A New Patent Washing Machine and Wringer.

The accompanying engraving illustrates another alleged improvement in machines for washing clothes and an apparatus for wringing them from the suds, secured by separate patents to the same inventors. The patent of the washing machine bears date Feb. 25, 1862, and the wringing machine was patented March 4, 1862.

The washing machine consists of a swinging board, *a*, and a stationary board within the tub—not shown in the cut—between which boards the clothes are repeatedly pressed, in the suds with which the tub is filled. The swinging board, *a*, is corrugated and the stationary board in front is formed of slats with openings between them for the passage of the suds. The board, *a*, is swung back and forth by means of the lever, *b*, with which it is connected by means of toggle levers, as shown. The lever, *c*, is provided for the hand of an assistant in case one should be required. An ordinary rubbing board, *d*, is secured in the front end of the suds box, for cleaning by hand any portions of the clothes which may not have been thoroughly washed by the operation of the machine.

The clothes wringer is of the class in which the water is pressed out of the clothes by passing them between two elastic rollers, and the patent consists in the mode of fastening the wringer to the tub. The rollers, *e* and *g*, are formed of india rubber or other elastic material, and are secured to the edge of the tub by two pairs of jaws of a novel character. The two pairs of jaws are precisely alike, and the description of one will answer for both. The outer jaw, *f*, forms a portion of the rod upon which the rollers are secured, the rod being bent at the proper angle to allow the jaw to fit the outer side of the tub and to carry the rollers over the edge of the tub so that the water expressed from the clothes will fall back into the tub. The journal of the lower roller, *e*, is cast upon a collar, which fits the rod loosely, and upon the under side of the same collar is a projection which forms the inner jaw. It will be seen that a pressure of the upper against the lower roller will cause the jaw to gripe the edge of the tub. This pressure is obtained by screwing a thumb nut upon the end of the bar; an india-rubber spring being interposed between the nut and the journal box of the upper roller. By this thumb screw the pressure of the rollers together is also adjusted, the same operation serving to fix the apparatus to the tub and to adjust the pressure of the rollers upon the cloth which passes between them.

GILL, PALMER AND WEBB'S WASHING MACHINE AND WRINGER.

Patents for both inventions were granted through the Scientific American Patent Agency, and further information in relation to either of them may be obtained by addressing the patentees, Gill, Palmer & Webb, at Alton, Ill.

HISTORY OF TURBINE WATER WHEELS.

Number II.

It has been formerly stated that the superior effects obtained from admitting the water to reäction wheels in a direction coinciding with the motion of the wheel, was a discovery made by the brothers Z. and A. Parker, and resulted from a peculiar accident. Their first successful wheel gave them encouragement to make a set of working models, both vertical and horizontal, and they made a series of experiments which greatly extended their knowledge, and enabled them to calculate with more certainty, the size and form of the issues in proportion to the quantity of water and hight of fall. Their saw mill which had proved a failure with the old wheel was then reärranged, the wheel taken out, rebuilt, and the guides so formed as to give the water a vortical motion in the right direction. This wheel when started, operated to their entire satisfaction. These labors and experiments were performed between 1825 and 1829, and a patent was obtained by the inventors for their wheel, in October of the latter year. As some disputes have arisen respecting the claims of several American inventors, and some European inventors relating to the invention of the vortex principle in water wheels, we will describe the principle, and give the claims of the first Parker Patent.

"The principle upon which this improvement is founded is producing a vortex within reäction wheels, which, by its centrifugal force, powerfully accelerates the velocity of the wheel and adds proportionably to its momentum." The claims are, "First, the compound vertical percussion and reäction wheel for saw mills and other purposes, with two, four, six, or more wheels on one horizontal shaft; the concentric cylinders inclosing the shaft and the manner of supporting them, the spouts which conduct the water into the wheels from the penstock with their spiral terminations between the cylinders.

"Second, the improvement in reäction wheels by making the buckets as thin at both ends as they can safely be made, and the rim no wider than is sufficient to cover them; the inner concentric cylinder; the spout that directs the water into the wheel and the spiral terminations of the spout between the cylinders.

"Third the rim and planks that form the apertures into the wheel, and the manner of forming the apertures; the conical covering on the blocks, with the cylinder or box in which the shaft runs, and the hollow gate in any form, either cylindrical, square, or irregular."

It is claimed by Mr. Parker, that the patent embraced principles which have been applied to a greater or less extent in every good reäction wheel since constructed in the United States. At the time it was issued, there existed a general ignorance of the action of, and a great prejudice against, all water wheels but the overshot and breast, and Dr. Jones, who was then editor of the *Journal of the Franklin Institute*, and held a situation in the Patent Office, gave public expression of his opinions unfavorable to the new wheel. Several years subsequent to this, however, a committee of the Franklin Institute investigated the subject, made experiments with the Parker wheel, and presented a favorable report upon it, which was published in 1847.

