

## FREIGHT CAR DOOR LOCKS.

The accompanying engravings represent two simple, strong, and durable locks for fastening doors of freight cars. The upper figures show a device for securing the end doors so that they cannot be opened from the outside—Fig. 1 showing the lock open and Fig. 2 showing it closed. To lock the door it is simply necessary to push the toggle to one side, when the weighted end swings the bolt down so that its other end enters the recess in the door; at the same time the toggle swings forward, and its lower end rests upon the bolt, which is held firmly in place. To unlock the door the toggle is pushed one side, and the bolt raised until it is supported upon the upper catch of the toggle. The dotted lines show the small end of the bolt in the two positions. The seal holding tag can be passed through an opening in the side plate and through the end of the bolt. The lock is reversible, and will fit on either door post.

In the lock shown in Fig. 3 the bed plate is made with an inclined bottom, in the center of which is pivoted a button which, when in the position shown in the cut, most effectually prevents the door from sliding. When the button is moved to the inside of the inclined bottom, the door is free to move by. From one side of the button projects a hook, in which a strong three tumbler lock bolts and secures the button in its outward position. The tumblers and lock bolt are made of brass, the latter being so placed that rough usage will not affect it; the locks are of malleable iron. Cinders, snow, etc., are prevented from entering the lock by an inside escutcheon for the keyhole. Openings are made in the button and side plate large enough for the seal and for the U. S. lock for bonded goods.

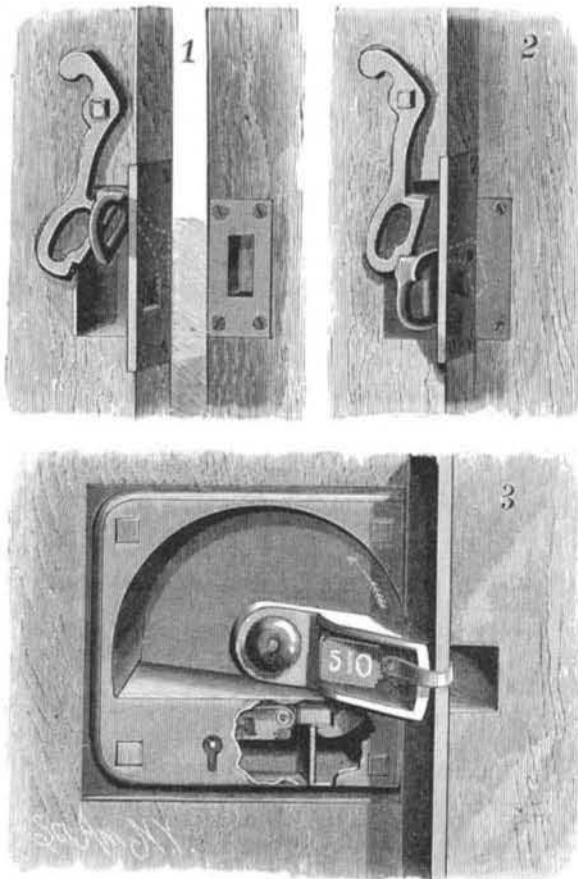
These locks are manufactured by Mr. J. Hyde Fisher, of 50 State Street, Chicago, Ill.

## PETROLEUM INDUSTRY OF BAKU.

It is singular that although the oil wells of Baku have been known for over fifty years, it is only within two or three years that they have been worked to any extent, and only within a few months that the public generally have had the fact of their existence thrust upon their attention. This condition of affairs is due to several reasons, the principal of which is that Baku is located upon a remote frontier of the Russian Empire, being separated from commercial Russia by the exalted range of the Caucasus, and having no railroad communication with the interior. Its former obscurity is due, however, more to the lack of enterprise on the part of those who undertook to work the wells than to its geographical situation; for although its location is remote as regards the market, it is situated on the shore of a great inland sea, the Caspian, and in this respect has a great advantage over our own oil producing district. The cause of Baku having been brought so unexpectedly and suddenly before the public notice is due perhaps to the fact that the wells have been brought under the control of a new management, who have spared no means or expense to bring the wells into the most perfect working condition, and who have had the keenness to perceive that it was not the expense in procuring and storing the oil which rendered the petroleum high priced

This, by the way, is about as close a relation as it holds to our Pennsylvania petroleum, for the latter for illuminating purposes is a far superior product, while as a lubricator it is said not to equal the Russian oils. According to Professor Mendelyeff's analysis, the Baku petroleum contains 20 to 40 per cent. of lubricating matter, while the American contains but 7 per cent. of this substance.

