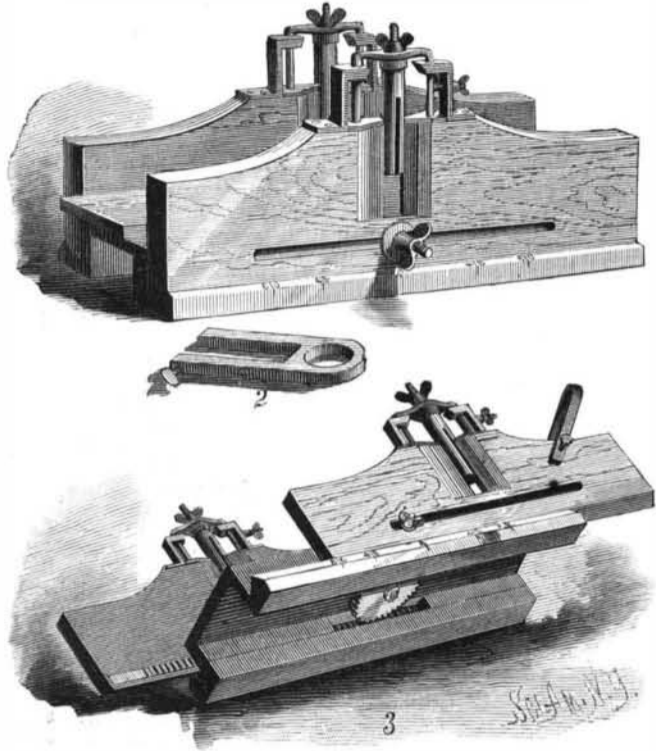


IMPROVED MITER BOX.

The miter box herewith illustrated can be instantly adjusted for a cut at any angle from one to sixty degrees, or even eighty degrees. The side pieces can be moved longitudinally on the bed plate in opposite directions, the movement being so controlled by racks on the lower inside of both of them, working with a pinion between them; that when one side is moved longitudinally on the bed plate the other moves in the opposite direction over an equal distance. The side pieces are beveled at the bottom to fit into grooves in the base of the bed plate, in which they slide to and fro. Both

**POWELL'S IMPROVED MITER BOX.**

pieces have a slot cut through them near the bottom, extending about two-thirds the length, which allows them to move over the screw bolt that holds them to the bed plate. A screw bolt having a thumb nut and washer at one end and a broad head at the other extends across the box and its sides below the bed; this bolt holds the sides to the bed. (By removing this bolt, the box can be taken to pieces and packed in the carpenter's chest with the rest of the tools.) By loosening the nut, the side pieces may be moved along the grooves, and held firmly in any position by tightening the nut. The saw teeth are prevented from coming in contact with the bed plate by a loose bottom. In the sides are vertical openings, in which the saw guides hang suspended from above. These openings are beveled on both sides to permit the saw to swing at any angle across the bed, and their vertical edges are fitted with a metal shield which will cut on a circle to correspond to the circle of the surface on the saw guides and embrace them loosely, so that they cannot get out of place. The saw guide cylinders, of hard wood, are a little longer than the side openings, in which they fit loosely, and are formed with a central slot wide enough to take in the saw used. The upper ends of these guides are secured by bolts and thumb nuts to yokes supported by brackets fixed to the top edges of the side pieces. The yokes are formed with guide rods extending downward through openings made in the brackets and sides. The saw guides may be partially revolved by loosening their nuts, and they may be raised or lowered, together with the yokes and guide rods, and may be secured at any elevation by means of the set screws shown at the sides of the guide rods. On the base of one of the sides are marked figures to indicate the different degrees at which the saw may be set to cut. The pinion on the bottom, shown in Fig. 3, is attached by a bolt and nut to a bracket extending across the bed plate; this pinion engages with racks to move the sides to and fro, as mentioned above. Fig. 2 shows a spring clamp which can be affixed to either side of the miter box to keep the piece of lumber in the box in place.

This invention has been patented by Mr. W. J. Powell, of East Marshfield, Mass., from whom particulars regarding the United States and Canadian patents may be obtained.

An Invention Needed.