After Messrs. Parker had succeeded in introducing their wheels extensively in Ohio, they still found that a great hindrance to their more general application and success was the rapid wearing of the steps of those secured on vertical shafts. They also found a difficulty connected with those secured on horizontal shafts, by their cranks striking the tail-water of the wheels as they revolved. These evils seemed insurmountable for a long time, but at last Austin Parker (long since deceased), the younger brother, conceived the idea of placing a wheel in a "draft box," and applied it to a saw mill in Trumbull county, Ohio, as early as 1832. It was used on this wheel for quite a number of years, and is, perhaps still employed in the saw mill. The "draft box" consists of an air-tight case in which the wheel or wheels are secured, and by the water expelling all the air, the benefit of a vacuum is secured under the wheel placed at any hight between the tail-race, and the top of falls equal to 33 feet. This was perhaps the greatest improvmentever made in the application of reäction wheels. This invention remedied the evil of the crank striking in the tail race, as wheels which previously were all secured as low down as possible to get the entire pressure of the water, were now raised to any convenient hight above the race. The pressure on the steps of vertical shafts was also removed by admitting the water from the lower sides of the wheels. The patent for this admirable invention was long delayed after it was first applied for, on account of the death of the inventor, Austin Parker. It was issued June 27, 1840, to his brother Zebulon, and Robert McKelvey, administrator of his estate. The claim in the patent for this invention is as follows:—

"What is claimed as new in the above-described improvement on the percussion and reäction wheel as originally patented by Zebulon and Austin Parker, is the placing of the said wheel or wheels, or wheels analogous thereto in their construction and mode of operation, within air and water-tight cases or boxes herein denominated Drafts, substantially in manner and for the purposes above set forth."

This patent was the first on record for the draft box applied to wheels. If the admission of water in a whirling direction to reäction wheels, coinciding with that of the wheel's motion, constitutes a true turbine, then the brothers Parker were the inventors in America of both turbine wheels and draft boxes. The next article will give some account of the application of such wheels in Europe.

Bread from Heated Wheat.

Wheat which has been exposed to moisture and a fermenting temperature and has become heated, has always been considered completely ruined for making bread. If it is dried and converted into flour, and subjected to fermentation, the dough will not rise, and if baked, it will not make spongy, light bread. The cause of this is the conversion of the gluten in the wheat, by its germinating action, from an insoluble into a soluble substance and the consequent destruction of its elasticity.

Some new light has lately been thrown upon this subject by Prof. Nichels, France, who has made a series of experiments with such heated wheat. He states that common salt possesses the quality of restoring the soluble gluten of germinated wheat to its original elastic condition, and that good bread may be made from it by adding 4 ounces of salt to every 13 lbs. of the flour. This information, if entirely reliable, is of great importance, because thousands (and perhaps millions) of bushels of wheat are annually injured by water and heating, when transported in bulk on our lakes and canals. Such wheat sells in New York and other places for a very few cents per bushel. It is chiefly used for making starch.

Iron Vessel for the British Navy.—We learn from the *Engineer* that no more wooden ships are to be built for the British navy. Hereafter, every vessel is to be built wholly of iron, or of wood plated with iron. The Admiralty officials "have made up their minds," says our cotemporary, "to devote their energies to the development of sloops and gunboats of an indestructible and incombustible character."

The total product of copper in the Lake Superior copper mines, in 1861, was 3,460 tuns and 731 lbs.

The Cultivation of Flax.

The Canadian *Agricultural Review* contains a lecture lately delivered at Sherbrooke, by Mr. P. McCudden, from Cavan County, Ireland, who seems to be practically acquainted with the whole subject of cultivating and treating flax. As many of our farmers design to initiate the cultivation of flax this season, all useful information on the subject is of great importance to them. We have, therefore, condensed this lecture, leaving out the less important statements, to render it more general in its application.

Flax has long been known to thrive well in the United States and Canada, but by far the most valuable portion of it has been thrown away and allowed to rot on the manure heaps, possibly owing to a want of knowledge respecting its real value and usefulness, or from a want of facilities to treat and prepare it at the proper season. The soil and climate of this country are admirably adapted for the growth of flax. From a commercial or manufacturing point of view the advantages to be derived from the culture of flax appear to be very great. In the old country the proper cultivation of a moderate patch of land laid down in flax has enabled a family to live in comfort during recent years, because the price of the article has been so high.

