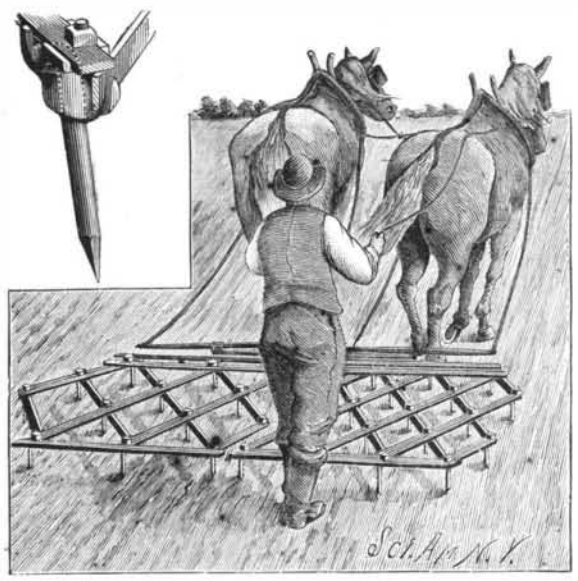
IMPROVED HARROW.

The frame of this light and strong harrow is composed of flat bars of iron or steel, arranged diagonally in two series crossing each other, the bars of one series being arranged flatwise and those of the other edgewise, the bars being connected with each other and with the harrow teeth by sockets placed on the bars at their intersections. The socket is a casting having a central vertical aperture, with a lateral recess for receiving the right-angled end of the harrow tooth. The lower part of the hole is flared to permit a slight lateral movement of the tooth, which turns on its right-angled arm as a pivot. Upon opposite edges of the surface of the socket are formed ribs, between which is received the bar placed flatwise. Between the ribs a stud projects upward from the face of the socket for receiving the apertured bar and a nut by which the bar is clamped to the socket. Upon the side of the socket is formed a hook for receiving the other flat bar, which is clamped in the hook by the bar placed flatwise above it. One socket is placed at each intersection of the bars. In addition to the diagonal bars, the studs of the end rows of sockets receive apertured bars, which are held in place by the nuts. One of these bars is connected by links or clevises, secured in bolt holes formed in the bar, with the eyener by which the harrow is drawn forward. It will be seen that by means of a simple socket at each intersection of the bars they are strongly clamped together, and the teeth are securely held in proper relation to the bars. By arranging the bars flatwise and edgewise, strength and rigidity are secured without undue weight. Any tooth may be readily removed and replaced without disturbing the others. This invention has been patented by Messrs. P. C. & I. A. Carstensen, of Walnut, Iowa.



CARSTENSEN'S IMPROVED HARROW.

IMPROVED CAR COUPLING.

