

## THE BESSEMER PROCESS IN AMERICA.

One of the most important improvements in the mechanic arts that has been made in this country is the Bessemer process of making steel. Iron is our most abundant and valuable metal; it performs an essential part in all the arts and in nearly all the operations of life, and if we were deprived of it the numbers and condition of mankind upon this earth would be materially changed. When the Bessemer process was first announced it seemed to us that so radical a reform in the methods of working iron was destined to produce great results, and we have taken pains to spread before our readers full accounts of every step in the progress of the invention, with illustrations of the apparatus employed.

It will be remembered that on a trial of interference at our Patent Office, between Mr. Bessemer and William Kelly, of Eddyville, Ky., it was decided that Mr. Kelly was the prior inventor, and a patent was accordingly issued to him on the 20th of January, 1857. Subsequently, on the 12th of July, 1859, a patent was granted to Christian Shunk, of Canton, Ohio, who claims to be the very first inventor of the Bessemer process in the world. Mr. Shunk has obtained several reissues, and, when we last saw him, seemed full of determination to enforce his claims.

A wealthy firm of iron manufacturers in Troy, N. Y., Messrs. Winslow, Griswold & Holley, have obtained rights under Mr. Bessemer's patents in this country, and have commenced the manufacture.

Mr. Holley, an educated and able civil engineer, visited England, and learned the process from Mr. Bessemer. At the last meeting of the Polytechnic Association, Mr. Holley read a long paper on the Bessemer process, giving the same statements that have already appeared at length in our columns. He, however, presented one fact that is new and interesting. In erecting the works at Troy, several minor improvements were made, and one of considerable importance; that is, the use of a cupola furnace in place of a reverberatory for melting the iron. As one pound of coal will melt two pounds of iron in a reverberatory furnace, while it will melt from eight to thirteen pounds in a cupola, the change effects a material economy in the manufacture.

This prompt effort to effect improvements in the process and apparatus, suggests the long series of inventions which are, doubtless, destined to accompany the development of this great manufacture in this country. We hope that in this development our American inventors—those who have already secured patents, and those who hereafter may secure them—will receive the full share of profits to which they are justly entitled.

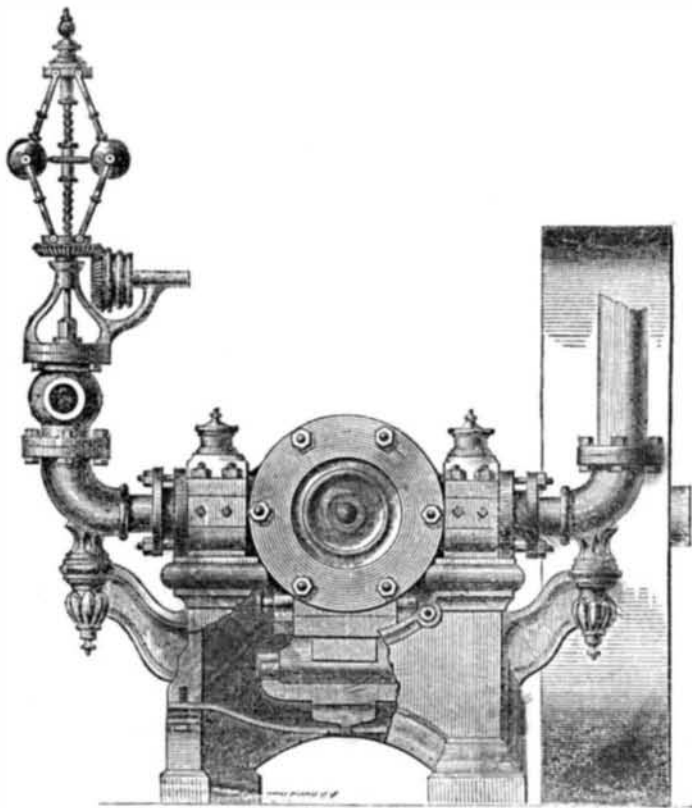
## EXHIBITION OF GRAIN DRYERS AND SEPARATORS.—TO MERCHANTS.

On the 13th inst. several machines for drying and separating grain were exhibited at the Produce Exchange building, in this city.

R. Heneage's Patent Grain Dryer, made by W. H. King, of Buffalo, N. Y., was among the number, and is an ingenious machine. An octagonal tower has in its axis a vertical rotating shaft, which carries a series of horizontal, circular, metallic disks, perforated with small holes. The grain is poured gradually upon the center of the upper disk, when it is carried by centrifugal force to the edge, and thrown off; it is caught by a tunnel of wire gauze, which

conducts it to the center of the disk next below, when the process is repeated, each disk being provided with its tunnel. The grain is thus separated and exposed freely to the current of air which ascends perpetually through the tower.