The following extract, taken from the prospectus of a company formed in Belfast, to encourage the growth of flax in East India, will show the great scarcity of that article, and the length they have gone to look for a very equivocal supply, at the very antipodes :—

The linen trade, at its seats of action in Leeds, Dundee and Belfast, and their manufacturing dependencies, has, for some time past, been suffering severely from the extreme scarcity of flax, and the inquiries instituted with the view of opening up extended sources of supply have forced on the minds of manufacturers that it is vain to expect from the present sources the quantity of fiber necessary to meet the growing requirements of the trade.

Independent of this crop being the most remunerative, it enters into the best regulated system of rotation, a thing much to be desired by every practical armer. Flax loves to luxuriate on a well-drained tlay subsoil, with rich surface soil properly pulverized. It yields the largest and best quality of fiber when it follows a crop of wheat or oats immediately out of lea, but may be sown with success on more worn ground. It has been found from experience that the proper time for sowing is from the first to the twelfth of May, a period very suitable for the sowing of clover and grass seeds, when those delicate seeds will have no difficulty in quickly germinating, or their growing progress retarded by frost, when earlier sown ; it is, therefore, considered the safest and best crop for laying down land with those essentially useful seeds. Clover has been properly styled the farmer's sheet anchor, and from the preparation that is needed for the due development of flax a heavy crop of clover is the general result. Those intending to grow flax will at once see that much depends on the condition of the land, and it is highly necessary, to insure a good crop, to have it perfectly free from any foulness. No crop is more generous in its return for care bestowed on it than flax ; we should be particular in doing every thing connected with it well. When not intended for laying down, but to be followed by fall wheat, it will be off the ground in time for that purpose, as it occupies the least time of any crop in coming to maturity. As flax requires but a very slight covering, all unevenness in the ground should be removed by the harrow, and if the weather has been previously dry, rolling before sowing will pulverize the small lumps, and tend much to have an even and productive crop.

Holland seed is the best for clayey soils, and Riga for loose friable soils. About seven pecks of seed to the acre is the proper quantity, and should be sown broadcast. When the plants have attained to a hight of six or eight inches they should be weeded by hand. They will then require no further care until the time of pulling.

Breaking Heifers for Milking.

The *American Agriculturist* gives the following good advice, which may be put into practice during the next month in many thousands of cases :—

This is often made quite a serious affair, in which kicks and bruises are freely interchanged between the frightened brute and the irritated master. Many an otherwise excellent milker isspoiled for life by harsh treatment. A heifer, if well broken to the milk pail, will pay for much painstaking. Rarey's reasoning respecting horses applies equally to other animals. They only resist when injury is apprehended, and their natural instinct suggests danger whenever any unusual treatment occurs. Every one has noticed how shy a creature is in entering strange inclosures, or at sight of new objects. The handling of a heifer's bag is to her a very unusual proceeding, and in addition, the teats are often tender, and the bag caked and inflamed so as to be painful under even a gentle touch. Training for milking should commence long before calving. First teach the animal to welcome your coming by an apple, a handful of corn, or salt or other delicacy. She will soon readily permit the hand to be laid upon her back and enjoy the gentle rubbing and scratching which may be given. Extend the handling to different parts of the body, until she will not flinch from grasping her teats, and the work may be soon accomplished without a harsh word. This will be a good lesson for the boys to practice and it will teach them patience and kindness, in addition to the good effects upon the animals.

Grape Vines for City Gardens.

The Baltimore *Rural Register* on this subject says:—We have two vines, which we can recommend with confidence, viz., the Catawba and the Isabella ; but superior in some respects to both of these is the Diana—a white grape, or rather of a light amber color. This grape is not surpassed in point of hardiness, and has received the most unqualified commendation of the best vine growers at the North. Another grape, and second only to the Diana, is the Concord. It is hardy, prolific and of good flavor. We have grown also for some years the Clinton. It is a small grape, bears early, and sets an abundance of fruit, but the quality to our taste is inferior to any of the others we have already mentioned.

Now, as to the manner of starting cuttings. So soon as the ground is in good condition in the spring break it up well and deeply with the spade ; we always trench our beds for this purpose. When the spading is finished, cut a trench across the bed six inches deep, one edge of the trench being sloped at an angle of forty-five degrees. Against this slope the cuttings are to be placed six inches apart, leaving but one, or at most, two eyes above ground—two eyes being below the surface and the lowest eye being close to the lower end of the cutting, the stem being cut clear across horizontally at that point and not slantwise. When the cuttings are placed six inches apart against the slope of the trench, pack the earth well to them, and level with the spade. At a distance of eighteen inches from this trench dig a second, and so proceed until the whole number of cuttings are planted. Should the season prove dry before the roots have gained strength, water the bed heavily, so as to moisten the soil to a good depth, and if the whole bed is mulched with loose litter the moisture will be longer retained in the soil and the young vines will start and grow vigorously, even in the hottest summer weather.

