STEAM TIPPING-CART.

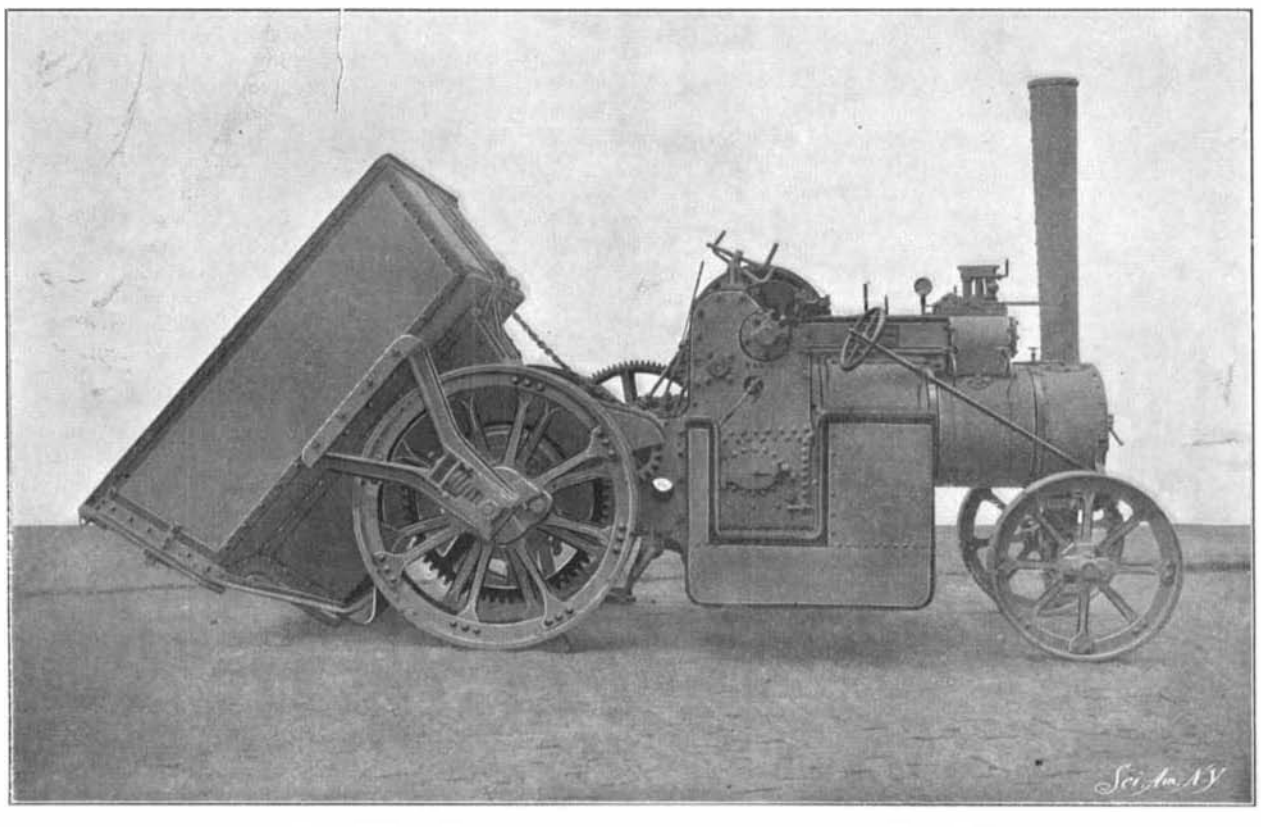
The automobile is slowly making headway as a means of transporting freight on the highways, and of handling material in engineering work. The several defects which were inherent to the early types of engines for road haulage purposes, severely militated against their adoption. But the question of motor haulage of heavy loads over roads has successfully emerged from the experimental stage, and engineering firms are now turning their attention to the construction of vehicles especially adapted for this class of traffic.

One of the most novel, and at the same time most useful contrivances manufactured for road traffic is the steam tipping-cart, constructed by Messrs. Mann & Company, of Leeds, England. In appearance it is not unlike the conventional traction engine which is commonly adopted for the haulage of heavy freight. It differs from this class of locomotive, however, in the fact that, instead of hauling individual trucks, the cart carrying the load practically forms part and parcel of the engine. The advantage of this is obvious. It dispenses with any connecting pins; it is not so unwieldy; it occupies less space; and it is far easier to handle.

