

THE NEW GRAIN ELEVATOR IN NEW YORK CITY.

As it is now manifest that the war in Europe is destined to render this country the principal source of grain supply to foreign markets, it also is apparent that increased facilities for handling grain will become needed at all points of shipment. Inventions, therefore, tending to improve upon present methods of loading and unloading cereals are, or

measures 154 feet in height to the peak of the roof. It is erected on made ground, some 7,000 piles having been driven into the river bed at intervals of 2 feet 9 inches between centers. These are cut off below low water level, filled in with sand, and transversely capped with heavy timbers. Two diagonal cappings follow above, and a series of granite piers, pyramidal in shape, finally support the ponderous timbers

is taken up much more rapidly than other kinds. The lower portion of the elevator legs—there are eleven in the building—is made of plate iron from the foot to the bottom of the bins; through the bins, 2 inch pine planking is used. Each elevator has a 22 inch six-ply gum belt, on which the buckets are attached at intervals of a foot. As the grain reaches the bottom of the receiving pit, it is

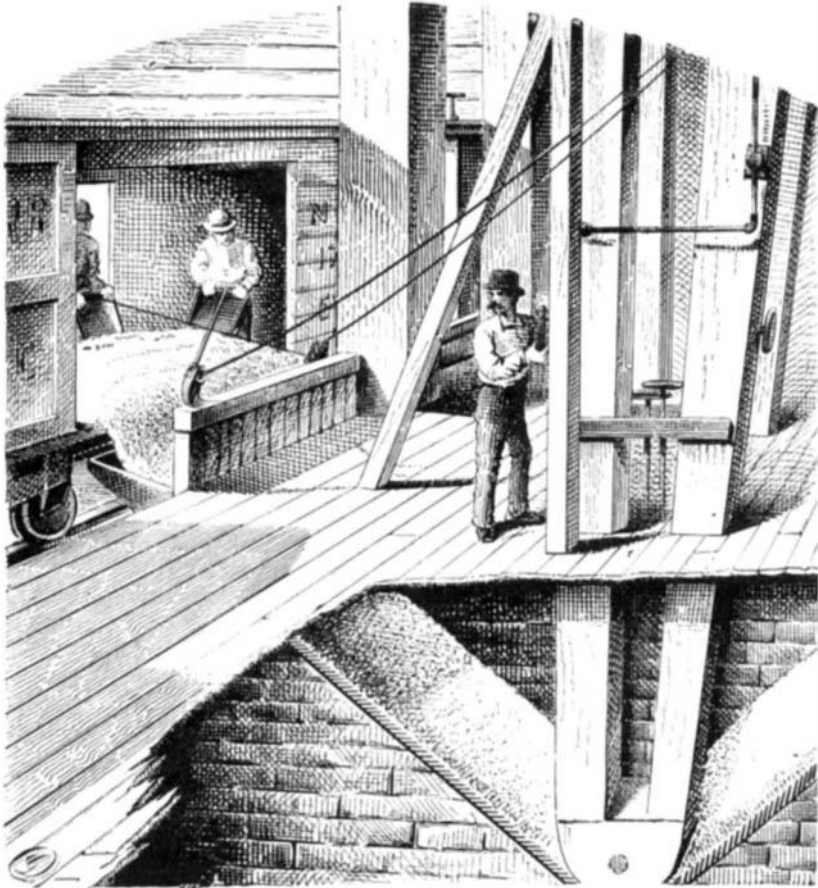


Fig. 1.—TAKING GRAIN FROM THE CARS.

