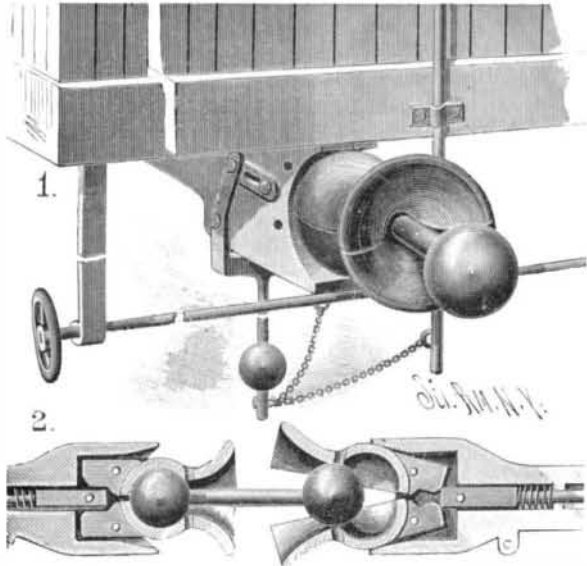


**CAR COUPLING.**

The recess in the enlarged head of the drawbar is rectangular at its inner end, but is formed with beveled sides as it approaches the mouth of the head. Within this recess there are pivoted two coupling jaws, each formed with a hemispherical recess and a flaring mouth piece formed like one-half of an ordinary bell; between these parts there is a shoulder, as shown in the sectional view. Each jaw is provided with a rear lug formed with a notch, so that when the two jaws are in the



**CHAPPELL'S CAR COUPLING.**

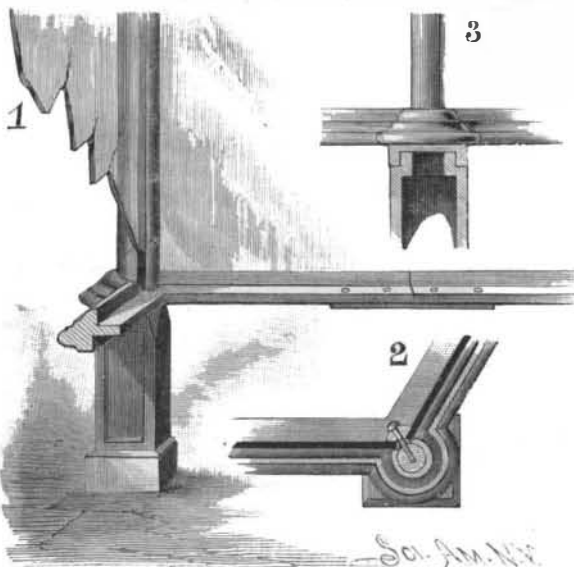
position shown at the left in Fig. 2, there will be a space between the lugs which can be entered by the locking dog, which is held forward and within the recess by a spiral spring. The dog is provided with a cross bar extending through slots in the sides of the drawhead. Links connect the ends of this cross bar with the ends of a U-shaped lever pivoted to a lug upon the under side of the drawhead. A downwardly extending arm of the lever is provided with a weight and is connected by chains which can be wound upon either a horizontal rod extending across the end of the car, or a vertical rod extending to the roof of the car; upon the outer ends of these rods are hand wheels by which the coupling can be operated without going between the cars. Upon each end of the coupling link there is a ball that fits snugly within the spherical recess.

The operation of this coupling is as follows: One end of the link is placed within the recess of one of the couplers, and the locking dog advanced between the lugs to hold the jaws closed. As the cars approach, the outer ball of the link strikes the bell-shaped mouth of the lower jaw of the other coupler, slides up the mouth piece, separates the jaws, and enters the spherical recess; the upper jaw drops to a horizontal position, and the lower jaw is raised by the ball striking the inner face of the recess, when the spring forces the dog between the lugs to lock the jaws. Each jaw is formed with an aperture through which a pin can be passed when it is necessary to use a coupling link of the ordinary construction.

This invention has been patented by Mr. Clifton T. Chappell, of 227 Second Street, Macon, Ga.

