

## Science and Art.

**Preventing Thin Steel Tools from Bending.**

A correspondent—Eugene Duchuny—informs us that the following composition will prevent long thin steel tools from becoming crooked during the tempering process:—

Dissolve one ounce of gum arabic in a pint and a half of hard water, which should be contained in a long narrow vessel. The tool is first heated in the fire, then plunged into this liquid, and held therein until it is quite cold. He says, we may rely upon it that thin steel tools, thus treated, will be perfectly straight, and will not crack.

We hope this receipt will be useful, and that the object sought to be effected by it will be accomplished. We, however, cannot give a reason why a solution of gum arabic can prevent long thin steel tools from becoming crooked during tempering any more than a bath of cold water. Such tools generally warp in the heating process, not in the cooling bath. Articles of thin steel heated in a bath of molten lead by holding them vertically, then immersing them vertically, but gently, in cold water, generally retain their shape if the operation is skillfully conducted. If thin steel blades are heated in oil at the boiling point, then cooled in a strong solution of potash, they are not so liable to become crooked. This process, however, only produces a soft temper.

**Variation in Vital Heat.**

The French Academy has awarded a prize to M. Roger, for a "Memoir on the Temperature of Children." In the investigations of this subject, the author has made more than a thousand experiments. At the moment of birth the temperature of the infant is forty degrees Centigrade—that is, equal to that of the medium in which it lived; but it soon decreases to thirty-five degrees. In the following years it varies from thirty-six to thirty-eight degrees. The typhoid fever is the sickness in which the temperature is the highest, varying from 42.5 to 41 degrees; in pneumonia it is thirty-nine degrees on an average, and in eruptive fevers it varies with the periods of the disease. In meningitis there are the greatest differences of temperature, depending more on the individuals than the severity of the disease. In only one disease—the hardening of the cellular tissue—is there a very great decrease in the temperature; in nineteen children, the thermometer under the armpit marked thirty-three degrees; in seven, less than twenty-six; in two others, twenty-three degrees, and even twenty-two.

**New Hay Elevator.**

To those of our readers who may not be conversant with agriculture and its associate pursuits, it may seem unreasonable for us to present illustrations of implements and machines to our readers when the thermometer is below zero (as it is while we write), and the whole earth is spellbound in an icy grasp. But it is just at this period that the farmer is laying his plans for the coming spring and summer, and is determining upon the machinery he will employ for cultivating and harvesting his crops, and the manufacturer is busy at work making the implements likely to be in demand with the opening year.

The elevation of hay and similar substances from carts into barns or on to stacks, or from the ground into the cart for transportation, requires to be done quickly by a large fork or elevator, and as this cannot be easily manipulated by the hand alone, it has been made in some measure a mechanical device, and the parts have been so arranged as to do away with the necessity of the throwing and twisting that is so fatiguing.

The subject of our illustrations is a hay elevator, the invention of C. E. and J. N. Gladding, of Troy, Pa., and which was patented May 11, 1858.

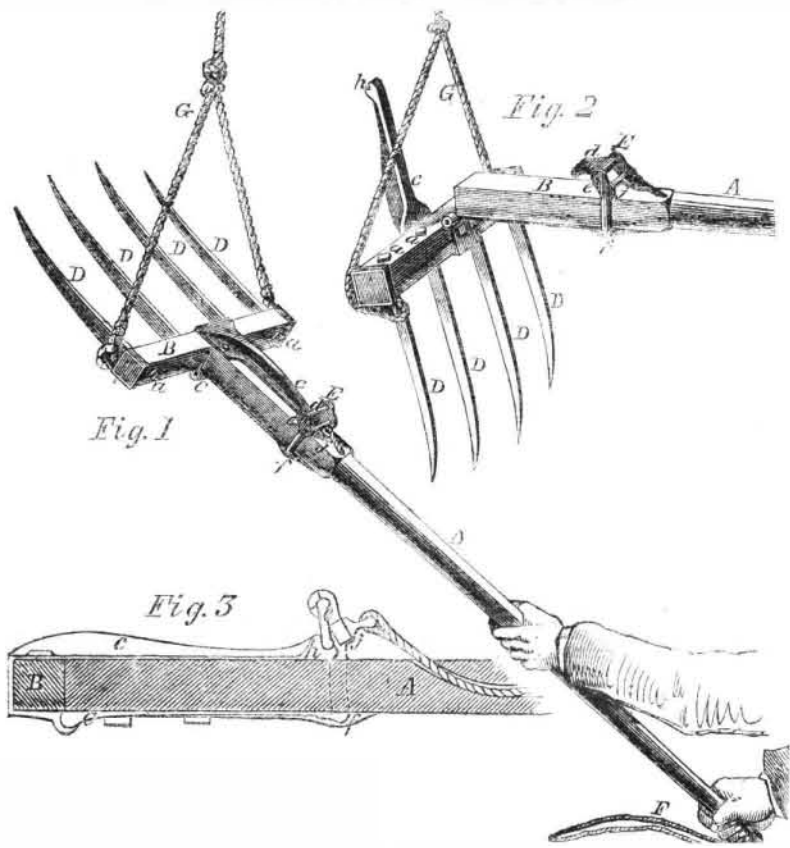
Fig. 1 shows the elevator as it would appear when lifting hay.