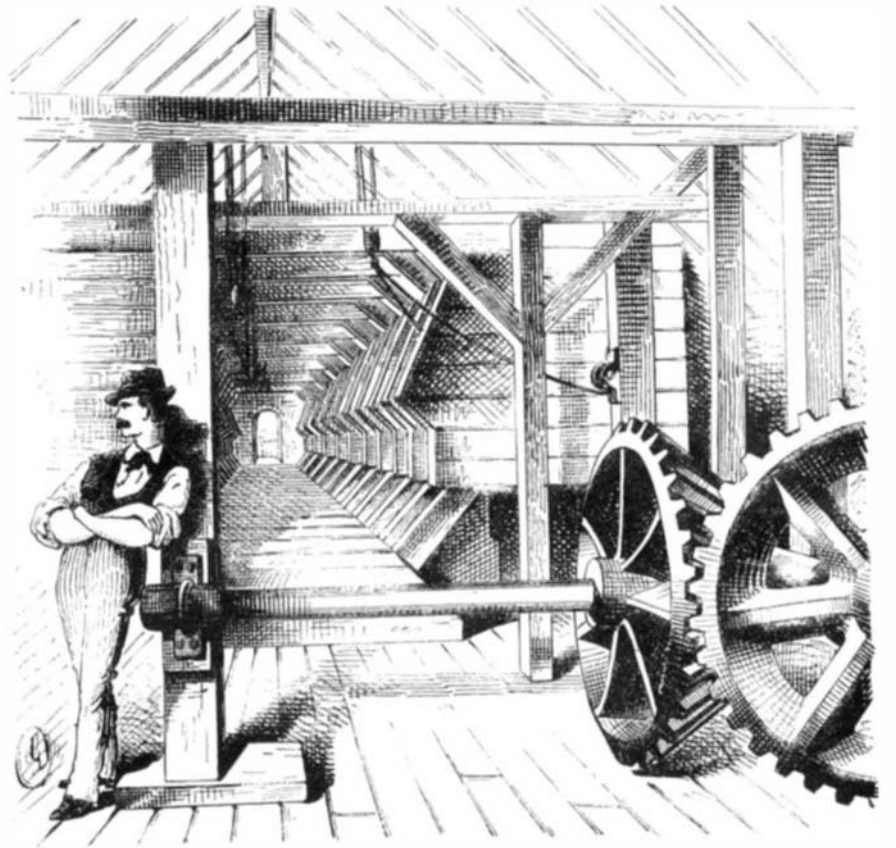


Fig. 2.—THE HOPPERS AT THE HEADS OF THE ELEVATORS.

soon will be, the subject of especial demand. As there is an excellent field for inventive work in the present form of grain elevator, we have prepared the annexed series of engravings from the fine building of this class, recently completed by the New York Central and Hudson River Railroad Company, at the foot of 60th Street and North River, this city, which conveys a good general idea of probably the most improved machinery, etc., now employed for grain transshipment and storage. There are other elevators in the country

which sustain the bins. Of the latter there are 7 rows, 33 in each row, making 231 in all; and there are shipping bins in addition. There are 182 large bins, measuring 9 feet by 13 feet 3 inches by 72 feet deep; others are variously subdivided to make smaller receptacles. The walls of the bins are of 2 inch planks laid flat, and strongly spiked together, the width of the boards making the wall thickness. The total capacity of the bins is 1,500,000 bushels.

We shall now trace the progress of the grain from the time

scooped up by the buckets and carried to the uppermost garret of the building. Here we have followed it in Fig. 2, which represents the long perspective of lofty elevator heads. The elevator belt here passes over a 6 foot pulley, the journal of which has a hinged bearing, so that the pulley may be raised and lowered by means of a lever and cord. In this way it is brought into or out of contact with a friction pulley on the main driving shaft. A part of the heavy bevel gearing by which power is transmitted from shaft to shaft is shown in the foreground of the engraving. The friction pulley referred to is made of brown paper pressed in between iron disks, 2 feet in diameter; its face also measures 2 feet.

