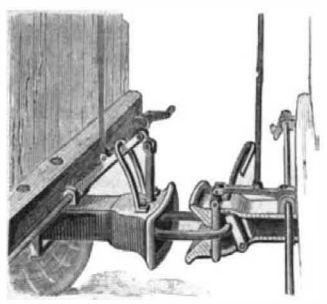
RECENT INVENTIONS.

Improved Car Coupling.

This invention, although applicable as a coupling for railroad cars generally, will be found particularly adapted to freight cars, and, taken as a whole, forms a strong, reliable pin-and-link coupling, which may either be operated automatically or by hand from opposite sides of the car, or from the top of it, and avoids all risk of accident to trainmen. It may be readily applied to the drawheads in common use with the ordinary form of coupling link, and provides for uncoupling standing cars which are not required to be immediately separated, and holds the link in position in one drawhead and the coupling pin raised in an adjacent drawhead, ready for coupling at any time that may be required by merely dropping the raised pin. The pin is operated by means of the lever, which can be moved by a person at the side or top of the car. The pin is retained in an elevated position by a pivoted bar which is pushed back as the link enters the drawhead, thus permitting the pin to drop through the link. The same pivoted bar also holds the link in position to be engaged by the drawhead of the adjacent car. The coupling is also provided with a device for holding the lever and pin in an elevated position, independently of the pivoted bar. This is to permit the cars to be uncoupled when desirable, without separating them. This invention has been patented by Mr. E. D. Cain, of Winthrop, Missouri.

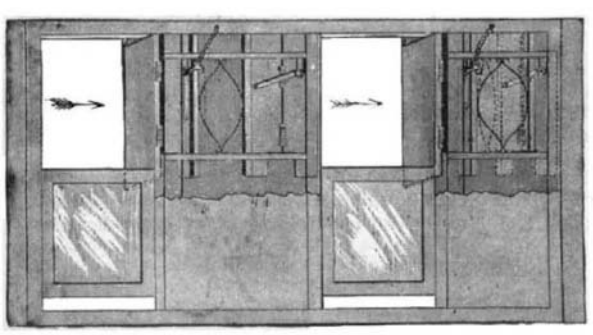


Improved Injector.

The engraving shows a steam injector which will force a solid stream of water under any pressure of steam. The body of the injector has a removable cap at its upper end to facilitate cleaning. The steam supply pipe extends through the top and connects with the lifting tube, and also with the inclined forcing tube. Water supply pipes communicate with the water chamber of the lifting tube. It will be seen that this injector is double. The vertical one lifts the water and the inclined one forces it into the boiler. Both tubes are supplied with suitable regulating and waste valves. All of the parts of this apparatus are accessible. It will deliver either hot or cold water, and works equally well whether hot or cold. We are informed that it is giving excellent satisfaction wherever it is used. This invention has been patented by Mr. Orson H. Wheeler, of Charlesworth, Mich.

Car Window Deflector.

A car window deflector to prevent dust and cinders from entering the car and for keeping up a circulation of air in the same has been patented by Mr. Henry B. Mears, of 1,429 Walnut Street, Philadelphia, Pa. The deflector consists of two sashes, one of which is attached rigidly to slide bars in such a manner that it may be slid backward and forward in the space in the side of the car. The other sash is attached to this rigid sash by spring hinges. The sashes are pressed out of the opening or space inside of the car by an elliptic spring attached to the back of the sash, and which liberates the hinged sash so that it will be swung outward to the extent permitted by the coil springs upon which it is hinged. Strips are provided which retain the deflectors in their outward position, and a stop block is likewise attached to the sill, which limits the movement of the blind and closes the space between it and the sill. For moving the deflectors inward and retaining them to the angle required, levers are provided which are operated from the interior of the car by a key. The deflectors are arranged on both sides of the windows, but only those deflectors are brought into use which are located toward the head of the train, the other deflectors remaining in the recess provided for them till the direction of the train is changed, when they come into use and the others are shut back into the recess.