The inventor who will devise a cheap, speedy-working power press, which will press straw or hay into small solid blocks to furnish fuel for our vast woodless tracts of wheat country, would surely enrich himself. Such a press, if practical, cheap, and durable, would confer a great blessing upon the country. Millions of tons of straw and hay are now burned to waste which by such a device might be converted into valuable fuel. Our present straw-burning engines, although valuable, do not fully fill the bill.—*United States Miller.*

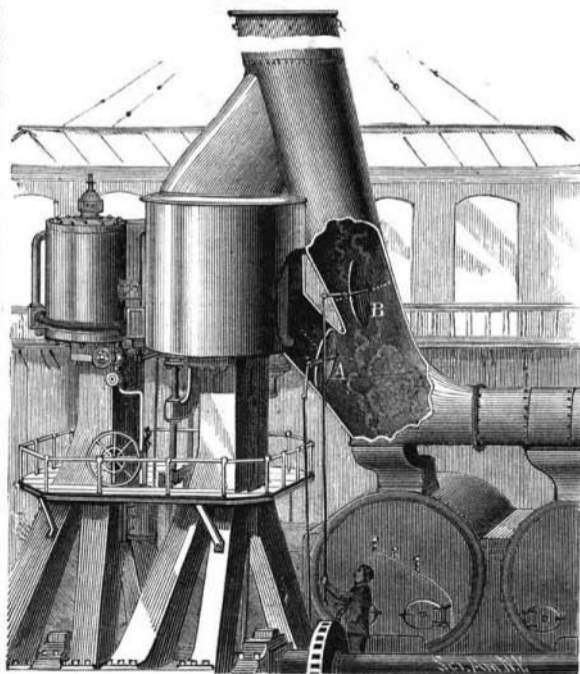
The Car Coupler Question.

Referring again to the inevitable car coupler question, candor compels the admission that the prospects for the adoption of any particular style or patent for general use throughout the country are not at all encouraging. The master car builders have wrestled with the question at every annual convention of their association for several years past, and at their last meeting proposed a plan, referred to in these columns recently, involving the collecting of a fund from the railways with which to thoroughly test the various couplers which are before the public, under the direction of Mr. M. N.

Forney as the representative of the association. We learn that no action has yet been taken, however, looking to the carrying out of this plan, and that there is little prospect that it can be made successful. There are so many conflicting interests to be considered, and to be appeased or antagonized; so many patents, each of which, in the opinion of the inventor, is worth more than all the rest; so much money has been spent, so much stock has been disposed of, and there are so many ideas in direct opposition to each other, that in the nature of things the adoption of a universal coupler for freight cars is simply an impossibility. Even if the railway commissions of half the States in the Union were to recommend a particular coupler, such action would not result in a suspension of efforts to introduce scores of others. Men who have invested their capital in the manufacture of an article in the value of which they have perfect faith, will not close their doors, discharge their employes, and permit their plants to fall into decay because a number of railways or a number of railway commissions may have declared in favor of a competitor. While it may be that there has not yet been discovered a perfect coupler, there are, nevertheless, a number which possess sufficient merit to render a choice from among them a most difficult task. There seems to be no other way but to allow inventive genius and capital the same freedom to invent and manufacture and sell that is allowed the universal American citizen. It may be questioned, however, whether it is politic or just, either to the railways or inventors and manufacturers of couplers, to encourage the annual contest before the Master Car Builders' Association, which has involved outlay by these people, many of whom are not able to incur unnecessary expense.—*Railway Age.*

REGENERATOR FOR COMPOUND ENGINES.

The invention shown in the engraving, lately patented by Mr. Thomas Hulme, of Galveston, Texas, relates to that class of engines in which the products of combustion pass from the furnace around one or more of the steam cylinders. The furnace connects with the smokestack directly, and also by a divergent trunk, which is enlarged to form a chamber, so that all the products of combustion shall pass through the chamber when the damper, B, in the direct flue is closed. The low pressure cylinder is within the chamber, which is large enough to leave space around the cylinder sufficient for draught. The packing glands of the piston

