

## New Inventions.

### Improvement in Apparatus for Drying Cloth in Printworks.

Mr. Nathan Buchanan, of Providence, R. I., has invented a new improvement for drying cloth in calico printworks, which is of no little importance in this branch of the arts. In what are termed "blotching stove rooms," calico cloth, in a certain stage of preparation, is submitted to a most intense heat to dry the mordant very rapidly; this is done in a hot, still atmosphere. The improvement is to dry the cloth in an active hot atmosphere, by a peculiarly constructed chamber, heated by hot air driven in by a blower. The cloth passes up (the pieces being connected together) over rollers, and is dried in a very rapid and even manner, at one revolution, of what may be termed "a chain of pieces." The invention also embraces the drying of pieces in a current of the atmosphere, the chamber being so constructed as to open a flaring-mouthed slide at the bottom, which tapers into the chamber, and which, when opened to the breeze, causes a partial vacuum in the top of the chamber, by the air being condensed in it, thereby creating in a very simple manner without any machinery being employed, an artificial current of air to dry the cloth in a very short space of time.

### The Iron Twin Steamer—An Old Concern.

The London Morning Post contains rather a glowing account of a new iron steamer built and fitted out according to a patent granted to Mr. Peter Borrie, for improvements in the construction of double-hulled or twin vessels. Mr. Borrie is a Scotch engineer from Dundee, and we are sorry to see a practical man engaged in re-vamping Symington's old boat, described in the last volume of the Scientific American. The hulls were chiefly constructed of iron and placed side by side, with a space or canal between them, in which the paddle-wheel works, and are strongly connected together by the deck (which extends over all,) and also by a plate arch below the deck, and a number of wrought-iron stays between them, so that the two divisions of the vessel are bound together in the most secure manner.

This steamer is named the Gemini, and the Post says that "twin steamers are extensively employed in river navigation in the United States, and they are occasionally to be met with in this country." This, however, is a great mistake—no such vessels are employed in America. The Gemini, as might have been foreseen, has proved itself to be a "dead shot," having made very bad time on the Thames. A vessel of this kind was once erected in New York by an engineer, and it could do every thing but sail well. We remember well what it was to do before it was completed, and we remember very well what it did not do, after it was completed. It is not to be expected that engineers know the best form of vessels, nor carpenters the best kind of engines.

### Improved Lathe Chuck.

Mr. Thomas Harding, of Rochester, N. Y., has taken measures to secure a patent for an improvement in concentric chucks, which is a very simple and good one, we believe. There are four setting screws, on which the jaws are secured in the usual way, but there is a bevel pinion on each screw pin, which works into a bevel geared ring inside, so that by turning any one screw the whole of the jaws move in unison to, or from the centre.

### Improvement in Quilted Cloth.

Mr. Thomas Francis, of this city, has taken measures to secure a patent for a new kind of manufacture of quilted cloth, whereby raw cotton is embraced between two sheets of cloth and secured in stitched stripes—all worked on the weaving loom at one operation, the cloth and the quilting.

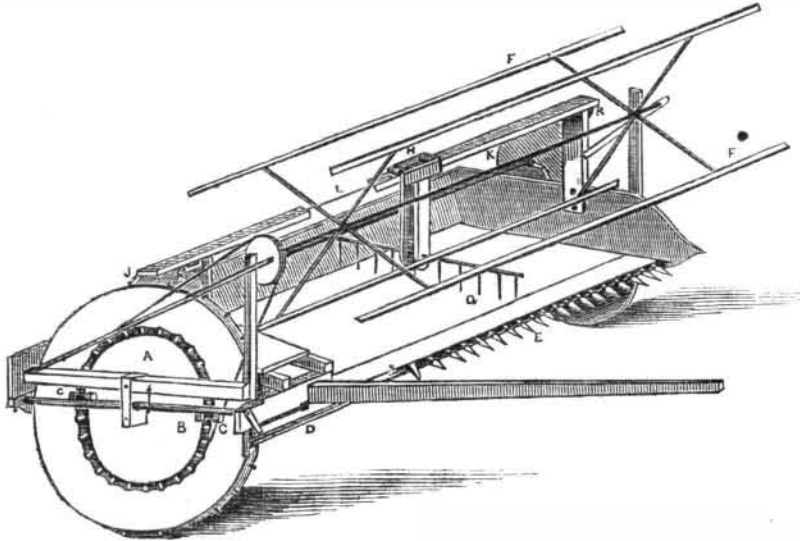
More than sixty expeditions have been despatched from England to explore the Arctic regions, from the time of John Cabot and sons, in 1497, to that time of Sir John Franklin, in 1846.

