An improvement in commodes has been patented by Mr. Andrew Climie, of Ann Arbor, Mich. The object of the invention is to prevent the unpleasant odor arising from a water closet, especially such as are used in railway cars, and to inclose the deposits and convey them away.

An improved nail for the soles of shoes, so formed that after being driven and having its head removed the nail will have a four pronged appearance, has been patented by Mr. Zephaniah Talbot, of Holliston, Mass.

An improved refrigerating and ice making apparatus has recently been patented by Mr. Charles P. G. Linde, of Munich, Germany. The improvements relate to that class of refrigerating or ice making apparatuses in which the refrigerating effect is obtained by the evaporation of a volatile liquid, the vapors of which are compressed by a pump into a condenser, and then liquefied ready to be again subjected to the process of evaporation. The object of this invention is, first, to prevent overheating of the pump; second, to effect a more perfect packing of the stuffing box of the pump, and the employment of the stuffing medium for the lubrication of the points of contact of the working parts; third, to provide means for replenishing the apparatus with pure liquid ammonia while in operation; fourth, to provide means for the production of transparent ice and the means for discharging the same from the carriers.

Mr. Samuel A. Bollinger, of Patterson, O., has invented a harrow so constructed that either side or the whole harrow can be raised from the ground to clear it from rubbish and to pass roots, grass, and other obstructions.

AN IMPROVED HARVESTER.

Although the general principle of the reaper shown in the engraving is common to many machines of this class, the particular machine illustrated embodies several novel improvements of considerable merit which render it superior. The machine is constructed throughout with a view to convenience in handling, to strength and durability, and at the same time the new features render it very efficient.

The frame containing the running gear is composed of two iron end pieces and two wrought iron side pieces, secured together by bolts or rivets. The outer side piece supports an adjustable slide, to which is attached the seat spring, thus making the seat adjustable, so that the driver may move it either backward or forward to balance the machine and relieve the necks of the horses from undue weight.

The inner side piece of the main frame carries an adjustable foot piece which forms a guide for a vertical bar, the lower end of which is jointed to the side bar of the platform or table. On the upper end of the vertical bar there is a hand lever, which is connected by a rod with the side bar of the platform, a short distance back of the vertical bar, so that by moving the lever the platform may easily be tipped one way or the other as may be required. The lever is provided with a bolt or latch, which retains it in any desired position by falling into one of several notches in a sector secured to the top of the vertical bar.

Upon the foot piece which guides the vertical bar there is a ratchet and chain wheel for winding a chain connected with the inner end of the platform. A lever carrying a pawl is adapted to work the ratchet wheel so as to raise or lower the inner end of the platform by winding or unwinding the chain. A holding pawl is provided for retaining the ratchet wheel in any desired position.

The crank shaft and gearing intermediate between it and the axle are supported by journal boxes attached to the main frame. Side draught is avoided by attaching the tongue to the inner side of the frame. The automatic rake is of a well known type, which will be recognized by those of our readers familiar with agricultural machines.

The appearance of this machine is trim and workmanlike, and it seems well adapted to the work for which it is designed.

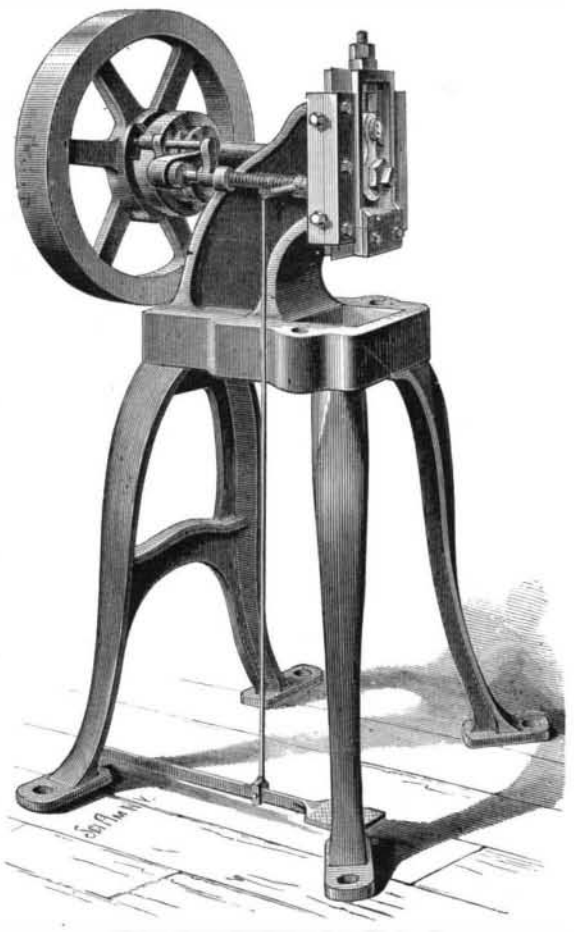
The adjustments, which are calculated to meet every requirement, are all easily made. The working parts are of wrought and cast iron and steel.

