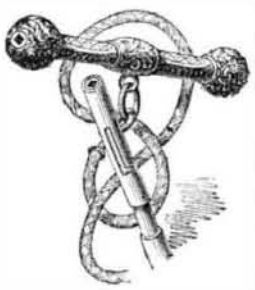
ELMER'S COMBINED WATCH KEY AND GUARD BAR.



THE beautiful little picture annexed represents an ornamental watch key and guard bar, not less beautiful, which has just been secured to the inventor by Letters Patent. The inner tube, *a*, one end of which is fashioned for a winding key for a watch, is made of brass or other inferior metal, and is covered and conccaled by gold or other precious metal, which may have balls at the end or be otherwise ornamented, at the taste of the manufacturer. The outer sheath is divided (in the middle) into two parts, one of which is soldered firmly to the interior cylinder, while the other, *b*, is fitted to slide loosely upon it, so that when the part, *b*, of the sheath is slipped inward upon the interior cylinder, the end, *a*, of the latter will protrude beyond the sheath with the ball upon its end sufficiently for use as a winding key. A slot is made in the sheath, *b*, and a pin firmly secured in the cylinder, *a*, enters this slot and controls the movements of the sheath. Two forms of slot have been devised by the inventor, and secured by separate Letters Patent. Both forms are clearly shown in the cut. One of them is L-shaped, consisting of a longitudinal slit, with a small recess at right angles to hold the sheath in place when it is drawn outward, so as to bring the ball to the end of the guard. The form preferred by the inventor, however, is the spiral shown in the detached spindle, requiring the sheath to be turned around spirally in carrying it inward to expose the end of the winding key, and the reverse direction in carrying the sheath outward to complete the symmetry of the ornamental bar. A band of precious metal around the middle of the bar conceals the joint where the two parts of the sheath come together.

The first of the patents by which this neat little invention is secured was granted (through the Scientific American Patent Agency) on June 6, 1860; and further information in relation to it may be obtained by addressing the inventor, D. F. Elmer, at Haydenville, Mass.

A GREAT BALLOON.—Old Rome had her Horatios, Ciceros, and Cæsars, but she never had a great balloon builder. Modern Rome in New York completely eclipses her ancient mother in a grand attempt at aerial navigation. The Rome *Sentinel* states that Professor Coe of that place has commenced a balloon which is to be 208 feet high (20 feet higher than the steeple of the Presbyterian Church of that village) its horizontal diameter will be 118 feet, and is to contain 1,731,000 cubic feet of gas. About 20 miles of sewing has been executed on this balloon already, and 8,700 yards of cloth are required for it. Professor Lowe's great aeriel ship, which contains only 700,000 cubic feet, is but a baby to this giant of Professor Coe's. Talk of the *Great Eastern* after this. Why, it cannot fly.

THE USE OF COMETS.—C. L. Carter sends us an article, suggesting that the use of comets may be to keep up an exchange of electricity between our solar system and other similar systems in the universe.

IMPROVED HORSE RAKE.

When the horse rake was invented, it was thought that the *labor* of raking hay was at an end; the farmer had merely to follow his rake about the field, while the horse did all the work. But the progress of improvement is rapidly pushing the community forward in luxury and ease, and our inventors will not be satisfied until they have taken the farmer from his feet, and the ground, and placed him in an easy seat, to *ride* over his fields in the operation of raking hay.

The invention illustrated in the accompanying engravings consists essentially in the atttachment of a revolving horse rake to a carriage on wheels. The rake-head, A (Figs. 1 and 2), is connected with the uprights, B B, by iron straps, in such a manner that it may revolve. While it is sliding along the ground, gathering the hay, it is prevented from revolving by the bar, C, which is held just above the ends of the back teeth. When the rake has gathered its load of hay which is to be deposited in the windrow by turning the rake over, the bar, C, is drawn back from over the end of the teeth by pressing forward the lever, D. The joint, E, is so constructed that it can only turn a short distance, and when it is brought to its stop, a continued forward motion of the lever, D, causes the whole back part of

