

CENTENNIAL NOTES.

In the English department was exhibited a model of Whitwell's fire brick

HOT BLAST STOVE

for raising the temperature in hot blast furnaces. The usual method of building these stoves has been to construct them of cast iron pipes, which, if the temperature were raised to 1,200° Fah., usually were burned out. In Whitwell's system, the heating surface is constructed entirely of fire brick, which are so laid up that the heated gases are forced through a series of flues, alternately from top to bottom of the stove, until the whole mass of brickwork is raised to a high degree of heat; the stoves will stand a temperature of 2,000° Fah., without damage. Three stoves are used with a furnace, two of which are being heated while the third is having the air forced through it into the furnace. The advantages claimed are that the greatest economy of fuel is secured, nearly the whole heat being utilized, several hundredweights of fuel per ton of iron being saved: that they last a long time with but trifling expense for repairs, and that they are easily cleaned. The estimate of saving in cost of producing iron is 33 per cent.

Among the

ENGLISH CARPETS

we noted several magnificent patterns in Wilton and Axminster. The difference between these very costly kinds of floor covering is not generally understood. Wiltons are Brussels carpets with the loops cut before the wire is drawn out; they are generally closer woven, so the pile, or cut ends, may be packed closer together. The colors of these carpets go clear through to the back, but are only seen there in straight lines. The Axminster carpets, on the contrary, show not only the colors but the pattern on the back, though the pile is only on the right side. Nor is there any limit to the number of colors which may be used. They do not necessarily repeat themselves in any regular order, nor are the patterns repeated, either in regular order or at all, except at the will of the manufacturer. Each carpet has an individuality; but to accomplish these results there is less of machine work and more head and hand labor required. The process is a slow one, but the result may be seen in carpets with a pile of five eighths of an inch high, and so close that it cannot be separated to show the warp. Such carpets endure a great deal of hard service, and when the pile has grown uneven it can be brightened up four or five times by shaving it with a machine made for that purpose.

What is called "patent" Axminster is woven in the loom, and the color does not appear on the back at all. On the surface it would be difficult to tell in what the difference consists. It can be made for a much less cost than the real Axminster, which requires each thread and color to be tied separately by hand to the warp. This is so great a labor that fully three months are required to make a carpet twenty feet square. So great is the difference that the best patent Axminsters can be furnished for much less than half the cheapest real Axminster; yet there seems to be no reason why the patent carpets should not wear as long as the real.

A new method of

ARTISTIC POTTERY WORK

is called the *pâte sur pâte*, or paste upon paste process. The design is raised in white china clay upon a dark ground, the result being a most perfect imitation of a cameo in onyx or agate. White china clay is reduced to a liquid state; and with it this condition, the artist, with a thin brush, paints the design upon the plate, vase, or other object, putting on coat after coat of the liquid china until the desired thickness is obtained in each of the parts. Before burning, the china is opaque, but becomes translucent after burning. The artist, therefore, to properly distribute the light and shade, must put on the material thin or thick, and do this, too, without being able to judge of the effect by the eye; nor can any error of judgment be corrected by subsequent retouchings, as nothing can be done after the piece has been burned.

A model was exhibited by the Erie Railway Company of the famous

WOODEN BRIDGE

that carried that line over the Genesee river at Portage: a structure so arranged that each piece of timber could be separately removed and replaced by a fresh piece without disturbing the strength of the work as a whole. The bridge was further distinguished by the fact that it was the highest wooden bridge in the world, the rails being 235 feet above the level of the water. It was opened to travel August 2, 1852, and was destroyed by fire on May 6, 1875. Hanging beside the model is a photograph of the iron bridge that has taken its place, an airy structure looking like a spider's web outlined against the sky. Not the least wonderful fact in connection with the new bridge was the rapidity with which it was erected, the line being reopened for travel on the 31st of the following July. But this was slow in comparison with what was accomplished (almost simultaneously) by the same company in rebuilding the bridge carrying their metals across the Delaware, three miles above Port Jervis. The bridge comprehended one deck span of 160 feet, three deck spans of 150 feet each, and a span over the Delaware and Hudson canal. The four deck spans were swept away by the ice on the night of March 17, 1875. On the 26th of the following April the new bridge, of iron, double track, was complete and put into service, having been built in just forty days. Another instance of quick work was in the case of the trestle of 780 feet long and 90 feet high, thrown across the Chattahoochee in four and a half days, in August, 1864, by the Construction Corps of the T. S. Military R. R., under the direction of Engineer W. W.