**IMPROVED WINDOW SASH.**

The accompanying engraving shows an improved



**BROSNAN'S IMPROVED WINDOW SASH.**

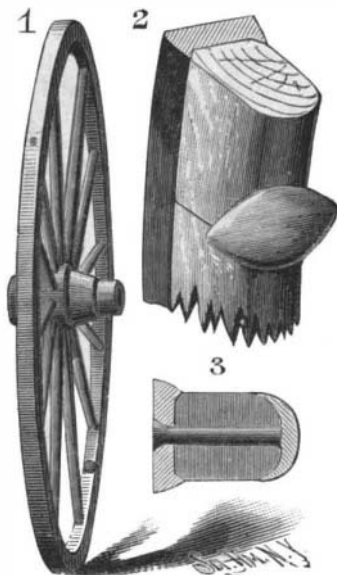
construction of the frames and sashes for store windows. The vertical post sustaining the edge or edges of the glass is formed of a pipe provided with a longitudinal slot at its inner side. This post is filled with wood, and the edges of the glass are held by a fillet secured against the margins of the glass by screws, as shown in the sectional plan view, Fig. 2. The lower end of the post rests in a socket formed in the upper end of a metal standard. In the case here

shown, this socket is formed by the continuation of the fillet that extends along the top surface of the metal sash bar, and forms, with the horizontal inwardly projecting flange of the bar, the rabbet in which the lower edge of the glass is held. This flange also forms the support for the boards composing the flooring of the window. In the case of a window having a single post at the meeting edges of the glass, the sash bars are extended in both directions and their free ends are supported in the walls or columns of the building. In a window having two or more posts the adjacent ends of the sash bars are bolted to a connecting plate, as shown at the right in Fig. 1. By making the bars and support for the post in one piece, the relative movement of the parts is prevented. The standard may be made in two parts, as shown in Fig. 3. By using a metal frame for supporting the glass, there is no liability of the shrinking, warping, or giving away by decay, so as to allow the glass to settle, as is liable to occur in the construction of these parts commonly used. The metal sash bar, by occupying only a small part of the opening beneath the window, gives a much larger space for lighting the lower room than could heretofore be obtained.

This invention has been patented by Mr. P. J. Brosnan, of 200 Milwaukee Avenue, Chicago, Ill.

**SIMPLE MEANS OF FASTENING WAGON TIRES.**

The illustration herewith represents a means of securely fastening the tires of wagon and carriage wheels, so that it is almost impossible for them to spring from their position, while only two bolts are used, those being at the joints where the fellys come together. Fig. 2 is an enlarged and Fig. 3 a sectional view of the bolt and tire, showing how the joint is made. The tire is made with flanges to fit over the outside edges of the felly, so that it requires a full heat in being put on to give the necessary expansion, but the subsequent contraction is then sufficient to hold the felly firmly within



**HITT'S TIRE AND TIRE BOLT.**

the flanges of the tire. The bolt is then driven through the felly and tire, and riveted in a countersunk hole in the face of the latter, the head of the bolt being drawn over the felly on the inside, as shown in Fig. 3. The whole operation can be completed in far less time than it takes to put on a tire of the ordinary style, and the wheel has a neat and substantial finish. In this tire, also, the face is wider than the felly, and thus protects that and the spokes from injury from rock and dirt, while the flanges likewise help to stiffen the tire and help it to better keep its shape with hard usage.

This invention has been patented by Mr. Lewis L. Hitt, No. 924 Market Street, Chattanooga, Tenn.

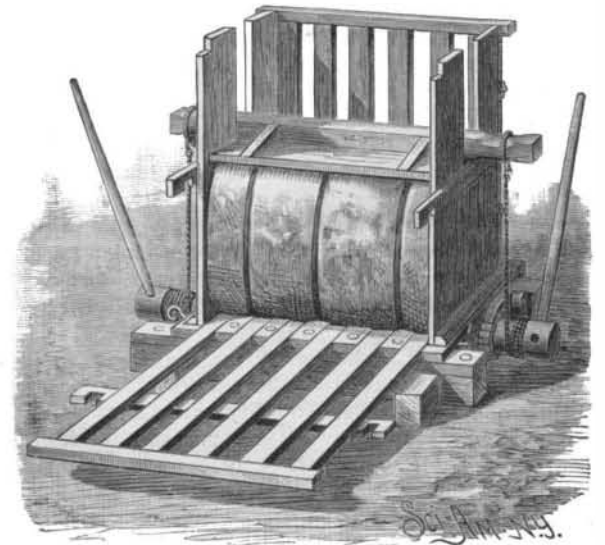
**Test for Leather Belts.**

Herr Eitner proposes the following method for testing the efficiency of belts: A small strip is cut off and placed in a jar filled with common vinegar. If the belt was well tanned and good quality, it may remain in the vinegar many months without being injuriously affected, it growing only a little darker in color. If, on the contrary, the belt was of an inferior make, its fibers begin soon to swell, and after a short time are transformed into a gelatinous mass.