The engine is a small one of the compound locomotive type, mounted upon springs. All castings, wherever possible, are made of steel. All the working parts are properly cased in. The engine is fitted with a single eccentric reversing gear, which can also be utilized as a brake; and it is provided with two traveling speeds. All gear wheels and brackets for carrying shafts and axles are of crucible cast steel, and no pitch chains are used. The boiler is of the locomotive type. Two water tanks are provided, which are of sufficient capacity to carry the engine from seven to ten miles, according to the condition of the road. The exhaust steam from the engine is passed through a superheater, before passing to the smokestack. A noticeable feature of this motor cart, which distinguishes it from other types of steam wagons, is that the footplate and coal bunker are not placed behind the firebox, as in the case of the ordinary road locomotive, but on one side, while the water tank is placed on the other.

At the rear of the engine is carried the tipping-cart, which is carried upon its own wheels. The latter, however, are exactly of the same diameter as the rear wheels of the engine, which are placed farther back than usual, and there is just sufficient space to enable the wheels of the cart to fit outside those of the engine. The two sets of wheels can be bolted together, if necessary, so that the engine wheels become driving wheels instead of trailers. By this means the whole weight of the cart and its contents is utilized to obtain a better grip or adhesion to the road, thus obviating slipping. The wheels in both cases are fitted with smooth tires instead of with cross strips, which are liable to damage the roads; while the broad smooth shod wheels act somewhat in the same manner as those of the steam roller.

The engine itself weighs a little less than three tons. The weight of the cart is one ton, with a carrying capacity of five tons. The load can be readily and easily tipped at its destination, and by means of a windlass fitted to the engine can be quickly hauled back into its normal position. The engine is economical in the consumption of fuel, only requiring about ten pounds of ordinary gas coke per mile with a full load. It can attain a speed of five miles an hour with comparative ease, and will climb gradients as steep as 1 in 5. It will travel as readily and as satisfactorily backward as it will travel forward, and for this reason is easily manipulated under cramped conditions. This cart was recently subjected to a severe practical test at the Yorkshire Motor Car Show held at Bradford. The competing motor wagons had to travel over a course 2½ miles in length, which included some stiff gradients and three very sharp turns. The tipping-wagon was laden with four tons and covered the outward journey at a mean speed of 5·4 miles per hour, and the return journey at an average speed of 4·75 miles per hour. In the subsequent awards, it secured the gold medal.

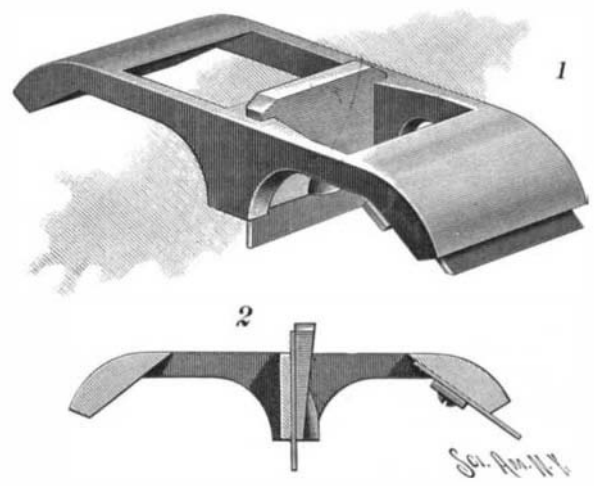


STEAM TIPPING-CART. CAPACITY, 4 TONS AT 5 MILES PER HOUR.

AN IMPROVED SCRAPER.

The device which is illustrated in our engraving is a carpenter's or painter's scraper, of such construction that it involves no complicated parts. The scraper is the joint invention of Michael Mullin, Isaac N. Watson, and John A. Hall, of 738 East Long Street, Columbus, Ohio. Fig. 1 is a perspective view of the invention and Fig. 2 a longitudinal section.

The scraper comprises a metal stock with straight sides and curved ends. In the sides are vertical guides (Fig. 2), adjacent to which is a cross-plate. The vertical guides receive a scraping-blade and a hard-wood



A NEW PLANING AND SCRAPING TOOL.

key, the blade being held flat against the cross-plate and wedged firmly by the key in any desired position. The key is formed with a projection or knob, by which it can be driven out of position.

One of the curved ends of the stock carries an end blade which is clamped against the plane under surface of the curved end by a cleat. The other end of the stock serves as a gage to the action of the first-mentioned or middle blade.