The grain in the buckets is carried over the large pulley and is at once discharged into a weighing hopper, Fig. 3, on a floor below. This hopper stands on an 18 ton scale; and as fast as the grain within it is weighed, a valve is opened by which the grain escapes through the swinging spout on the next floor below, shown in Fig. 4. This spout may be turned by hand, so as to eject the material into anyone of the open conduits, the mouths of which are placed around the cir-

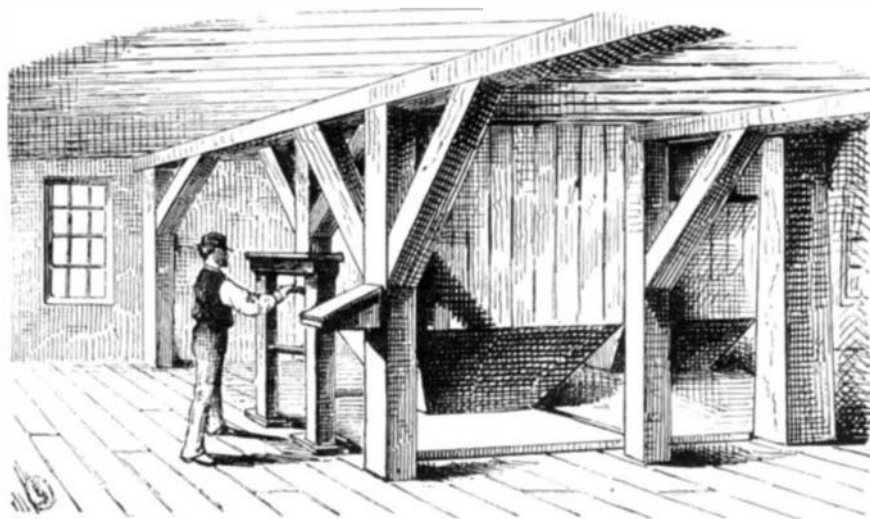


Fig. 3.—THE WEIGHING HOPPER.

much larger than the one here referred to; but the latter, constructed under the engineering direction of Mr. Charles Hilton, is practically a combination of the best results of experience as exhibited in the principal older structures in Boston, Chicago, Baltimore, and elsewhere.

The building is of wood, with an exterior envelope of brick. It is 354 feet in length by 100 feet in width, and

it enters the building on the cars until the final delivery into the vessels. Four tracks enter the building at the north end; and between the outside pairs twenty-two receiving pits are arranged, the disposition of one of which is shown in Fig. 1. Each receptacle is a huge wrought iron tank, sunk in masonry and lined with boards. Each has two hatches with hoppers, abreast of which the doors of the freight cars are brought. The grain is then removed from the cars by steam shovels operated by simple overhead mechanism. By this means the unloading is very rapidly accomplished; and the grain slides down the inclined side of the pit until it meets the lofting elevator leg, the foot of which descends to the lowest point of the pit. Here is a valve adjusted by a wheel above (shown in the hands of the workman), which checks the supply of grain to the buckets in accordance with the nature of the material, as some grain

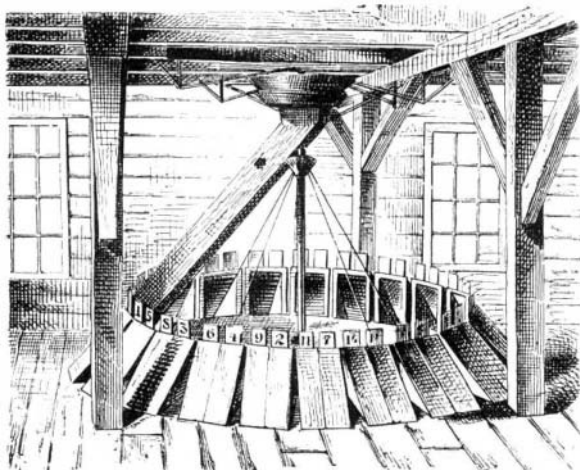


Fig. 4.—THE SWINGING SPOUT.

