RAILWAY IMPROVEMENTS.

The annexed engravings represent improvements in grain car doors, and in railway draw bars, recently patented by Mr. Thomas Hibbert, of Cochran, Ind. The car door is designed for application to ordinary box cars to adapt them to the transportation of grain. It is arranged so that it closes the lower half of the doorway when the car is to be used for grain, and swings up out of the way when the car is used for goods. The door, A, fills the lower half of the door opening, and is cut away at the free end and fitted to the flanged guard or stop, D. The opposite end of the door is pivoted to a bar, B, which, in turn, is pivoted to a post secured to the side of the car. The bar, D, carries a projecting pin which engages a curved guide, C, fastened to the vertical post and to the floor of the car. This guide keeps the door in its place and prevents it from being lifted out of its place, when closed and locked; it also protects the door against injury when the car is packed with goods.

When in use the door occupies the position shown in the engraving, and its free end is fastened by an eccentric latch at the top of the guard, D. When the door is not in use it is raised up out of the way as shown in dotted lines.

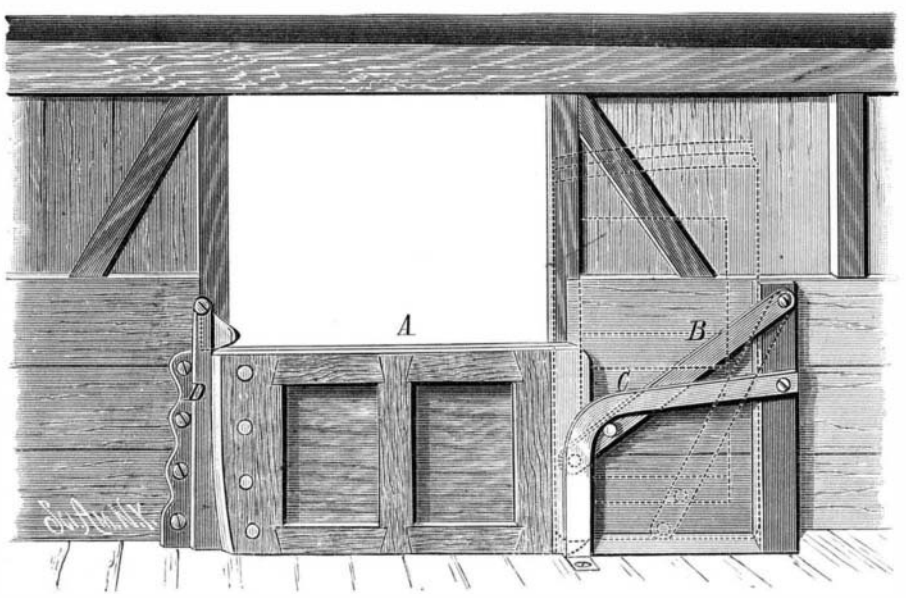

Fig. 1.—HIBBERT'S GRAIN-CAR DOOR.

The continuous draw bar, shown in Figs. 2 and 3, is arranged so as to take the longitudinal strain off the car and thus dispense with one of the greatest causes of destruction to railway cars. The drawhead, A, is slotted to receive the crossbar, B, and its inner end, D, is guided between parallel timbers, C, that extend the whole length of the car. The outer end of the drawhead is supported by a stirrup in the usual way, and the inner end passes through a follower, which is pressed outward by two spiral springs, E, which are properly supported and guided in the framework attached to the bottom of the car. The arrangement of the draw bar is the same at each end of the car, and the two crossbars, B, are connected by two draw rods, F, which extend parallel with the central timbers of the car throughout its entire length. When the draught is applied by the engine the strain is transferred through the draw rods, F, to the rear end of each car of the train, thus relieving its frame of all stress lengthwise, owing to the yielding of the buffer springs at the rear end of the car and the abutting of the follower against the extremities of the buffer beams or blocks. In backing, the drawheads are pressed inward, the followers pressed against the ends of the timbers, C, and the springs are pressed back into their recesses, when they are relieved of further compression.

In backing the train the inward movement of the drawheads occurs without bending the rods, F, as the latter are slotted to admit of the movement of the crossbar, B.

Should the rods break, the drawheads are prevented from pulling out of the frame of the car by means of a key, extending through the inner end of the heads behind the followers; the strain is then transferred to the brackets in front of the follower. For further information in regard to these practical and useful inventions address the inventor as above.

