

CENTENNIAL NOTES.

AFTER THE FAIR.

The dismantling of the Great Exposition is being pushed forward with great rapidity, and the scene in the grounds reminds one of the busy haste incident to the week prior to the opening. Freight cars, wagons, and trucks, loaded with filled boxes, are everywhere; the machinery is motionless, and much of it is taken apart and covered with white lead; on such of the State buildings as are not sold (but most of them are), the placard "For Sale" stares the visitor in the face; and barriers at every hand prevent the accustomed free rambling about the grounds. In the Main Building nearly all the foreign exhibits are fenced in, and admittance to them is denied. The Japanese display is surrounded by a high partition which prevents even the empty cases being seen. The paintings are nearly all packed. Visitors who puzzled over how Markart's immense work was transported may now have their curiosity satisfied by beholding the canvas removed from its stretchers and carefully rolled on a huge cylinder, a proceeding which smaller oil paintings would hardly undergo without cracking. Most of the statuary is to be sold, and some is already advertised to be offered at auction in this city. The Government Building is closed, and a sentry paces his beat in front of the door. Visitors are still admitted to the grounds at the usual price, but they number scarcely 15,000 a day. Bargain hunters are present in full force, there being a prevalent idea that exhibitors will offer their wares at greatly reduced rates rather than remove them. The reverse, however, appears to be the case; and with some exceptions, the exorbitant prices hitherto charged are maintained. To judge from the immense number of objects that were sold during the fair and the sums they brought, visitors must have become imbued with the notion that everything exhibited was unique and unattainable elsewhere. We doubt if there was anything, with the exception of certain works of art and oriental objects, that could not be duplicated in this city or even imported from Europe at a very much less cost. The Italian trinkets, which are sold in Genoa for their weight in silver, were universally purchased at about four times their value; the Chinese porcelain went at about the same ratio as compared with New York prices; and as for the supposed Turkish jewelry, thousands of dollars worth of the spurious trash was bought at at least five times its usual cost. At the beginning of the Centennial, some real Turkish goods were offered for sale; and these Mr. Bayard Taylor probably saw when he wrote the letter to a New York journal attesting their genuineness. That letter was posted conspicuously by the dealers; and under its innocent guarantee, thousands were induced into buying glass and brass which elsewhere they would have scorned, and which now is gladly sold on the grounds at less than half price. The United States government seems to have profited considerably by the generosity of foreign exhibitors, and in this respect to share the advantages with the city of Philadelphia. Nearly every government represented on the grounds has given something to the National Museum, while many have given all and others the greater portion of their specimens in certain departments. Philadelphia has lately been presented with the German Pavilion; and the Jewish statue of "Religious Liberty" which has just arrived, unfortunately too late for the Exhibition, will be set up permanently in Fairmount Park.

The Centennial Commission are finishing the award business, and shortly will adjourn for a period of several months, leaving the entire management in the hands of that less cumbersome body, the Executive Committee. The members of the Commission are determined to completely wind up the affairs of the Exposition just as soon as the accounts can be revised and final reports prepared, and thus creditably to finish their creditable work.

With the close of the Exposition comes the period of statistics, and they are appearing with a frequency that presupposes a pre-eminent popular mathematical taste. We are told that the total number of cash admissions was 8,004,214, and receipts \$3,674,888.74. The hotels in West Philadelphia report the accommodation of 2,564,000 guests. The Globe hotel is to be removed to Long Branch, the Atlas will be demolished, and many of the others will be altered back into dwelling houses. The attendance at the Exposition was lowest during the month of May, averaging 19,946 daily; it steadily increased, and during October averaged 102,456. The fund realized by the 15 per cent royalty on beer and soda water amounts to \$500,000. The Corliss engine flywheel made 2,355,300 revolutions during the Exhibition. Any point in its periphery therefore traveled an average of 260 miles per day, or 40,147 miles during the entire Fair.

Science in America.

