### IMPROVED METHOD OF SECURING CAR WHEELS TO THE AXLES.

The accompanying illustration shows the patented method adopted by Messrs. William Jessop & Sons (Limited), of the Brightside Steel Works, Sheffield, of securing car wheels to their axles. The advantages claimed for this method are simplicity of construction, few loose parts, and the ease and rapidity with which the wheels can be taken off and replaced securely on the axles, a great desideratum in the case of a broken wheel. The gripping action of wheels made according to this invention may be compared to the grasp of a hand, the boss of the wheel contracting round the whole surface of the periphery of the axle, and not bearing on two or three points only, as is generally the case where the wheel is secured by keying or by a nut.

Fig. 1 is a sectional view of a wheel fitted to an axle having inside bearings. A is the axle, the end being shown in section at B, showing the recess, D, and key plate, C, the lower end of which fits into the recess, D. The key-plate is held between the arm and lug, H (Fig. 2), in the space, E, and is secured by the bolt and nut, F. G is the center hole of the wheel. It will be seen that the boss of the wheel is not cast solid, but that the space or key-way, E, cuts through into the center hole; when, therefore, the nut of the bolt, F, is screwed up tightly, it draws the lug, H, toward the arm, and contracts the diameter of the center hole, gripping the axle with immense power. All that is necessary to release a wheel is to unscrew the nut, when the boss of the wheel expands, and the wheel may be removed. To make any movement of the wheel or the axle (either lengthwise orrotary) impossible, a slot or recess, as before mentioned, is made in the axle, a key plate is made to fit into this, and is held between the lug and the arm of the wheel, the bolt used to contract the boss being also used to secure the key plate by passing through a suitable hole at its upper end.

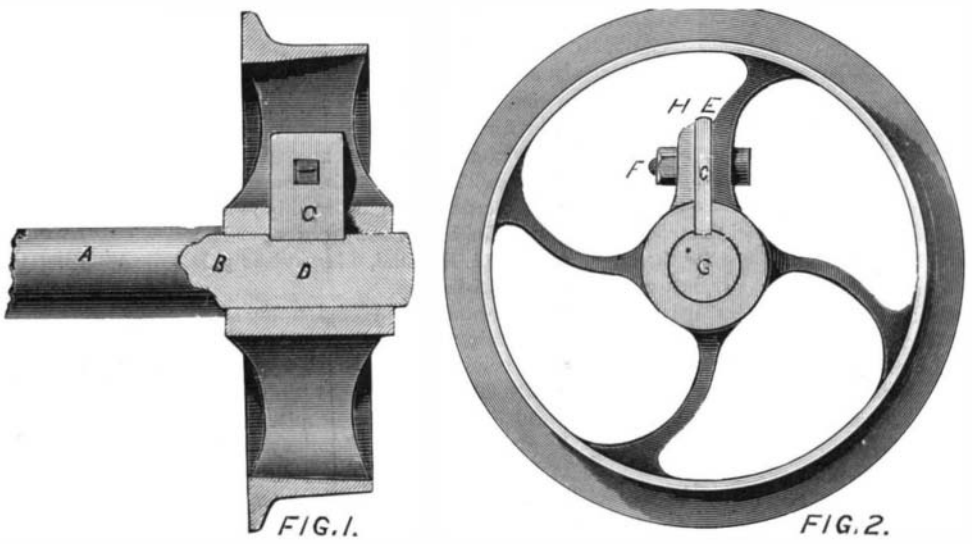


FIG. 1. FIG. 2.

NEW METHOD OF SECURING CAR WHEELS.

### Our Sugar Refineries.

The discussion among the leading sugar refiners, looking to the placing of the refining business in the hands of an executive committee to put a stop to over-production, brings out the fact that there are in the United States nineteen refineries in active operation, with a capacity of about 7,500,000 pounds daily, while the daily consumption does not exceed three-fourths of this quantity.