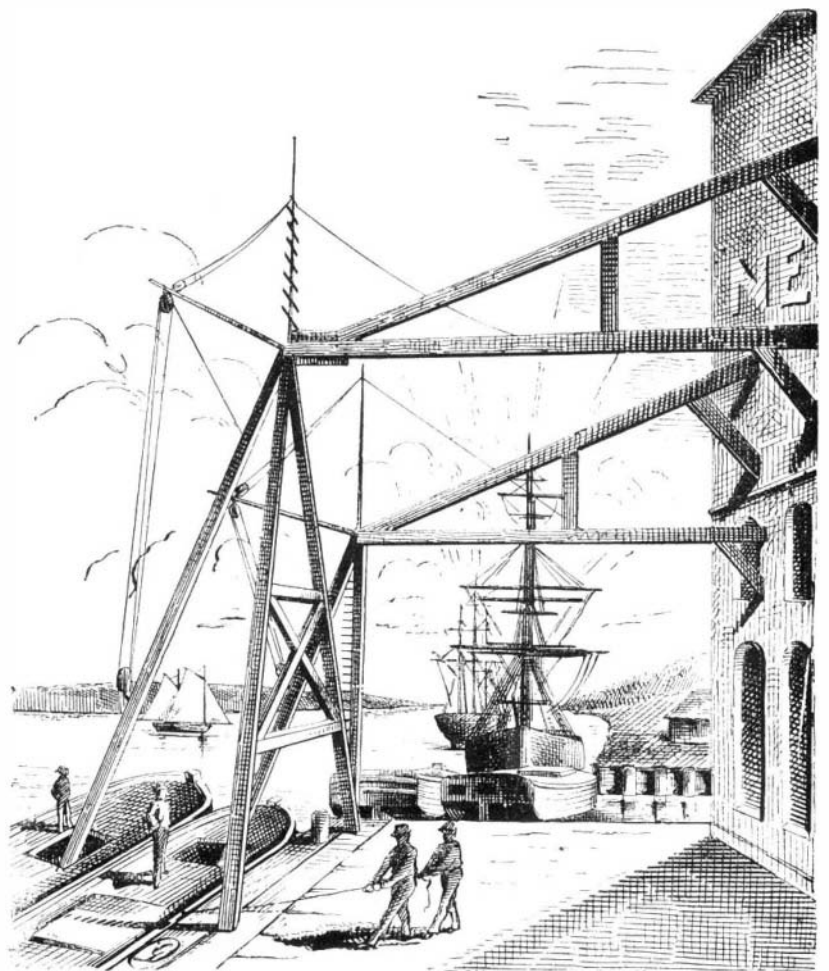


Fig. 5.—LOADING THE VESSELS.

cumference described by its lower extremity. As all the bins are numbered, and as each conduit bears a similar number to the bin to which it leads, it is merely necessary to adjust the spout to any desired opening to divert the grain to the proper bin. A blackboard, painted on a partition, is divided into numbered squares corresponding again with the bin numbers; and in each square a record is kept of the contents of the bin, so that the person in charge can see at a glance just where the incoming grain may be stored.

The grain, now being in the bins, is there left until it becomes necessary to load it aboard vessels or otherwise prepare it for transportation. If the vessels are to take it in bulk, the grain is allowed to escape from the bins through spouts

Blowpipe Apparatus.

A prize of \$50, which has been placed at the disposition of the Council by Colonel A. A. Croll, is offered by the Society of Arts, with the Society's silver medal, for the best set of blowpipe apparatus which shall be sold retail for \$5. The apparatus must, at least, contain blowpipe, blowpipe lamp or candle, spirit lamp, charcoal or charcoal pastilles and holder, platinum wire, glass tubes closed at one end (mattresses), open glass tubes, platinum-tipped forceps, magnet, hammer and anvil, and four reagents, namely, borax, microcosmic salt, carbonate of soda, and nitrate of cobalt. These instruments and reagents, together with any other which may be thought desirable, must be packed in a box. It must be

Milk and Butter.