Professor John W. Draper delivered an inaugural address, as President of the newly formed Chemical Society, on the above subject, at Chickering Hall, this city, on the evening of the 15th of November. He began by stating that the progress of Science depends on two elements, our educational establishments and our scientific societies. Briefly sketching the scientific and industrial progress of the century, he said that in 1840 it had become apparent that there was provision in the existing educational establishments for instruction in accordance with the world's advance in substantial knowledge. The colleges clung to the mediæval as long as they could, and only accepted the modern when they were compelled; and generally, the lecturer considered that the sooner colleges emancipated themselves from the mediæval confines of the classics, and assumed thoroughly and sincerely the modern cast of study, the more the cause of scientific progress would be promoted.

Dr. Draper then sketched the growth of scientific societies and pointed out the benefits of their organized efforts. He thought that endowment of colleges was a noble disposition of money, but considered that the bestowal of funds on any scientific society was still nobler. The one is a local and transitory benefaction, the other enduring and universal benevolence.

The most important part of the address related to scientific progress due to Americans, and was in answer to many of the addresses made during the last summer on the Centennial occasion, in which the shortcomings of the United States in extending the boundaries of scientific knowledge, especially in the physical and chemical departments, have been set forth. The persons who make these humiliating accusations mistake what is merely a blank in their own information for a blank in reality.

"Perhaps, then, we may without vanity recall some facts that may relieve us in a measure from the weight of this heavy accusation. We have sent out expeditions of exploration both to the Arctic and Antarctic Seas. We have submitted our own coast to a hydrographic and geodesic survey, not excelled in exactness and extent by any similar works elsewhere. In the accomplishment of this we have been compelled to solve many physical problems of the greatest delicacy and highest importance, and we have done it successfully. The measuring rods with which the three great base lines, of Maine, Long Island, Georgia, were determined, and their beautiful mechanical appliances, have exacted the publicly expressed admiration of some of the greatest European philosophers, and the conduct of that survey their unstinted applause. We have instituted geological surveys of many of our States and much of our territories, and have been rewarded, not merely by manifold local benefits, but also by the higher honor of extending very greatly the boundaries of that noble science. At an enormous annual cost we have maintained a meteorological signal system, which I think is not equaled, and certainly is not surpassed, in the world.

"Should it be said that selfish interests have been mixed up with some of these undertakings, we may demand whether there was any selfishness in the survey of the Dead Sea? Was there any selfishness in that mission that a citizen of New York sent to Equatorial Africa for the finding and relief of Livingstone, any in the astronomical expedition to South America, any in that to the valley of the Amazon? Was there any in the sending out of parties for the observation of the total eclipse of the sun? It was by American astronomers that the true character of his corona was first determined. Was there any in the seven expeditions that were dispatched for observing the transit of Venus? Was it not here that the bi-partition of Biela's comet was first detected, here that the eighth satellite of Saturn was discovered, here that the dusky ring of that planet, which had escaped the penetrating eye of Herschel and all the great European astronomers, was first seen? Was it not by an American telescope that the companion of Sirius, the brightest star in the heavens, was revealed, and the mathematical prediction of the cause of his perturbations verified? Was it not by a Yale College professor that the showers of shooting stars were first scientifically discussed, on the occasion of the grand American display of that meteoric phenomenon in 1833? Did we not join in the investigations respecting terrestrial magnetism instituted by European governments at the suggestion of Humboldt, and contribute our quota to the results obtained? Did not the Congress of the United States vote a money grant to carry into effect the invention of the electric telegraph? Does not the published flora of the United States show that something has been done in botany? Have not very important investigations been made here on the induction of magnetism in iron, the effect of magnetic currents on one another, the translation of quantity into intensity, and the converse? Was it not here that the radiations of incandescence were first investigated, the connection of increasing temperature with increasing refrangibility shown, the distribution of light, heat, and chemical activity in the solar spectrum ascertained, and some of the fundamental facts in spectrum analysis developed, long before general attention was given to that subject in Europe? Here the first photograph of the moon was taken, here the first of the diffraction spectrums was produced, here the first portraits of the human face were made—an experiment that has given rise to an important industrial art!