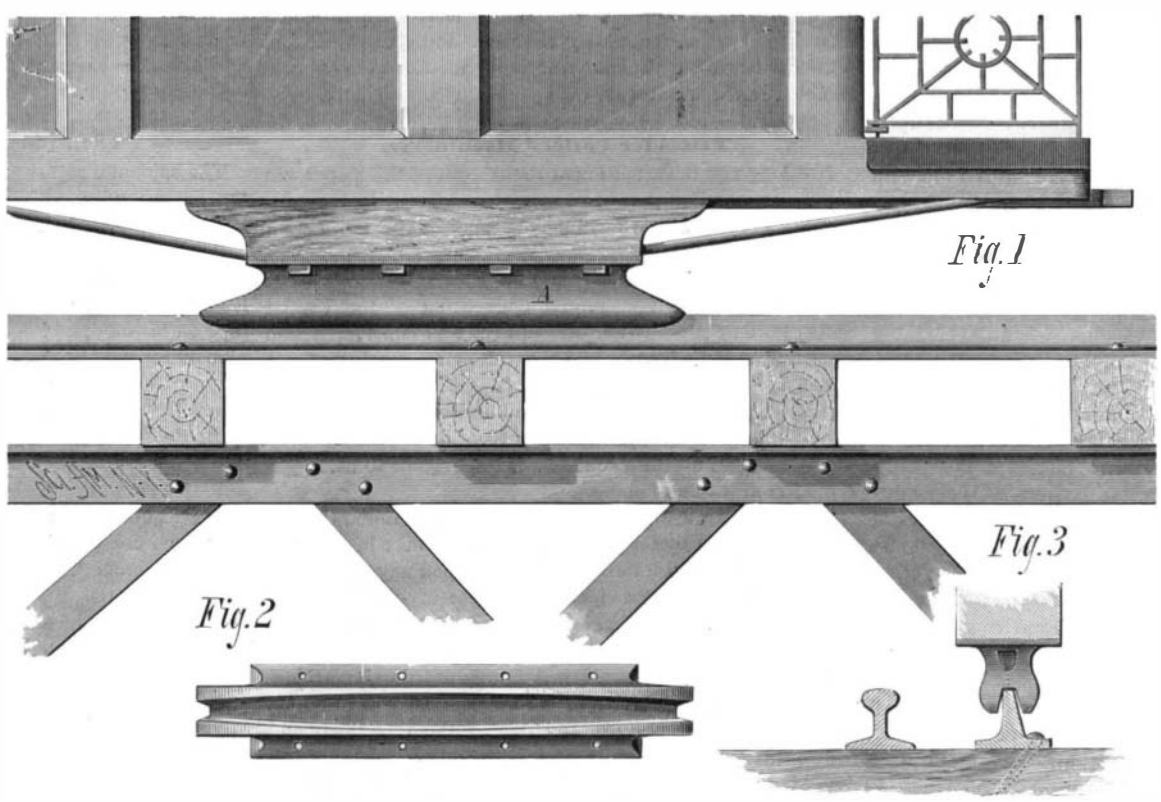
### NOVEL METHOD OF RUNNING RAILROAD CARS.

The engraving represents a novel plan for moving the cars of elevated railroads without jar or noise and without subjecting the track or trestle work to the concussions incident to the use of wheels. The tendency of continued pounding and jarring is to enlarge the holes in the beams and braces, to shear off the rivets, and to weaken the structure. The inventor of the device illustrated proposes to do away with all of this wear and tear, and to make the elevated roads practically noiseless. Certainly such a state of things is greatly desired by the property owners, business houses, and residents along the lines of the elevated roads, and no doubt the roads themselves would be greatly benefited by the adoption of any device that would accomplish these results.

The device is exceedingly simple, and apparently not difficult to apply to the existing structures or the cars now in use.

The invention consists in substituting for the present wheels and axles a set of sliders or skates, which run upon special rails placed upon the ties, outside of the ordinary rails, the latter being used for the drive wheels of the locomotive. The inventor says that the drive wheels, being large and running at a comparatively slow speed, make no appreciable noise, and it is claimed that with proper lubrication a train may be moved with the skates on the plain track with less power than is now required to move cars provided with wheels. The skates are each provided with a chamber for containing a lubricant, and are fitted to receive wearing slips in the groove on the under side, so that when the skate becomes worn, the worn surface may be removed and replaced without interfering with the main portion. The auxiliary track is made of steel, and is quite narrow at the top, and is smoothly finished and polished, so that when slightly lubricated the car will glide smoothly and easily. The lubricant is slowly applied to the special track through small holes extending from the chamber to the lower face of the skate.

A portion of a car with the skate attached is shown in Fig. 1; and Fig. 2 is a bottom view of the skate, showing the removable wearing surface, and the curved form of the sides of the groove which adapt it to curves. Fig. 3 is a transverse section of one side of the track, showing the relative position of the two rails and the skate.




COX'S IMPROVEMENT IN RUNNING RAILROAD CARS.

The inventor claims that the saving which this device would effect in journals and wheels would pay the expense of the change, and that it would last much longer without repairs. As a matter of engineering, the problem of applying this invention to the existing roads is very simple. Switches, crossings, etc., are easily arranged, and no material changes will be required in the working of the roads.