A is the handle, to which is hinged at C a crosshead, B, provided with prongs, D, secured in it by screws and nuts, *a*. G is the rope by which it is lifted, the rope being passed over a pulley or similar contrivance to assist in raising the elevator. To the top of B is attached a tongue, *c*, which has a small notch, *h*, in its end; in this notch the catch, *d*, that is suspended in the catch frame,

E, by pivots, *e*, fits and holds it on. The catch frame, E, extends around the pole or handle, it being kept in position by the spring, *f*, on the underside of the pole. A cord, F, passes through the pole, and is attached to the spring catch, E, by a ring, *j*.

Fig. 2 shows the elevator in the position in which it discharges its load, and Fig. 3 is a section.

The operation is simple. When the hay has been elevated to the required height, the

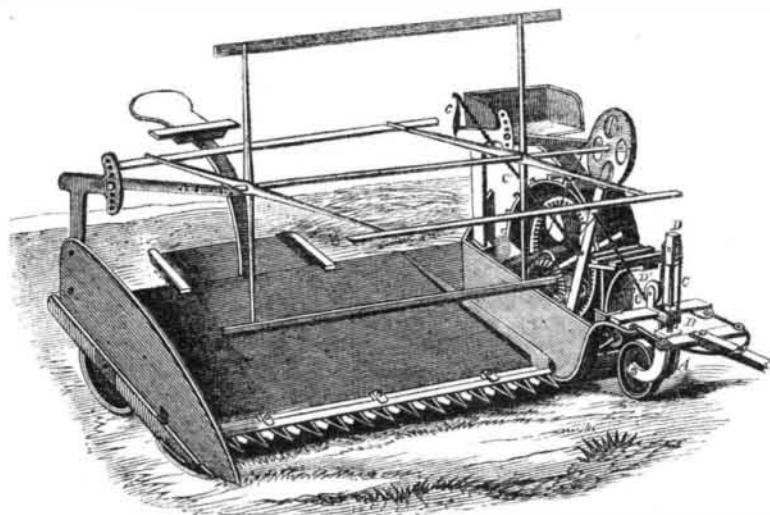
**GLADDING'S HAY ELEVATOR.**

cord, F, is pulled by the attendant, and this pulls back the catch frame, E, and releases the catch, *d*, from the notch, *h*, allowing the prongs to assume a vertical position, and allow their contents to fall. On lowering the whole, by pressing on the handle, A, the prongs and crosshead are easily placed in position, the spring, *f*, allowing sufficient play of E to permit *c* to fall back to the position shown in Fig. 1, and retain it there by *d*. With this fork a ton of hay can be unloaded in from three to seven minutes, thus saving much hard labor, and facilitating the securing of hay when properly cured; and by its aid hay may be elevated and discharged in comparatively a small place, for the fork being

allowed to drop in order to discharge its load, the tilting of the handle, as in ordinary forks, for the same purpose is dispensed with. Hence with this fork, hay can be unloaded with the utmost facility into shed windows, or beneath purline beams, or into places where ordinarily the horse fork cannot be used. It can also be used in the field for stacking.

It took the first premium at the Pennsylvania State Fair at Pittsburgh, 1858, and also the first premium at the New York State Fair at Syracuse, 1858.

