

ENGINEERING INVENTIONS.

A car coupling has been patented by Mr. William Emmett, of Logansport, Ind. The drawbar is formed with a weight, and the drawhead has rounded claws and a concave or cam, for causing the drawheads to rotate when the cars are brought together, making an automatic coupling that is not liable to get out of order.

A rail friction clamp has been patented by Mr. William Emmett, of Logansport, Ind. It consists of two clamp bars shaped to fit against the web and top of the base of the rail, these bars having a flat straight base part so made that when the outer edge of the base part rests against the under side of the rail base, the inner edge will be a short distance from the inner side of the rail base, the base having tongues and recesses for locking them together.

A valve gear has been patented by Mr. James B. Quinn, of St. Paul, Minn. It consists of two swinging arms deriving their motion from the wheel shaft, two arms imparting motion to the slide valve and automatically cutting off steam by adjustable dogs placed on segments, and a device for regulating the position of the dogs on the segments, the gear being especially adapted for stern wheel steamers using a high pressure engine on one side and low pressure on the other.

AGRICULTURAL INVENTIONS.

A marking attachment for corn planters has been patented by Mr. William H. Clay, of Paris, Ky. It is pivoted to a swiveled piece, with a device fastened to the seat for locking, and a pivoted movable rope carrier, secured to an inclined frame, so the attachment can be shifted from one side of a corn planter to the other.

MISCELLANEOUS INVENTIONS.

A brake for vehicles has been patented by Mr. John B. Hinton, of San Diego, Cal. It is especially designed for vehicles whose fore wheels turn under the box or bed in a place made for that purpose, and the brake is made to operate by the application of a flexible cable.

An animal poke has been patented by Mr. David F. Sandusky, of McLeansborough, Ill. It is a yoke so made that a lever will act to hit the animal on the nose and cause him to start back as he approaches a fence, but will not interfere with the grazing of the animal wearing it.

A mangle has been patented by Catharine Whitney, of Lawrence, Kan. By this invention large wooden rollers are used for smoothing clothes, there being receptacles for clothes ironed and unironed, and means whereby the weight of these receptacles and their clothes are utilized in the ironing process.

A log boat has been patented by Mr. William A. Dexter, of Dayton, N. Y. It is so made as to accommodate itself by both wheels and runners to hard or soft ground, and thus be drawn easier than boats or sleds not having wheels so arranged, saving labor of men and animals in getting out timber.

An attachment for bedsteads has been patented by Mr. James W. Bowles, of Louisville, Ky. This invention provides a guard board which may be used to separate two or more persons sleeping in a bed, or may be used at the edge of a bed to prevent children and others from falling out.

A freight checking device has been patented by Mr. William B. Thomas, of Athens, Ga. The invention covers a tilting lever and means for connecting it with registering mechanism, the device to be placed on the station platform, and being especially adapted for registering the shipment of cotton bales.

A fastening band for packages of merchandise has been patented by Mr. Samuel W. Page, of Jersey City, N. J. It is flexible, one end being plain and the other having attached a metal clip with clinching prongs, and short hook-shaped sharp teeth for engagement with the plain end.

A fire escape has been patented by Messrs. Robert M. Henderson and John A. Glaesline, of Jackson County, Ind. (P. O., Leesville, Ind.) It is made in sections, adapted to be drawn out so the ladder may be made to reach any desired height, can be operated by one person, and adjusted and set to any required inclination before the sliding portions are raised.

A revolving sweeping attachment for spinning mules has been patented by Mr. Charles Ashworth, of Grovesnor Dale, Conn. It has a sweeping roller so operated as to gather up and retain the sweepings, and form them into a mat or web around the roller, from which the sweepings may be cut, furnishing a compact bat or web.

A radially folding synchronous chart has been patented by Messrs. James M. Ludlow, Isaac K. Funk, and Adam W. Wagnalls. It is made with a series of sector-shaped plates, pivoted and divided into a fan-like arrangement, to constitute historical charts, or so that events for the same century, year, etc., may be readily compared.

Stringing pianos forms the subject of a patent issued to Mr. James F. Conover, of New York city. This invention provides additional pressure strings adjacent to the long covered and plain strings, the additional strings resting on the bridge and exerting a pressure thereon, but not being struck by the hammer, and not sounded.