Wright. But in this case the piers were standing—the bridge had been burned by the rebels—and the structure was of a temporary character.

In the Tasmanian section a stuffed skin of that wonderful and incomprehensible creature known as the

PLATYPUS OR ORNITHORHYNCHUS,

was displayed. The platypus is a fur-bearing animal, shaped much like a large duck; it has a duck bill and webbed feet, the web extending over the toes. The male has a spur like a rooster on his hind feet; back of the spur is a gland filled with poisonous matter, but the poison is not necessarily fatal. It has the fur and tail of a beaver; small black eyes like a mole; a pouch for carrying the young, like a kangaroo; its tongue is split and forked like a snake's. It lives on vegetable matter, and is amphibious, living, like the beaver, in or out of the water. In its anatomy, it has a wishbone, like a chicken, and in swimming the motions are the same as those of a bird in flying. Naturalists have been inclined to call it a bird, or at least oviparous, producing its young by eggs, but, unfortunately, the accounts of finding the eggs are too conflicting. Some men say they have seen the eggs, one man strengthening his assertion by saying he had eaten them for his breakfast. The young have been seen, evidently when but a few hours old; but no eggs have been found in the runs or holes near the water, which the platypus lives in, like a muskrat. Further than this, the natives say that this platypus does not lay eggs, and their habits of observation ought to make them good authorities on this point. A naturalist, who had dissected one of these animals, claims to have found mammary glands, which would strengthen the belief that the platypus is a beast, but sufficient evidence on this point has not yet been obtained.

In the French milling exhibits was a

BURR STONE MILL

for bolting the flour as it is ground. This consists of a number of fine wire sieves, arranged like rays on the surface of the millstone, through which the flour falls as it is ground, its passage being facilitated by means of a revolving hammer, which jars each sieve. Some of this flour is very fine, but a large portion of it must be reground. What is called high grinding is adopted with this style of stone: that is, the millstones are more widely separated, the husks and fine flour are removed in the usual way, and a rather coarse middlings is left, which, while possessing the most nutritious qualities of the wheat, is too dark and coarse. This is afterwards run through another pair of stones, which grind it into fine flour.

THE SALE OF THE BUILDINGS.

Twenty-four buildings belonging to the Centennial Board of Finance, besides a dozen structures of varying dimensions, the property of individuals, were sold at public auction on November 30. The Main Building, which cost about \$1,600,000, was sold to the Permanent Exhibition Company for \$250,000. The other structures brought even a less percentage of their original cost. The principal sums realized were as follows: Two Mineral Annexes, cost \$19,000, sold for \$1,000; Carriage Building, cost \$55,000, selling price \$4,100; Art Annex, cost \$110,000, selling price \$3,500; Photographic Hall, cost \$23,000, selling price \$1,000; Judges' Hall, cost \$30,000, selling price \$1,500; Shoe and Leather Building, cost \$30,750, selling price \$3,000; Agricultural Hall, cost \$275,000, selling price \$13,100. The remainder of the buildings sold at about similar rates, and the work of removing them will at once begin. The structures left are the Main Building, Machinery and Memorial Halls, German Pavilion, English dwellings, and Horticultural Hall. The Woman's Pavilion, which it was at first proposed to sell, is now to be reserved as a memorial. The Japanese Building will be sold, and the future disposition of the United States Building is not yet announced.

THE OCCUPATIONS AND HEALTH OF THE MERCANTILE CLASSES.

Out of every thousand men engaged in mercantile employments, examined by the enrolment surgeons during the late war between the States, five hundred and twenty were fit for military service: forty more than were furnished per thousand of professional men, and forty-four less than were got from the same number of skilled mechanics. Rated according to the military capacity of their members, the different mercantile occupations stand in the following order: Tobacconists, furnishing 623 per thousand; clerks, 585; peddlers, 580; bar keepers, 500; liquor dealers, 471; grocers, 451; innkeepers, 420; agents, 416; merchants, 392; brokers, 329.

Bar keepers we have transferred from the list of unskilled workmen for comparison with liquor dealers and tobacconists. It is one of the most surprising results of this examination to find those engaged in handling tobacco and spirituous liquors so exceptionally healthy. They not only stand especially well among the mercantile classes, but much better than the members of the higher professions. And curiously, they would seem to be especially free from the disorders of the digestive system and the nervous system which certain popular theories would make inseparable from their employment.

