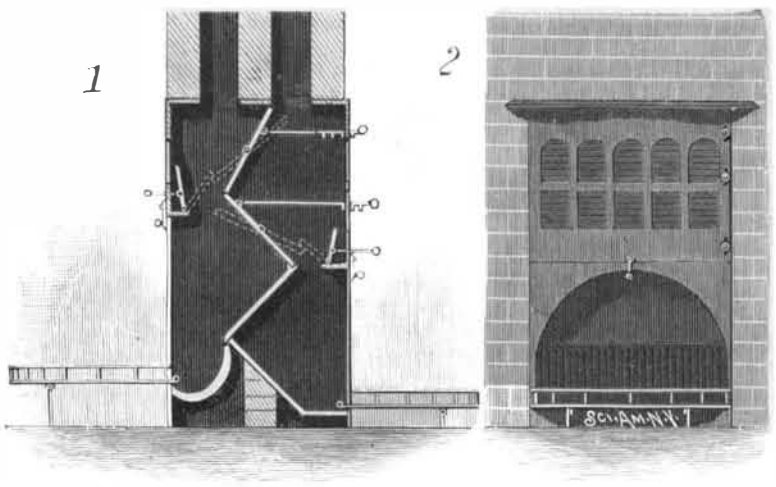
IMPROVED DOUBLE FIREPLACE.

The invention herewith illustrated—patented by Mr. R. R. Jones, of Sprague, W. T.—provides a fireplace for heating two rooms; the fire place is so constructed that each room can be heated by one fire, or both rooms by one fire, or one room by two fires. Fig. 1 is a sectional elevation and Fig. 2 a face view. The chimney is arranged in the wall between two rooms, and is provided with two separate flues, below which is a fire box having two fireplaces. The back of one fire place is formed of an inclined cast iron plate, and the back of the other is formed of a plate, resting on a brick wall, and having its upper end resting under the lower end of the other plate; grates are formed in the lower portions of the fireplaces. The two faces of the fireplace box are furnished with openings which can be closed by hinged fenders; above the openings are registers. Within the fire box are damper valves having rods extending through the casing, which are formed with notches to hold the valves in any desired position; it will be readily understood that by properly arranging these valves the products of combustion may be made to take any desired route to the chimney. When the valves are adjusted as shown in the full lines in Fig. 1, the smoke, etc., from each fire box passes up its corresponding flue, and each fire box heats its room. The dotted and full lines show

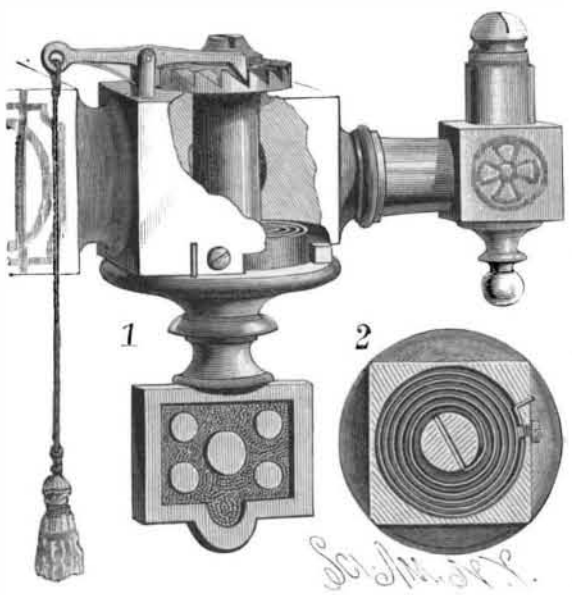


JONES' IMPROVED DOUBLE FIREPLACE.

the positions the dampers may be placed in, and it is evident that by properly arranging them, the heat from either or from both fires may be used to heat either or both rooms.

ATTACHMENT FOR GAS COCKS.