### New Locomotive.

A new locomotive recently patented in England, has been tried on the Liverpool and Southport railway and attracted considerable attention. The object of the patentees of the engine was to combine lightness, power, and economy of fuel, and we believe they have succeeded in their aim. The engine, which is named the Spitfire, conveyed a train of carriages from Waterloo-station to Southport at a rate of speed varying from forty to sixty miles an hour, and, when at its highest velocity, manifested no oscillation whatever. The Spit-

fire is a four wheel engine, with fourteen inch cylinders and twenty inch stroke, the driving-wheels being five feet six inches. The working valves and pumps of the engine, which are usually crowded together underneath the boiler, are placed outside the frames, so that for all the purposes of adjustment, cleaning, or repairs, they are as easy of access as similar parts of a fixed engine. On the whole, the trial of the engine gave great satisfaction. It was constructed by Messrs. Forrester, of Vauxhall Foundry.—[Liverpool Albion.

### ADKINS' IMPROVED HARVESTER.—Fig. 1.

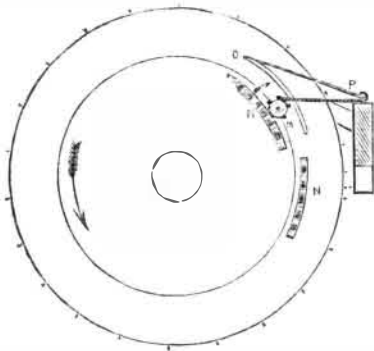


This improvement is the invention of Mr. Homer Adkins, of Plymouth, Hancock Co., Illinois, and for which, as we stated last week, he has taken measures to receive a patent.

Figure 1 is a perspective view, figure 2 is a side inside view showing the master wheel, which operates the rake and gives it a reciprocating intermitting motion. Figure 3 is a front view of the pulleys and a side view of the reciprocating rake. The same letters of reference indicate like parts.

The nature of this improvement consists in having a rake connected with the cutting apparatus, and operated in such a manner as to deposit the cut grain, &c., after it is laid on the floor of the machine, in regular bunches on the ground, in rows, ready for binding. A frame of the carriage is constructed in the usual way, with a pole, D, at any side for the team to draw. A is the master wheel, with

FIG. 2.

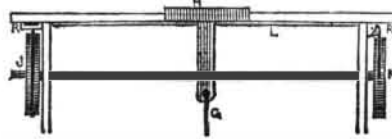


cam projections, on one side of it; these projections strike the arm, C, which is connected with the cutting blade, D, and give it a side to side reciprocating motion, to cut the grain or grass. The teeth, E, gathers in the grain and holds it firm to the action of the scythe. The grain is laid over on a platform when cut, by the revolving reel, F F; this reel bends down the grain on the platform; it receives a rotary motion by a band passing from a pulley on the wheel, A, over a small pulley on the shaft of the said reel. So far the description does not relate to the improvement, Mr. Adkins having already received a patent for the manner of operating the scythe, and which is illustrated on page 12, Vol. 5, Scientific American.

Behind the reel there is a rake, G, placed transversely, to slide forwards and backwards, and push over, or deliver, at the side on the ground, the cut grain. Behind the reel are two uprights with a shaft working in bearings in the same. On the two ends of this shaft are

grooved sheaves, J K. A cord passes over each of these pulleys in opposite directions, in such a way that the cord winds up on the one in one direction, and from the other in the opposite direction; these cords pass over small rollers, R R, and are attached to the slide, H, of the rake, (G, fig. 3.) L is a guide bar of the slide of the rake. The way by which the rake gets motion will be better understood now by paying attention to fig. 2; this figure shows the inside of the master wheel, A, of figure 1. (The pins on the periphery is to give it adhesion on the ground.) On this wheel are two sections of cam cogs, N N, the one placed above the other, and but a short distance apart. M is a pinion on the shaft of the sheaves, J K, and the cord shown is one passing over a sheaf in fig. 3. As the wheel passes round in the direction of the large arrow, the cogs, N, now acting on the pinion, turn it in the direction of the small arrow winding up the cord on the pulley, J, fig. 3, and making the rake, G, slide forward, pushing outward at the side the cut grain, or grass, in a bunch. Then, when the other cogs, N, take on to the other side of the pinion, they turn it in a contrary direction, the cord is gathered up on the pulley, K, and the slide of the rake is pushed back

