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# CYLINDRICAL NUTS.

square or a hexagonal form has been advocated, with years from failure 'of air brakes, and accidents less tunity was given to see a practical illustration. A ma- the bridge would have been provided with an autochinist had an order for a small ornamental steam en-matic signal were it not for an occasional failure of gine, to be placed in the show window of a coffee and these appliances, and their excessive cost, and it would spice establishment, and on it he used cylindrical nuts, not seem a difficult matter to remove these objections. instead of hexagonal ones. The engine was a horizontal one, with steam chest on the top of the cylinder, skillful mechanics, whose business is to give them thorand all the hold-down bolts were furnished with cylin- yough inspection and all needed repairs at the end and drical nuts, through the tops of which protruded the before the commencement of each trip, but notwithflattened convex ends of the bolts, making a very neat standing these precautions they sometimes refuse to finish. The bolts were three-eighths of an inch diame- act, and the results are usually serious. Brakes and ter and the nuts three-quarters of an inch diameter; to signals that are more simple in construction, and rehave made them hexagonal they would have been a quire less skill and expense to keep in working order, trifle over seven-eighths of an inch from corner to corner, are in demand. and if square they would have been a full inch across corners, and neither the hexagonal nor the square nut would be any stronger than the cylindrical nut-the protruding corners give no additional strength. For a wrench he took a tool with opening jaws operated like a pair of pliers. These jaws, while slightly open, were reamed to fit the diameter of the nut, so that when closed on the nut the jaws would embrace almost its entire circumference; the leverage of the handles made a very slight pressure necessary to set up the nuts. The wrench did not have a short biting jaw, like a pair of pipe tongs, which dig into the pipe at each grip, but the inside of the jaws were perfectly smooth, and left no mark on the nut in using.

The method of making the nuts produced them in a very rapid manner. A bar of steel, of the proper diameter to finish to size after being turned, was fed through the head of a turret lathe, the end squared, a hole drilled in it, the tap run in, the surface turned, who desire and the nut cut off; all done by fixed tools in the turret and the cross cutting off tool. The finished nut dropped, and the bar was advanced for another nut. There was no planing, milling, or seating on an arbor, as would be the case in forming and finishing rectangular nuts. Every machinist knows that lathe work is NEW YORK, SATURDAY, SEPTEMBER 19, 1885. cheaper and quicker than reciprocating work, whether planer or milling machine.

> In addition to these advantages of quick work. almost self-acting, the rapid production of the nuts and their finish from the first inception, there is the advantage of the requirement of less metal for the requisite strength. The embracing jaws of the wrench have a bearing on almost the entire circumference, the wrench is on only two opposite sides.

> Another advantage that the cylindrical nut has over the angular nut is that the wrench may get a grip in moving through the smallest arc of a circle; an advantage that will be understood by the setters-up of machinery under difficulties. With the square nut an entire quarter turn is required before, in a confined space, the wrench can get a new hold; and with the hexagonal nut not less than one-sixth of a revolution is necessary before the wrench can take a fresh grip. When the wrench handle is long and the working place is limited, these considerations are of consequence.

# 

# RAILWAY IMPROVEMENTS NEEDED.

The recent disaster near St. Catherines. Ontario, where a heavy passenger train drawn by two locomotives went through a swing bridge into the canal, brings to mind the fact that a similar accident occurred at the same place eleven years ago, and that about 1854 one of the most serious disasters on record occurred under similar circumstances near there on removed or abandoned.

bridge signals to become inoperative seems to be the irksome and perfunctory.

brakes to operate. This is the fifth train that has The substitution of cylindrical nuts for those of a met destruction on this side of the Atlantic within two very good reasons as a backing. Recently an oppor- serious are frequent from the same cause. Doubtless Air brakes are usually placed under the care of

# AS TO THE SINKING OF THE WIRES.

The time given to the electrical companies in New York city to present plans and come to an agreement as to the system to be adopted in burying the wires has now gone by, and, according to the law passed by the last legislature, they must accept the plan chosen by the Electrical Subway Commission, or have their wires buried by it vi et armis.

