Correspondence

Ten Thousand Dollars for a Substitute for Ivory.

MESSRS. EDITORS :—On page 135 present volume of the SCIENTIFIC AMERICAN, we observed an article with the above caption, in which our willingnes s to give $10,000 for a suitable substitute for ivory, to be used in the manufacture of billiard balls, was announced. This statement, which appeared in the *Tribune*, is perfectly correct, and was authorized by us, and as its re-publication in your columns may probably have the effect of stimulating the inventive genius of some of your numerous readers, we will give a brief description of the indispensable qualities required in the desired substitute.

The material or composition of the artificial ivory must possess the qualities of *elasticity, density* and *hardness;* facilities for being easily turned of a perfect spherical form in the lathe, and for being readily colored and polished. It must not shrink, warp or crack under the ordinary variations of atmospheric temperature. Its specific gravity must be equal to that of natural ivory, so that billiard balls of the same size formed of the two materials, may be of precisely similar weight. Its cost as compared with that of ivory, must be at least *fifty per cent less.* In the event of the discovery of such an artificial ivory as we have indicated, and the above amount of $10,000 being claimed by the discoverer, we should require the right and title to its manufacture and use to be conveyed to us, *exclusively,* by the transfer and possession of the patent right.

If you should deem the subject of sufficient importance we will shortly give a succinct sketch of the various attempts hitherto made to invent artificial ivory, and the causes of their failure. This may probably have the effect of saving much loss of time, expense and disappointment to inventors.

PHELAN & COLLENDER.

63 Crosby street, New York City, Feb. 25, 1864.

[We should be pleased to receive the article alluded to.—EDS.

Improvements in making Steel.

MESSRS. EDITORS:—On page 20 of the present volume of the SCIENTIFIC AMERICAN, I noticed an article on the making of steel, by what is called "the process of cementation." Of late years great improvements have been made in the manufacture of steel in Europe ; and I can not see anything in the way of Americans benefiting themselves by those inventions. First and foremost is Mr. Bessemer's process, also Capt. Uchatius's, M. Bugeny's, Mr. Hurst's, the "Steel Puddling Process," and many others. Each, in its peculiar character, is an improvement on the old way—especially that of Mr. Bessemer's. Crude iron contains 5 per cent. of carbon; malleable iron none ; steel from 0.5 to 1.5 per cent. "Why then cannot crude iron be purified and the desired per-centage of carbon left, without raising its market value to 16 times that of cast-iron?" I presume it can.

To illustrate the subject :—Suppose that a blast furnace yields 200 tuns of iron per week ; to bring that into malleable iron, ready for the blister steel converter, it would take 120 men and 20 boys, 2 refining furnaces, 15 puddling furnaces, 9 heating furnaces, 1 train of puddling rolls and hammer, 1 train of merchant bar rolls, with shears, &c.; also 600 tuns of coal for furnaces. It would cost for the erection of the above $100,000. Then we would have to put the merchant bars into the blister steel pots for nine or ten days, until they attained to a white heat; then we would have to cut them up and melt them in the cast steel pots, to bring them into cast steel ingots. It would require 4,750 crucibles, with their stands and lids, 200 men, 60 boys, 700 tuns of hard oven coke, and 760 separate melting furnaces, at a cost for their erection of $160,000.

Now contrast this with Mr. Bessemer's process, where it would only be necessary to have two 7-feet converters, made of boiler plates lined with fire-bricks, and a hammer or a train of rolls, as the case may be. It would take 8 men for the converters, and the same number for the hammer and rolls as in the malleable iron department. You could have malleable iron or steel with any per-centage of carbon you please, and with any amount of tensile strength required, up to 70 tuns per square inch. Then it has been found that iron, containing from $\frac{1}{4}$ to $\frac{1}{2}$ per cent. of carbon, and capable of bearing from 90,000 to 100,000 lbs. per square inch, is most suitable for steam boilers, as it will stand punching and flanging like a sheet of copper. For instance, such boilers as are in use near Manchester, England, and are working under a pressure of 100 lbs. to the square inch; they are 30 feet long by 6 feet 6 inches in diameter, and $\frac{5}{16}$ in thickness. Where lightness and great strength are required, this process should not be overlooked. With the proper use of this metal we should not have any of those heavy useless iron-clads of which the United States, England, and France seem to be so proud.

