

apathy of British traders. After being over-credulous for years they are now becoming over-cautious, and improvements or investments which show a good chance of being remunerative are either neglected altogether or postponed to an indefinite period.

The Wagon Hardware Trade.

Pittsburg seems to be a "head center" for the trade in wagon hardware. A recent article in these columns gave our readers an idea of the extent of the wagon and carriage building trade in the United States. A Pittsburg firm, Messrs. Lewis, Oliver & Phillips, employ about 700 men upon wrought iron wagon fittings. They control nearly 100 patents, covering the devices used and the processes for turning out the different parts by machinery. The firm make the necessary fittings for 90,000 wagons per annum, supplying the following wagon-making concerns: Studebaker, of South Bend, Ind.; Milburn, of Toledo, O.; Schuetzler, of Chicago; Baine, of Kenosha, Wis.; Austin, Tomlinson & Webster Co., of Jackson, Mich.; Moline Wagon Co., Moline, Ill.; Kansas Manufacturing Co., of Leavenworth, Kansas, and others.

ARTIFICIAL HAYMAKING.

On these islands, says the *London Graphic*, where farmers suffer far more often from excess of moisture than from excess of sunshine, and where crops, which up to the last moment have promised well, are often seriously injured by wet during the process of gathering in, a successful method of artificial drying without the aid of the sun's rays would be an immense boon. For many years Mr. W. A. Gibbs, of Gillwell Park, Chingford, Essex, a gentleman engaged in mercantile pursuits in the city, and also, we may venture to observe, favorably known among the poets of the day, has also devoted much attention to this hay-saving problem. By slow degrees he invented a really practicable process, which is thus described:

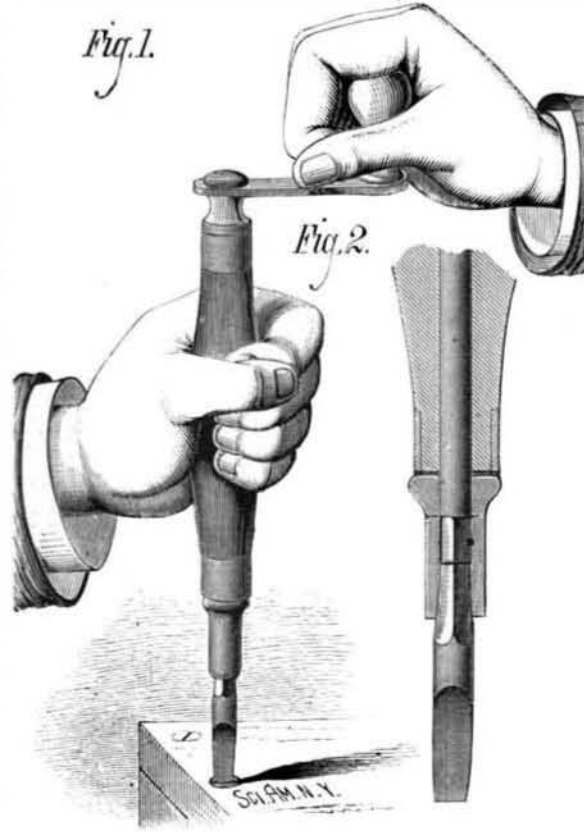
"Streams of hot air from the mouth of a hot blast fan, connected with a portable engine, are directed upon masses of wet hay or grain laid in open troughs, and brought in turn, by occasional lifting of forks, under the direct action of the air. By increasing the temperature of the blast it was found that the drying process could be proportionately expedited. Eventually the scheme was perfected by bringing the hot blast fan to bear upon a shed divided into two compartments by an iron partition, and having a space between the iron floor and the ground. Hot air, supplied from the hot-blast fan by means of a duct from an underground furnace, communicates with thirty-two conical perforated tubes on the floor, on which are spiked the wet corn sheaves. These tubes of course are used only for grain. The crowning success of the whole process is an atmospheric hoist, worked by the same engine as the hot blast, which elevates and sends up to the top of a stack, 22 feet high, as many as 960 sheaves per hour."