The wells are by no means as deep as our wells on this side



FISHER'S FREIGHT CAR DOOR LOCK.

the water, and some of their best producing drives are not more than 500 feet deep, while the deepest well of Nobel Bros., who are the largest owners in this region, is but 735 feet in depth, and the yield from this drive is perfectly enormous.

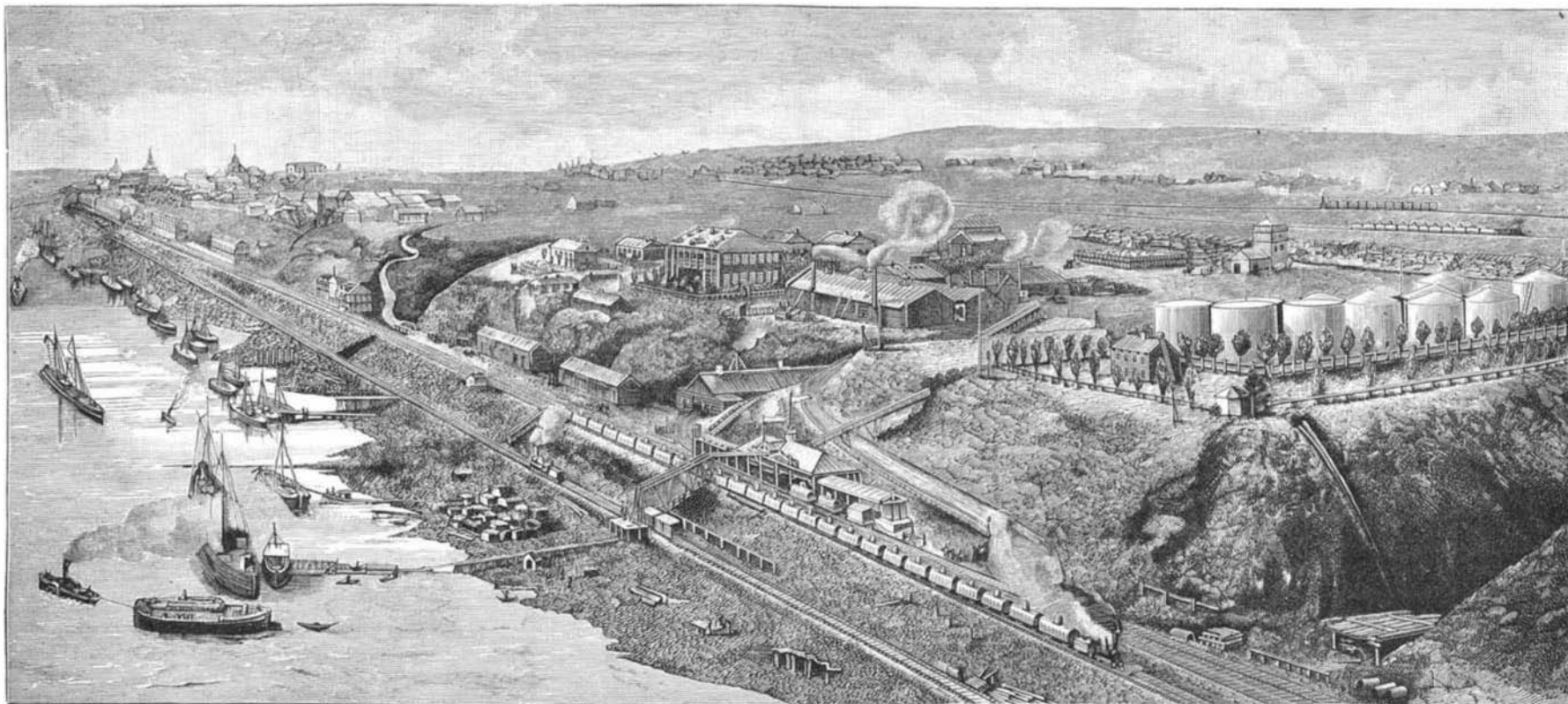
It will be seen from this, says *Engineering*, to which we are indebted for our cut and the following details, that the Baku people have not exploited to any very serious extent their petroleum deposits. Years must elapse before 1,000 feet, a common depth in America, will be attained; and at least two or three decades before they touch the cells 2,000 feet below the surface, as has been already done in many cases in Virginia. The present supply of oil is so

suit the characteristics of the Apsheron peninsula. To Messrs. Nobel Brothers belongs the credit of having introduced the composite system now in vogue, they having brought over to Baku six borers from Pennsylvania early after commencing operations in 1875.

