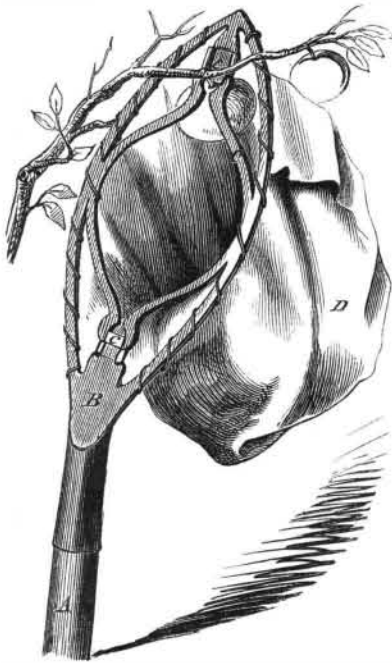


## Science and Art.

## Important Improvement in Bank Note Printing.

We are glad to chronicle, says the New York *Independent*, the discovery of a chemical process by which the photographing of bank bills, checks, bonds, and certificates can be prevented successfully. The discovery was made by Mr. George Matthews, one of the chemists employed by the Montreal City Bank, who has taken out patents not only in Canada but in the States. The discovery is of a calcined green oxyd of chromium, which produces a green tint, and this being mixed with the black carbon ink, produces an impression which is unalterable. Every possible chemical test has been applied to the erasing of the impression, but not one has been successful, the black impression and the paper itself being destroyed where the green tint is. Professor Henry, of the Smithsonian Institute, B. Silliman, Jr., Dr. Torrey, and other scientific men, have all testified to the perfect security afforded by the "patent green tint and black carbon ink." The newest bank bills, the new issues of treasury notes, the specie certificates employed by the banks in their Montreal exchanges, are all printed in these two permanent inks. The American Bank Note Company now uses it, as it has of late been used by Rawdon, Wright, Hatch & Edson. It is hardly twelve months since the patent was obtained, yet it is rapidly coming into exclusive use for bank note and stock certificate printing. The red ink which has been so much in use is found no longer available, as it can be photographed without injuring the bill. The green tint and black ink cannot be photographed without doing so, in all cases and circumstances. The claim is to the use of the calcined green oxyd of chromium for making ink for printing from engraved plates and other objects.

## Goodwin's Fruit Gatherer.



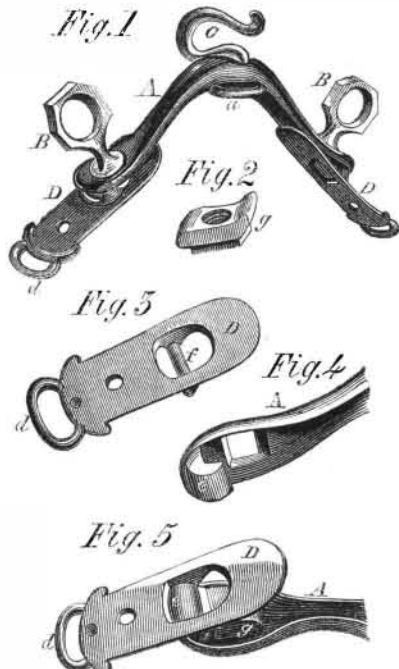
A great quantity of fruit is spoiled in the gathering, by being allowed to drop on the ground, or else the tree is much injured when they are violently pulled off by hand, as the small branches are liable to be broken. This simple little device, cheap and light, is one of the best we have seen for gathering fruit, neither spoiling it or damaging the tree. Any child can use it, and every one who gathers fruit should.

It consists of a light frame of cast iron, B, to which a bag is stitched, and it is placed on a pole, A. In recesses at each end of B is placed a small cutter, c and e, so that all the operator has to do is to pass the device round the fruit, and in pulling it down or pushing it up, the knife cuts the stalk of the fruit, which drops undamaged into the bag. The fruit gathering season is coming on, and all

who want to know more concerning this convenient little assistant to the orchard labors, should apply to the inventor, F. Goodwin, of Astoria, L. I. A patent was obtained November 10, 1857. They are for sale by Belcher & Haviland, 246 Pearl st., New York.

## Improvement in Harness Trees.

This harness tree is constructed entirely of metal, and it will operate equally easy on any horse. It is durable, neat, and plain, and can be furnished cheaper than the adjusting trees now in use.



Our engravings illustrate the invention very fully, Fig. 1 being a perspective view of the whole, when put together. A represents the tree, having terrets, B, a rein hook, C, and crupper loop, a. On each end of A is cast a hook, e, seen in Fig. 4, which hooks over a cross bar, f, cast above a hole in the pad, D, Fig. 3, that has loops, d, to support the tugs. A nut, Fig. 2, having a projection, g, secures the terret to the tree, and in the space left in the hollow of this projection and the space under the hook, e, the cross bar, f, works—as seen in Fig. 5.

It will be observed, from this arrangement of the parts, that the pads must fit the back of any horse, as they have free play, and the weight of the shafts and tree is always properly distributed over the horse's back.

The inventors are F. B. Kuchnhold and D. B. Sturges, of Newark, N. J., where they may be addressed, at the Hedenberg Works, for further information. It was patented February 16, 1858.