This invention has been lately patented by Mr. James R. Cox, of Auburn, N. Y., who may be addressed for further information.

### NEW INVENTIONS.

An improvement in cotton choppers, patented by Mr. John Warren, of Newton Factory, Ga., consists in combining with curved arms blades having upwardly turned cutting ends, a horizontal blade, and a slotted bar.

Mr. James M. Harrison, of Hollansburg, O., has invented a hand corn planter, which is an improvement on the hand corn planters for which letters patent No. 111,202 were granted to the same inventor January 24, 1871.

Mr. De Laski T. Clemons, of Hornellsville, N. Y., has patented a table-leaf support, so constructed that it will adjust itself in position when the leaf is raised, and by being slightly moved will allow the leaf to drop, the support being pushed out of the way by the weight of the leaf.

In an improved crucible furnace, patented by Mr. Georg Fischer, of Hainfeld, Austria, the lower part of the furnace containing the crucibles and fuel is fitted to be raised by means of an elevator and put in connection with the middle portion of the furnace, or let down upon a track on the floor of the smelting house for removal and replaced by another lower portion previously heated and charged with crucibles. The object of the invention is to produce a continuously working furnace by allowing the lower part of the furnace to be raised and put in connection with the middle part or separated therefrom and lowered on a track leading to the foundry. In this way separate charges of crucibles are being heated, raised into the furnace, and being taken to the foundry, rendering the operation continuous.

Mr. Nixon Thomas, of Dupont, Ind., has patented an improved device for increasing the efficiency of those washing machines that operate by pounding the clothes. The invention consists in a combination of parts that cannot be clearly described without engravings.

An improved force pump has been patented by Mr. Philip A. Myers, of Ashland, O. The invention consists in a novel construction and arrangement of the various parts of a pump. Although it is quite simple it cannot be clearly described without engravings.

Mr. Marion H. Simmons, of Atchison, Kan., has patented an improved self-locking clevis, which has two arms hinged to each other at their forward ends by a pin, the one arm having a pin at its rear end and the other having a notch to receive the pin, the corresponding hooks formed upon the forward ends of the arms, and the link hinged to the end of one of the hooks, whereby the clevis can be readily attached to a double tree or other object.

An improvement in the class of devices which combine the functions of a measure and funnel for use in drawing off and measuring small quantities of liquids and such dry solid substances as will flow readily, has been patented by Messrs. Allen C. Smith and Henry W. King, of Canaan, N. Y. The invention is embodied in two parts, which are connected so as to form practically one measuring funnel. The parts are a cylinder having a tapering nozzle and mouth or receiving opening to adapt it to serve as a funnel, and a measuring cylinder or vessel, which also has an open mouth, and is placed in the former or funnel cylinder and pivoted in such manner that it may be tilted for the purpose of discharging its contents into the same.

A ditching machine that, as it moves along, cuts and removes the earth and deposits it on the sides of the ditch by means of an inclined auger, has been patented by Mr. Andrew D. Martin, of Abbeville, La.

An improved fence post, patented by Mr. Andrew Climie, of Ann Arbor, Mich., combines the advantages of wood and stone and to produce a post or tie that is substantial and practically indestructible. It consists, essentially, in a post or sill made of concrete, and provided with an iron rod for strengthening it longitudinally, and with transverse branches of the rod for attaching the fence rails to the post or the planks or boards to the sill.

Messrs. James T. Coughlin and August P. Schneider, of New York city, have patented an improvement in the construction of boats. The invention relates to the manufacture of boats, especially light shell or race boats. It consists in the use of sheet cork as a material for the shell of boats, strengthened by sheets of thin cloth or other suitable material, which is secured upon the inner and outer sides of the shell by waterproof varnish.

Mr. Francis M. Myers, of Jersey City Heights, N. J., has patented an improved article of board for bookbinders' and box makers' use, and a new process of making it. Heretofore such board has been made of a single homogeneous sheet of paper of the required thickness and then dried on the cylinder. This mode of making the board is, however, objectionable, on account of the difficulty experienced in drying sheets above a certain thickness without injuring the qualities of the board. The improvement consists in making the board of two or more homogeneous sheets of board cemented together.

An improved washing machine, patented by Mr. Fred. Ernest Arnold, of Chicago, is so constructed as to do the work quickly and thoroughly. It is simple in construction and easily operated.

An improved apparatus for opening hinged gates, patented by Mr. Henry Allen, of Silverton, Oregon, consists in the combination and arrangement of devices for elevating the pivoted latch of a laterally swinging gate.