordon's Baling Band.—7. Sawyer's Leather Measuring Machine.

when it is necessary to supply fuel and remove ashes, and the fire is supplied with air by the flue, C, which becomes heated by contact with the furnace shell and by the heat radiated therefrom, so that it enters the ash pit in a condition for insuring combustion without check. The flue being of large capacity, an adequate supply of heated air is insured at all times. Deflectors placed under the boiler detain the smoke and gases until they are consumed, and the heated products pass through the boiler at an intense and uniform heat.

Hay and Cotton Baling Band.

An improved and novel baling band, that can be closed and locked or unlocked and unclosed very rapidly and conveniently, has been patented by Mr. William S. Gordon, of Princetown, N. Y., and is shown in Fig. 6 in the accompanying engraving. Two bars or slats, A, B, made of wood or metal, are united at their ends by wires, ropes, or chains, C, D. The bars are preferably made wider at their middle, so as to make them stiffer and stronger. The ends of the wire, C, are firmly attached to the corresponding ends of the bars, and one end of the wire, D, is firmly attached to the opposite end of the bar, B. The bar, A, is provided with a transverse slot, a short distance from the end opposite the one attached to the wire, C. Grooves are cut in the outer surface of the bar that extend from the end of the slot to the edges of the bar, and a slot extends from the end of the bar to the transverse slot and at right angles to it. A T-shaped key has its shank or lug attached to the free end of the wire, D, and the inner edge of the key is slightly beveled to adapt it to fit into the grooves on the top of the bar, A. When the band is used the bars are placed on the top and bottom of the bale, and the free wire is drawn so that it can be passed through the slot in the end of the bar, and the key is turned so that the shank will rest in the transverse slot and the inner edge in the grooves on the top of the bar, thus locking and holding the band. The operation is reversed to unlock it, and the band may be used a number of times, as none of the parts are broken.

Leather Measuring Machine.

Mr. William A. Sawyer, of Denversport, Mass., has patented a new and ingenious machine for rapidly and accurately measuring sides of leather and other similar surfaces having irregular edges. It is shown in Fig. 7 of the engraving. The main frame of the machine is composed of upright pieces which are tied together by cross pieces, and upon the uprights are secured bearings in which the shaft of the power roller, B, revolves, and above these blocks are bearing blocks to which the shaft, C, is attached. Secured to the cross piece is a series of depending arms, each of which carries a grooved roller, d, and the lower ends of these arms are formed with perforated enlargements through which the shaft, C, passes. Upon this rod and between these arms are placed a series of loose wheels, F, which normally rest upon the roller, B, and receive their motion therefrom. There should be a sufficient number of these wheels to reach over the greatest width of the surface to be measured. The hubs of these wheels are grooved to correspond with, and are arranged immediately under the wheels, d, for grasping the rods of weights, for the purpose of moving them over the roller, k, of the suspended frame, J, across which roller they are fulcrumed. When a side of leather is to be measured it is passed between the power roller, B, and the wheels, F, under the series of which any portion of the leather passes, will be raised up by the thickness of the sheet, causing the hubs of the wheels to grasp the rods of the weights and draw them forward over the roller, k. The number of wheels raised correspond with the number of weights moved, and the width of the surface and the distance the weights are moved correspond to the length of surface passed under the wheels respectively, and it follows that the position of the weights, after the surface has passed entirely through the machine, will indicate the exact extent of surface in the sheet irrespective of its shape. The aggregate of the movement of the weights is indicated by a registering dial, the pointer of which is operated by suitable intermediate mechanism between the suspended frames, J, and the dial.

Discovery of Ancient Ruins in New Mexico.

The Boston *Journal* reports that important discoveries of the largest ancient ruins yet found on this continent, which extend for a distance of fifteen miles up and down the banks of the Las Animas River, about forty miles from Durango, in Rio Grande county, N. M., have recently been made. Post Office Inspector Cameron, who visited these ruins lately, believes the ancient villages were occupied by the Moqui Indians, and not by the Aztecs, as is generally supposed. He speaks of discovering a stone ruin 400 feet by 450 feet, which at one time evidently was three stories high. The walls are five feet thick. There were about one hundred and fifty rooms in the building, of ten feet square each. An enterprising Yankee who has pre-empted as government land the ground on which the ruins stand, has been doing a fine business selling relics to visitors. A discovery thought important by the gentlemen of the Bureau of Ethnology was lately made there of thirteen human skeletons in a subterranean chamber of the building mentioned. This had evidently been used as a burial vault. They were wrapped up carefully in a kind of coarse cloth, and bore a close resemblance to Egyptian mummies. This cloth was of cotton, and woven with as much skill as if done at the present day, which is considered not the least interesting part of the discovery. The skeletons were perfectly preserved and clean. They were unmistakably those of Indians. A quantity of pottery of the best make was also found in this tomb.

An Artificial Moon.

Take a soup plate and slightly grease the surface with lard or oil; distribute irregularly in varying thicknesses about a tablespoonful of so-called granulated citrate of magnesia. Take a basin, pour in enough water to fill the soup plate; shake into the water about two-thirds the quantity of fine freshly burnt plaster of Paris, which will sink at once; pour off nearly all the superfluous water; stir two or three times with a stick or spoon, so as to mix irregularly the paste; then pour it on the powder in the soup plate. The water in the plaster will cause an immediate disengagement of carbonic acid gas, which will rise in bubbles of various sizes through it in irregular patches; the plaster almost immediately setting, the shape of the outline of the bubbles and the walls of them become fixed, and, as a result, a most startling resemblance to the cratered surface of the moon is produced.

If a photograph of this be taken with a strong light, the resemblance becomes so perfect as to deceive almost all who are not professional astronomers. I believe that a little sugar, or sirup, or gum in the water would produce larger craters, but I have not tried this.

A. STEWART HARRISON.

[As we have for several years used illustrations of the moon's surface formed by Mr. Harrison in the way described above, we can vouch for the accuracy of his statements.—Ed.]—*Knowledge*.