This machine is made by Messrs. Crawford & Co., at their Globe Agricultural Works, London, Ontario, Canada. The name given the machine is "The Imperial Harvester."

A NEW PUNCHING PRESS.

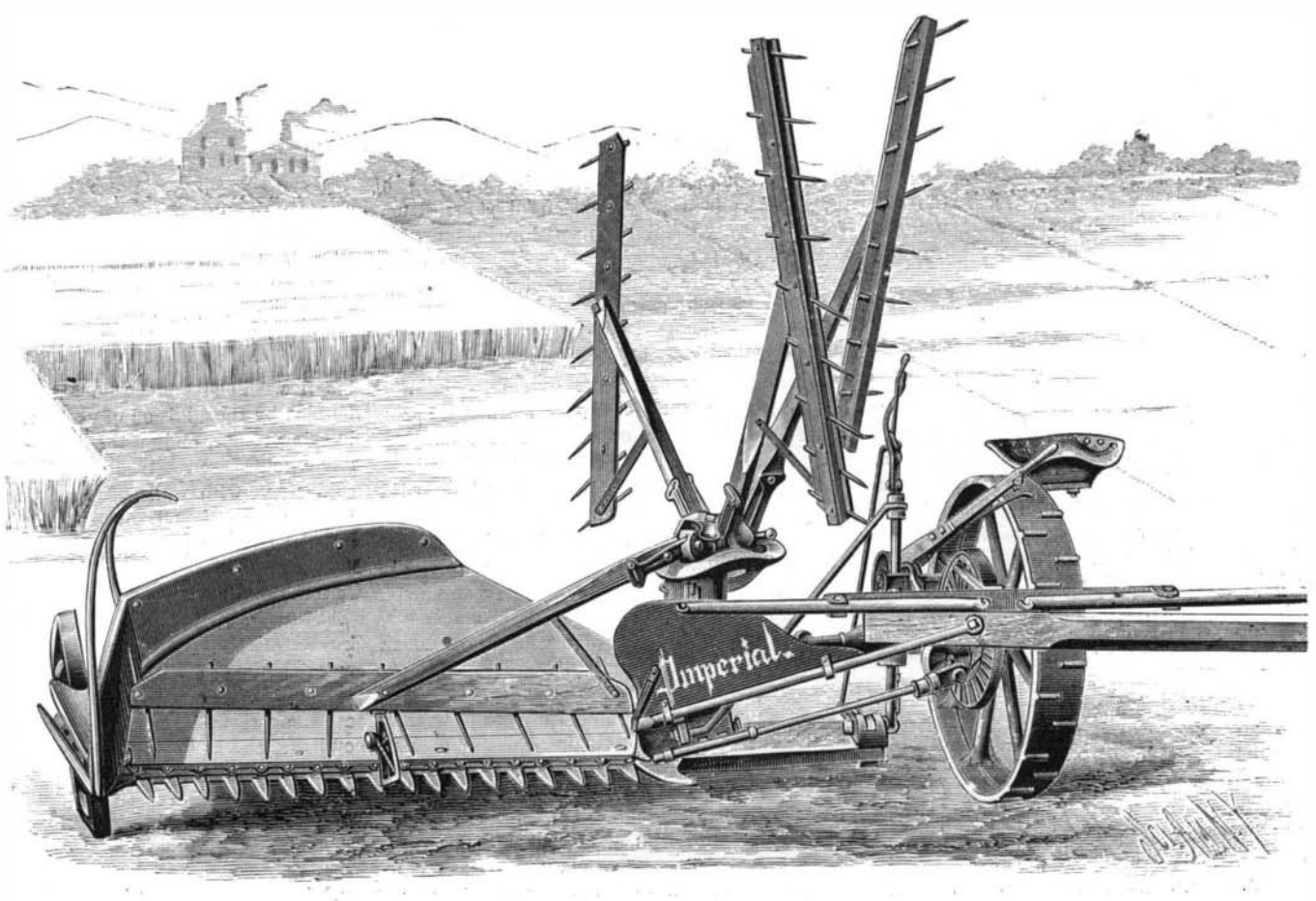
The Peerless Punch and Shear Company, 52 Dey street, New York, have just completed a new power press for punching sheet and bar metals, similar in design to their No. 1 foot press, of which we published illustrations in September last, excepting that the treadle and pendulum are replaced by a balance wheel for belt power.