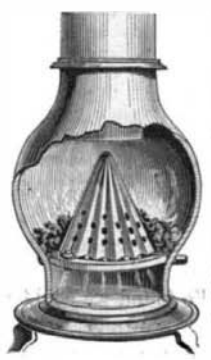
The accompanying engraving represents two windows of a passenger car, showing the deflecting devices applied. The inventor claims that by the use of his deflectors the traveling public are not only rendered more comfortable, but that it is a great saving to railroad companies, as they preserve the upholstering of the cars from cinders and dust.

Combined Cradle and Seesaw.

This is a combined cradle and seesaw, in which side rockers are used that make the undulating motion in line with the body, so that when using the device as a cradle the tossing of the body and the turning of the head of the child from side to side are avoided. The chairs or seats are adjustable. Springs are used to ease the motion, and a pulley and cord are employed to work the teeter. When the device is used as a see saw the seats are separated, as in the engraving: but when it is used as a cradle, the two seats are fastened together. By adjusting the seats at different distances a light child and a heavy one may balance each other. The cradle is provided with a treadle, which enables it to be operated by foot. This useful invention has been patented by Mr. J. Wayley Hill, of Cairo, Ill.

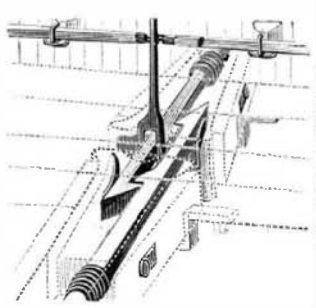
Improvement in Heating Stoves.

This a hollow side perforated cone, used to admit air laterally to the center of fire and into the combustion chamber above the fuel, so that a more perfect combustion may take place in all parts of the fire. The air which is admitted is so warmed by its contact with the inner surface of the cone that it more readily supports combustion, and but little is carried up by the draught before its oxygen has been utilized. This device economizes fuel, and increases the efficiency of the stove to which it is applied. It is very simple and inexpensive, and is applicable to stoves and furnaces of various kinds. A patent has been issued to Mr. John Kilshaw, of St. Paul, Minn., for this invention.



Improved Car Coupling.

To the under side of the cars are secured the diverging timbers, between which are held the hollow tapering bell-mouthed castings, which constitute the drawheads of the cars. These drawheads have vertical movement at their outer ends between the timbers, so that the hooked connecting bars will enter the drawheads when the cars are brought together for coupling, whether the cars are of the same height or not; and for this purpose the drawheads are cast with trunnions, and the timbers have recesses which receive the trunnions. Springs hold the outer ends of the drawheads elevated against the bottom edge of the cars, as illustrated, but permit the drawheads to be moved downward. Buffer springs are placed in recesses, against which the trunnions come when the cars are in motion. The coupling bars are each formed with two hooks, which are adapted to engage with each other for connecting the cars, and they reach back through the drawheads, and are provided at their rear ends, outside of the drawheads, with coiled springs which furnish a yielding draw. Flat springs are secured in the throats of the drawheads. for causing the connecting bars of the opposing cars, as the cars are backed together for coupling, to engage each other on entering the opposing drawheads, and to keep the hooks engaged with each other until the bars are forced apart for uncoupling. The means for forcing the connecting bars apart for uncoupling consists of a vertically movable bar having a slot through which the connecting bar of the car passes to hold it in place. This invention has been patented by Mr. Wanton C. Barber, of Villisco, Iowa.



Formation of the Solar System.

At a recent meeting of the London Physical Society, Mr. Braham gave an experimental demonstration of the vorticel theory of the formation of the solar system by rotating a drop of castor oil and chloroform in water until it threw off other drops as planets.

Electrical Units of Measurement.