Sawdust in Manure.

F. J. Kinney, of Wayland, Mass., gives, in the *New England Farmer*, an interesting account of his use of sawdust for bedding, as a fertilizer and absorbent.

In January, 1859, he commenced hauling sawdust and fine chips from a clothes-pin manufactory. There were two horses, seven head of cattle, and several swine on the farm ; and in course of the year he used 100 cords of this material as bedding for these animals. The stable floors were covered with it about six inches deep, and as fast as that under the swine and cattle became saturated with urine, it was removed with the solid excrement to the manure cellar. The horse bedding and manure were piled under a shed.

In closing his communication, Mr. Kinney remarks :—" Wherever I have examined the roots of a vegetable grown where sawdust, chip or leaves and stable manure had been used, I found them embracing with their delicate fibers every atom of the vegetable matter within their reach, and drawing their natural sustenance from them ; and there is nothing I have ever tried as an assistant fertilizer that holds so much liquid or retains it so long, where only the air and sun operate on it, as hard wood sawdust ; and nothing that yields up this embryo vegetable so readily to the petitions of the rootlets.

Cultivation of the Strawberry.

At a late meeting of the Fruit Growers' Association of Western New York, held in Rochester, the Rev. J. Knox, of Pittsburgh, Pa., a great strawberry cultivator, was present, and by request gave the following remarks, as reported by the *Rural New Yorker*, in regard to his practice with this fruit, to which he devotes fifty acres of land. He considers a rather light clay soil preferable to a sandy soil. The first work in its preparation is thorough drainage, next breaking up or pulverizing from twenty to twenty-four inches in depth. This is effected by the plow alone. First use an ordinary plow, with two horses, followed by a kind of subsoil plow, with two yokes of oxen. Give the ground several plowings in different directions until it is well broken up and pulverized. He could obtain two or three very good crops from land plowed in the ordinary way, eight or ten inches deep, but on that plowed two feet deep could get ten or twelve crops in succession. Strawberries do not require much manure. Any good wheat or corn land is good enough for them. Plant in rows thirty inches apart, and keep the plants ten inches apart in the rows, making twenty thousand plants to the acre. When he commenced strawberry culture he plowed between the rows, but latterly has discarded all implements except the hoe. Weeds are taken out by hand. The less the soil is disturbed after planting the better, as the whole ground is covered with a network of small fibrous roots. Never allow the vines to bear the first year after being planted, but pick off all the fruit stems and runners and remove the runners every year that the plant is fruited. He sets out plants early in the spring, and protects them in the winter by wheat or rye straw thrashed with the flail. The straw is removed in the spring and placed around the plants as a mulch. Two tuns to the acre is about the right quantity of straw to commence with, but after that one tun of new straw each season will answer. Varieties that succeed in some soils and situations fail in others. The strawberry season ought to be lengthened. It is usually about three weeks, but with proper selections can be extended to five weeks.

For a general crop, " Wilson's Albany " and " *Triomphe de Grand* " are the most profitable. The latter is the strawberry of all strawberries, and possesses all the excellencies that can be desired—productive, beautiful, large, of fine quality, berries shipping well, and the plants are hardy. It is not as productive as the " Wilson," but an acre will bring more money. Mr. Knox, sent them to Cleveland, Chicago, Philadelphia and New York, and received orders from New York alone for more than his whole crop. If confined to one kind of strawberry he would plant the " *Triomphe de Grand.*" Although not quite so productive as the " Wilson," he could say with safety that it produces more than 300 bushels to the acre. For putting up in cans, the " Wilson " is preferred. The only manure used is well-rotted stable manure. The same plant, if the runners are kept off, will bear ten years. A good many crowns will start and cluster around the original plant, each bearing a fruit stem, and all producing a very large amount of fruit.

Purifying Air.

MESSRS. EDITORS :—Is there any practical way by which air can be purified or rendered fit for respiration, by recharging with oxygen after being breathed once, and what is the process? C. W.

St. Louis, Mo., March 6, 1862.

[There is a very simple and efficient way in which air can be recharged with oxygen. It is only necessary to open a window and let the air go out into the great ocean of the atmosphere. There chemical agencies are in operation on the largest scale, always busy in the work of purification. The carbonic acid which is expired from the lungs is decomposed by vegetation, or absorbed by snow and rain, and the animal matter that comes out with the breath is also carried down by descending water ; while every green blade of grass and every growing leaf is pouring out through the whole day its fresh supply of oxygen.—EDS.

VALUABLE IMPROVEMENTS IN SKATES FOR SALE.—By reference to our advertising columns it will be seen that a small capitalist desiring to engage in the manufacture of skates of a very desirable pattern, covered by two separate patents, has an excellent opportunity.