**HAY AND COTTON PRESS.**

This press for baling hay and cotton is constructed in independent detachable sections, so as to be quickly set up for use and taken apart and compactly packed for storage or shipment. Upon the base are mounted the four sides composing the box. Two sides are made up of upright strips, between the spaces at the lower ends of which are the ends of similar strips forming the bottom. The upright strips are united by top and middle rails. The lower parts of the ends, each of which is made in one piece, are held from spreading by strips secured to the base. The upper ends of the four side pieces are held together by cross bars, which are halved into the extended ends of the middle rails. The lower ends of the two

sides are pivoted to the frame by removable rods, which form hinges upon which either side can be turned down to form a platform upon which to receive the bale from the press. The follower is provided with a central cross beam extending through vertical openings in the ends; to the extended ends are secured ropes wound around a windlass turning in bearings in the base, by which the follower is drawn down to compress the bale. The windlass is



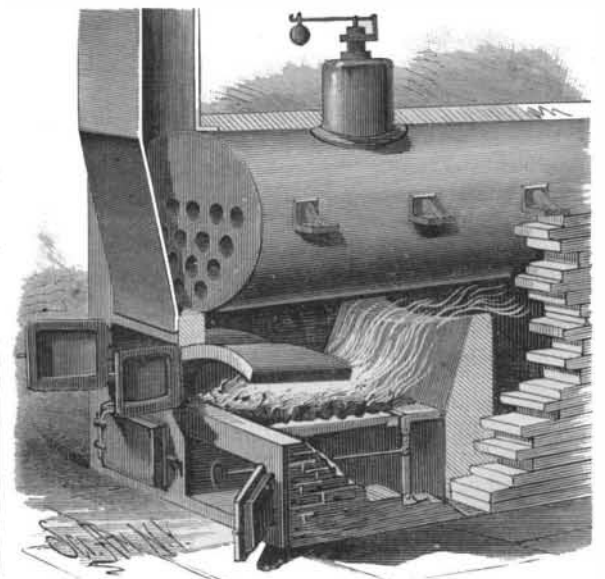
**HANSEN'S HAY AND COTTON PRESS.**

operated by a lever, and is prevented from turning backward by a pawl. That side of the box not to be used as a door may be connected to the ends by bolts and staples. To prevent the end pieces from rising off the base, they are notched beneath the top side rails.

This invention has been patented by Mr. H. G. Hansen, and further particulars can be had from Mr. Fred. Mackensie, of Calumet, Mich.

**A SMOKE CONSUMING FURNACE.**

The simple construction herewith illustrated, for promoting a more perfect combustion, and making a furnace which is in reality a smoke consumer, adapted for locomotive, marine, and stationary boilers, will be understood at a glance. Its most essential feature is in the arch located in the front of the combustion chamber, between the fire on the grate and the boiler, and dividing the combustion chamber so as to form a coking oven in its front half. Here the fuel is first fed, and after being there coked is forced back upon the rear of the stationary grate, where the process of combustion is completed. The arch is inclined toward the rear, so as to narrow the throat between the coking oven and the rest of the combustion chamber, so confining all the volatile products of combustion as to insure their most thorough utilization, that no smoke or soot may pass the bridge wall. The arch also prevents cold air from coming in contact with the boiler when the door is opened for the admission of fuel or otherwise. There is a dumping grate in the rear of the stationary grate, just in front of the bridge wall, which is provided with an operating bar, shown at the side of the ashpit door; as the clinkers are crowded to the rear end of the furnace in the



**THE BACKUS BOILER FURNACE.**

regular order of firing, they may thus be readily removed without disturbing the operation of the furnace or impairing its even and perfect combustion of fuel.

This invention has been patented in the United States and in several foreign countries by Mr. Absalom Backus, Jr., and these furnaces are manufactured by The Backus Company, of 505 Fort Street West, Detroit, Mich.