

Improved Feed Cutter.

The combination of devices, shown in the annexed engraving, renders the machine illustrated a most efficient, as well as simple and durable, implement. We have seldom met with an agricultural machine which seemed, in all respects, more adapted to the purpose it was intended to subserve. The feed cutter is a machine that should be on every farm, and the inventor of the one we are about to describe has evidently comprehended the requirements of farmers in this respect. The feeding apparatus is one of the principal features of the invention. Its operation is as follows:

A lug, A, is attached to the knife plate. As this plate is actuated by the hand in cutting the forage, the lug lifts the end of a pivoted bar, B. To the bar, B, is pivoted a ratchet bar, C. This bar is bent at right angles and toothed, as shown, so that the teeth of one end engage the upper ratchet wheel, D, and the lower teeth actuate the lower ratchet wheel. These wheels are respectively attached to the feed rolls. The effect of this arrangement is, that the operator can gage his feed exactly as he wants it while cutting, the amount of feed being regulated by, and depending upon, the motion of the knife plate. The higher the latter is lifted, the greater will be the feed, and *vice versa*.

The upper feed roller is held down upon the hay or other material to be cut, by means of a wooden spring, E, which acts through a crosshead and vertical bars, F.

The feed rollers are furnished with suitable blades and points with which to grasp and carry forward the materials to be cut, and also to hold them firmly so that they will not be drawn out of place by the pressure of the cutting knife.

The cutter bar, at the point where it is pivoted to the fulcrum, is compressed between an armed washer of large size secured by a nut, and a friction compress tightened by a thumb screw, so as to force the knife always to move close to the face plate, allowing no chance for it to spring off from the substance to be cut.

The advantages gained, in addition to those already stated, are, a broad guide plate for the knife; the closeness with which the knife holds itself to the face plate; and the automatic feed arrangement, by which the danger and labor of feeding by the hand of the operator is avoided.

The machine is covered by two patents, obtained through the Scientific American Patent Agency, dated respectively Dec. 1, 1869, and Nov. 15, 1870. Address the patentee, G. S. Garth, for territorial rights and further information, at Mill Hall, Clinton Co., Pa., Md., and D. C., are not for sale.

RE-VACCINATION--GLYCERIN LYMPH.

The great prevalence of smallpox in Europe and this country, at the present time, has led to a re-examination of the statistics of vaccination. It has been found that no re-vaccinated person has been admitted into the London hospitals, a fact which speaks volumes in favor of the practice.

Another peculiarity is now recognized, and that is, that vaccination previous to the age of puberty cannot be relied upon as a protection afterward, and that therefore children should be re-vaccinated when they have passed the boundary between childhood and adult age.

Prussia is avowedly the country where regular re-vaccination is most generally practised, the law making the precaution obligatory on every person, and the authorities conscientiously watching over its performance. As a natural result cases of small pox are very rare. It has, however, been objected, there as here, that lymph is scarce. To make the most of such lymph as there is, Government has tried its application when mixed with glycerin, and the result was so successful as to lead to a public recommendation of the mixture to official vaccinating surgeons. The manner in which the glycerin lymph is prepared is thus described by the *Reichsanzeiger*: The pustules of a healthy vaccinated person are opened with a needle, and the effluent matter carefully removed by means of a lancet, the same instrument being gently applied to assist the efflux. The lymph is then best placed in the hollow of a watch glass, and there is mixed with twice its quantity of chemically pure glycerin and as much distilled water. The liquids are thoroughly well mixed with a paint brush. The mixture may be preserved for use in capillary tubes or small medicine glasses. The lymph thus procured is considered equal in effect to pure lymph; care must, however, be taken to shake it before use. As the same quantity that now suffices for one is thus made to suffice for five, the discovery ought to be extremely useful in crowded cities like ours.

Electrotypy---Imitation of Leather.

There is not a doubt but that this is an age of imitations; and the sham is so often taken for the real that even judges themselves have been misled. In manufactures there is such a constant demand for something new that the best energies are severely taxed to meet the requirements of the hour, and it is surprising to many how promptly this craving is satisfied. As an instance of the extending power of the imitator's art, we have noticed that Messrs. Elkington and Co., of Birmingham, have arranged to produce, by the electrotype process, imitations of the choicest grains of leather. They say that the system of producing leathers in exact facsimile of

morocco, seal, and other skins, by means of electro deposited copper rollers, has now become an established branch of leather manufacture. The fine grain of the most rare and valuable skins can by this process be reproduced at a merely fractional cost, as compared with the ordinary inferior imitations. The system may be briefly described as follows: An ordinary machine roller is fitted with a mandrel, upon which is deposited, by a new process, the copper facsimile. The latter is an exact copy of any rare or choice skin required to be reproduced, and it is only by a recent improvement in electrotyping that the difficulty of depositing from such a substance as leather has been surmounted. An ordinary skin can thus be impressed with the beautiful surface of morocco skin, even to the finest variations of grain, and several thousand may be copied by one deposit. In all cases the actual skin required to be copied must be sent. These roll-