The tool is held with the stock in horizontal position and with the middle scraping blade against the work. If it be so desired, the tool may be tilted so that the gage-end of the stock may be used to control the action of the middle scraping-blade. The second or end blade is of great service in working in corners and other places difficult of access, and when thus used the other end of the tool, as well as the middle scraping blade, is raised out of contact with the work. By properly beveling the blades, various kinds of work can be performed. For example, by suitably beveling the middle scraping-blade, the tool may be used as a plane by lowering the gage-end of the stock into contact with the work and pushing the tool forward with the blades in front.

Restoration of Discolored Platinum Prints.

Platinum prints in which the whites have yellowed in consequence of the whole of the iron salt not having been removed may be restored by immersing them in a bath made by dissolving half an ounce of sodium carbonate and 300 grains of "chloride of lime" in 8 ounces of water.—Gaedicke.

American Machinery Exports.

Exports of American tools and machinery do not show the shrinkage in volume which recent reports would indicate. Some concern has been expressed by leading export houses by reason of a falling off in foreign orders due to the high prices of iron and steel. In this connection it will be interesting to note that the exports of builders' hardware, saws, and tools during the fiscal year 1900 were the largest in the history of our export trade, being $9,646,017, against $7,842,372 in 1899, $6.627,466 in 1897, and $5,509,188 in 1896, prior to which year the exports in this line had never aggregated so much as $5,000,000. In exports of sewing machines, typewriters, electrical and other intricate machinery there are also gratifying increases. Comparing the export figures of the fiscal year just ended with those of 1898 and 1899, it is found that sewing machines increased from $3,136,364 in 1898 and $3,264,344 in 1899 to $4,540,842 in 1900; electrical machinery from $2,052,564 in 1898 and $2,736,110 in 1899 to $4.328,917 in 1900; locomotive engines from $3.883,719 in 1898 to $5,592,403 in 1900; typewriters from $1,902,153 in 1898 to $2.697,544 in 1900; metal-working machinery from $4,618,683 in 1898 to $7,193,390. in 1900; and all other machinery from $13,336,930 in 1898 to $21,913,202.

While our chief market for machinery is still to be found in European countries, an increasing proportion is being sold in the Far East, especially in British Australasia, Japan, and India. In 1898 our exports of builders' hardware and tools to British Australasia amounted to $877,635, in 1900 they aggregated $1,325,793; in 1898 our exports in this line to Japan were $76,500, while in 1900 they were $106,251. Our exports of typewriters to British Australasia in 1898 amounted to $60,039, while in the fiscal year 1900 they were $101,000; to Japan, the exports of typewriters in 1898 amounted to but $4,220; in 1899 they had increased to $7,262, and in 1900 to $16,579. of which sum $2,211 were exported during the month of June alone, thus forecasting in some degree the possibilities of future development in this article of export. Commenting upon the increase in exports of typewriters, a prominent American manufacturer is quoted by The New York Commercial as saying:

"The demand for American typewriters was never greater, and our machines are pretty good globe-trotters. We have just made a shipment to Puntas Arenas, on the Straits of Magellan, at the extreme southern point of South America, and another lot of typewriters has been sent north to Vladivostock, Russia, for the use of the Imperial Government. Many of the missionaries and foreign business men in China use our machines, and nearly every American regiment in the Philippines has from three to five machines; and, as business increases at Manila under American auspices, there will be a big demand for typewriters. The typewriter has become well-nigh universal in its use, and is found in all the large business houses in the principal cities of the world, and its keyboard represents nearly all languages. The exceptions are the Japanese and Chinese. As their characters are upright and composed of many hundred figures or signs, it seems practically impossible to produce them on the typewriter's keyboard."

A Curious Accidental Fire.

An extraordinary accident occurred at Waukesha, Wisconsin, on August 6. A motorman was handling a burned-out motor. The controller came in contact with a celluloid collar he was wearing, and his neck was at once encircled by fire. He was severely burned, and it is believed that he will not recover. Celluloid collars and cuffs should not be worn by those whose vocations require them to be near open lights, fires or electricity. The motormen on the Milwaukee trolley cars received an order from the president of the company that they must not wear celluloid collars.

American Coal for London Gas Production.

The South Metropolitan Gas Company, of London, has given an experimental order for 4,000 tons of coal to a Pennsylvania colliery.