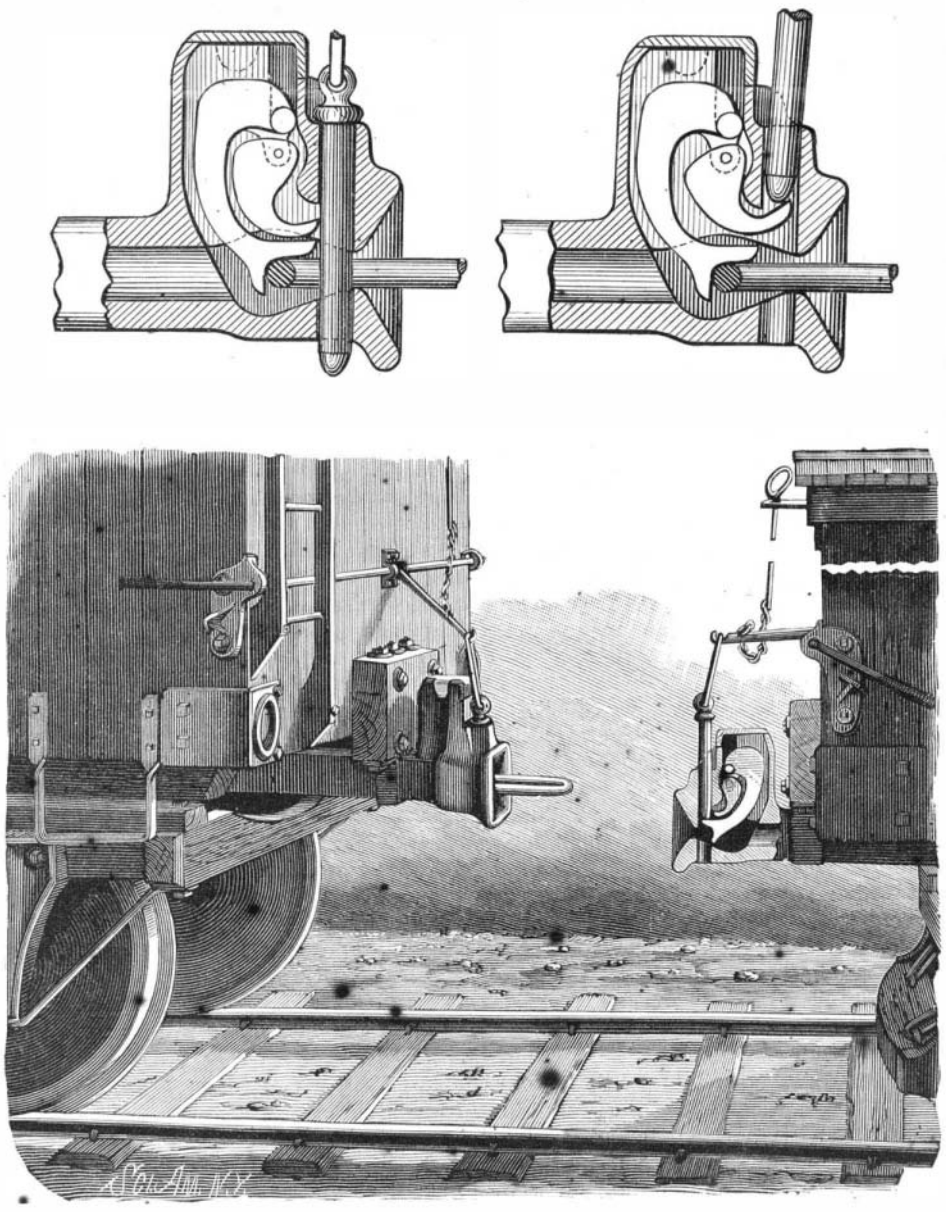
The car coupler herewith illustrated is particularly noticeable for the simplicity and admirable arrangement of its parts. The link is held in a horizontal position, so as to insure its ready entrance into the opposite coupler, while the pin is held elevated by a table which is pushed back by the entering link, through which the pin is then free to drop. The coupler is perfectly automatic in its action, and its reliability is assured, since the parts are so weighted that the force of gravity alone is depended upon. The drawhead opening is so formed as to permit the ink to have all necessary vertical and lateral play without subjecting it to any but a tensile strain, thereby lessening the danger of breaking. As the only action required of the brakeman is to lift the pin, and as this can be done from either the sides or top of the car, he need not enter between the cars. The drawhead is provided with a wide flaring mouth terminating in a narrow throat, which serves to readily and certainly guide the link into position with reference to the pin. Beyond the throat the chamber for the link is enlarged to allow the rear end of the link to freely play up and down and sideways, to accommodate itself to the swaying and springing of the cars. Above this wide chamber is a narrow and parallel-sided one opening at the top of the drawhead. This opening is covered by a removable cap as shown. Pivoted in this chamber is a table free to swing, and, being heavily weighted in the rear of its pivot, it gravitates so that its foot or ledge is pressed strongly forward against or under the pin. From the rear portion of the foot a heel projects downwardly into the path of the link as it enters the chamber. Pivoted to the first or primary table just below its trunnions is a second table, which is weighted to gravitate forward, and has a foot lying normally just above the foot on the primary table. When the link is in its proper position in the drawhead, the foot of the primary table rests on its rear end (Fig. 2), the rebyholding its exterior end out horizontally from the drawhead in the position most favorable for coupling with another car.

The construction of the parts is such that the weight of the tables is not always on the link, except when the cars are uncoupled and the link is presented for coupling. The weight of the tables never tends to carry the inner end of the link below the horizontal line; but the link, when the cars are coupled, may swing on the throat of the drawhead as a pivot until its inner end is far below the tables, and so leave the latter entirely suspended on their trunnions in the bottom of the vertical slots, in which they are free to move up and down. These slots or cups are formed at the top and on either side of the chamber, and receive the pivots or trunnions formed on the main table. This construction of the tables, whereby they are pivoted at their top in vertical cups in which they are supported and guided, enables them, when the cars are coupled, to freely swing forward and back or to rise and fall to accommodate themselves without danger of breaking to the thrusting in or jerking out of the link, as well as its frequent sudden elevation or depression, incident to the rocking, swaying, and jumping of the cars.