The general health of tobacconists was even better than the foregoing figures would indicate, since 86 per thousand were rejected for conditions not necessarily connected with disease, chiefly for deficiencies in age and size, and 26 for local injuries and deformities, in which the selective action of a light occupation is apparent. In syphilis their record is bad: 16 per thousand, or twice as many as among the clergy, but only half as many as among bar keepers. Their chief diseases are of the digestive system, causing the rejection of

65 per thousand (almost wholly from loss of teeth and hernia); diseases of the circulatory system 43 (mainly heart disease); lung diseases 34; diseases of eye and ear 30, and of organs of locomotion 41. For diseases of the nervous system, they stand about with regular merchants and clerks. They are comparatively free from obesity, and but little troubled with chronic rheumatism.

Clerks were disabled chiefly by conditions not necessarily connected with disease, 76; local injuries 33; diseases of the digestive system (mainly hernia and loss of teeth) 106; diseases of the organs of locomotion 30; of the eye and ear 32; of the circulatory system 44; of the lungs 33. Peddlers rank next to clerks, and show for the most part disabilities not directly attributable to their work; for example, 50 per thousand rejected for conditions not necessarily associated with disease; 40 for loss of teeth; 51 for wounds, fractures, etc.; and 33 for diseases of eye and ear. For inguinal hernia, attributable in many instances no doubt to lifting heavy packs, 39 in the thousand were rejected; 17 for diseases of the joints, and 7 for spinal curvature, largely due, possibly, to the just mentioned cause. Consumption disabled 42 per thousand, and diseases of the circulatory system 48.

Bar keepers and liquor dealers stand near together in military efficiency, high compared with the professional classes, but low as compared with mechanics and laborers. Bar keepers suffer more than liquor dealers from diseases of the digestive system (133 to 40), but less from disorders of the circulatory system (52 to 129); in consumption and disorders of the nervous system their record is good, 21 to the thousand. Liquor dealers suffer more than any other mercantile class from chronic rheumatism, and from diseases of the eye and of the organs of locomotion. Grocers fall below the mean of the mercantile classes. Loss of teeth caused the rejection of 86 per thousand, and hernia, 69. For all disorders of the digestive system, the rejections were 190 per thousand. Disorders of the circulatory system come next, 67 per thousand. For disorders of the nervous system they stand among the worst, 21 per thousand being rejected for this reason; for consumption 35; diseases of the eye and ear 38; of the organs of locomotion 52; for conditions not necessarily associated with disease 27; for injuries, etc., 55.

Innkeepers are a grade lower than grocers in general health, and lead the van in obesity, for which ten per thousand were rejected: the same fault causing the rejection of five grocers and seven agents per thousand, all others of the mercantile class being nearly if not quite free from it. Innkeepers stand universally high also for loss of teeth, 93, and for hernia 48. For all diseases of the digestive system, 223 per thousand were rejected. For diseases of the nervous system, they stand higher than lawyers, and are exceeded only by agents, watchmen, ostlers, and unclassified "other occupations." For diseases of the eye and ear they stand third (44 per thousand), the ratio for brokers being 50, and for liquor dealers 57. They also stand next to brokers and above all others for disabilities arising from wounds, fractures, and malformations.

Agents suffer more than any other mercantile men from lung diseases, 53 per thousand, from diseases of the nervous system 29, and insanity 9; they are exceeded only by merchants in diseases of the digestive system, 189; and are afflicted more than the average by diseases of the circulatory system, 51. As regards syphilis they rank with clergymen, doctors, and public officers. For diseases of the eye and ear, 39 in the thousand were rejected; for diseases of the organs of locomotion 51; for conditions not necessarily associated with disease 49, and for local injuries and malformations 69.