Any one wishing further information concerning this useful implement can address the assignee, C. E. Gladding, of Troy, Pa.

**JEROME'S COMBINED MOWER AND REAPER.**

The ordinary and necessary parts of a mowing and reaping machine are so well understood by the majority of our readers, that in calling attention to the subject of our engraving it will be unnecessary to describe these features, so we shall only call attention to the special improvements that characterize this machine. The great difficulty of fine or wet

grass clogging the guards is entirely overcome, by improved steel fingers with cutting edges, which are riveted upon the upper side of a wrought iron finger bar, to permit the cut grass to pass freely back, without lodging on the bar, while the cutting edges are of such a form that they cannot be clogged in any kind of grass, whether it be wet or dry,

not even under the knife, but work perfectly clear under all circumstances; as a consequence of this freedom from clogging, and of the cutting edges on the guards forming a shear cut with the vibrating motion, the draft of the machine is light, and the work is well performed.

The whole weight of the machine is carried upon wheels, so that there is no drag upon the ground, and it avoids side draft on the horses, and no more weight upon their necks than there would be on a wagon pole.

The cutting apparatus is carried upon a large castor wheel, A, in front of and near the line of cut, while by means of a spring attached to a hoisting lever and flexible joint in front or near the castor wheel shaft, the cutter bar can adjust itself to the inequalities of the ground, and the driver, while sitting on his seat, and the machine is in motion, by means of the spring and lever chain, C, and pulleys, D D', in connection with the castor wheel shaft, B, is enabled to raise the knife with ease, to pass over stones and other obstructions to cut higher or lower, and to throw in and out of gear with a spring and check, which is very convenient, and to pass from field to field as easily as a cart. The mower is changed to a reaper in a few minutes, the cant-board being taken off, and a loose platform and raker's seat being put in, and the reel is raised. The grain is discharged in good condition for binding, out of the way of the next round, so that a whole field may be cut without moving the grain. The platform can also be arranged to discharge the grain when necessary at the back of the machine. The reel may or may not be used as the grass requires.

It is the invention of G. F. and M. Jerome, of Mineola, L. I., and patents were obtained Sept. 28, and Oct. 5, 1858. Numerous certificates from able judges regarding the efficiency of these machines are in the hands of the inventors, who will be happy to furnish any further information.



**INVENTORS, MILLWRIGHTS, FARMERS AND MANUFACTURERS.**

**FOURTEENTH YEAR!**

**PROSPECTUS OF THE SCIENTIFIC AMERICAN.**

This valuable and widely-circulated journal entered upon its FOURTEENTH YEAR on the 11th of September.

It is an Illustrated Periodical, devoted to the promulgation of information relating to the various MECHANICAL and CHEMICAL ARTS, MANUFACTURES, AGRICULTURE, PATENTS, INVENTIONS, ENGINEERING, MILL WORK, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

All the most valuable patented discoveries are delineated and described in its issues, so that, as respects inventions, it may be justly regarded as an *Illustrated Repertory*, where the inventor may learn what has been done before him in the same field which he is exploring, and where he may publish to the world a knowledge of his own achievements.

Reports of American Patents granted are also published every week, including *official* copies of all the PATENT CLAIMS. These Patent Claims are furnished from the Patent Office Records expressly for this paper, and published in the SCIENTIFIC AMERICAN in *advance of all other publications*. Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and people in every profession of life, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them hundreds of dollars annually, besides affording them a continual source of knowledge, the value of which is beyond pecuniary estimate.

**TERMS OF SUBSCRIPTION**—Two Dollars a Year, or One Dollar for Six Months.

**CLUB RATES.**  
Five Copies, for Six Months.....\$4  
Ten Copies, for Six Months.....\$8  
Ten Copies, for Twelve Months.....\$15  
Fifteen Copies, for Twelve Months.....\$22  
Twenty Copies, for Twelve Months.....\$28  
Southern, Western and Canadian money or Post Office stamps, taken at par for subscriptions. Canadian subscribers will please to remit twenty-six cents extra on each year's subscription, to pre-pay postage.  
For all clubs of Twenty and over, the yearly subscription is only \$1.40. Names can be sent in at different times and from different Post Offices. Specimen copies will be sent gratis to any part of the country.  
MUNN & CO., Publishers and Patent Agents,  
No. 128 Fulton street, New York.