## How Gold Lace is made.

In an interesting description of the method of manufacturing gold lace, an exchange pointedly says that gold lace is not gold lace; it does not deserve this title, for the gold is applied as a surface to silver. It is not even silver lace, for the silver is applied to a foundation of silk. The silken threads for making this material are wound around with gold wire so thickly as to conceal the silk. The making of this gold wire is one of the most singular mechanical operations imaginable. In the first place, the refiner prepares a solid rod of silver about an inch in thickness, he heats this rod, applies upon the surface a coating of gold leaf, burnishes this down, applies another coating, burnishes this down, and so on, until the gold is about one-hundredth part the thickness of the silver. Then the rod is subjected to a train of processes which brings it down to the state of fine wire, and it is passed through holes in a steel plate, lessened step by step in diameter. The gold never deserts the silver, but adheres closely to it, and shares all its mutations. It is one-hundredth part the thickness of the silver at the beginning, and it maintains the same ratio to the end. As to the thinness to which the gold-coated rod of silver can be brought, the limit depends on the delicacy of human skill; but the most remarkable example ever

known was brought forward by Dr. Wollaston. This was an example of solid gold wire, entirely free from silver. He procured a small rod of silver, bored a hole through it from end to end, and inserted in this hole the smallest gold wire he could procure. He subjected the silver to the usual wire-drawing process, until he had brought it to the finest attainable state, being, in fact, a silver wire as fine as a hair, with a gold wire in its center. To isolate this gold wire, he subjected it to warm nitrous acid, by which the silver was dissolved, leaving a gold wire one-thirty thousandth of an inch in thickness—perhaps the thinnest round wire that the hand of man ever produced. But this wire, though beyond all comparison finer than any employed in manufactures, does not approach in thinness the fine film of gold on the surface of silver in gold lace. It has been calculated that the gold on the finest silver wire for gold lace is not more than one-third of one-millionth of an inch in thickness, that is, not above one-tenth the thickness of ordinary gold leaf.

## Lord's Perch Coupling.

The king bolt by which the axles of vehicles are connected to the body, and on which they turn, is a very inconvenient appendage, not on account of the space which it occupies, or its shape, but from the fact that it is very liable to break; and as a vehicle changes its center in turning a curve, the king pin being rigid, does not allow the center to change, so that the vehicle is very liable to overturn when rounding a sharp angle. This invention obviates these difficulties, and compels the perch always to traverse the axle, thereby adding to its strength, and lessening the liability to upset, while at the same time it greatly reduces the circle in which the buggy or other vehicle can turn.

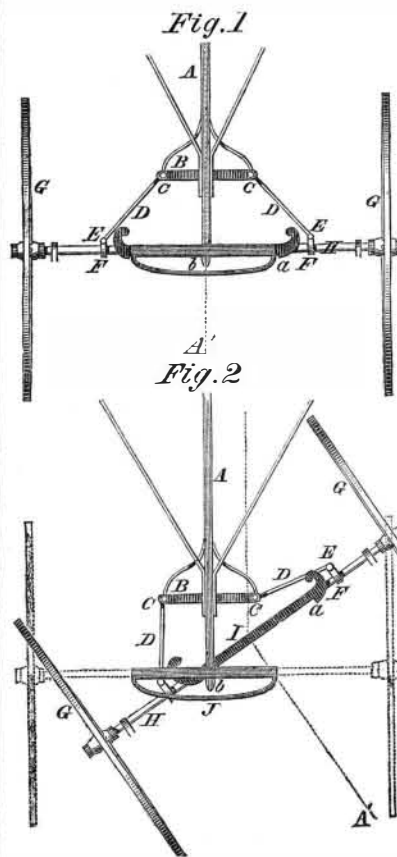


Fig. 1 shows the perch and front axle of a buggy when straight, and Fig. 2 shows the same when turning a curve, the lines, A A', illustrating the deviation from the center, which the king pin will not allow. A is the perch, the end of which, b, slides on a metal plate, I, that has catches or projections, a, to prevent the perch sliding too far, and it is secured on to the front axle, H. G are the wheels. To the perch is attached a cross bar, B, to each end of which is pivoted, by pivots, C, a lever, D, also pivoted at E to clips, F, which are firmly secured to the axle, H.

It will be seen from the illustration that a steady draft is obtained, and the pull is always directed in the best manner to turn the vehicle in the way desired.

This efficient coupling is the invention of

W. S. Lord, of Pulaski, Tenn., and was patented by him October 28, 1856. Any further particulars can be obtained from the agent, E. G. Chant, corner of Broadway and Broome st., New York.

## All Animals Can Talk.

At an annual meeting of the Association for the Advancement of Science held in at Boston, it was shown that, after all, there are no dumb beasts! Dr. Gibson read a very interesting paper on the *language of animals*. He said that every variety of animated being possesses some means of intelligible communication. Each creature by sounds or signs of correspondence has a language understood by its own kind, and sometimes learned by others. Emotions of caution, affection or fear—of joy, gratitude and grief—are disclosed by simple tones of voice, or by impressive gestures to signalize feelings strictly comprehended and often answered. Insects and birds, fish and beasts thus express themselves in distinct languages, signed, spoken and sung, seen, heard and felt. He illustrated his theory by stating familiar facts relative to domestic animals.

## Metallic Compound.

Mr. W. Sharman, of Sheffield, England, proposes to manufacture ornamental articles of a compound of from 35 to 90 per cent of the finest zinc with from 10 to 65 per cent of fine tin. The zinc is first melted, and the tin gradually added, the whole being thoroughly fused is stirred, and the alloy thus formed is rolled after the manner of ordinary zinc and afterwards annealed.



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