The following is a tableshowingthe tensile strength of different kinds of steel. experimented upon at Woolwich, England :—

	lbs. per square inch.
Capt. Uchatius's cast steel	90,000
Ordinary cast steel	128,000
Krupp's steel gun	129,000
Mersey puddled steel	94,000
Best Sheffield cast steel	130,000
Bessemer's hammered steel	160,000
Mr. Mushet's gun metal	103,500

The tensile strength of Bessemer's iron, experimented on by Col. E. Wilmot, at Woolwich, England, is as follows:—

	lbs. per square inch.
Cast or unhammered iron	41,242
Hammered or rolled iron	72,643
Flatingots, rolled into boiler-plate iron	68,319

The tensile strength of the best Lowmoor or best Staffordshire iron is 64,200 lbs.

Although Bessemer's iron is perfectly malleable, it is nevertheless in a crystalline state, and ought to be brought under the hammer or rolled, as the table will show. The hammering and rolling have the effect of adding one-half to the strength of iron, or in the ratio of 18 to 32. One 17-feet converter will convert 2½ tuns of iron into steel in 30 minutes.

W. G.

Litchfield, Conn., Feb. 20, 1864.

A Mountain of Salt in Louisiana.

MESSRS. EDITORS:—I notice that, on page 103, of the present volume of the SCIENTIFIC AMERICAN, in speaking of "Mineral Salt," you say that "no other country yet known yields this peculiar product." Enclosed I send you a specimen from the celebrated Salt Mountain, situated about six miles west of New Iberia, La. It was only discovered in August, 1862; but it was the source from which the rebels of the Southwest supplied themselves. I assisted in destroying their machinery for mining and a largequantity of salt that had been mined, of which the enclosed is a sample. The rebels were sending about 300 barrels per day into the Confederacy. It seems that the whole mountain is one pure lump of salt; there being but very little soil over it. I saw larger quantities of it at Vicksburg and Port Hudson, when they came into our possession. I have no doubt that, when the war is over, this mine will be worked to great advantage by whoever secures it.

E. S. HULBERT.

Bernardstown, Mass., Feb. 17, 1864.

The Call for a Horseshoe.

MESSRS. EDITORS:—The extensive influence and circulation of your invaluable journal has been made strikingly apparent to me during the past few days. My proposition to pay a premium for a horseshoe which any person accustomed to handling horses, shall be able to put on and take off without the aid of a smith—which shall be light, simple, safe—which shall remain firm in its place while the horse is striking a 2·40 gait, and yet not hurt his foot—was copied from my own paper into the SCIENTIFIC AMERICAN. (See page 88, present volume.) In about a week afterward, I began to "hear from it;" at this present writing I have a file of some fifty letters on the subject, hailing all the way from Montreal to Tennessee, and "still they come!" Two only of the whole number contain drawings in the rough, showing the idea. The others variously say: "*Eureka!*—I have found it!" "I can do it!" "I *am* doing it!" "I shall soon do it!" "I am experimenting upon it!" &c. Some of my correspondents have been considerate enough to enclose a postage-stamp to prepay a reply, (and to all such I *have* replied); but the majority neglect that obvious rule.

All this is needless. Let those who feel interested in the matter understand that the thing desired is not *easily* accomplished. The solution of this problem will be quite an achievement, but it cannot be done in a dozen or fifty different ways, and *all* of them "safe, simple and effective." A few of my correspondents desire me to pack up my carpet-bag and go directly and see them—a proceeding which, however agreeable to the parties, would be both expensive and very uncertain in its results.

If those who have taken the trouble to write to me, will attentively read the original proposition, go to work and accomplish the job, if they can; *testing* it thoroughly and patiently before claiming they have done it, and without fear that others will do it before them and thus receive the premium—then they can communicate actual results to me and will be duly attended to. The proposition was made in good faith; but the terms must be *exactly* and *literally* complied with.

EDITOR OF THE "NATIONAL EAGLE."