Lowest in military capacity among mercantile men are merchants and brokers. Their disqualifying disabilities present some curious contrasts. For instance, more than twice as many brokers as merchants were rejected for wounds, fractures, malformations, and the like (120 to 56); and nearly fifty per cent more for conditions not necessarily associated with disease (76 to 56). On the other hand nearly three times as many merchants as brokers were rejected for diseases of the organs of locomotion (55 to 19). Evidently a larger proportion of men, unfit for severe labor because of injuries, malformations of hands and feet, and deficiencies in size and strength, adopt the broker's calling. More merchants are disqualified because of hernia and loss of teeth, fewer for disorders of the circulatory system (60 to 82); more for insanity and nervous derangement (13 to 9); and more for consumption (48 to 19). In general health and physical capacity, merchants and brokers rank with physicians, clergymen, and public officers, and were capable of furnishing for the army only about half as many men per thousand as the mass of unskilled laborers. In disorders of the digestive system, they exceeded all except innkeepers (brokers 177, merchants 218). In diseases of the circulatory system, the brokers came next to the liquor dealers (82), the merchants next to grocers (60). The brokers stood lowest in consumption, the merchants next the highest. In chronic rheumatism, the brokers stood second to liquor dealers, and the merchants come next, on a level with agents.

Wanted, A Tiger Exterminator.

During the year 1872 a census was taken in India of the persons who had been killed by wild animals during the years 1868, 1869, and 1870. The total reached 38,218, of which it was found that 25,664 had died through the bites of venomous serpents, while the remaining 12,554 had nearly all been devoured by tigers. So that, for the years mentioned, Her Majesty's dusky subjects were eaten at the rate of about one every two hours. Plenty of such suggestive statistics are at hand. Official reports from Lower Bengal state that 13,400 persons in that section of the country were devoured in six years, and the destruction over the entire

peninsula is estimated at 10,000 people a year. In 1869 one tigress blockaded a road, stopped traffic thereon for several weeks, and slaughtered 127 victims. During two previous years she killed 108 people.

Nor do the feline damages end here. We have further statistics which show that for each person killed sixty head of cattle are destroyed, and this aggregates a money loss of about \$5,000,000 yearly. The terror produced by a tiger's ravages often desolates whole villages. At one time, in one of the Central Indian provinces, thirteen villages and a cultivated area of 250 square miles were simultaneously abandoned, owing to the visitation of a band of tigers.

These facts have been laid before the English House of Lords, and the government has been asked to take speedy measures to check the present rate of carnage. Since the Sepoy rebellion and the consequent disarmament of the natives, it is reported that the tigers have greatly increased in numbers. In localities where they abound, there are bands of hunters who receive a bounty from the government for every tiger killed; but these men never shoot a tiger unless the animal has acquired considerable celebrity by his exploits. They thus pocket a much higher reward, owing to the authorities setting a variable scale on the head of the beast, according to his age and voracity. Meanwhile the English papers are urging immediate action. The *Times* says that: "It is frightful to think that, in the middle of the nineteenth century, with all the improved engines which man has invented to destroy his kind, a considerable number of the subjects of Her Majesty are exposed, just as if it were a form of natural death, to be devoured on their very thresholds by savage beasts."

Here is a chance now for some enterprising person to undertake the extermination of the Indian tigers by contract. He might contrive an ironclad steam carriage, capable of propelling itself through jungles, and having apparatus for throwing jets of boiling water or hot steam into inaccessible places, to dislodge the animals, and a battery of Gatling guns wherewith to salute their appearance. Tigers are not invulnerable; but to engage them, even on elephant back, is a perilous undertaking. To destroy them from behind armor with Gatling guns and torpedoes is a much safer proceeding; and as the authorities frequently offer as high as \$150 for a single animal, it might prove a remunerative venture.

PROFESSOR HUXLEY says: "The general notion of an Englishman when he gets rich is to found an estate and benefit his family. The general notion of an American, when fortunate, is to do something for the good of the people and from which benefits shall continue to flow. The latter is the nobler ambition."

A distinguished French scientist has recently died. M. Charles St. Claire-Déville was a chemist and mineralogist of great ability. He discovered amorphous and insoluble sulphur, thus showing, for the first time, a simple body in two conditions, differing not only in physical characteristics, but in essential chemical properties.

Recent American and Foreign Patents.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED NECK YOKE.

Frank Hannig, Lockhart, Tex.—This consists in proving the neck yoke with a central enlargement, and connecting the tube which slips on the end of the carriage pole with the yoke by means of rings having perforated ears to receive the ends of a pivoted bar, to which the pole ring or tube is swiveled.

IMPROVED AXLE LUBRICATOR.

John J. Wetmore, Shabonier, Ill.—This consists in combining an oil chamber having a close-fitting plunger with a skeln having an internal longitudinal groove and side apertures communicating with the surface of the bearing.

IMPROVED HAT-BOX-BOARD CUTTING MACHINE.