Bodge's Grain and Seed Separator was also shown in operation. This compact and efficient machine was illustrated and described on page 278 of our last volume. A few quarts of mixed grain and seed were poured into the hopper, and the handle was turned two or three minutes, when the seed was found completely separated, each kind in its proper receptacle—oats in one vessel, hay seed in another, peas and corn in another, large wheat in another, small wheat



MESSRS. BROWN'S ENGINE.—SEE FIRST PAGE.

in another, and, finally, the refuse wheat and chaff in another. The separator was very perfect in its operation, and the machine attracted much attention from the large crowd of grain dealers present.

## MISCELLANEOUS SUMMARY.

THE engines of the *Bellerophon* English iron-clad were guaranteed to make 70 revolutions per minute, with a pitch on the screw of 22 or 23 feet. With all the boiler power it was impossible to get more than 58 revolutions, but at this velocity it was stated that the "drag" of the screw was so great the contract could not be complied with. It is, therefore, proposed to put in "another screw," which means a finer pitch, we suppose, when the required velocity will be had.

A MANUFACTURER FINED FOR MAKING FALSE RETURNS.—The Gloucester *Telegraph* states that a manufacturer in Manchester, Mass., has been heavily mulcted for making false returns of the amount of his business. An investigation showed conclusively that some eleven monthly returns did not show a true statement of his business, and he was assessed \$1,200 extra, to cover the deficiencies, and fined \$1,200 for making fraudulent returns.

THE operations of the Naval Academy at Annapolis have been resumed, under the superintendence of Rear Admiral D. D. Porter, assisted by a large number of young naval professors. There has also been added to the professorships a Professor of Steam Engineering, in the person of Chief Engineer W. W. Wood, United States Navy, under whose instructions the naval cadets are to be taught steam engineering.

THE New England States pay about fifty millions a year to the Government in internal revenue taxes. Of this amount Massachusetts pays nearly thirty millions, which shows the wonderful prosperity of that State.

"HARPERS' WEEKLY," of Oct. 14th, contains a picture entitled, "The attempted escape of Doctor Mudd from the Dry Tortugas," sketched by a passenger on board the steamer. In this engraving the Doctor is represented as having crawled into a rifled gun, and is detected therein by his heels sticking out. There are no rifles in existence a man can crawl into, so the passenger on board has taken some liberties with the fact.

BUFFON combined plane glass mirrors only 6 inches by 8 inches, and with 40 set on fire a tarred beech plank, 66 feet distant; with 98 at 126 feet, with 112 at 138 feet, with 168 at 200 feet; and he melted metals at 30 or 40 feet.

THE middle of the center arch of Southwark Bridge rises one inch in the heat of summer, and the effect of a gleam of sunshine on the Britannia Bridge is immediately perceptible.

THE resistance of the air to a cannon ball of 2 pounds weight, with a velocity of 2,000 feet per second, is more than sixty times the weight of the ball.

FEET WASH.—The feet of some persons naturally evolve a disagreeable odor. Wash them in warm water to which a little hydrochloric acid or chloride of lime has been added.

IN dry air at 32° sound travels 1,090 feet per second, and one foot more for every degree of the thermometer.

A FIBER of silk a mile long weighs but 12 grains, so that there are 583 miles of fiber in a pound avoirdupois.

THE magnesium light is found to be sufficiently active to determine the combination of hydrogen and chlorine.

SILVER can be beaten into plates of which 110,000 make an inch, and drawn into wire of the 13th of an inch, sustaining 137 pounds.

VEGETABLE ivory may be colored almost any shade of purple by the more or less prolonged action of concentrated sulphuric acid.

M. AUPIN has determined the presence of silver in the water of the Dead Sea; a tun of the saline residue contains seven grains of the precious metal.

It is reported that Lieut. M. F. Maury, who ran away from the National Observatory at Washington in 1861, has migrated to Mexico.

A PLAIN glass mirror reflects 5,352 of 1,000 rays—the quicksilver reflects two-thirds.

FIVE THOUSAND men (infantry) in two ranks, and formed in line, extend a little over one mile.

SPENT tan is sometimes substituted, with excellent results, for charcoal in blasting powder.

THE disease which has been attacking the cattle of England has appeared also among the sheep.

THE trial between the *Winooski* and *Algonquin* was renewed on Tuesday the 17th inst.

It is said there will be no transit of Venus till December 8, 1874, and no other till 2004.

THE part of the spectrum where the greatest heat prevails is found to be the center of the yellow.

DR. RICHARDSON states that catarrh is induced by ozone.

A PLATINUM wire of the 13th of an inch will suspend 274 pounds.

A CUBIC inch of mercury at 62.30 degrees weighs 3,425.35 grains.

WATER heated in a strong closed vessel has melted lead at 612 degrees.

SEA water is both salt and bitter at the surface, but only salt in its depth.

THE organ was invented by one Ctesibius, a barber, of Alexandria, about 100 years B.C.

A CONVEX lens burns at 25 feet under the surface of the sea in a diving bell.

TIN wire, the thirteenth of an inch in thickness, sustains 34.7 lbs.; a lead wire but 28 lbs.

SOLID carbonic acid sinks the spirit thermometer to 162° Fah. below zero in two minutes.

THE ascending power of a balloon with hydrogen gas to one filled with coal gas is as 15 to 11 nearly.