

MECHANICAL EXHIBITION AT BOSTON.

One of the good features observable at this exposition of the industrial arts is that nearly all the machines in the machinery department are in motion. This allows the specific work accomplished by each, the *modus operandi*, to be readily ascertained and understood. Among these machines are several that have been already fully described in this journal, as the Buckeye Steam Engine, the Brown Caloric Engine, Worthington's Duplex Engine Pumps, Brainerd's Milling Machines, the Allen Steam Engine Governor, the Chase Steam Engine Governor, etc.; but there are others in operation having improvements that are ingenious and valuable. We refer more particularly to Kidder's Printing Presses, Dooley's Paper Cutter, the Morse Diamond Cutting Machine, Leather Splitting Machine, L. J. Wing's Improved Rotary Engine, Wiswall's Torrent Rotary Pumps, and many wood-working machines.

There is an unusually fine exhibit of steam, water, and gas valves by the Chapman Valve Co., of Boston. The Chapman valves have come prominently before the public during the past five years. They possess features which are of special interest to all persons using valves, and particularly to those who have found difficulty in procuring a valve that would remain tight under the various conditions to which valves are subjected. This company claim to produce a valve that will remain tight permanently when used for hot or cold water, gas or steam, and substantiate their claim by giving a guarantee with every valve. These valves are made with a hollow plug, and have a seat of Babbitt or soft metal instead of hard metal. The seat is cast into dovetail recesses in the body of the valve around the inlet and outlet openings after the plug is placed in position, and forms a perfect seat without grinding. The process of forming the seat is very ingenious, and originated with the manufacturers. These valves are, we are informed, proved at 300 pounds pressure per square inch. In the case of steam valves, with which there is so much trouble, this company guarantee that every valve obtained from them shall remain tight for the space of one year under 150 pounds steam pressure. The workmanship and finish of these valves is very superior. The hydrant by the same company is known as a gate hydrant, and the claim made for the valves extends with equal force to it.

The Boston Blower Co. exhibit a "Lightning Grinder," which was patented November 24, 1874, and improved 1878. This machine is for the purpose of grinding mower and reaper knives. It will grind a uniform bevel from the points to the very base of the sections. It will grind out notches and uneven places. It can be operated by one person. By taking off the knife holder, which is held by two screws, attaching a standard and platform rest, and putting on a larger wheel, the machine becomes an emery wheel grinder, which will sharpen, point or polish plows, cultivator teeth, shovels, mill picks, axes, and all tools used on a farm or in a shop. It is excellent as a cross-cut saw gummer. The emery wheels make 2,000 revolutions per minute. The same company exhibit, on the interchangeable plan, fan blowers, some of which are in operation, for cupola furnaces and forges, puddling and heating furnaces, steam boilers, etc., and also some exhaust fans for removing shavings from wood working machinery and dust from sand and emery wheels. The exhaust fans can also be used for ventilation, refrigerating, etc.

Hill, Clarke & Co., of Boston, have a fine exhibit of machinery, consisting of Flather's Hollow Spindle Engine Lathe, with turret head in place of tail stock and other tools. Their "Concord Buzz Planer" is a very meritorious machine. The shape of the frame is such that any irregularity in the floor will not cause a twist or spring, thereby cramping the tables or throwing them out of line. The tables are both movable and quickly adjusted by the use of one hand-wheel at each end of the machine; and while being raised or lowered the edge of the table will keep at equal distance from the cutting edge of the cylinder, thus giving the smallest possible amount of opening from the cutters when gauged for work. Their patent adjustable rest or guide is also attached to the machine, and by simply turning one screw it can be set for any bevel, or if desired it can easily be removed from the tables. On the front edge of the back table there is a rabbeting groove by the use of which, in connection with the rest, rabbeting can be done any depth from 1-16th to 1/2 inch, and any width desired.

A new device which remedies a great railroad nuisance is the noiseless locomotive safety valve invented by Mr. Henry G. Ashton, of the Ashton Valve Company, of Boston. The object of the invention is to overcome the nuisance of the sudden bursting out of steam when a locomotive is moving or standing still. The high pressure of steam in a locomotive boiler finds vent at the inconceivable velocity of 1,600 feet per second through the safety valve. The steam strikes the air with this force, and the problem has been how to avoid a noise proportionate to that force. This noiseless safety valve operates so that no steam is either seen or heard, by simply conducting the escaping steam through a pipe into the tender of the locomotive, where it is used to heat the feed water, which is then pumped warm, instead of cold, into the boiler. Thus all the steam that was blown into the air (with a noise) and wasted is utilized silently, and the public now has, or may have, in respect to a safety valve, a noiseless locomotive.