William Jenkins, Newark, N. J.—The invention consists of a reciprocating carrier that feeds the block against the adjustable cutting knife to cut off the thin boards. The board is pressed in one direction against the knife by a weighted roller, and lifted by vertically movable rollers and actuating mechanism operated by the carrier when sliding in opposite directions to clear the knife.

IMPROVED DOOR SHEAVE.

George Laauwe, New York City.—These sheaves for sliding doors are so constructed that they may be easily adjusted to regulate the door so that it may be plumb, and to enable the wear to be easily taken up. The sheaves are pivoted between the arms of a V strap, which is inserted in a case; through the top of the latter a screw passes, and is so secured to the sheave strap that the sheave may be raised and lowered to adjust the door.

NEW AGRICULTURAL INVENTIONS.

IMPROVED CHURN.

Elisha A. Hewitt, Groton, Conn.—This consists of a churn with revolving bifurcated beaters and fixed side breakers, the air being admitted by a revolving fan with hollow shaft, operated by the driving mechanism.

IMPROVED CHECK ROWER.

Albert M. Black, Pawnee, Ill.—This check rower is used in connection with a planter, and is readily adjusted on the ground without necessitating the marking of the same. It consists of a cord with tags, applied at suitable distances, passing over guide pulleys and rollers at the ends of a cross bar of the planter. The dropper keeps his eye fixed on the end of the pointer, and gives a pull to the drop lever for depositing the required quantity of corn as each tag passes the end of the pointer. When the opposite side of the field is reached, the dropper takes a tension pin, with spring top hook, and drives it some distance back of the planter into the ground, passing the spring hook over the rope to retain the tension of the same. The stretching pin at the end is then taken up,

and the planter turned, the rope being again drawn through the pulleys and staked down at the opposite side of the planter, which is then ready to pass back over the field, dropping the corn in the same manner as before.

IMPROVED HORSE HAY RAKE.

Amos W. Coates, Alliance, O.—This invention relates to an improvement in clearers for horse hay rakes, and is more particularly an improvement in that class of clearers which consist of a transverse bar resting upon the rake teeth and connected to each of them by staples or equivalent devices. According to this improvement, the clearer bar is supported above the rake teeth by means of forks which bear upon but two of the latter, whereby certain advantages are secured in respect to wear and friction, ease of operation of the rake, and independent action of the wire teeth.

IMPROVED HARROW.

Adolphus W. Davis, Dwight, Ill.—This improves the construction of the harrow for which letters patent were granted to the same inventor, July 13, 1875. By pushing a lever forward and then raising its rear end, the forward end of a section will be raised from the ground, and then, as the upward movement of the lever is continued, the whole section will be raised from the ground. In the same way, by drawing the lever to the rearward, and then raising its rear end, the section will be raised rear end first. As either end is raised, the other end rests upon the ground to do its required work.

IMPROVED CORN PLANTER.

Ira Houghtling, Houghton, Mich.—This invention consists in providing a corn planter with a cam shaft, disk slide, spring, arm, and spouts; also, in connecting the feeding tube slide and spring by a link that may be shortened.

IMPROVED FARM GATE.

Joseph Jennings, Jr., Wilton, Iowa.—By raising the forward end of the gate the rear end of the braces are drawn forward, and a bolt drops into notches of the bottom bar and thus holds the forward end of the gate securely at the point to which it has been raised. Devices are provided for lowering the forward end of the gate to any desired point.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED PRINTING PRESS.

Willard W. W. Belknap, Brooklyn, N. Y.—The new feature consists of a swinging platen, in combination with a vertically movable bed, and an oscillating ink-distributing mechanism. The simplicity of this apparatus renders the press less expensive, and facilitates the rapid and effective working of the same.

DEVICE FOR MAKING FACE PLATES FOR DRAWBARS.

John Green, Sunbury, Pa.—This invention relates to an improvement in the manufacture of face plates for drawbars of railway cars, and it consists in a series of tools to be used for the common end of making the said plates, which tools are employed for the successive steps of cutting out the blanks, stamping the slot and rivet holes, and bending the stamped plate into curved form: each of the tools being provided with extended handles for their convenient manipulation beneath the hammer, whereby all of the said steps of the operation are conducted under the same heat employed for forging the blank plates.

IMPROVED ROTARY ENGINE.