FIG. 3.



to await until the cogs, N, of the wheel come round again to make the rake deliver the cut grain or grass, as set forth. The cogs, N, are so set on the wheel as to make the rake act once during one revolution—one revolution of the wheel being allowed to cut about the right quantity to make a bunch for binding. The wheel might be made to make the rake deliver two bunches as well as one, or even more. The rake is so attached to the arm in which it is hung, by a joint, that it moves stiffly forward, but turns up so as not to disturb the next cut of grain, while moving back. This is done by a bar in the rake arm, which prevents the rake from swinging back when moving forwards, but allows it to swing when it is moving back. P (fig. 2.) is a pall which prevents the pinion, M, from turning back. It is now represented as being lifted by a curved cam, O, to allow the cogs to act on the pinion, M. This pall is attached to the back part of the machine, and of course cannot be more represented in fig. 2.

We have thus explained the construction

and action of this machine, and our farmers, as well as machinists, will get a correct idea of the same.

Mr. Adkins' machines are in operation in Illinois, giving good satisfaction. More information may be obtained by addressing him at Plymouth, as mentioned above.

### Useful Hints.

**TO TIN AND SOLDER IRON.**—Iron can be tinned in two ways,—one by the old method of cleaning the iron well and dipping it in molten tin; another, for small jobs, by cleaning the iron well, dipping it in a solution of the chloride of zinc and then dipping it in molten tin. Two pieces of plate iron may be soldered together in the common way of soldering tin, by first cleaning the edges either by a file or sand paper, then by the feather of a quill washing the edges with the chloride of zinc, putting them together and soldering in the usual way. We have seen plates of iron soldered this way with great rapidity. The chloride of zinc is made by dissolving clean pieces of the sheet metal in muriatic acid; feed in the zinc until the acid stops effervescing. This liquid should be kept in every machine shop. After the joint is soldered it should be washed in some water in which soda or common wood ashes have been dissolved: this is to neutralize any free acid that may be about the joint. It should at last be washed by a little warm water.

**TO WASH ENGRAVERS' PLATES.**—Engravers on copper and steel have frequent trouble, after having etched their designs, to find free acid working underneath, and also in the clogging up of the etched lines with the oxide formed with the nitric acid and the metal; two years ago an eminent engraver, of our city, had considerable trouble from the causes mentioned, and having asked our advice about it, we told him to wash his plates in warm water. He did so, and since that time he has never had any trouble with them. The reason why warm water is superior to cold, is owing to some oxides being insoluble in cold water, and perfectly soluble in warm water. Some free acids also combine, with some difficulty, along with cold water, but are freely taken up with water.

### Sea Sickness.

M. Currie, recently, in a paper read before the Paris Academy, has pointed out the cause of sea-sickness. He has shown that it depends upon the movement of the intestinal canal which floats, as it were, in the abdomen. It descends with every movement of the vessel, and then, ascending, pushes up the stomach and the diaphragm. His theory, well explained, was well received, and Magendie and Keraudien gave their assent to it. But his remedy was thought more ingenious than practicable. It was to breathe in with every downward movement of the vessel, and expire the air with its ascent. What seemed more easy, and is known to be more effectual is a horizontal position in the middle of the ship, and a tight bandage over the abdomen.

It is well known that the latter plan is very effectual to relieve sea-sickness, but it is not a good plan to pursue, after the first sea-sick bout is over. Active exercise, and frequent action on deck, soon drives away sea-sickness, and without this course is pursued, those liable to sea-sickness, need not expect to get over it at all, they are liable to have it during all rough weather.

Aristotle said that man had the largest brain of all animals, in proportion to the size of his body, but modern anatomists say that canary birds far exceed us in proportional weight of brain.

The glass house for the World's Exhibition, next year, goes on nicely. It will contain 400 tons of glass.

### Rotary Steam Engine.

We understand an improvement has been made by Geo. F. Woolston, of Orangeburg, S. C., in the rotary steam engine working on the principle of re-action, by causing the arms from which the steam issues to revolve in a vacuum.