One of these presses, although weighing but 500 lb., will punch a ½ inch hole in ¼ inch iron, or 1 inch hole in ⅛ inch iron, and will cut a blank 6½ inches square from No. 14 iron or brass. If used as a shear, it will cut bar iron 2 inches by ¼ inch in thickness, or ⅝ inch round.



PEERLESS POWER PRESS No. 1.

The wheel is 22 inches diameter and weighs 130 lb. The design embodies great strength, while the press occupies floor space only 2 feet 3 inches by 2 feet 11 inches. Many of this style of presses are sold with a pendulum attachment to be worked by foot power when steam is not available. This is a great convenience, as the operator is not altogether dependent upon steam power, and can use his press at any time by merely taking off the balance wheel and putting on the pendulum in its place.



THE "IMPERIAL HARVESTER."—MADE BY CRAWFORD & CO. LONDON, ONTARIO CANADA.

Covington, Iowa, Threatened.

In several instances thriving towns on the treacherous banks of the Mississippi and the Missouri rivers have been wiped out by the erosion of the river banks. Covington, Iowa, according to the Sioux City *Journal*, is another doomed city. It stands on a bend of the Missouri River, where the banks are being gradually eaten away. Many feet of fast flowing water now sweep over the spot where the court house stood a year ago. Recently the current set in shore and took off a strip of land thirty feet wide in a few hours. No invasions were made for another week, when another slice was cut off. Then about half a dozen buildings were moved back about some thirty feet, and the next day the land on which they had stood was all gone. The citizens have tried to moor trees and logs to the bank in the hope of forming a barrier for the flood, but the current is so swift and the water so deep that these attempts have failed. To give an idea of what the town of Covington has suffered in the past five years, the case of the ferry house and the principal hotel may be instanced. Two years ago there were six hundred and sixty feet of land between the building and the river bank; now you can toss a stone out of the hotel window into the river, and buildings are now being put on rollers for removal.

Hatching Spanish Mackerel.

Professor Earle, of the United States Fish Commission, has discovered that Spanish mackerel can be hatched artificially, and that its capacity of reproduction is many times that of the cod or the shad. Professor Earle received his first hint in regard to Spanish mackerel from Chesapeake fishermen, who reported that large numbers of them annually frequented the inland waters near Chrisfield, Md., and Mob Jack Bay. On being directed by Professor Baird to make experiments there with hatching apparatus, Professor Earle was surprised to find that the fish were hatched within eighteen hours from the time the milk and spawn were brought together. It requires five days to hatch shad, and from eight to twelve days to hatch cod. The number of eggs operated upon at a single hatching was between 200,000 and 300,000, while of shad only about 20,000 to 30,000 can be turned out at once.

Another fact of importance is that the season for operations with the spawn of the Spanish mackerel is toward the last of June and first of July, after the shad season is over, and before that of cod begins. It is estimated that the number of young fish "turned out" this season will be more than a hundred million.

How Mr. Hannay Made his Diamonds.

Mr. G. B. Hannay, in a recent number of the "Proceedings before the Royal Society," gives an interesting account of the method employed by him in starting and prosecuting his experiments in making diamonds. And if only as a record of indomitable perseverance against ever-increasing difficulties, of scientific acumen, and of the true application of the Baconian method of research, as the London *News* justly says, it is worthy of study. Some idea of the nature of the investigation may be obtained from the fact that out of complex and expensive experiments only three succeeded. Violent explosions were frequent; furnaces were blown to pieces; steel tubes burst, scattering their fragments around. On other occasions, tubes which had been carefully prepared, filled, welded, and nestled in a reverberatory furnace for many hours, were found to have leaked and spoiled the experiment. "The continued strain on the nerves," writes Mr. Hannay, "watching the temperature of the furnace, and in a state of tension in case of an explosion, induce a nervous state which is extremely weakening, and when the explosion occurs it sometimes shakes one so severely that sickness supervenes." The diamond-making experiments were started in September, 1879, when Mr. Hannay made many attempts to find a solvent for the alkali metal, sodium, potassium, and lithium. But in no instance could such a solvent be found which did not, in the gaseous state, and under pressure,