George C. Hale, Kansas City, Mo.—The object of this invention is to effect an improvement in that class of rotary steam engines whose case or cylinder is made to revolve around a stationary circular head or disk to which the pistons are attached. To this end the pistons proper are hinged within a stationary disk having hollow trunnions, and the cylinder revolves around it. The induction ports are in the piston heads, and the cut-off is effected by the automatic movement of the pistons themselves. Thus the necessity of supplementary steam valves is avoided, the number of working parts reduced to a minimum, and the compactness of this class of engines considerably increased.

IMPROVED MILLSTONE DRESS.

Elias N. Roeder, Quakertown, Pa.—This invention consists in dressing both stones exactly alike, with a series of tapering, leading furrows, wider at the eye than at the skirt, deep on one side and tapering to a feather edge upon the other, which feather edge is arranged radially with the center of the stones, so as to have no draft in the leading furrows, the necessary draft being supplied by the quarter furrows, which open into the leading furrows and are formed with an inclined bottom, and of a tapering shape similarly to the leading furrows.

IMPROVED MILL PICK.

Edgar F. Lemoine, Emmerton, Va.—This improvement consists in the particular means for clamping the jaws, in which a screw-threaded stem of the shank enters a female thread of the upper jaw and holds the jaws together, while guide pins prevent the jaws from turning on each other. With this means of clamping the jaws the latter do not become loose, and the blades can never become accidentally detached, as when a key is used, which latter, from the impact of the blows, is readily displaced.

IMPROVED MIDLINGS SEPARATOR.

Edwin Slagle and John McClure Graham, Albany, Mo.—This relates to improvements in the flat, inclined, shaking flour bolt, having cloth arranged in wave-like form, for which a patent was granted to the same inventors, February 1, 1876. Seven new devices, mainly relating to improved mechanical construction, are embodied.

IMPROVED MILLSTONE DRESS.

Henry Grigg and William McElroy, Lockport, N. Y.—This invention consists in beveling the inner portion or bosom of a millstone, from a point about ten inches from the periphery down to the eye, making the space thus formed about one half inch deep at the eye. It also consists in cutting furrows from the eye outward, on a radial line from the center of the stone, to the line that defines the beveled portion, starting in a line at the eye, and increasing to the required depth at the outer edge of the beveled portion. The grooves, from this point, are tangential to a circle drawn outside of the eye, so that they have an inclination or draft of from five to eight inches. The object is to provide a millstone dress that will increase the quantity of midlings.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED GRINDING MILL.

James Madison Collier, Gadsden, Ala.—The driving belts are led to each end of the running stone, both from the countershaft, which is so located that the pull of the belts is directly against the crowding of the journals of the runner against the boxes by the grain.

IMPROVED OILER.

Nelson Holmes, Ypsilanti, Mich.—This consists of an annular spring-supported piston on the rear end of the nozzle, so that, when the latter is pushed back, oil is ejected through the spout.

IMPROVED COIN COUNTER.

Aron Bernstein, Berlin, Germany.—This furnishes a reliable means to instantly detect any false or light gold coin without showing the mode or mechanism by which the same is tested. This object is obtained by allowing the gold coin to fall through a narrow opening and guide channel on to a balance or tilter, from which it will, if genuine and of full weight, roll at once, by suitable deviating mechanism, into the cash box or receptacle; but if it is not genuine, or is of short weight, it is conducted into a separate open receptacle, so as to indicate directly the lack of genuineness or full weight.

IMPROVED LUBRICATING COMPOUND.

John W. Bartlett, Moline, Ill., assignor to himself and Mervin Witherell, same place.—This is a lubricating compound for car axles and other friction surfaces, which will not take fire from a hot journal. It is formed of pulverized blue stone, oil rock, carbonate of potash, chloride of lime, American soapstone, concentrated lye, golden machine oil, pure lard oil, salt, tartaric acid, and soft water.

IMPROVED CARTRIDGE-LOADING DEVICE.

Thomas P. Camp, Stoughton, Wis., assignor to himself and G. W. Wise, same place.—This is an improved device for loading the cartridge shells of breech-loading shot guns. It consists, mainly, in the arrangement of a single continuous slide, having two charging holes, which, by being moved back and forth in a race, receive the charge of powder and shot from respective powder and shot hoppers above, and deliver it to the cartridge shell below. There is a central plunger and inserting spout for the wade, and cut-off brushes in the hoppers, for brushing off and leveling the charge in the slide.

IMPROVED PESSARY.

