

INTERNATIONAL TRIAL OF REAPING MACHINES.

An international trial of reaping machines, under the auspices of the Royal Hungarian Board of Agriculture and Trade, is projected by the Agricultural Society of the County of Wieselburg at Ungarisch-Altenburg, from the 5th to the 10th of July, 1869. The following rules have been adopted:

I. No other machines but reapers are admitted for trial and competition.

II. Reapers generally require a greater draft than that of two Hungarian horses, and for this very reason these machines have not, up to the present time, been in such general use as could have been wished; therefore, such competing machines will be preferred which do not require a greater draft than that of two middle-sized horses, their effect being of course in proportion.

III. The utmost simplicity consistent with durability in the construction of the machine is one of the first conditions for an award of a premium.

IV. Apart from all other qualities, a machine with self-delivery will be preferred, or a combined one to be also used for mowing grass. This said qualification is not, however, absolutely necessary in machines requiring but light draft.

V. All other qualifications being equal, preference will be given to those machines which will cut tangled or lodged grain, require least manual labor, scatter least corn, waste least straw, are the easiest to move, are lowest in price, and which deliver the straw in the most regular manner to admit of the sheaves being bound in the readiest way.

VI. Experience has proved that the Hungarian oxen, from endurance, strength, and swiftness, are well adapted for working reapers, the Agricultural Society therefore think it desirable that the speed of the knives of such machines which require more than 250 German pounds, should be modified to suit the pace of the native horses and oxen. The poles must also be arranged for oxen.

VIII. Premiums will be offered as follows:

First, for reapers constructed with self-delivery: 1st prize, 60 ducats and a gold medal. 2d prize, 40 ducats and a gold medal. 3d prize, a large silver medal.

Second, for reapers not constructed with self-delivery: 1st prize, 50 ducats and a gold medal. 2d prize, 30 ducats and a gold medal. 3d prize, a large silver medal.

VIII. The jury, which consists of Professors of the Royal Agricultural Academy, of Ungarisch-Altenburg, by approved deputies of the agricultural societies of Pest and Vienna, and representatives of agricultural societies of various countries, will pronounce its judgment on the reapers in a competent and strictly impartial manner.

IX. All other points not specially mentioned here, with regard to awarding the prizes, and the system of proceeding to be observed, will be arranged by the above jury.

X. Every competing reaper must cut no less than one Austrian acre (equal to about 7,000 square yards). Each competitor will have a suitable space allotted to him to experiment on previous to the trial. Horses or oxen for all trials are furnished by the Committee.

XI. No competing machine is allowed to withdraw before finishing the trial without the consent of the jury.

XII. The Agricultural Society, in inviting all native and foreign manufacturers of agricultural implements to send reapers, announce that the proper authorities will be requested to grant a reduction of freight and toll duties, the result of which request will be published as soon as possible.

The competing reapers are to be sent "Zur Ernte-maschinen-Concurrenz, in Ungarisch-Altenburg, letzte Eisenbahnstation Wieselburg, an der Wien-Neusonyer Linie, Ungarn."

XIII. Manufacturers wishing to send reapers for this exhibition are requested to give notice before the 30th of June, to "Herrn R. Rath Paul Major, Vice-Präsident des landwirthschaftlichen Vereins Ungarisch-Altenburg," giving the number of reapers to be sent, stating whether self or hand delivery, the prices at factory, and if possible, the prices delivered both at Vienna and Pest, and further, whether a man will be sent to work the reapers or whether the society are to provide one.

The 30th of June is the latest day for the arrival of reapers at Ungarisch-Altenburg.

N. B.—The Committee will see that all due care is taken of the machines on arrival.

XIV. The Agricultural Society will also publish a precise report of the trial of the reapers, so that the result may be known both in Hungary and in foreign countries.

The Secretary of the above society is Charles Kopfmann, who may, we presume, be addressed by parties interested.

Smoky Chimneys.

The *Architect*, a London weekly, gives the following summary of the causes of smoky chimneys, condensed from a new work on the subject, published by Longmans, which seems certainly very comprehensive as well as concise.