The pin is operated from either the top or sides of the car by means of a rock shaft extending across the end, as represented in the perspective view.

When in position for coupling, the pin rests on the foot of the primary table; the entering link strikes the hub, crowding it back and withdrawing the foot from underneath the pin, which is then free to fall. To uncouple, it is only necessary to lift the pin above both tables, when, the link still holding back the lower table, the secondary table is free to swing its foot beneath the pin, as shown in Fig. 3. When the cars separate and the link is withdrawn, the heavier lower table swings forward, taking with it the pivot of the upper table, which is thereby pressed against a stop and swung backward to withdraw its foot from beneath the pin, which then falls upon the foot of the primary table, and the parts are again in their first position ready for coupling. It will be observed that the only manual action required is the simple momentary swinging of a side lever against its stop; and that, after it touches the stop, the hand may be instantly withdrawn, the whole operation thereafter, both of uncoupling and coupling, being entirely automatic.

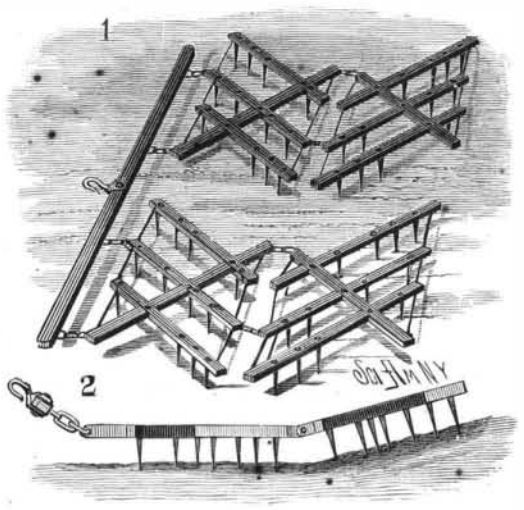
This invention has been patented by Mr. S. D. Locke, of Hoosick Falls, N. Y.



LOCKE'S IMPROVED CAR COUPLING.

IMPROVED HARROW.

This harrow, the invention of Mr. James G. Owen, of Covello, W. T., is made in two double sections, each comprised of front and rear parts, consisting of a series of tooth-carrying bars braced by a diagonal bar, and all connected at the ends of each part by spacing and brace irons. The tooth-carrying bars are set at an angle of about forty-five degrees with the line of draught, the front series ranging backward toward the left, while the rear series range backward toward the right. The front and rear parts of each section are coupled together by hinges, allowing independent vertical movement of all four of the harrow sections, and the front parts of each double section are coupled by suitable flexible bar, link, and staple connections with the draught beam, to which the horses are hitched. The teeth are fitted in the bars in such relation to each other as will cause them to harrow the ground in lines about two inches apart. As the harrow is drawn over the ground, the sections will adapt themselves to any inequalities of the surface in all directions, and no part of the ground will escape the proper action of the teeth. The converging arrangement of the tooth bars, together with the coupling of the front and rear parts by hinges, not allowing lateral play of one part on its connected part, causes the harrow to run truly and effectively on side hills, and without the tracking of one tooth in the path of the preceding one. This harrow is not liable to clog, and does not have a swinging motion from side to side; it may be made of either wood or iron.



OWEN'S IMPROVED HARROW.

Textile Soap.

The firm of Trawitz, Dueringer & Co., Strassburg, Alsace, manufacture a soap for use in the textile industry which it is claimed meets the highest requirements and perfectly replaces the best Marseilles soap. This "Luetzelburg textile soap," as it is named, according to the analysis made in the laboratory of the *Seifensieder Zeitung* contains:

Fatty acid	65·2 per cent.
Soda	7·6 "
Water	27·2 "
	100 "

The fat is completely saponified and the soap absolutely neutral, and therefore suitable for any purposes of the textile industry.

A RUSSIAN engineer reports that he has discovered a process of reducing petroleum to a form of crystals which may be easily and safely transported to any distance and then reconverted into liquid form.