Unhappily for the New York companies, the commission contains neither an electrician nor a scientific expert, and however good their judgment maybe, it is scarcely probable that they will be able to discover a means of efficiently working long lines of telephone, at least, underground, when a score of experts employed by the companies have failed in a similar search.

It is pretty evident, too, by recent action of some of the companies, that the constitutionality of the law is to be thoroughly tested before they succumb: the Commission in the mean time being enjoined from interference. From reports which have reached us, the grounds on which an injunction will be asked may thus be summarized:

Having once had authority to string the wires through the streets, and there having been no proviso to restrain them at any moment from further operation of aerial lines, they cannot be constitutionally forced to change the mode of operation without compensation. The right of the legislature to forbid any further stringing of wires, save what is required to keep the original lines in efficient working, is admitted. But to compel the companies to make the great outlay required in taking their wires down while on the square and hexagon nuts the bearing of and placing them underground would be to mulct them in damages for doing what under their charters they have a clear right to do, and it was intended they should be protected in doing. The case of the elevated railroads might be cited as in many ways parallel. Having legislative authority to build the road the incorporators went to the expense of construction. They took a certain risk. Had the project proved a failure, they would have had to stand the loss-the State, of course, would not have compensated them. Now, the project having proved a success, can the legislature step in and regulate the rates at which they are to carry passengers? Eminent authority decided that it could not, and the Governor refused to sign the bill.

How conclusive this reasoning may be, the writer has no intention of trving to determine. There is reason, however, to believe that the courts will be called upon to do so.

#### SHOP IN DEPENDENCE.

Unless one has an "independent fortune," one makthe same road at a canal bridge that has since been ing him independent of financial circumstances, there is no condition in civilized life preferable to that of a There are appliances that will, if kept in working shop mechanic. Especially is this the fact if the meorder, effectually prevent such accidents. It is true chanic is competent and feels an interest in his work. that accidents do happen occasionally on roads that He has a comfortable shop, pleasant fellow workmen, are equipped with the most approved means of safety, good tools, and a job that will amount to something but this is chargeable to the neglect of those who when it is done; this is enough to content a man who have the care of the appliances, rather than to any has a pleasant home or a comfortable boarding place. inherent defect. The liability of switch and draw- And yet there are some who look upon shop life as

principal reason set forth by railway officials for re-| There are others who do not. An illustration is fusing to adopt them, and this objection may be re- recent. A fine workman, a machinist, possessing other moved by a more simple construction, which would valuable qualifications as an executive manager, a render them reliable and proof against derangement-public speaker, and with great personal power of per-Simplifying their construction would also reduce the suasion, was induced to take the superintendency and cost and remove the only remaining objection to their management of a Young Men's Christian Association. general adoption. Most of the signal devices brought He filled the position satisfactorily and creditably; forward of late are expensive, and require much skill but at last he tired and resigned. Strong influences and constant watching. An automatic signal that is were brought to induce him to change his determinanot reliable at all times is more dangerous than those tion. He refused, and for nearly two years has worked which are operated independently by an attendant. in the shop as a tool maker. He gets good pay, but because greater reliance is placed upon the former, refuses to be a boss-only an inspector-and works and it is not as closely watched by engineers. The every day as any ordinary workman. recent accident occurred at midday, but the engineer Recently he was seen, and asked if the change from a had no warning of danger until he saw the ends of the public life to a shop life was agreeable. He was quite apply the air brakes, but they failed to act. He then ent; had no meddling suggestors to bother him; could called for hand brakes, but it was too late. The pri- scan his day's work in the morning, and see it done in

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religion; sorcery; etc.-4 engravings.....

mary cause of the accident was the lack of a proper the evening; was nobody's slave or servitor; did not 3088 | signal, and the immediate cause was the failure of the | have to modify his plans to suit a committee ; his eight