"Want of sufficient height in the flue. The outlet of the chimney being placed in an exposed and cold situation, while the air with which the fire is supplied is drawn from a warmer and more sheltered region. Excessive width in the flue, by which a large volume of cold air is drawn in and allowed to lower the temperature of the ascending column. Low temperature of the interior of the flue in comparison with that of the external air. Humidity of the air. Too accurate fitting of the windows and doors, and joints of the flooring. The draft of one fire injuring that of others in the same house. A current caused by the heat of the fire circulating in the room. A flue of insufficient size. A foul flue. Displacement of masonry, or accumulation of mortar within the flue. The sudden obstruction of the draft by gusts of wind entering the chimney top. Increase of density of the air at the chimney top, due to the effect of wind in chimneys rising from the

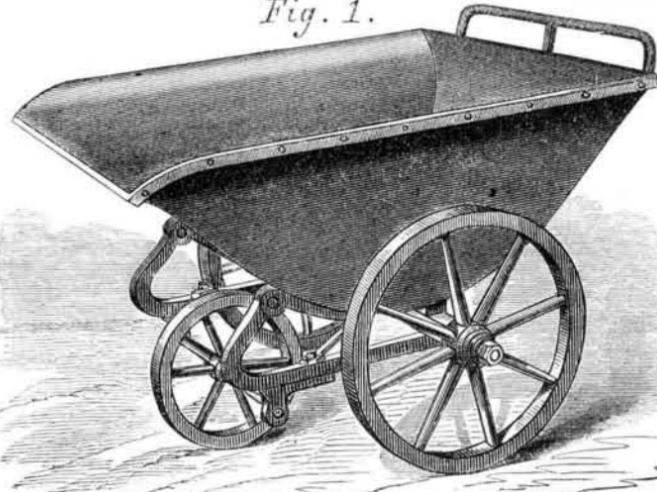
eaves of roofs. Drafts within the room which throw the smoke out of the influence of the ascending chimney current.

"Of course the remedies consist in the removal of these causes, but the suggestion given that the kitchen flue should be at the north or east end of a stack is sagacious; also, the recommendation to supply fire with air for its own consumption, drawn from the coldest side of the house. The arrangement proposed with this aim is ingenious, and no doubt capable of easy and effective application in a large proportion of cases; but the question of the exact position, size, and adjustment of the air inlet near the hearth appears to us yet open to further investigation, and it must not be forgotten that any such arrangement diminishes the efficiency of the open fire as a ventilator of the room."

FARMER'S HAND DUMPING BARROW.

The object of the device, of which the accompanying engravings are representations, is to furnish a hand barrow, superior to those generally in use, for mines, coal yards, rail-

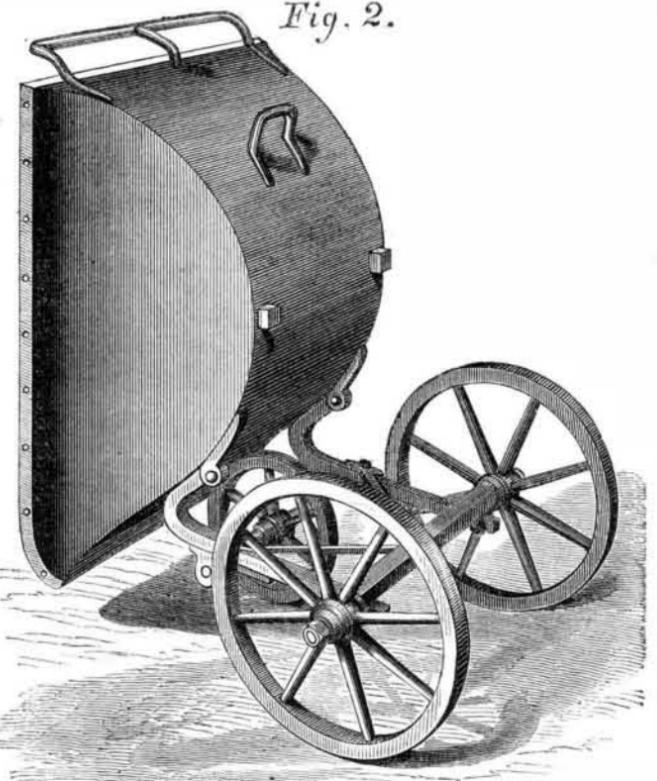
Fig. 1.



road stations, gas works, foundries, farms, etc. It is capable of turning very short corners, under perfect control, readily handled by one man, cannot be overturned by accident, and dumps its load easily. It has an additional advantage over the ordinary barrow in being shorter by the diameter of the wheel and the length of the barrow handles.

Fig. 1 is the cart in position for receiving its load; Fig. 2 is the cart reversed for delivery. When loaded the weight is borne almost wholly by the axle which carries the two large wheels. The pivots on which the cart body turns in the act of dumping are directly over the small leading wheel which then receives the weight. The load may be so adjusted that but a slight effort will be required to tilt it either way, to raise the front wheel in turning short corners—done by bearing down on the handle at the rear—or to deliver the load by lifting lightly on the handle. These barrows may be seen in

Fig. 2.



use at the works of the Manhattan Gas Light Company, 18th street station, North River, and 14th street station, East River, New York city.