This year, owing to the unprecedented wet summer, Mr. Gibbs' invention has come to the front and been recognized by practical men as one of extreme value. He says, in a letter to the *Field*: "On Tuesday in last week I lent one of my hay driers to Mr. Ashcombe, of Sewardstone, a practical farmer of long experience and large 'holding.' He started it at 9 A.M., and in ten hours had dried and stacked the produce of ten acres, estimated at one and a half loads per acre. The total cost was £5 10s. for the ten acres, rather less than it would have cost to make the hay in the field, had that been possible. The hay was made from unripe, rank, weedy grass which had been perpetually rained upon; Mr. Ashcombe and his men were inexperienced in the use of the machine, and had no help from me; the hay drier was wholly uncovered, and heavy showers fell on the hay

while it was being dried." Yet, in spite of these unfavorable conditions, the result was a complete success. Already several leading agriculturists, among whom is the Duke of Sutherland, have purchased these machines. The price of the large size is £350, but cheaper forms for small holdings, ranging from £50 to £90, are in use, and have done good service.

AN IMPROVED SCREW DRIVER.

The engraving given herewith represents an improved screw driver recently patented by Mr. George Abrams, of Philadelphia, Pa. It consists of a handle through which extends a shaft, having on the upper end a crank and upon the lower end a socket for receiving the screw driver bit.



ABRAMS' CRANK SCREW DRIVER.

With this tool screws may be inserted and removed with much greater facility than with the ordinary form of screw driver, as the motion is a continuous rotary one instead of intermittent.

If desired the screw driver bit may be removed and a drill or boring tool inserted in its place.

MECHANICAL INVENTIONS.

Messrs. Jacob W. Cagle and Joshua W. Nichols, of Greenville, S. C., have patented an improved press for baling cotton, hay, straw, rags, bagging, hemp, etc. It is simple in construction, convenient, rapid, and powerful in operation. It consists of certain novel features which cannot be fully described without an engraving.

An improvement in skiving machines has been patented by Mr. Charles E. Langmaid, of Stoneham, Mass. It consists in a vibrating knife that is hung upon the bed and used in connection with the usual clamps or rolls for feeding the material, and operated by mechanism, whereby the cutting is done with greater facility than heretofore, and the machine may be used for the finest work.

Mr. William H. Silsby, of Chico, Cal., has patented an improved grain separator of that class in which the grain is thrashed and immediately separated from the straw by endless belts. It consists in a peculiar arrangement of parts which cannot be readily described without an engraving.

Mr. John M. Whitney, of Mount Pulaski, Ill., has invented an improved windmill and pump for use in supplying water for stock and other purposes. It is so constructed that the wind wheel may be in operation so long as the wind blows with sufficient force, while the pump will operate intermittently, or only at such times as the tank or trough is empty, or nearly so.

Mr. William F. Rundell, of Genoa, N. Y., has patented an improvement in mowers, which consists, first, in the construction and arrangement of a clutch for connecting the main shaft with the driving gear; second, in the peculiar arrangement of the gauge wheel for the inner end of the cutter bar with respect to the cutter bar and carrying frame; third, in the peculiar form of joint connecting the outer end of the pitman to the cutter bar; and fourth, in the peculiar construction and arrangement of the draught attachment.