Claremont, N. H., Feb. 20, 1864.

What is Sound ?

MESSRS. EDITORS :—Would there be such a thing as sound were there no ears for the vibration of the air to act upon ? As this has been discussed a great deal in our little circle, without any definite conclusion, your answer would be gratefully received.

E. L.

Cincinnati, Ohio, Feb. 13, 1864.

[In all discussions, the first point to be settled is, whether the matter in dispute is a questioned fact or statement, or whether it is the meaning of a word If the latter, the question is to be settled by a refer ence to authorities. No man can affix a new, arbr trary meaning to any word. Words have the mean ings which have been assigned to them by the usage of good writers, and they can be properly used only with the significations thus established. By referring to Webster you will find that the word "sound" has two meanings. It means the impression made on the ear by certain vibrations in the air, and it is also used to signify the vibrations themselves. There would, therefore, be such a thing as sound were there no ears for the vibration of the air to act upon.—EDS.

Steam on the Tow-path.

MESSRS. EDITORS:—In this progressive age, it would appear singular that there has been no efforts made to substitute the iron horse for that raw-boned animal that slowly drags his life away upon the tow-paths of our numerous canals. A very slight modification or alteration would be necessary, before this revolution could be accomplished, and I think we may look for its fulfilment at no distant period. Along the line of the present tow-path the iron rails could be laid, and for convenience the heel path or opposite bank can be similarly accommodated, resulting in what is now considered the *par excellence* of rail-roading—a double track, and with all its well-known advantages. The same system of stations, switches, and time-tables, &c., which exist on our inland railroads could be introduced, and instead of the one solitary boat now seen creeping along at a snail's pace, the twin relic of the stage-coach of the past, they would number the capacity of the engine to carry them along at a rate of ten to fifteen miles per hour, at a cost of not exceeding that of the single boat with the horse-flesh propelling power of to-day. The difficulties of ascending grades, or the passage of locks, could be easily overcome by having a boat in the van of the train, which we might call the tender, provided with a track on its deck, upon which the engine could be placed, and rise to the succeeding level through the lock. A turn-table would be necessary below and above each lock and the tender with its track on deck, should be sufficiently low to correspond with the level of the tow-path, to facilitate the loading and unloading of the engine. This system has the advantage over the introduction of propellers, from the greater amount of tunnage that an engine on the rail can draw, which is impracticable for the propeller in such

shallow water, without washing the embankments away by the great agitation of the water. I think if you were to suggest some ideas bearing upon this subject, it might lead to some important results.

JOHN LIPPINCOTT.

Pittsburgh, Pa., Feb. 27, 1864.

[Our correspondent's idea is not new, but as this is eminently the age of wonders, it is not impossible that the revival of the idea will meet with favor from some one interested.—EDS.

Packing Steam Pistons.

MESSRS. EDITORS:—I recently read in the number of your valuable journal, published on Jan. 16th, (page 43 of the present volume) an excellent article on the errors of packing steam pistons. But the barbarism of setting the packing out too strongly by springs is far exceeded on many boats on Western waters by the plan in very common use there, which is, to have the piston head turned slightly conical; and the rings finished on the inside to fit this cone, on the outside to fit the cylinder. The follower is then screwed home with all the leverage of a two-feet wrench, and there fastened with temper screws. When the packing gets leaky, the literal "mashing-up" or "upsetting" of the metal, to use a technical term, together with the increase in size from being forced further upon the cone, is depended upon for obviating it. Here, the inclined plane, the screw and the lever are employed to produce a tremendous pressure, which is altogether unnecessary.

In no part of mechanical engineering is there so much misconception, as of the amount of pressure required to render a piston steam-tight. I remember to have seen the piston of a cylinder—twelve inches bore, and thirty inches stroke—moved freely back and forth with one hand, when unshipped from the connecting rod, and the packing removed from the piston; it was perfectly steam-tight under a pressure of seventy-five pounds to the inch.

In packing piston-rods, I have found it an excellent plan to cut a strip of thick, heavy rubber; in width, a little more than the depth of the box, and in length, just sufficient to line it. The packing yarn is placed between this and the rod. The constant spring of the rubber keeps the packing close upon the rod, with less pressure from the gland than is ordinarily required. It also compensates for any slight variations from a true line in the engine—a great advantage when boats are built so slightly that the loading and unloading is constantly deflecting them, as is the case here.