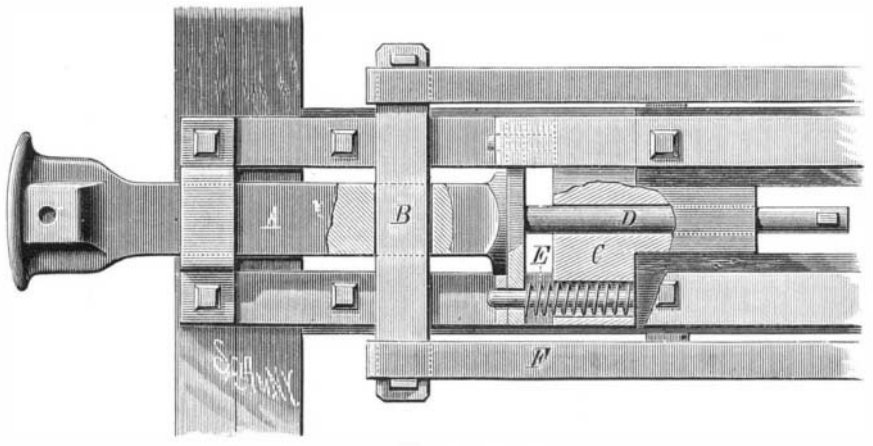

Fig. 3.—DRAW BAR.

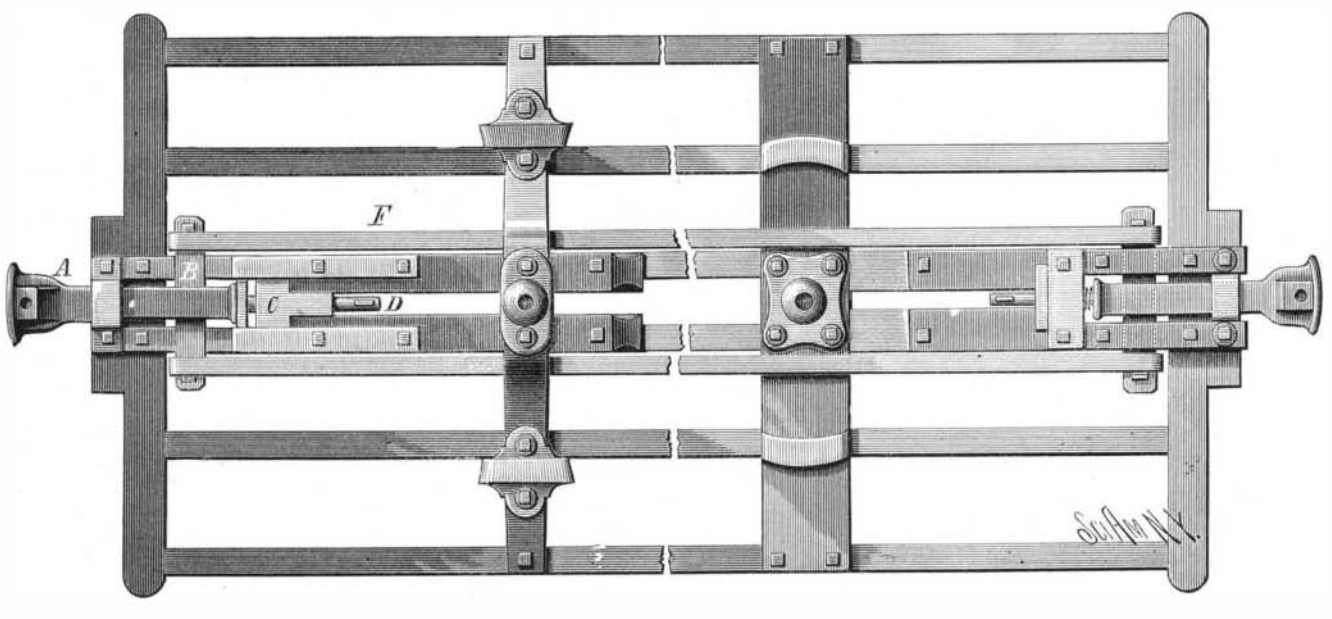

Fig. 2.—HIBBERT'S CONTINUOUS DRAW BAR.

Spontaneous Combustion of Coal at Sea.