Several correspondents of the *Electrical Review* have dealt with the vexed question of the "unit" of measurement for the general supply of electromotive force, and have endeavored to translate the technical expressions in use among electricians into equivalents comparable with the ordinary measurement of gas. Mr. Moulton, F.R.S., has proposed that the charge for domestic supply shall be based on the consumption of "1,000 watts for one hour." It appears, however, that a "watt" is not a quantity at all, but is simply a rate of doing electrical work. Another writer says that the usual methods of measurement are something analogous to calling "a cubic foot of gas at normal pressure the amount which will run through a certain pipe in twelve minutes at the rate of 5 cubic feet an hour." He thinks a new term, the "vomb," would be euphonious and impressive for an electrical unit. In this way a "megvomb" and "megwatt" are brought to mean the same thing, and are somehow shown to be equivalent in incandescent lights to about 30 cubic feet of 15 candle gas, or with arc lights to about 100 cubic feet of gas. It is confessed that there is a chance of great confusion among the electrical units. It would appear, from these and similar letters, that the confusion is not only coming, but has arrived. Quite lately one of the most important electric light companies was reported to have offered to supply electrical energy at the rate of 6d. per 1,000 "erg hours." We now learn from an electrician that there is no apparent way of connecting hours with "ergs." As a way of escape from impending bewilderment, we are bidden to "study the coulomb, volt, ampere, ohm, watt, and above all the vomb." It will then be just possible for the student to understand a bill for a domestic supply of electromotive force for lighting. The main fact to be gathered from this interesting discussion is that, whatever the unit may be called, its price is proposed to be equivalent to common coal gas at 8s. 9d. per 1,000 cubic feet. To this would have to be added the consumer's expenses for renewals of lamps, which are assumed to add another 1s. to the cost per 1,000 cubic feet for equivalent gas lighting.—*Journal of Gas Lighting.*

A New Test for Waste Pipes.

A Boston paper relates a discovery which may prove to be a better test for leaky waste pipes than heretofore used. The invention is accorded to a woman. Noticing an offensive odor in her parlor, she suspected a defect in the waste pipes, and sent to the agent to request that a plumber might be sent to examine them. The agent was incredulous, and refused. She tried the peppermint test. To make her proofs more convincing, the woman, after borrowing two cats from her friends, purchased some oil of valerian, and, stationing the animals in the parlor, went up stairs and poured the valerian into the basin in the same way that the peppermint had been previously applied, and then descended to watch the result. Cats are extremely fond of the odor of valerian, and it was not long before both of them began to sniff the air, and move toward the door of a closet through which the waste pipe ran. The door was opened for them, and they immediately sprang upon a certain shelf, where they remained purring with satisfaction. A third time the woman went to the agent, who, though still unbelieving, consented to send a plumber to make further investigations, and on cutting away the plastering so as to expose the pipe, a joint was found completely separated at the place where the cats had indicated.

Slates Bad for the Eyes.

Professor H. Cohn, of Breslau, believes that the use of slates by school children tends to produce short-sightedness; and would substitute either pen and ink or an artificial white slate with black pencil, manufactured in Pilsen, and already introduced into a few German schools. In 1878 Horner found (*Vierteljahrschrift offentl. Gesundheitspflege,* x, 4) that B and E could be read, if black on white ground, 496 cm.; if white on black, 421 cm.; and if gray on black, 330 cm.; and ascribed the greater difficulty with white letters to irradiation. The reflection of light from the surface of slates is, it is said, enough alone to cause their disuse. The school board of Zurich has forbidden the use of the slate after the first term (primary year), and many teachers and oculists advocate the substitution of white-boards for blackboards. The noise of slates; dirty habits formed by erasures; bad positions favored by reading the less legible script; a heavy hand; and the habit of twisting, learned with a pencil, and to be unlearned with a pen—these, it is said, are obviated by the use of pen and ink at the outset. The obvious objections are, that children can occupy themselves better with slates, and from pencil to pen is from the easier to the harder.

Artesian Well at Denver

While the miners were sinking a blind shaft for coal in North Denver, Colorado, a stream of water was struck at a depth of 375 feet. This is the first artesian well opened in the State, although nearly $100,000 has been expended by the Government and corporations in experimental sinkings. It is proposed to systematically establish wells in the neighborhood of the accidental discovery, with a view to developing the rich lands there for horicultural purposes.