In conclusion, allow me to express the pleasure I have received from a perusal of the sound mechanical views you have expressed on the above and kindred topics. They cannot fail to do good wherever read. My fervent wish is that your valuable paper may yet have ten times the circulation that it already has, among mechanics and engineers.

AN ASSISTANT ENGINEER.

[We thank our correspondent for his compliments, and also for the information he has forwarded us. The barbarism he mentions cannot be too strongly condemned, and it is mainly in the hope that this letter will be the means of suppressing the evil that we publish it. We hope that all engineers, wherever situated, will expose the abuses of the profession by writing us such sensible letters as the above.—EDS.

Breech-sights for Field Guns.

MESSRS. EDITORS:—Please to call the attention of inventors, through the columns of your well-known paper, to a very annoying defect in the breech-sight, now in common use with field guns in our army. One of the primary objects in using a breech-sight is to keep the line-of-sight either in, or parallel to, the vertical plane of fire; that is, the vertical plane passing through the gun's axis. But with the exception of the pendulum hausse (which practically fulfills the required conditions) all varieties of the breech-sight keep that line in a plane perpendicular to the axis of the trunnions; the gun's axis being either in, or parallel to, this plane. Now, it is very evident that, when the trunnions are not horizontal—which is generally the case with field guns—the line-of-sight will make an angle with the vertical plane of fire. If the right trunnion is the lowest, the plane of fire will incline to the right of the line-of-sight; if the left trunnion is the lowest, that plane will incline to the left. The amount of divergence, in yards, can be found (to a near degree of approximation) by multiplying the range, in yards, by a fraction whose denominator is 3,600, and whose numerator is equal to the number of degrees of inclination of the trunnions, multiplied by the number of degrees of elevation. For example: Let the required range be 1,200 yards; the angle made by the axis of the trunnions with the horizontal plane, 6 degrees; and the elevation 5 degrees; then 1,200 yards $\times \frac{6 \times 5}{3600} = 10$ yards—an amount too great to be overlooked. The above method is deduced from the following formula, which is exact when the line-of-sight is horizontal, to wit: "tan. a sin. b=tan. x." In this formula a represents the angle of elevation, b the angle of inclination of the trunnions, and x the angle included between the vertical plane of fire, and the vertical plane of sight.

When representing to an officer, lately, the necessity for a more general introduction of the pendulum hausse, for the above reasons, he argued that *that* would not remove the difficulty; "for," said he, "in the 'Instructions for Field Artillery,' which were prepared by a board of artillery officers of the regular army, you will find—immediately following a minute description of the pendulum hausse, as the usual instrument for pointing field guns—an enumeration of the causes which disturb the flight of a projectile; and it is stated that one cause of deviation is the inclination of the plane on which the wheels of the carriage stand." Although I replied that it was evidently a mere oversight on the part of those officers, in not modifying the statement to suit circumstances, he would not be convinced.

I trust that the influence of the SCIENTIFIC AMERICAN will be brought to bear in this matter; and that we shall leave our camp-of-instruction with appliances which will enable us to profit by what we shall have learned there; and not to pass through another campaign with pointing instruments which are almost worthless.

JOSEPH SPOR,
Battery H, 1st Penn. Art.

Camp Barry, D. C., Feb. 20, 1864.

THE TRAITOR'S "COAT-OF-ARMS."—Joseph Schofield (an Englishman by birth, but an adopted citizen of the United States, now residing in Iowa, and who justly boasts of having two sons in the army, one of whom has just re-enlisted to fight for the flag of his country) sends his annual subscription to the SCIENTIFIC AMERICAN for another year; and at the same time he soundly berates those who do not stand up for the Government. He closes his letter with the following pungent remarks:—

"The traitor's 'coat-of-arms' consists of *a flea, a fly, a magpie and a side-of-bacon.* Explanation:—A flea will bite either the quick or the dead; so will a traitor! A fly 'blows,' corrupts and contaminates all it comes in contact with; so will a traitor! A magpie is always chattering, talking and lying; so is a traitor! A side-of-bacon is never 'cured' till it is *hung;* neither is a traitor!"