There is a series of inventions connected with these noiseless safety valves covered by eight patents owned by the Ashton Valve Company, who are applying their valves quite extensively on locomotives of different railroads.

Among the smaller machines at the Exhibition is an ingenious type writer exhibited by Fairbanks, Brown & Co., of New York and Boston. It is intended for use by reporters, editors, authors, copyists, merchants, and professional men. Writing with this machine is done by means of keys, which are compactly arranged in four rows of eleven each, and may be operated by any finger of either hand. On each key is plainly printed the letter or character it represents. By depressing any key, the corresponding letter is printed on the paper. The "action" is fully as rapid and easy as that of the piano. The alphabet, numerals, and all necessary characters for punctuation, italicizing, and reference, are made by it. It is easily adjustable to any desired spacing between lines. The improvements in this little useful machine are numerous, and its construction is different from all other machines of this class. The advantages claimed for it are beautiful legibility, rapidity of action, and ease of operation. The average speed of a pen in ordinary writing is from twelve to twenty-four words per minute. The average speed of the type writer is from forty to seventy-five words per minute, that is, where a single copy only is desired, but as any number of copies from two to twenty can be made at the same time, it follows that with this type writer, and a good operator to use it, from three to twenty hours' work can be done in one hour. Three different kinds of type can be used in the machine.

In the evening the main hall of the building is lighted up in a brilliant manner by the Brush and the Wallace-Farmer electric lights. Of the former there are two No. 5 current machines, each operating four lamps, of 3,000 candle power each, or equal to 200 five-foot gas burners. The machines are operated by a steam engine, and absorb while in action about fourteen horse power. The lamps in use are adapted to burn about thirteen inches of carbon without adjustment, and the carbons last six to seven hours. At the end of this time new carbons may be placed in the lamp in a few seconds without serious interruption of the light. The light produced is a pure white light, like that of the sun. It is very steady, and delicate shades of colors may be detected as well by its use as by sunlight. Another peculiarity of electric light is that it produces very little heat, and gives off an inappreciable amount of non-respirable gases. An equal amount of gaslight produces nearly two hundred times as much heat and about the same proportion of non-respirable gases. The healthfulness of electric light is therefore a great point in its favor, as compared with any other artificial light, and there is no danger of fire or explosion in its use. The steadiness of the light produced by the Brush apparatus is noticeable.

AMERICAN GOODS IN BRAZIL.

In a long and somewhat rambling commentary on the markets of Brazil, a correspondent of the *Evening Post*, writing from Rio de Janeiro, mentions some things worth heeding by those who intend to send goods thither. Following the list of articles forming the cargo of the pioneer steamer, the writer notes that drugs are not likely to gain a large sale. There is a decided preference for French goods, while the experience of the English in supplying the East Indies and other tropical markets gives them a very decided advantage over new rivals. Books will meet with only a limited demand. For rice machinery the prospect is poor, since the cultivation of rice is dying out. Mule shoes are subject to heavy duties, and can scarcely compete successfully. For cut nails there is no market, the French wire nails being preferred, though more costly, owing to their superior penetrating power. Cotton drills should meet with a large sale. So, ultimately, with iron machinery, though it is difficult to compete in cheapness with articles of English and Belgian make. There is, too, a prejudice against American machinery, owing to its lightness and seeming delicacy, which will have to be overcome. Our wood-working machines are often found to be too light for the hard, tough woods of Brazil. American boots should succeed. The market, however, is not so large as the population of the country would suggest, the great mass of laborers, Portuguese, and negroes going barefoot or wearing wooden-soled shoes. We are inclined to think that this custom will not hold out long against cheap and durable shoes of leather. Our printing presses are found to be so superior to those of the French, that they are sure to compete successfully. Small printing offices are numerous, and although they are able to command only small and cheap presses, it is to these rather than to the few large establishments that our press makers and type founders should pay special attention. The market for sewing machines is good, but it will be up-hill work to conquer the prejudice of the people for a long-established American machine of Glasgow make.

American kitchen ware and cutlery are slowly winning favor. In miscellaneous hardware the trade is yet small, owing to the cheapness of European products and the popular prejudice against the lightness of American articles. Hats, if cheap enough, will command a large sale. In the cities the tall, uncomfortable silk hat is almost universally worn. American rifles and pistols are too good for the market. The Brazilian is very little addicted to the use of firearms, and is satisfied with the cheap trash supplied by Belgium. The market for printing paper is not promising, the cheap English and Belgian papers being generally used. Our printer's ink is meeting with ready sale and gives good satisfaction. American type stands high, notwithstanding its greater cost, owing to its toughness and finish. American axes are unexcelled, and are selling in every part of Bra-

zil, in spite of the circumstance that the Germans are flooding the market with an inferior article bearing American makers' trade marks. American clocks sell well. American furniture can be found throughout the greater part of South America. Complaints of its frailty, however, are too frequent. Lard and flour are staple articles, and are sold largely. American butter lacks keeping qualities, and is therefore unsalable.