350 rooms, and six smaller ones, as well as nearly 2,000 houses, were utterly broken in pieces. The deaths are known to amount to 2,393 people. The influence took a circular direction, and covered 400 miles of ground. Our readers will understand the effect of this visitation on such a people as the Chinese, whose superstition and credulity are proverbial.

THE GOVERNMENT OF NEW YORK CITY.

The rapidity of the growth of population and wealth in New York city naturally makes its inhabitants anxious that its administration be conducted in the best, wisest, and most economical manner. All Americans are proud of the Empire City, and we natives especially hope to see it the best governed city in the United States.

Of the importance of the city, and the magnitude of its interests, the annual message of the Mayor, just published, gives us opportunity for judging. The population is declared to be 942,252 souls, the amount of property, real and personal, valued for taxation is \$1,075,000,000, and the taxes for the year, \$23,300,000. The imports from other countries amounted to over \$300,000,000, and the customs duties collected to over \$140,000,000. The exports from the port of New York were about \$300,000,000. These are imposing figures, showing that the commercial interests of New York will alone suffice to place the United States high in the category of nations.

For the comfort and well being of its vast population, 460 miles of streets, 340 miles of water pipes, and 275 miles of sewers, have been constructed; 19,000 gas lamps have been erected; and nearly 1,300 cars and omnibuses, and 94,000 carriages, licensed and private, traverse the streets daily.

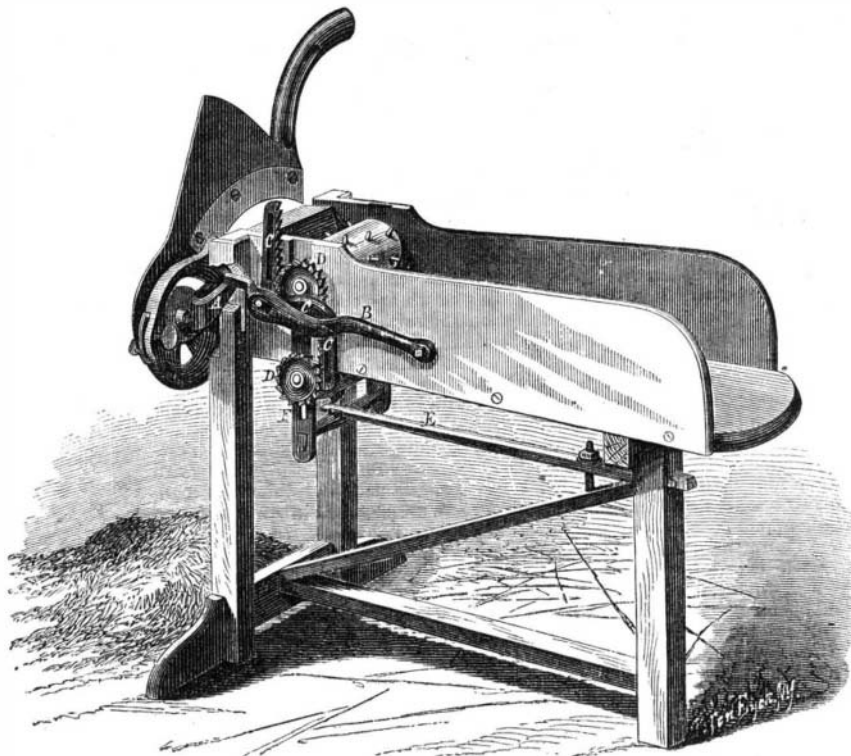
The area of New York city comprises about 22 square miles, with a frontage to the Hudson and East Rivers of 29 miles. Of the necessity for the reconstruction of the whole water frontage, we have spoken at length in a recent article, as well as of the plans under consideration, and the manner of carrying them out. In respect to public improvements generally, the Mayor states that the city could be liberally ornamented and beautified, as well as rendered more subservient to the public

convenience, by an expenditure of \$20,000,000 during the next three years, and that the increased value of property would lighten the pressure of taxation by better distribution of its incidence. The property belonging to the city is stated at \$267,000,000, while the outstanding debt is only about \$80,000,000. There is no wonder, then, that the savings banks and other monetary institutions in search of unquestionable investments, which are accustomed to prefer securities that are backed by real estate, invest largely in bonds of the City of New York.