THE "GALENA" READY FOR SEA AGAIN.—The iron-clad *Galena*, which was so riddled at Fort Darling (Va.), has had her armor removed, and is about to go into commission. With her armor on, the *Galena* made eleven knots, and it is expected that a much higher rate will now be obtained. She is 215 feet long, 35 feet beam, and draws 11 feet of water. She has 2 engines, with 48-inch cylinders and 3 feet stroke, driving a screw 11 feet diameter and 22 feet pitch. The stroke is multiplied by the plan of the engines so that the crank has 1 foot more stroke, or 4 feet altogether.

THE London *Engineer* publishes a long account, accompanied by tabular statistics, of the number and character of the boiler explosions occurring in England in 1863. These tables are the result of the labors of the Manchester Association, and are of very great value as regards exhibiting the physical character of the ruptured boilers. We shall shortly publish a condensation of this report, believing that it will prove of great interest to the profession.

THE droppings from stove-pipes, where wood is burnt, leave very persistent stains. Oxalic acid will remove the iron, and when the spot is then well washed, ammonia may take up what is soluble.

Photographic Items.

The art of photography is so simple and so easily acquired that it seems to be especially adapted as an employment for women. Its manipulations require a certain delicacy of touch, gentleness and quietude which are the natural attributes of females. No part of its attendant labor is rough; many of its operations may be done in a sitting posture. It is by no means as difficult or laborious as ordinary needlework; while its various operations and processes present to the mind objects of unceasing interest. In England there are many women engaged in the art, both professionally and as amateurs. The exhibition gallery of female photographic artists, Pall Mall, London, is one of the finest establishments in that city.

The "tannin" dry-plate process is now extensively employed for taking landscape pictures. The London *Photographic News* notices (in its last number) some splendid samples done by this method; size of the pictures 16×18 inches. The deepest shadows are very transparent and there is a complete absence of chalkiness in the lights. The editor says that he has rarely seen any architectural photographs so fine.

The dry process is particularly adapted for amateurs, because the plates may be prepared during leisure time, either by day or evening, and stowed away, ready for future use. Pictures may then be taken, by simple exposure of the plates in the camera; after which they may be again stored until leisure permits their development and printing. For excursionists nothing can be more admirable than a camera and a stock of these sensitive plates. What treasures of art and beauty are yet to adorn even the cottages of the lowly, when this wonderful art becomes generally employed! To the young it presents a wide field for instruction and absorbing amusement.

A recently suggested improvement in the tannin process is as follows:—20 grains of gum arabic; 20 grains sugar; one grain carbonate of soda, dissolved in 1 ounce of distilled water; 20 grains of tannin, 1 grain carbonate of soda, in another ounce of distilled water. Keep in separate bottles, and in summer add to each a few drops of spirits of wine. Equal parts of the above are mixed, for use, and merely poured once over the washed plate from an upper to a lower corner and run off to waste, drained and allowed to dry. The time of exposure in the camera is rather more than for a wet plate.

Faded yellow photographs may be restored in a few minutes by immersing the prints in a bath composed of 1 grain of bichoride of mercury to the ounce of water.

M. Disderi, of France, recently brought suit for damages to the amount of $12,000 against certain publishers who had copied some of his most popular photograph portraits. The court held that photographs were the result of mechanical processes only, not the fruits of the thought, intelligence and genius of the producer, and consequently not subject to the protection of the law, like paintings and other works of art; hence the reproduction of such photographs was not an act of piracy, and M. Disderi was accordingly non-suited. In England there is a sort of copyright law for photographic pictures. They may be secured by registry and the selling or production of copies, except with the consent of the photographer or publishers, is illegal. There ought to be such a law in this country.

Mr. Winfield, an experienced English photographer, is said to excel all his compeers in the art. He does not require immobility in the sitter, but directs him to move slightly, so that all the lines and boundaries of his form shall be modified and softened. The ugly features of a photographic likeness are by these simple modifications entirely removed. It is not new to take photographs "on the move." With paper prepared to the proper degree of sensitiveness, even the dashing wave and its scattering spray are caught in the act. As for ordinary portrait photography, we believe it to be generally acknowledged by Europeans that, for softness, brilliancy and artistic effect, the American pictures are not surpassed in the world.