There are no farmer's productions, says the *Maryland Farmer*, so subject to injuries from many slight causes as milk and butter, and none so sensitive to unpleasant odors of every kind; none that is so much and as readily deteriorated in value as these are. Hence, all kinds of uncleanness should be avoided, and the utmost neatness should be observed in every step of their production and marketing, from the very feeding, handling, and milking of the cows, as well as treatment and handling of the milk, with the churning, working, and putting up of the butter. All of the implements used, the water and salt used, and the rooms occupied in keeping the milk and making the butter, should be kept

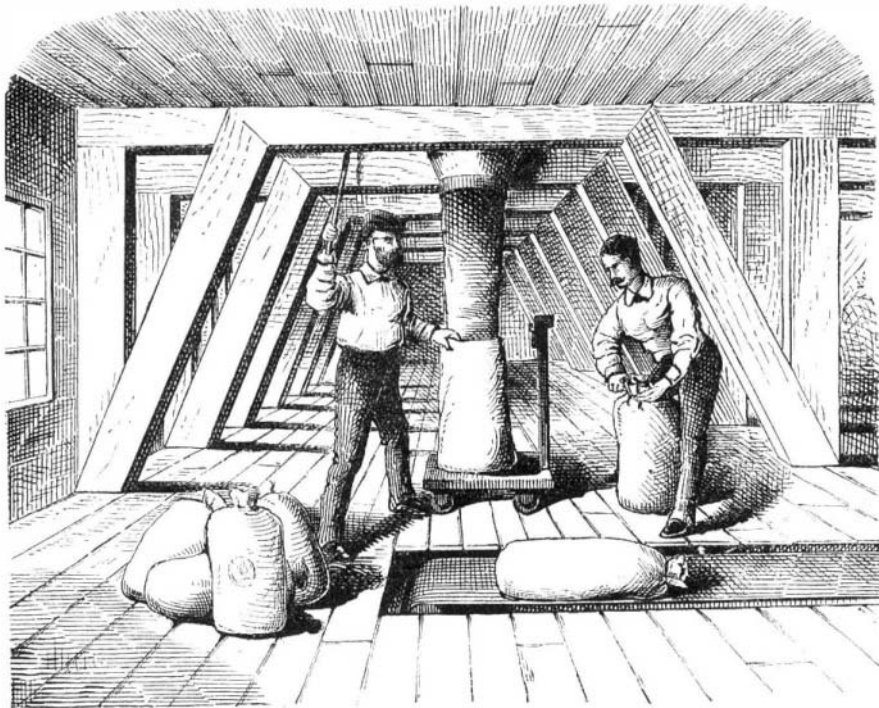


Fig. 6.—THE BAGGING FLOOR.

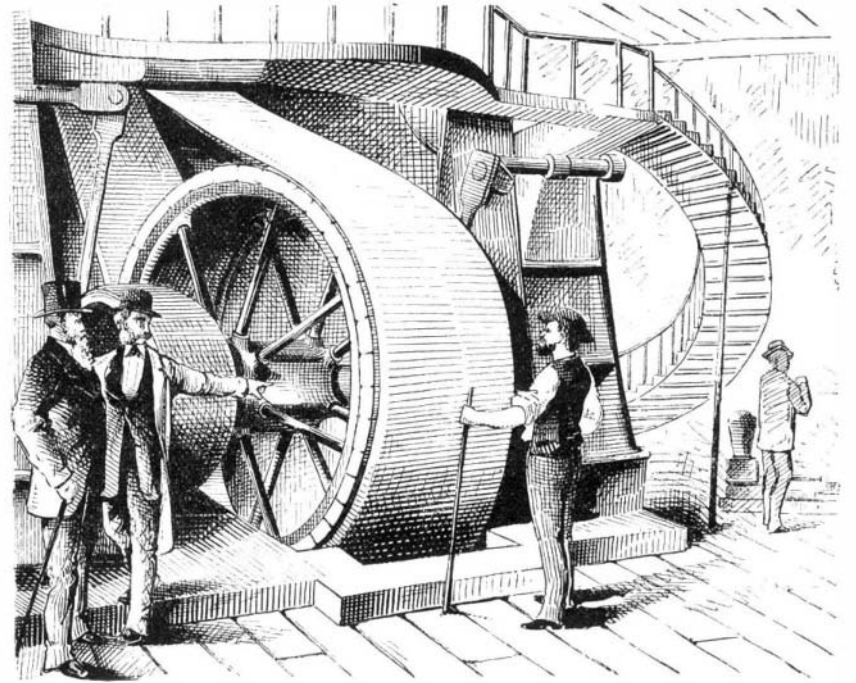


Fig. 7.—THE STEAM ENGINE.