**HULME'S REGENERATOR FOR COMPOUND ENGINES.**

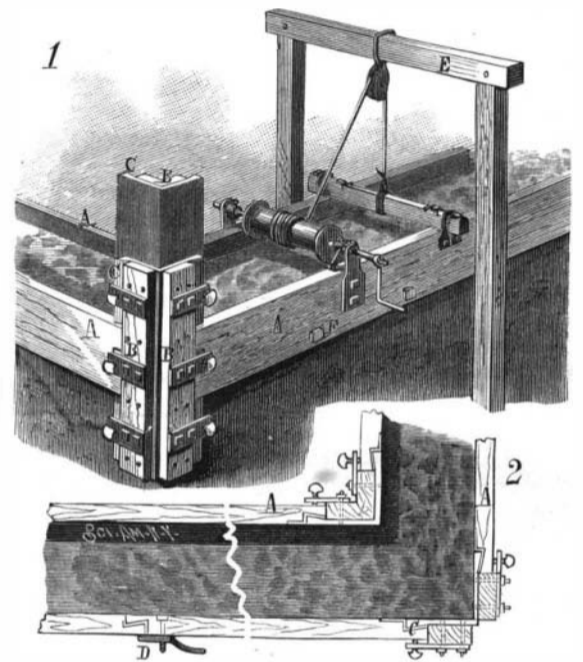
and valve rods project below the bottom of the chamber, so as to be accessible, and removable plates permit access to the cylinder head and steam chest cover. The damper, B, is to be opened when the fire is just starting up and when the engine is at rest. By this arrangement condensation in the cylinder is greatly prevented, the result being increased steam pressure. The chamber may be covered to prevent radiation of heat.

Shetland Pony and Percheron.

It is a difficult matter to believe that those magnificent specimens of equine power, the Percheron and Clydesdale draught horses, should be derived from the same original stock as the Shetland pony. These little, hardy, obstinate, good natured pets have been undergoing during a number of years a process of physical degeneration, which has reduced them to an average stature of forty to forty-eight inches, and often much less. They, like the oaks and firs of the island upon which they have been reared and bred, have become stunted in their growth by the peculiar conditions of their environment; while the other branch of the family has been interbred and selected and improved, with a view of producing the magnificent thoroughbreds which we now so often see in the business parts of our cities, and which are so often the pride of our State and county fairs and horse shows. In point of strength the pony probably stands ahead of the Percheron in proportion to its size, and wonderful stories are told in their native isle of their wonderful endurance and power.

APPARATUS FOR BUILDING CONCRETE WALLS.

The planks, A, forming the mould are tied together by cross bolts, and connected at the corners by angle pieces. At suitable points in the length of the wall, frames, E, are erected. A shaft carrying a drum is supported by brackets attached to the planks. A rope from the drum passes through a block suspended from the frame, and connects to a bar secured to the planks. The shaft is provided with a crank handle and adjustable collars, which prevent endwise move-

**CARRICO'S APPARATUS FOR BUILDING CONCRETE WALLS.**

ment and allow adjustment to any width of mould. A pawl on the mould engages a ratchet wheel on the shaft. The windlass is used to hoist the mould from a finished course into position for a new course. The method of splicing plank to form a mould of the desired length is shown at D, Fig. 2, the ends of the plank being held together by latches hung on screw pivots. At the corners the plank ends are fitted at the inside with strips, C, bent at the required angle; bars, B, are bolted to the strips so as to form shoulders for the ends of the plank to abut against. The same bolts hold plates that have clamping screws in the ends projecting over the planks, so as to hold the latter to the angle pieces. The angle pieces and bars are in length about three times the width of the plank, so that they will remain in place until three courses have been completed. The mould so constructed is firm, substantial, and easily handled, and its use insures a proper formation of the walls.

This invention has been patented by Mr. Thomas W. Carrico, of 912 Avenue C, San Antonio, Texas.

At the Top of Mount Washington.

A visitor to the top of Mount Washington concludes that the weather is really cold up there. He was convinced by a walk along the railroad, with the wind blowing seventy miles an hour and the thermometer twenty degrees below zero. The temperature does not get lower there than in many other places, but the wind blows with greater velocity, it is said, than at any known spot in the world, and this makes the cold unbearable. A velocity of 180 miles an hour has been attained, while at Pike's Peak, 8,000 feet higher, the greatest is 100 miles, and in New York 45 miles is a heavy gale.

The cold is so intense that if one covers every part of the body, leaving only the eyes exposed, these are soon coated with frost, which closes the lids and often makes it almost impossible to see. The moisture of the breath freezes under the coverings of the face, and a frost bite is the consequence.