Some Benefits of the Hard Times.

Commissioner Williamson, of the General Land Office, has prepared a comparative statement of the disposal of public lands during the fiscal years ending June 30, 1877, and June 30, 1878, which shows a general movement Westward during the past year from regions of the East. In nearly all the prominent Eastern cities societies of emigration have been engaged in forming colonies from among mechanics and unemployed laborers with a view of settling them by companies or colonies on the rich lands of the West, and thus relieving the cities of their superfluous and idle population. As Commissioner Williamson says, all this is certainly the good that has come from the evil of hard times. The mechanics, instead of sitting down to groan over the dullness of business prospects, have packed up their families and gone where work will bring an honest return.

Taking Dakota, Kansas, Minnesota and Nebraska, the comparative statement of the disposal of lands during the above periods shows how vastly the emigration has increased. Lands are disposed of by cash purchase, by homestead settlement, for timber culture, and by warrant and scrip location; four different methods, and the records of each are preserved separately in archives of the General Land Office at Washington. For Dakota the figures are:

	1877.	1878.
Cash.....	20,336.62 acres.	74,940.93 acres.
Homestead	123,869.82 acres.	804,298.66 acres.
Timber culture	68,188.92 acres.	570,224.34 acres.
Warrant and scrip location.....	5,983.04 acres.	12,346.80 acres.

The table shows an increase of 1,243,423.53 acres in one fiscal year. The same figuring for Kansas shows an increase of 1,356,478.68 acres; for Minnesota, 761,356.10 acres; and for Nebraska, 363,268.98 acres; making a grand total in these four localities alone of 3,724,572.29 acres. Reports show that this business is going on, and that the settlers are doing well. The *New York Tribune* says that the colonies that went to Kansas and Dakota from New York, through the instrumentality of John Kelly, about 4,000 strong, and those that went from Baltimore and Philadelphia, Indianapolis and Boston, are prospering beyond their expectations.

Autumn Suggestions.

Very decided changes in temperature come about at this season, and often without warning. Fresh, cool days are followed by others warm and moist. The *Philadelphia Ledger* tells its readers that it is unhealthy to shiver, and not either pleasant or salutary to sit about while under the sensation of even slight cold. Housekeepers should take care that some apartment in their dwellings is sufficiently warmed by stove or range or furnace to be comfortable. Health, no less than personal satisfaction, is involved in this matter. The slight ailments and occasional serious diseases which mark the change of season arise usually from inattention to the warnings which the body gives in its protests to discomfort. It is said by some to be heroic and hardy to endure the preliminary touches of winter. But it may be that the hero or heroine is simply indolent, and afraid of the labor or care involved by going into winter quarters.

The trees retain their foliage in luxuriant green, and all vegetation is very rank. This late verdure is beautiful, but, like many beautiful things, treacherous. Trees may have malaria lurking about them, more especially when the heat of noon is in wide contrast to the cold of midnight. Nature's chemical processes of the kind that are injurious to the human constitution are accelerated in autumn. As in the laboratory the manipulations of the operator give off gases, so in nature the combinations and changes which are constantly going on affect the wider circle of that grand laboratory, the world which we inhabit. The housekeeper must guard against these influences. The sunlight must be admitted to dwellings—the midnight it is well enough to keep out, except so far as to provide ventilation. Philosophers tell us of the "storing of heat." A simple test and proof of this theory is in the warming of the house by the cheerful sun, and the storing of the heat by preventing its escape as the decline of day weakens the warming rays.

Another seasonable hint is in order, in which the fire brigade and the insurance companies are also interested. The heating apparatus of every building, whether used for dwelling or for business purposes, should be thoroughly examined and put in complete repair. Metal corrodes during the summer, and flues become choked. Hence, from the neglect of precaution, cold weather is ushered in by fire alarms, and the report of casualties ranges from slight up to serious conflagrations. Now is the time for the housekeeper's tour of inspection over the premises (with a glance at the coal-bin, if that is not already filled). All these preparations may be conducted leisurely and comfortably at this time, with no interruption from cold hands. And if mechanics are needed, they will come for the calling, and be glad of the opportunity. A month hence, when the cry is universal, you might as well call "spirits from the vasty deep" as invoke the stove dealer and the plumber.