back into the receiving pits. Hence it is re-elevated to the top of the building, and passes first into a weighing hopper and then into a shipping hopper immediately below. By thus using two hoppers, the delivery of the grain is rendered continuous, as, while the weighing hopper is being filled, the shipping hopper may be emptying into the spout which leads down outside the building and thence directly into the vessels, as shown in Fig. 5. If, however, the grain is to be bagged, then, instead of going down into the receiving pits, it is drawn off by a simple valve to the bottoms of the bins directly into the sacks. The floor directly beneath the bins is thus known as the bagging floor, Fig. 6. As soon as a workman fills a bag, he closes the valve and places another bag in position. Another operative ties the first bag, and places it on the conveyer, which is a large rubber belt running in an opening and level with the floor. This transports the filled sack to the side of the building, and throws it off upon an inclined trough, down which it slides and emerges through an opening in the wall upon a wagon placed to receive it.

Figs. 7 and 8 represent the engines and the immense main driving belt. The engines are two direct-acting, vertical, inverted, with cylinders 34 by 34 inches. The average pressure is about 60 lbs. of steam. The belt, Fig. 8, is the largest in the country, measuring 4 feet in width and 331 feet in length, and weighing 2 tons.

Electricity in the Production of Galvanic Deposits and of Chemical Decomposition.

All who are acquainted with electro-magnetic machines know that the maximum of effect produced corresponds with the moment when the current is best closed, and the minimum with that when it is most open. The author was led to think that electrolysis might derive advantage from this principle. Hitherto, when desirous of effecting a metallic deposition or a chemical decomposition, a single bath has been used, into which were plunged two anodes more or less closely approximating. That is to say, we have placed ourselves in conditions approaching those of the least electric resistance and the maximum of effort. The author has therefore multiplied the baths, taking care to connect their anodes, as is done with the elements of a battery arranged for tension. The result was that the totality of metal deposited increased with the number of baths.—*M. Arn. Thenard.*

Adulteration of Bread and Flour with Gypsum, Heavy Spar, Etc.

A Rotterdam firm has been recently offering finely ground gypsum to various millers in the province of Hanover. To detect such frauds Vohl mixes 10 grains of the flour with 20 grains of potash saltpetre, places the mixture in a platinum vessel, and ignites with a red-hot platinum wire. If the flour is pure the pale green melted mass dissolves almost entirely in water, and the solution, scarcely turbid, gives no precipitate with hydrochloric acid, which, if it appears, indicates the presence of silicates. The acidulated solution should give with barium chloride merely a slight turbidity. A decided precipitate indicates the presence of sulphate of lime or of baryta.

understood that the above list of apparatus, etc., is only intended to include such as are absolutely indispensable, and it is expected that the set will contain additional instruments and reagents, the selection of which is left to the competitors. Special attention should be paid to the following points: 1. Solidity of construction. 2. Compactness and portability. 3. Facilities for packing and unpacking. 4. Number of useful instruments and reagents in addition to those mentioned. The Society does not engage to give the

perfectly clean and sweet, in order to produce the best quality to secure high and fancy prices. No article that the farmer produces for the market has such a wide range or difference in price as butter, not even cheese or choice fruit. We see by quotations in all the great butter markets that the prices of eating butter range all the way from \$1 to 10 cents per lb., while greasy, cooking butter is even lower than that; even the packages in which it is put up, whether firkins, pails, tubs, or rolls, affect the prices for which it sells. Grains and meats have but a small range compared to butter; the difference in the prices of butter is much greater than the difference in the cost; hence, it is much more profitable to make and sell a first-class article than a poor one.

Greasing Axles.