This attachment, invented by Mr. George Doutney, whose address is care of Messrs. Doutney Bros., 439 Broadway, New York city, closes the cock by means of a spring, and prevents it remaining partly open when the gas is turned off. It may be attached to any burner now in use. One end of a spiral spring, Fig. 2, is secured to the key and the other end to the casing surrounding the spring. The spring keeps the cock closed, and when the key is turned to open the cock the spring swings it back again, thus closing the cock automatically. On the upper end of the key is a disk formed with ratchet teeth engaged by a lever, Fig. 1, to one end of which a cord is secured. A spring keeps the lever engaged with the teeth. The key is locked in any posi-



DOUTNEY'S ATTACHMENT FOR GAS COCKS.

tion, whether the gas is to be turned on full or only partially, by the lever engaging with one of the teeth of the disk. To extinguish the gas it is only necessary to pull the cord, when the key is released and is turned by the spring, thereby closing the cock effectively and preventing any escape of gas. This attachment will prevent loss of life by careless or intoxicated persons leaving the gas key half way open, or by their turning off the gas and then turning the key partly open again. It will also prevent fires caused by the key being left open, and will prove to be of great interest to fire insurance companies and hotel keepers.

Bending Iron Cold.

Undoubtedly that iron which is so tenacious or coherent in its particles as to be bent forward and backward without showing visible disintegration is better (tougher) than that which cracks or "crinkles" under similar treatment. But no iron can sustain its integrity under this treatment. This statement does not refer to iron bent while plastic with heat, but means iron at the ordinary atmospheric temperature.

All manufactures and structures of wrought iron that assume such a quality in iron without permanent injury are faulty; iron cannot stand the strain of cold bending without injury, the injurious effect perhaps not being perceptible if the bending is slight and not often repeated, but nevertheless existing. The deduction from these premises is that wrought iron should be formed and fitted while plastically hot for the position it is to retain, just as cast iron is made to form. Still, wrought iron has a limit of safe elasticity—of resiliency—not allowable to even the best of cast iron; and in this quality of recouping, wrought iron is superior to cast iron. The idea sought to be conveyed is that wrought iron is not a mere metallic putty, that can be bent and rebent at will without losing its tensile character or impairing its tenacity.

Some recent experiments prove that wrought iron tends to disarrangement of particles, to change in structure, to weakening in mass, by being bent when cold, even though the bending is a gradual curve and not an angular change of direction. A bar of square section was cut off in the lathe perfectly square, and subjected to bending until it formed a segment of about one-third of a circle. It was noticed that the squared ends gradually changed from their perpendicularity to the length of the bar, the upper or rounding portion being shortened, so that measurements showed that the convex side of the curved bar had not so much elongated as the convex side had shortened. It was evident, therefore, that the bar had not moved in the bending as a whole, but rather as a series of superimposed plates might have been moved. Cutting the bent bar in two and examination under the microscope gave indications of a stretching, and in some cases of a rupture, of the fibers.

An attempt was made to verify this apparent demonstration, by the bending of a pile of thin strips of machine steel of a mass corresponding with the iron bar, but it was found that the "skin" of each strip had a tenacity or resistance greater than the body of the strip, owing to its being compacted in passing through the rolls in its manufacture. Still, enough was shown to indicate that wrought iron (and steel—mild steel) was liable to a dangerous displacement of fiber by being bent while cold.

Trunk Lines in the United States.

The tendency of the railways in the United States has been to combine into systems forming some of the longest lines of continuous railway administration in the world. The whole railway mileage in the United States and Canada is about 120,000 miles, and nearly half, or 57,954 miles, is in the hands of 15 companies, which in turn represent the amalgamation of a greater number of corporations. The magnificent distances traversed by these railroads are as follows:

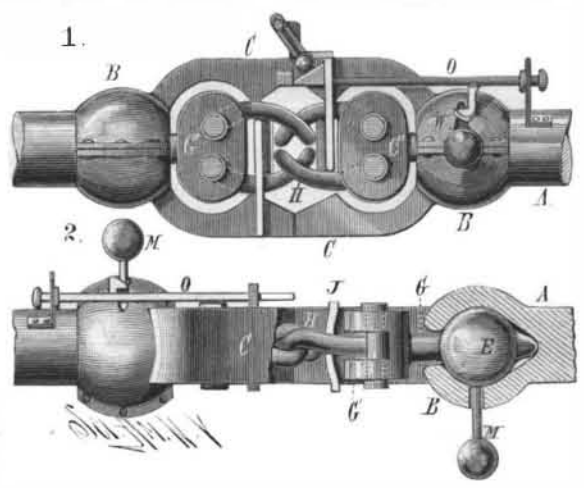
	Miles.
Missouri Pacific	6,045
Chicago, Milwaukee, and St. Paul	5,804
Chicago and Northwestern	5,645
Pennsylvania	4,807
Union Pacific	4,748
Central Pacific	4,194
Canadian Pacific	3,948
Wabash, St. Louis, and Pacific	3,507
"Vanderbilt" roads	3,066
Grand Trunk	2,950
Atchison, Topeka, and Santa Fe	2,799
Southern Pacific	2,789
Baltimore and Ohio	2,737
Northern Pacific	2,549
Louisville and Nashville	2,366
Total	57,954

The Binns Gold and Silver Fabrics.