A boot or shoe has been patented by Mr. Henry W. Joslin, of Titusville, N. J. It is designed to prevent moisture from penetrating the uppers around the edge of the soles, and the invention provides for a strip of waterproof material secured to the outer side of the upper along the edge of the sole at the forward part of the boot or shoe.

A turning machine has been patented by Mr. Albert T. Booth, of Meriden, Conn. This invention covers improvements on a former patented invention of the same inventor, including means for operating and controlling the chuck, whereby it is made to automatically tighten its hold, and may be readily released as desired, while the mechanism is simplified.

A washing machine has been patented by Mr. Samuel Martin, of Hartland, Mich. Combined with a tub is a shaft on which rollers are held, and a pivoted frame in which end rollers are held, over which an endless belt passes, on which transverse ribs are secured, the clothes being rubbed between the rollers and the ribs on the belt.

A fifth wheel attachment has been patented by Mr. Adelbert A. Meyers, of St. Louis, Mo. It consists of a small roller mounted on the end of a spring in position to bear hard against the under side of the movable part of the fifth wheel, the spring and roller being within a casting which acts as the main brace and coupling clip of the running gear.

A clasp for ribbon rolls has been patented by Mr. Edwin W. Raymond, of Coupeville, Washington Ter. It is made of a piece of spring metal folded upon itself to form parallel clasp arms, one arm being bent to form a lip or stop to keep the clasp in place upon the goods and the goods in place upon the roll.

A handle for package carriers has been patented by Carrie C. Boyd, of Fruitport, Mich. It is made with a central part forming a hand grasp, and with opposite ends bent to form three open loops, into which the cord of the package passes when the handle is applied, to facilitate the convenient carriage of packages bound with cord or twine.

A fire escape has been patented by Mr. Thomas D. McKinzie, of Colorado, Tex. It consists of a car and elevator chain, with various novel details, whereby the lowering of the car is made easy, the occupants may be shielded from smoke and flame, the apparatus may be conveniently housed when not in use, and cannot be used by burglars.

An oil drip washer for roller skates has been patented by Mr. Louis Steinberger, of New York city. It is a metallic washer provided with an adjustable and removable fibrous drip, to catch and absorb the oil escaping from the axle and hub, the drip surrounding the edge and extending over a portion of the two surfaces of the washer.

A safe deposit vault has been patented by Mr. Rufus E. Dixon, of New York city. This invention covers a frame with central compartments surrounded by outer ones, a combination with a shell and surrounding masonry, the frame being adapted to revolve in the shell, with other novel features, to afford the most complete protection against fire and burglars.

An apparatus for smelting and calcining lead and other ores has been patented by Mr. Elliott R. Moffet, of Joplin, Mo. It is so made that the fumes from the roaster or calcining furnace are drawn or passed direct into the cupola furnace, and the air supplied to the cupola furnace is heated by the heat from the calcining furnace, with other novel features.

A ribbon reel has been patented by Mr. James E. McMurtre, of Saxton, Pa. It has opposite slotted frame bars, with intertuned and slotted end parts, clamp plates and screws, with other novel features, the device being intended for holding bolts of ribbon, braid, and the like, so that any desired quantity may be reeled off, and the loose end will be held firmly.

A gas pressure regulator has been patented by Mr. Robert F. Hatfield, of New York city. Combined with the inlet pipe, cylinder attached to the float, and cone attached to the inner case of the regulator, are a valve and cylinder rigidly connected with each other and with the cylinder, whereby the descent of the float will wholly prevent the inflow of gas.

An automatic registering machine has been patented by Mr. William H. Barber, of Ward, O. It is made so that an enumerating tape may be transferred back and forth upon separate drums, with transferring rollers having an intermittent movement to carry the enumerating tape a certain distance at every intermittent movement, for use with bagging and weighing devices, etc.

A washing machine has been patented by Mr. Hiram H. Tuttle, of Phoenix, Arizona Ter. This invention covers an improvement in that class of washing machines in which a cylinder clothes carrier is supported and revolved within a steam boiler or case, the cylindrical body having a novel construction, and so the cylinders can be sold separately to be applied to an ordinary boiler or steam case.