Jonathan P. Barnett, Navasota, Tex.—This relates to an improvement upon the pessary described in patent No. 163,871, and consists mainly in the arrangement of the wings for supporting the pessary, the arms for adjusting said wings, whereby they are adapted to be folded inward, and the adjusting arms to be folded into slots formed in the tube, to which the wings are hinged.

IMPROVED BALE TIE.

James M. Pollard, New Orleans, La.—The central cross bar of the buckle is provided with a lug or projection on the under side, and the free end of the band is slotted and held up against the bar so that the lug projects into one of the slots, thereby forming the lock. The other or fast end of the band forms the spring by which the slotted end is thus held against the bar and engaged with the lug. The disengagement may therefore be readily effected by depressing the spring. The fast end of the band is so bent as to form a shoulder, which prevents the buckle being accidentally detached from the band; but the attachment and detachment of the buckle may be very easily effected when desired.

IMPROVED SCISSORS.

Amos W. Coates, Alliance, Ohio.—This is an improvement in scissors, designed particularly to adapt them to the use of little girls in cutting out their little quilt patches, doll papers, etc.: and it consists in constructing the two blades with two terminal bulbs or guards which, while permitting the perfect closing and free cutting action of the scissors, also form a guard, whether the scissors be open or shut, which prevents accidental injury to the child, and enables her to use the scissors with perfect safety to the eyes and body.

IMPROVED ANIMAL TRAP.

Cornelius Koons, York Road, Md.—This invention consists mainly in a drum-shaped two-compartment cage made of wire cloth, to the upper compartment of which access is had through a square tapering inlet formed by inwardly converging pointed wires, having suspended in the center a swinging gate composed of pointed wires which admit the access of the rats, or other animals, but prevent their escape; and it also consists in the particular construction and arrangement of the upper inlet and compartment with a lower compartment having a second inlet to receive and retain the rats caught by the first or upper compartment.

IMPROVED COMPOSITION FOR PRESERVING BOLTING CLOTH.

John Wayman, of Collinsville, Ill.—This is a compound formed of wormwood, oil of cedar, gall, and tallow, forming a paste which will keep insects away from the bolting cloth.

IMPROVED BELL TOY.

John T. Rich, Middle Haddam, Conn., assignor to J. C. Clark & Co., of same place.—This improves the construction of the toy bell for which letters patent were granted to J. C. Clark, November 2, 1875, in such a way that the vibrations of the bell may be less obstructed by the mounting. The bell, consisting of a spherical perforated shell, is now secured at one side only to the axle of the carriage on which it is supported.

NEW HOUSEHOLD INVENTIONS.

IMPROVED WASHING MACHINE.

Benjamin F. Fowler, Eau Claire, Wis.—This improved machine does its work by alternately saturating the clothes and then pressing them, to force out the water and dirt, between an upper corrugated roller and a series of smaller rollers beneath.

IMPROVED WATER FILTER.

Samuel F. Simes and Charles Tate, Philadelphia, Pa.—This invention relates to a novel construction of filter for the purification of water or other liquids, which filter is especially designed for attachment to the nose of a hydrant, but applicable also for general use in any connection whatever. The invention consists mainly in a specially prepared purifying pad formed by embodying powdered charcoal, kaolin, or other purifying material, either singly or combined, with the fiber of felt, by blowing it in during the process of the manufacture of the felt. This pad is contained in a chamber formed by two detachable caps, and is held between gratings in the same by means of a cam joint which fastens the caps, which devices also form a part of the invention.

IMPROVED STEAM COOKING KETTLE.

William G. Flanders, West Lebanon, N. H.—This is a double-chambered culinary vessel, made in detachable parts, each provided with a perforated diaphragm. The upper part has a bottom provided with a slide for closing the apertures therein, so as to regulate the admission of steam to the articles to be cooked.

NEW TEXTILE MACHINERY.

IMPROVED WARPING MACHINE.

John J. Ashworth and George Ashworth, Pentelton, England.—This invention places all the warp threads perfectly straight on the beam, prevents twisting, facilitates the weaving, simplifies the machinery, reduces labor, and economizes space in the mill. It embodies eight novel devices, all of which are of great ingenuity, but which are so combined that it is not possible to convey a clear idea of their working without the aid of drawings. There is a new registering apparatus which indicates the exact number of revolutions of the beam, while another device shows the tension of the yarn. By these the same length of yarn is wound in the same number of revolutions upon each of the succeeding sections of the beam as there is upon the first section.