The Binns Patent Band Co., manufacturers, Randolph Mills, Randolph St. and Columbia Ave., Phila., Pa., exhibitors at the New Orleans Exposition, have been awarded three gold medals of the first class, as the highest award in group 5, class 507: One gold medal for gold and silver trimmings, one gold medal for bullion cords, one gold medal for bullion yarns. The above firm have been running day and night for several months past. Leedham Binns, of the above firm, is the inventor and patentee of the machinery used by this firm.

CAR COUPLING.

The end of the draw bar is formed with a socket, B, from the open end of which the top and bottom buffer prongs, C, project. In the socket is a ball, E, having a stem on its rear end entering a recess to prevent the ball from swinging up or down or laterally. The free end of a stem projecting from the ball through the open end of the socket is formed with jaws, G, between which two S-shaped coupling hooks, H, are pivoted. Between the buffer prongs a plate, J, is held by diagonally opposite arms; the plate is between the hooks,



HAMPL & JACOBS' CAR COUPLING.

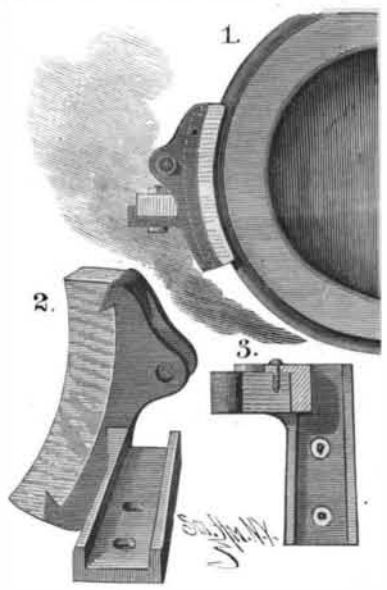
and separates them in the act of uncoupling. The stem, M, projecting from the ball, passes through a slot in the socket and carries a weight at its outer end. The rod, O, slides longitudinally, and has a stop button on its inner end and a beveled head on its front end. An angular arm projects upward from the top buffer prong, and a lug projects from the opposite side of the prong. Hung on the upper end of the arm is a slotted link having a ball on its lower end.

When a car is uncoupled, the jaws, G, are held diagonally in the draw head by the hook, W, on the bar, O, holding the weighted stem at an angle of about 45 degrees. The ball on the link rests against the front end of the beveled head. When the cars come together, the lug of one draw bar strikes the link ball of the other, and pushes the rod, O, back; this liberates the stem, M, which swings downward, thereby turning the ball, E, and the jaws, and interlocking the hooks of the two couplings. The link ball then slides upon the beveled top edge of the head. To uncouple, the stem, M, is raised, and the hooks are opened by the disk, J, while turning. The stem is then held by the hook, and the link ball slides down the bevel of the hook in front of the end.

This invention has been patented by Messrs. J. Hampl & D. Jacobs, of Fort Clark, Tex., and 74 Leonard Street, New York city.

IMPROVED BRAKE SHOE.

The engraving shows a new form of brake shoe designed particularly for street cars. The rubber or friction block has the usual concave rubbing surface, and is made of wood sawed out across the grain. This presents a better grip or hold on the wheel than a metal shoe, does not wear out the wheel so rapidly, and is cheap and durable. The metal backing, Fig. 2, is of arched form, and is provided with a single side flange and opposite hook shaped ends that enter similarly shaped recesses made in the ends of the block, which is thus held securely from splitting, and, only being bound on one of its sides by the metal head, may be easily removed on taking out a holding screw, Fig. 3, and be replaced by another without removing the whole shoe from the brake bar. The entire shoe may be carried in the usual manner.



This invention has been patented by Mr. J. H. Pitard; information can be obtained from Messrs. Goldsmith & Pitard, P. O. box 334, Mobile, Alabama.

Battery with Two Liquids.

The author succeeds in suppressing the nitrous vapors of the Bunsen battery by using a depolarizing liquid, consisting of nitric acid in which 75 grs. potassium dichromate have been dissolved per liter. In contact with the zinc he employs either acidulated water or potassium disulphate.—*A. Dupre.*