SOME farmers of Vincennes, Ind., wish to find a market for flax lint. Who can inform them of the price paid and disposition to be made of the lint?

Improved Cultivator.

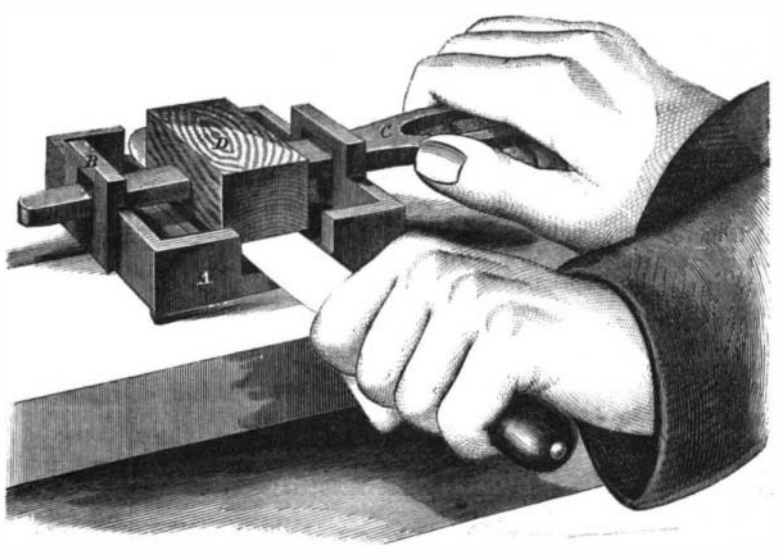
This form of cultivator is one that materially aids the farmer in his labors, for by the use of it a great deal of hand labor is dispensed with. At the present time this feature is of much importance, for farm hands are scarce as well as expensive. The cultivation of the growing crops is effected by this cultivator in the following manner:—The frame, which is suspended on the two wheels, carries two hanging bars, A, on its axle; these are jointed to the beams of a gang of cultivators, B. The cultivators do not follow in line with each other, but alternate so that they embrace either side of the crop; or they may be adjusted so as to pass upon one side alone, should such a course prove desirable. These cultivators have, from their being suspended, a swinging motion, or are capable of being moved from side to side accordingly as the operator directs them; the draught is directly on the cultivators, as the whiffletrees are connected to the bars, A, by brace rods, C. The two gangs of cultivators are both connected to each other sideways by a bar, D; this keeps both at the same distance apart, but permits the operator to elevate one gang in case of meeting with any obstruction, while the other is continued at work. There are also two staples and hooks, E and F, in both the cultivator and the frame on the wheels; by these staples the cultivators are raised if desired, so that the machine may be transported from one place to another without any trouble.

MITCHELL'S CULTIVATOR.

This cultivator will be found useful in all places, and it is a desirable addition to the already long list of machines for farmers' use. It was patented through the Scientific American Patent Agency on Dec. 1st, 1863, by Samuel H. Mitchell, of El Paso, Ill.; for further information address him as above.

Improved Knife-cleaner.

This convenient little utensil will be found a great improvement over the ordinary method of cleaning knives, which is, we believe, to use a rag, a board, and, as we are told by an exchange, sometimes the half of a potato. These make-shifts are all superseded by this simple device which accomplishes the purpose much quicker and better, with less labor, and without soiling the hands. In addition to these virtues it always cleans the knife across the blade, thus sharpening it as well as imparting a high polish. The method of using it is fully shown by the engraving; the utensil itself consists of a light cast-iron box, A, having recesses, B, through which a rubber bar, C, passes; the knife sets on a base under the rubber, D, which is made of hard wood; that substance being found the best for the purpose; the rubber is then drawn rapidly over the knife in an obvious manner. The knife itself remains stationary, except to be moved so as to bring all parts under the action of the rubber. The box is filled with a solution of bath-brick and water so as to cover the knife, and as no waste takes place with this cleaner, one bath-brick will last ten times as long as by the old-fashioned and wasteful methods heretofore practiced. The whole affair weighs but half a pound, and is an excellent thing for the purpose. An application for a patent is now pending through the Scientific American Patent Agency. For further information address Egbert P. Watson, Box 773, New York City. See advertisement on another page.