Nobel Brothers, whose organization in almost every detail is as perfect as care can make it, lodge their employes in spacious and commodious stone barracks alongside their borings. A telephone connects their wells with the office at Baku, and again with the manager's residence in the Swedish colony that is growing up outside Baku. From Baku telegraphic communication is maintained with all parts of the world.

Boring for petroleum in the Apsheron peninsula is conducted much in the same manner as that for coal. An iron bit, gouge shaped, is fitted to a boring bar 8 feet or 10 feet in length, which is successively fitted to other lengths as the depth of the piercing increases. The strata consist of alternate sand and rock. It is in the sand that often the greatest difficulties are encountered. A loose boulder will meet the boring tool, and, displacing itself, leave the passage free. But when the rods are withdrawn to allow the introduction of the tubes which form the lining of the well, the boulder falls back in its place, and baffles all attempts to continue the work. This boulder difficulty is the great terror of those commencing to bore. The diameter of the bore is invariably from 10 inches to 14 inches. The thickness of the tubes runs from one-eighth inch to three-sixteenths inch.

When the oil is touched there is usually a lengthened discharge of light carbureted hydrogen. Sometimes this pours up the pipe with terrific force, roaring so loudly that nothing can be heard alongside the well. As often as not grit is carried up with it, and finally comes the oil. Directly the gas begins to blow, all haste is made to withdraw the boring rod and fasten a *kalpak*, or iron cap, over the orifice. This is fitted with a sliding valve to regulate the passage of the gas and oil. Should the well be successfully capped over, the chief danger of an irrepressible fountain is removed, but it often happens that the oil follows too fast, and then nothing can be done to check the outburst of petroleum until its force moderates. Last year, when the engineers at Nobel Brothers' No. 25 well struck oil, the gas exploded and blew into the air 500 feet of boring rod before it could be removed. Formerly the tubes were sunk without any packing round the top. The consequence was that when they were capped the pipes burst. To obviate this it has been the custom for some years past to dig down 20 feet or 30 feet round about the mouth of the well, and fill it up with a concrete or asphalt setting. If this be well done, it will resist the strongest pressure, in spite of a filtration through it, as occurred when the Drojba fountain was stopped last December. With but a few exceptions, every care is taken by the well borers to prevent the wells becoming fountains beyond control. The Drojba catastrophe was due to an accident. The well was properly capped over, and it was while improving and strengthening the cap that the oil suddenly blew it off and spouted 300 feet high. It then became, of course, beyond control. In a few days the grit carried up



NOBEL BROTHERS' PETROLEUM DEPOT AT TSARITZIN, RUSSIA.

by the time it reached the market, but the awkward facilities of transportation at that time afforded; and it has been to this that the energies of the new company have been principally directed, and in this their efforts have been rewarded with success, for Baku has been connected with the Black Sea by a partially unfinished railroad since 1881, which road was monopolized during that period by a single company. The road has recently been thrown open to the public, however, and the petroleum is now introduced into the European market at very much reduced rates, and has become a very formidable rival to its American cousin.

enormous at the feeble depth of from 100 feet to 600 feet below the surface, that no inducement to deep sinking exists. Wells are only being bored in the hope that the impending opening up of the European market will cause a rapid and unprecedented demand for crude oil; or, as in the case of Nobel Brothers, who have a dozen good spouting wells plugged up, simply to keep the staff employed. The gravity of the crude oil ranges from 0.780 to 0.890, and no deterioration has been observed in quality in that obtained from the lower depths.

The mode of boring for oil is the American, modified to

with the oil ground to pieces the huge and massive beams at the top of the derrick.

Some weeks ago a report circulated in the English press that one of the oil fountains at Baku had spouted with such force as to fracture a 3 inch cast iron plate placed over the orifice to divert the stream. This was on the face of it erroneous, the real circumstances being these: When the oil is projected, it carries with it the grit with such force as to convert its volume into a sort of liquid grindstone. If an iron plate be placed in contact with the stream, the sand in the oil literally grinds it to pieces in a few hours. The first