Fig. 1

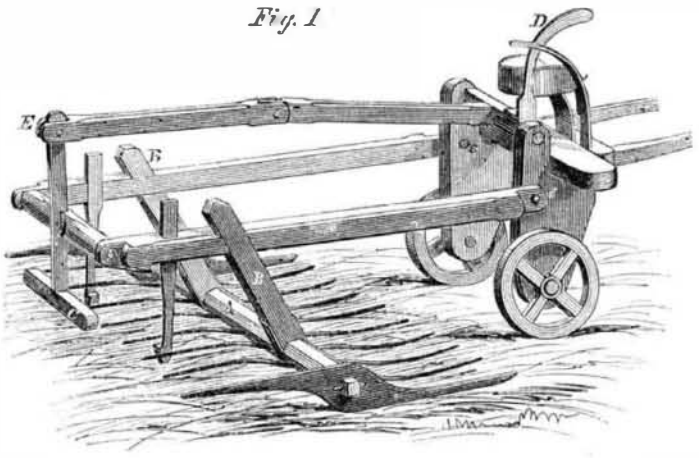
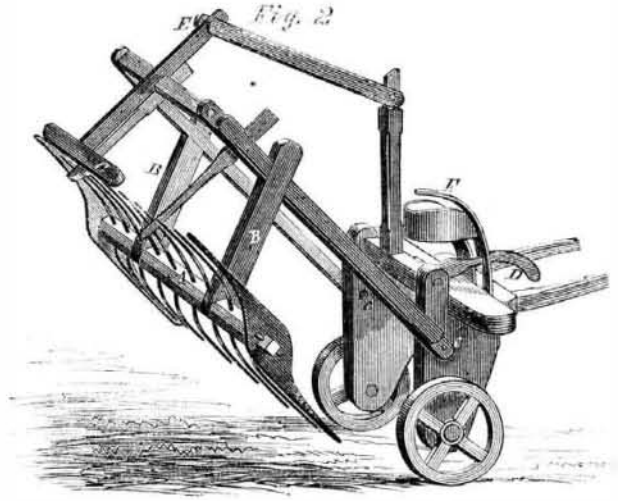


Fig. 2



SCHNEBLYS' PATENT HORSE RAKE.

the rake frame to rise, turning around the joints, *e e*, as fulcra. This rising of the rake frame causes the forward end of the rake teeth to catch against the ground, thus insuring the turning over of the rake. The lever, D, is held in place by a square notch in the brace, F, until it is released by the workman; thus holding the bar, C, over the ends of the teeth, and preventing any casual obstacle from causing a revolution of the rake before the windrow is reached.

The lever, F, has also a second notch, with the square face upward, for holding the lever, D, *down* (as shown in Fig. 2), by which means the rake is lifted entirely from the ground when it is desired to interrupt its operations.

The patent for this invention was obtained (through the Scientific American Patent Agency), on July 10, 1860; and further information in relation to it may be obtained by addressing the inventors, William and Thomas Schnebly, at Hackensack, N. J.

THE PHILOSOPHY OP CART HUBS.

MESSRS. EDITORS:—I have two carts, one has cast iron hubs weighing 200 pounds, the other has wooden hubs weighing 100 pounds. My carmen tell me that this 100 pounds extra on the iron hubs, is like carrying 100 pounds extra on the cart body. I reply no, for the weight on the bottom of the cart body is dead weight, whereas this rolling along on the hub is live weight in a measure, and does not consequently bear so heavily as the dead weight. They ask what is the difference? I answer I cannot tell, and refer the question to you.

Another thing, I contend that the greater weight of an iron hub wheel gives it a greater momentum, and that this on the rough pavement is an advantage in its favor. They ask how much advantage? I answer I cannot tell, I also refer that question to you.

If the surface over which the wheels moved were hard and smooth, I suppose this increased momentum would be of no benefit, but when the wheels drop into holes and roll over obstructions, it is a different matter. Please answer, and oblige— A.

[In regard to the first point, we agree with the men, and ask you what is the difference? In regard to the second point, the greater the load the greater the momentum; but is it not just as well to put the load in the cart, as to add weight to the hubs? Let the driver ride.—EDS.

FIRST FRUITS OF A CROP.

MESSRS. EDITORS:—There is an extraordinary crop of wheat in the northwest. My wheat will average about 33 bushels per acre—superior quality. Corn is good, and ripening off well on account of the dry weather. Wheat is only bringing 70 cents here on the Mississippi, instead of 90, as it would were there sufficient shipping to get from Chicago.

That you may know how I appreciate the SCIENTIFIC AMERICAN, I would just say that this is my *first* expenditure, of the first receipts, from my first farming in Illinois. When my subscription expired, I felt as poor as all my neighbors, and deferred renewal of it until I was out of debt. J. I. COX.

Fulton City, Ill., Sept. 8, 1860.

CEMENT.—J. B. Mahoney, of Columbus, Ohio, writes us, for the benefit of our correspondent of the 25th ult., that he makes a cement for coating buildings, which will not crack.