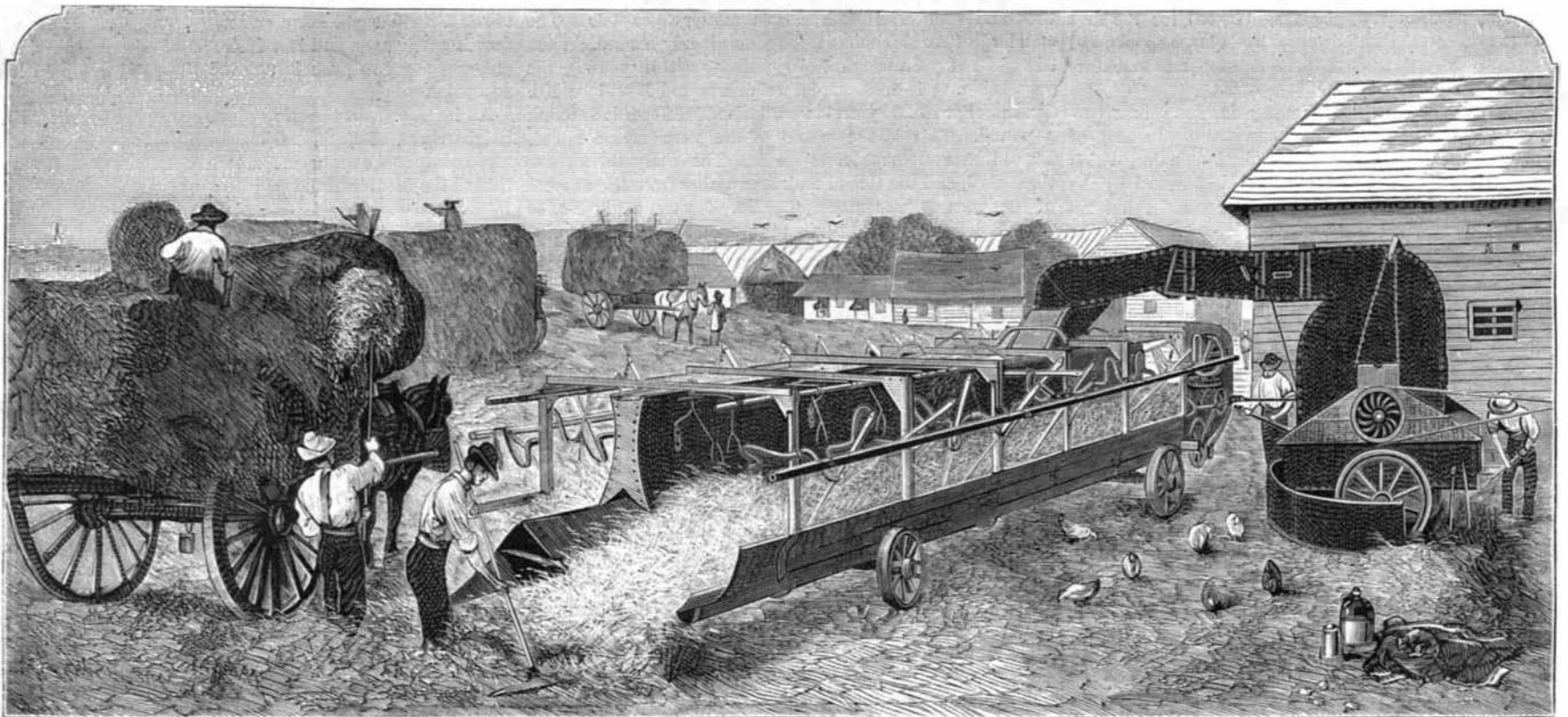
The New Cunard Steamer.

Mr. John Burns, one of the proprietors of the Cunard Steamship Company, writes to the *London Times*:

"It may interest the public to know that my partners and I have just concluded a contract with Messrs. James and George Thomson by which that firm is to build on the Clyde, for our fleet, a screw steamer the size of which will be exceeded only by that of the Great Eastern, while the speed will be greater than that of any ocean steamer afloat. This new vessel will be of 7,500 tons and 10,000 horse power, her dimensions being 500 feet in length, 50 feet in breadth and 41 feet in depth, propelled by inverted direct acting compound engines, with three cylinders and seven oval tubular boilers, having thirty-eight furnaces and 1,000 feet of effective fire grate surface. She will have an extra promenade deck, and will practically be a five decker, being fitted for 450 first class and 600 steerage passengers, with accommodation for a crew of 200 officers and men. Her cargo capacity will be equal to 6,500 tons, with 1,700 tons of coal and 1,000 tons of water ballast, having a double bottom on what is called the 'longitudinal and bracket system.'

"This vessel has been designed, after lengthened consideration, to meet the requirements of our traditional service, and we have adopted in every detail of the ship and engines the most advanced scientific improvements compatible with the safe working of so great a vessel. Among the important matters into which we have crucially inquired has been that of the employment of steel instead of iron, and after a practical and thorough examination into the merits of both materials we have adopted steel for the hull and boilers, but under a provision so stringent that every plate, before acceptance, will undergo a severe and rigid test by a qualified surveyor appointed and stationed at the steel manufactory for that special purpose, and that the manipulation of the steel by the builders shall be subject to an equally careful supervision by qualified engineers of our own appointment. The steel is to be made on the Siemens-Martin process, and all rivets as well as plates throughout the ship are to be of steel. The name of the new vessel is to be the Sahara, and she is to be ready for sea in March, 1881."

The prize of \$100 offered by Stillman B. Allen, of Boston, to the boy of York county, Maine, who should raise the greatest amount of corn on one-eighth of an acre this year has been awarded to Joseph Milliken, Jr., of Biddeford, who raised 1,404 pounds



CURING HAY IN WET WEATHER BY AID OF ARTIFICIAL HEAT.