Patented through the Scientific American Patent Agency, March 16, 1869, by Wm. Farmer. For State and county rights, or further information, address Herring & Floyd, 740 Greenwich street, New York, or the patentee at the Manhattan Gas Works, 18th street, North River station, New York city.

Sea Tunnels.

Under-sea tunnels are attracting the attention of English engineers. In addition to the projected tunnel under the English Channel, between Dover and Calais, it is now proposed to unite Scotland and Ireland by a tunnel, running from a point on the north-east coast of Antrim, Ireland, to Glenstrone, Scotland,

passing through the high rocky peninsula called the Mull of Cantyre. The total length of the tunnel is estimated at fourteen miles three furlongs. The ground through which it would have to be dug, it is asserted, is exactly suited for tunnelling operations, and the sandstone for lining it can be had in any quantity on the Irish side. It is proposed to construct the tunnel for a single line only, the extreme depth being twenty-one feet, and the clear width at the level of the rails fifteen feet. Three lines of rails, to accommodate wide and narrow gage carriages, however, are to be laid. The time estimated for completing the tunnel is about six years, and the cost \$21,250,000. To pay a dividend of five per cent, the road should earn \$210 per mile per week.

Transmission of Power by Hydraulic Pressure.

Sir William Armstrong, in a paper read before the Institution of Mechanical Engineers in England, states that he considered water in a pipe is preferable for many purposes to shafting, as it is perfectly controllable, and, being uniform in its action, communicates no shocks to the machinery. At present there are about six thousand hydraulic machines in use in England, and it is in docks and establishments where there is much lifting, and loading and unloading to be done, that their use may best be seen. Twenty or more cranes may be working at once, unaffected by each other. At the docks at Goole, on the Humber, these hydraulic cranes lift barges containing thirty-two tons of coal fairly out of the water, to a considerable height, where they are made to tip their load all at once into a coal-ship lying alongside. Another use for hydraulic machinery is to feed blast-furnaces. These furnaces are now built so big and tall, that the labor of wheeling up the ore and fuel to the mouth would be too severe and costly. The hydraulic lift, when properly arranged, does it by the turning of a cock. By the same simple operation, large holes can be punched through thick solid iron. At Newcastle-on-Tyne, the water-supply, as it runs down one of the hill streets, flows through an engine, and prints a newspaper. In other parts of the same country, all the raising and lowering in the mines is done by water-power.

Process for Rendering Casks Impervious.

The *Chemist and Druggist* states that important result, which has long been aimed at, seems to have been most satisfactorily accomplished by the use of paraffine. Although introduced to the various trades interested only within the past month or two, a long course of experiments has been instituted, for the purpose of fully testing the efficiency of paraffine in rendering casks, vats, and, indeed, wooden vessels of every description, thoroughly impervious to air and moisture.

The result of the investigation has been to establish fully the value of the process, which, we have no doubt, will shortly be generally adopted by brewers, wine-merchants, vinegar-makers, and others; while exporters, dealers, and consumers will all welcome a more perfect preservation of those liquids which are liable to fermentation, or become insipid by exposure to atmospheric influence. Many attempts have been made to secure these ends by means of soluble silicates, varnishes, etc., applied to the casks; but, from many causes, these have been, at best, but very partially successful. Paraffine, as most of our readers are aware, is a substance much resembling spermaceti in appearance, and possesses every requisite to fit it for the purpose required, while it also seems to be entirely free from all properties which would interfere with its service in this respect. The experiments which have been made with this substance in the preservation of meat, indicate its perfect power of preventing all contact of air, while its insolubility in water or spirit, its absence of taste and smell, and its freedom from all liability of cracking, give to paraffine a combination of advantages which can hardly be surpassed for the objects we now refer to. Paraffined casks, while retaining the safety and economy of wooden vessels, are in all respects of cleanliness and non-absorption, equal to glass. They wear longer, are much more readily cleansed, and preserve their contents in better condition than casks not so treated, and thus effect a considerable saving to firms who make use of them. We regard the process as one of considerable practical utility, as well as generally interesting.

Descent of Glaciers.

The Rev. Canon Mosely, in a paper published in the proceedings of the Royal Society, comes to the conclusion, from mathematical calculation, that the weight of a glacier, together with the weight of any snow mass behind it, would not account for its peculiar descending motion at the slopes which are observed. The glacier moves not as a whole, but with different velocities in different parts. "It moves faster at its surface than deeper down, and at the centre of its surface than at the edges." Thus it suffers constant disruption, and the parts are reunited by regelation, as Faraday explained. The displacement of particles one over the other in this motion is known in mechanics as *shearing*, and Mr. Mosely shows that the resistance to this movement is so great that the weight of the mass could not account for its descent; and that some other force much greater, and producing internal molecular displacements, must come into play.