The Marks from Small Pox.

The painful and malignant disease, which has lately, thanks to uncleanness and the disregard of the most ordinary precautions for the preservation of health, made such a change in the bills of mortality in this country and in Europe, calls to mind several of the remedies which are reputed to have the virtue of preventing the disfiguration of the skin. Among others, the *Sarracenia purpurea* was introduced into England. This plant is familiar to the natives of South Carolina, and is used by them internally, in the form of infusion, or decoction, for the cure of the same disease. It is a tonic, slightly stimulating, and is useful in cases of dyspepsia, water-brash, and abdominal distension. There is another, well known in India, the leaves of which are used by the natives to cover the bodies of sufferers for the above mentioned purpose. Dr. Wright says that "the leaves, beaten into a pulp and externally applied, act like a charm in removing the most intractable form of psora and other pustular eruptions." This plant is the *Melia Azadirachta* of Linnæus, and is called *pride of India*, *pride of China*, or *bead tree*. It is found, also, in our Southern States. It is, when taken internally, cathartic, emetic, and a powerful vermifuge; but its use, as described by Dr. Wright, does not appear to be known in this country. We look with interest for the results of experiments with it for the purpose of lessening the terrors of small pox.

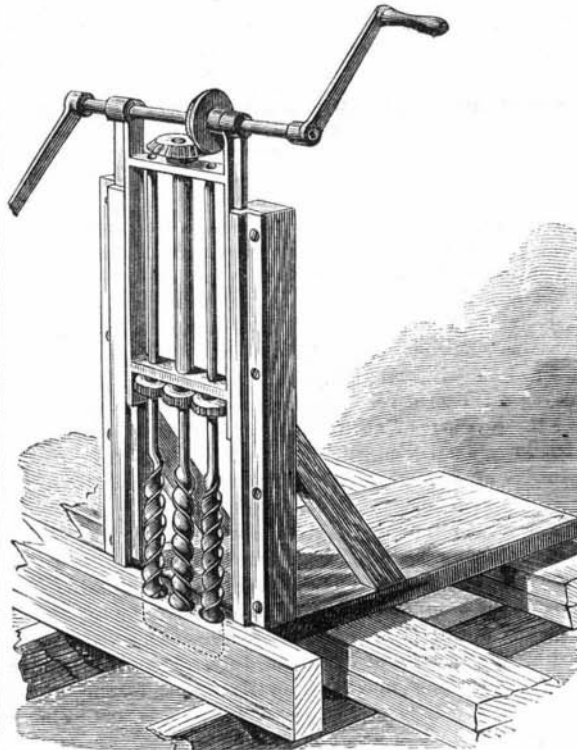
SINGER'S SEWING MACHINE IN ENGLAND.—Arrangements have been made for the extension on a large scale of the Singer Sewing Machine Company's manufactory in James street, Bridgeton. Building operations have already been commenced, and the additions contemplated will give about 25,000 square feet of extra floorage, thus affording employment to 300 additional hands. The new premises are expected to be finished and ready for occupation by August. The factory will then be capable of turning out fully 1,400 machines per week, being nearly double the present average production; while the total number of hands employed will be very little short of 1,000. These extensions will necessarily involve a large addition to the existing plant, and a lot of new machinery is about to be introduced for the medium or No. 1 machine. It is said that the Singer machine factory at Bridgeton is now the largest in the United Kingdom, and, in its enlarged form, it will compare favorably with some of the colossal establishments on the other side of the Atlantic. —*Engineering*.

**GARTH'S FEED CUTTER.**

ers are supplied ready for the machine; or, if preferred, manufacturers may send their own mandrels and have the facsimile deposited thereon.

BORING AND MORTISING MACHINE.

Our engraving is a good representation of a boring and mortising machine, invented by Arthur O'Neal, of Hyde Park, Mass. As will be seen, it is simply the adaptation of an old principle to driving a gang of augers instead of a



single one. The power is first transmitted to the central auger, and from its shaft to the others by means of gearing, the two outside ones having their twist and cutting edges in the opposite direction from the middle one.

Tremendous Earthquake in China.

The neighborhood of Bathang, in the district of Sechuen, the central western province of China, has been devastated by one of the most appalling earthquakes of modern times. On April 4th, the earth trembled so much that houses and public buildings were thrown down and destroyed. Volcanic fire burst forth from fissures in the ground, and tempests of wind increased the destructive power of the flames. The subterranean thunder continued to be heard for three days, and the whole district was rocked like a vessel at sea. The disturbance lasted for ten days, after which the motion subsided. Besides large public buildings, a temple containing