An explosion, the result of fire by spontaneous combustion of coal in one of the bunkers of the Anchor Line steamer Alsatia, lately, compelled that steamer to return to this port. No great damage was done. The occurrence, however, calls attention to a source of danger to steamers of which we fortunately hear but little on this side of the ocean. The loss of English vessels by the spontaneous combustion of coal carried in bulk as freight, became at one time so frequent as to call out a special parliamentary commission of investigation, one curious result of which was the discovery that the burning of ships at sea was largely attributable to the working of the compulsory education act. The fires were caused by impurities (pyrites, etc.) in the coal. Boys had been employed at the mines to throw out such impurities. The new education law compelled the boys to go to school, The coal was not picked over. The sulphurets oxidized, smouldered, and took fire on ship board, and many ships were lost.

Certain Nova Scotia coals are said to carry sulphurets enough to occasion their spontaneous combustion; and some Pennsylvania bituminous coals have similarly taken fire in piles exposed to dampness; but there is no instance on record of the loss of a vessel through the spontaneous combustion of American coal. It is commonly believed that abundant ventilation will prevent the loss of coal ships at sea by this cause; but the parliamentary inquiry above referred to discovered that the better the ventilation of the cargoes, especially in hot and moist climates, the more frequent the fires.

American Architectural Tiles in England.

A correspondent informs us that, at a recent exhibition at Crewe, England, of the London, Manchester, and Liverpool Agricultural Society, the first prize, gold medal, was awarded to J. & J. G. Low, of Boston, Mass., for the best art tiles in relief and intaglio. The progress of our countrymen in manufactures involving decorative art is very gratifying, and the special example here mentioned shows that the admirable methods of practical art instruction, now carried on in various schools in Boston, are beginning to produce useful results.

River Improvements.

Pittsburg sometimes ships by the Ohio River in one day more coal than would fill a train of cars 300 miles in length. All the coal used within forty miles of the river, from Pittsburg to New Orleans, is shipped out of the Allegheny and Monongahela Rivers in barges, and low water in the fall, followed by a frozen river, sends coal up several hundred per cent even in those Ohio River and Mississippi River cities that have coal mines within fifty miles of them by rail. So much cheaper is transportation by water than by rail, that the savings on the coal shipped from Pittsburg in the last ten years would have paid for the building of a railroad on the bank of the river all the way from Pittsburg to New Orleans. Poor as the navigation of the Ohio River is, its permanent suspension would destroy Pittsburg, and inflict upon all the Ohio River towns a damage which could not be repaired by a hundred million dollars' worth of railroads. France is peninsular, with the sea on both sides and not far away from her center; yet she finds her inland waterways indispensable to her prosperity, and capable of saving her more money every year than all her railways. She is preparing to extend her inland waterways at a vast expense, as a measure of economy, because they carry at a profit shipments which railroads cannot carry at all. The time is near at hand when the navigation of the Missouri River will save the people of its valley more money every year than all they now receive for their crops, and it will create lines of commerce and develop wealth which must lie dormant so long as we have to depend altogether upon railroads. Let our people come to the River Improvement Convention in this city, and take up its work in a practical way, and they will effect an emancipation that will free more laborers than that which Lincoln proclaimed in 1862.—*Kansas City Mail.*

RECENT INVENTIONS.

Mr. Alexander Atkinson, of Winterset, Iowa, bas patented a simple and effective device for washing clothes and afterward wringing them without moving them from the tub.

Mr. John Herman, of New York city, has patented an improved suspender brace formed of two shoulder straps connected on the back by a transverse strap, each of the shoulder straps being attached at both ends to a separate hook plate, upon which a ring or eye of a pulley or like device catches or takes, and through which pulley a cord terminating in three button loops passes.

A simple and convenient device for holding and fastening the end of a rope has been patented by Messrs. Lester J. Bailey and Leander H. Thompson, of McPherson, Kansas. The invention consists of a snap hook having a swiveled hook or loop and a tubular internally threaded shank, into which is screwed a tapering clamping sleeve that is constructed in longitudinal sections and is provided with interior projecting points.

A stop cock, so constructed that the plug can be readily fastened and released, has been patented by Mr. Charles H. Cushing, of Tidioute, Pa.

Mr. Benjamin Maillefert, of Astoria, N. Y., has patented an improved process of and apparatus for refrigerating and making ice, in which the compressed air from a pump passes through a cooler which is supplied with a constant stream of cold water, from whence the air passes to a chamber, in which it expands in presence of steam supplied in a jet, bringing the air and particles of moisture into intimate contact.

An improvement upon that class of mortise or box door latches in which the door is securely latched whenever it is closed without the turning of knob or handle has been patented by Mr. Lorenzo Wallace, of Leavenworth, Kan

Mr. George M. Arnold, of New York city, has patented an improved device for administering medicine, etc. It consists in a bowl with a bent stem.