On the authority of the *Carriage Monthly*, more injury is done to carriages and wagons by greasing too much than the reverse. Tallow is the best lubricant for wood axles, and castor oil for iron. Lard and common grease are apt to penetrate the hub, and work their way out around the tenons of the spokes and spoil the wheel. For common wood axles, just enough grease should be applied to the spindle to give it a light coating. To oil an iron axle, first wipe clean with a cloth wet with turpentine, and then apply a few drops of castor oil near the shoulder and end. One teaspoonful is enough for the four wheels. Carriages are sometimes oiled so much that their appearance is spoiled by having the grease spattered upon their varnished surfaces. When they are washed in that condition, the grease is sure to be transferred to the chamois from the wheel, and from thence on to the panels.

The Cockroach Utilized.

In Russia the common cockroach (*blatta orientalis*) is a favorite popular remedy for dropsy. Dr. P. Bogomolow, of St. Petersburg, has lately examined its effects in nine cases of Bright's disease, heart disease, and other affections accompanied with severe dropsy, and in all the result was the same. There was an increase in the secretion of the urine and perspiration, with rapid disappearance of oedema, and also almost complete disappearance from the urine of albumen and renal derivatives. The dose was five to ten grains of the powdered cockroaches in the twenty-four hours, but they were also administered as a tincture and as an infusion. These insects do not, like cantharides, says the *Boston Journal of Chemistry*, produce any irritant action on the kidneys. Dr. Bogomolow has succeeded in extracting from them a crystalline body which he calls antihydropsin, and which is their active principle.

Detection of Oleomargarin in Butter.

Professor G. Lechartier says that fresh genuine butter which has not been melted appears under the microscope composed of ovoid granules, and contains no crystals. The artificial product obtained from tallow contains crystals. Artificial butter does not melt at once, like genuine butter, to a clear oil, but fuses gradually, a whitish "sauce" being first formed.

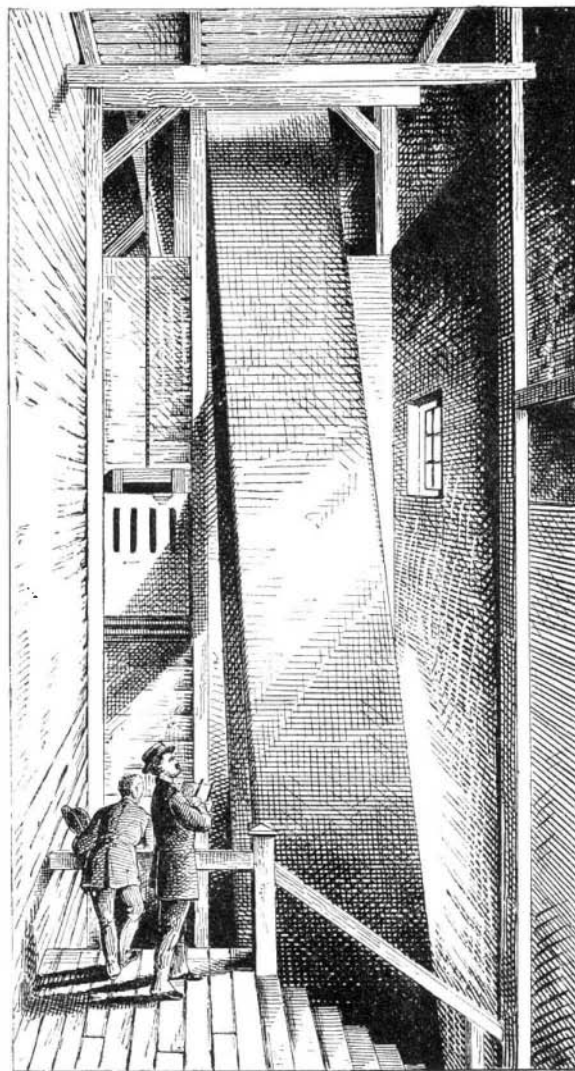


Fig. 8.—THE DRIVING BELT.

prize unless some apparatus appears to show sufficient merit, and some advance in merit on what is now obtainable for \$5. All apparatus for competition must be sent to the Society's House, London, on or before the 1st of August, 1877. The successful competitor must guarantee that a proper supply of the apparatus shall always be kept on hand, for sale in England.