A NEW KNIFE-CLEANER.

A HINT WORTH REMEMBERING.

No better illustration of the value of simple inventions can be found than one afforded by an instance which lately came to our notice. A gentleman who was a large manufacturer of furniture recently called at this office with a small wooden block in his hand, which was a certain portion of a bedstead. This block, or model, he desired to patent. We expressed our incredulity at such a trivial matter being worth patenting, and asked how much he would probably save on each bedstead by adopting it in lieu of the parts now used.

"Well," he said, "possibly *three cents* on each bedstead."

"What does that amount to, in the course of the year."

"Why, sir," the gentleman replied, "this simple thing that seems so unimportant to you is worth hundreds of dollars to me annually, and I have just such another little matter in my mind now, that will only save five minutes' work on a thing that is extensively used; and I anticipate as much profit from it."

Such testimony as this is most valuable to inventors and patentees. When a manufacturer voluntarily comes forward and pays the fees necessary to secure a patent on so simple an improvement in his business that he knows can only save *three cents* on each piece it is applied to, he not only shows his own sagacity but gives convincing proof that small things are not to be despised because they seem commonplace.

A New Fallacy.

"Leache's perpetual-motion machine, which has turned the heads of all the mechanics in Northern Vermont, has been sent to New York, where the keenest of the Gothamites will be invited to expose the humbug, if such they can prove it. It consists of a wheel seven inches in diameter, to which are attached twelve arms at right angles, and to each arm a ball weighing half an ounce. These arms are all connected by twenty-four cords, two to each arm, and are so arranged that the falling of one ball affects the other immediately behind it, and so on apparently till the machine is worn out."—*Exchange.*

[We have been looking for the new "perpetual-motion" man for several days; but up to the time of going to press he had not arrived at our office. A self-operating machine is something we have never seen, and we are very desirous to have our curiosity gratified. Bring on your "perpetual motion!" —Eds.

How to insure Defeat.

In the late disaster at Olustee, Florida, whereby the Government lost a battle and 1,200 brave men were killed and wounded, one regiment at least was demoralized before the engagement by a piece of folly on the part of some officers whose names are not given. As related by a correspondent of the *Tribune*, the case was as follows:—"The 7th New Hampshire had so deadly a fire poured into them that they broke and fell back in confusion. Dissatisfaction had been created among the men by depriving them of the 'Spencer repeating rifle' and by issuing, in lieu of this formidable weapon, Springfield muskets in a damaged condition. Unable to protect themselves with such guns, one wing of the regiment gave way and could not be rallied, while the other wing, which still retained the repeating rifle, maintained its position until the ammunition was exhausted, when it too was obliged to fall back."

Such a record as this—if the above account is true—is disgraceful in the extreme; when Government goes to the expense of providing these weapons for the soldiers, what business have dolts in gold lace to deprive them of the means of self-defense?

The Scarcity of Laborers.—For the last year or two, since the country has been so thoroughly drained of men for the war, there has been a great scarcity of laborers. Farmers have not been able to get half enough to put in or harvest their crops; and in every kind of mechanical business there has been the greatest difficulty in getting operatives, and those who are obtained, even the most unskilled, will work only for the highest wages. The supply of laborers by immigration is not sufficient to meet the increased demand. In this emergency why not look to Canada for a stock of laborers? The supply is greater there than the demand, increased by crowds of cowards who have fled there to avoid military service; and wages are low. The prospect of steady work and higher wages would induce many of the Canadians to emigrate to the States, if the facts could be put before them and some suitable effort made. The Canadians are intelligent, good-natured and valuable workmen in every respect. We don't want to invade Canada, but if an army of Canadian laborers would invade New England they would meet with a warm reception. The women may come too, and would find abundant employment in the factories and kitchens while their brothers were at work in the shops or on the farm.