A water gate has been patented by Mr. William A. Lovelace, of Lovelaceville, Ky. It is made in two sections, and has hollow posts with openings for the water to lift floats to raise the gate as the water rises, being more especially designed to prevent live stock from trespassing on adjacent lands, while so made as to clear floating substances drifting down stream.

A folding and pasting machine for forming cornucopia paper bags has been patented by Mr. John N. Chadsey, of Valatie, N. Y. This invention covers a novel construction and combination of parts by which the blanks, as fed to the feed rollers, are properly folded for a pasting edge, formed and pasted, and the pasted edges compressed into proper shape to form the bag.

A hot air stove has been patented by Mr. Richard A. Rew, of Pomeroy, Washington Ter. Combined with a cold air supply pipe and a distributing chamber divided into communicating sections by radial partitions, is a stove with inner and outer casings, so that pure air can be taken into the stove, warmed to any desired temperature, and discharged into the apartment to be heated, thus insuring perfect ventilation.

A process of and apparatus for remelting soap form the subject of two patents issued to Mr. John C. Ralston, of Toledo, Ohio. The process consists in subjecting the soap scrap to the action of heat and open steam simultaneously to soften and melt the same, and then subjecting the melted soap to the action of heat to remove the surplus moisture, the apparatus covering a suitable vessel, in its upper part a holder for the scrap, over a system of steam jet pipes, with a steam heating coil below the jet pipes, with other novel features, whereby the superfluous steam is not condensed in the melted soap.

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The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

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Wanted.—Agents to sell the "Hercules." See adv., page 270.

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Notes & Queries

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Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn. Special Information requests on matters of personal rather than general interest, and requests for Prompt Answers by Letter, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Minerals sent for examination should be distinctly marked or labeled.

(1) C. L. W. writes: Can you favor me with a plain explanation of Coddington's method of finding the radii of an achromatic object glass? I have Coddington's book, but it is too deep for me, as I do not understand algebra very well. In the *English Mechanic* for August and September, 1883, there is given an explanation of the method, but I do not understand how it is applied in practice. What I want is plain directions in simple language, and perhaps one or two examples showing how every step is taken, and how the numbers are derived, so that I can work out any example in practice myself. A. The formulas of Coddington and his contemporaries were very imperfect, and not suited to the requirements of late practice. The formulas published in a series of papers in the *English Mechanic* are somewhat better, but still imperfect, because the refractive and dispersive indices of both crown and flint lenses must not only have certain fixed relations as regards each other, for achromatism, but must also have certain relations in composition and density, to obtain correction in spherical aberration coincident with achromatism. These conditions are only fully understood as necessary for practical work by a few successful opticians. Professor Hastings claims to have made computations that led to practical and exact results, but they are not plain, simple, explanations that anybody can follow with all kinds of glass. The character of the glass, both flint and crown, must be an exact factor in any computation. In practice this can only be found by trial. For your consideration we give you the curves of some well known and successful objectives. Clark's 26 inch object glass at the Observatory, Washington (Fig. 1), 1st,



2d, and 3d surfaces equal curves; 4th surface (flint) slightly convex, and varied to make the final correction. Densities and indices unknown to us. The objective at Princeton, 23 inches diameter (Fig. 2), also by



Clark, is evidently made of glass of quite a different character, as will be seen by comparison of the relative forms of curves:

| | | |
|--|-------|-------------|
| 1st surface | | 265'8" rad. |
| 2d " | | 81'9" " |
| (both of these convex.) | | |
| 3d " | | 73'4" " |
| 4th " | | 222'2" " |
| (both of these being flint glass concave.) | | |

The lenses set 7/16" apart.

The Hastings object glass (Fig. 3) is reversed, having the



crown convex lens on the focal side, is 9 1/2" diameter, and the glasses are set 1/2" apart, curves as follows:

| | | |
|-------------------|-------|-----------------|
| Flint 1st surface | | 121'2" convex. |
| 2d " | | 34'29" concave. |
| Crown 3d " | | 34'48" convex. |
| 4th " | | 106'4" convex. |

The density of these glasses is as follows: Flint 3'516, refractive index 1'615; crown 2'563, refractive index 1'523. Focal distance not known to us, but supposed to be between 9 and 10 feet.