"Those who make it their practice to decry the contributions of their own country to the stock of knowledge may perhaps stand rebuked by the expressions that sometimes fall from her generous rivals. How can they read without blushing at their own conduct such declarations as that recently uttered by the great organ of English opinion, the foremost of English journals? The *Times*, which no one will accuse of partiality in this instance, says: "In the natural distribution of subjects, the history of enterprise, discovery, conquest, and the growth of republics fell to America, and she has dealt nobly with them. In the wider and multifarious provinces of art and science she runs neck to neck with the mother country, and is never left behind!"

Spontaneous Combustion in Coal.

At this season it is advisable to test the temperature of all piles of coal, whether in sheds or out of doors, in order to detect any tendency to heating. The usual method of running down tubes (ordinary inch pipes, sharpened at lower end) from the top of the piles to the bottom, at frequent intervals, will repay for the trouble. Whether in sheds or out of doors, coal is apt to heat, and more particularly so after being stored about three months. In many places, tubes are always kept in the piles, and the tempera-

ture taken daily, by lowering a thermometer into them: in this way any accumulation of heat can be easily detected, and the remedy applied before loss is incurred. When undue heat is detected, turning over that portion of the pile is the surest remedy. In several cases of heating that have occurred recently, only the watchfulness and promptitude of those in charge have prevented serious losses.—*American Gaslight Journal*.

Preservation of Timber with Salts of Copper.

Experiments by M. Rottier show that wood impregnated with copper may be long preserved, but will not last underground for an indefinite time. However carefully prepared, it decays after a longer or shorter interval.

So long as the wood contains a certain proportion of copper, it resists decay; when the copper is no longer there, it is in pretty much the same condition as unprepared wood, and speedily decomposes.

Some thin slips of soft poplar wood were carefully dried and afterwards impregnated with a solution of pure copper sulphate, containing 1½ lbs. of crystallized sulphate of copper per 100 lbs. water. It was not found necessary to resort to pressure, as the wood being very thin, mere immersion sufficed for its thorough impregnation with the antiseptic fluid. The strips were washed several times with plenty of water, and dried. Some were then set apart for analysis, and others buried, in a box filled with ordinary garden mold kept continually moist by repeated waterings. The annexed table shows the results:

	Length of time the strips were impregnated.	Proportion of impregnated sulphate of copper found in them.	REMARKS.
	days.	grains.	
15 grains of wood prepared and dried....	0	0.63268	
15 grains of wood prepared and dried...	68	0.38575	Wood still perfectly sound.
15 grains of wood prepared and dried....	117	0.33946	Strips showing a few black spots.
15 grains of wood prepared and dried....	179	0.26231	Wood almost entirely decayed.

Here we see, as plainly as it can well be shown, that the preservation of the wood was due to the presence of the cupreous sulphate; by degrees, as it parted with this metallic salt, it decayed. Now let us consider the causes of removal of the copper. They are three: 1. The presence of iron. 2. The presence of certain saline solutions. 3. The presence of carbonic acid.

Timber prepared with copper is liable to decay when the proportion of the latter contained in it becomes very small. It appears probable that its duration might be prolonged by fixing more copper in the ligneous tissue.

The ordinary method of preparing timber does not permit of the solution of the question; wood plunged in a solution of copper sulphate takes up a pretty nearly constant quantity of the metal; and that quantity is very small. Special processes are requisite to introduce larger quantities of the metal into the tissues.

Ammoniacal copper salts: The use of the ammoniated salts of copper allows of the introduction of large quantities of copper in woody tissue. Numerous experiments showed that wood so prepared contained from 0.255088 grain to 0.112639 grain of copper per 15.43 grains of wood.

It appears, therefore, that there are various ways of impregnating wood with copper in excess of the ordinary proportion. It remains to be seen whether the excess of copper gives a notable increase of durability. To decide this question seven strips of wood were buried in the ground side by side: 1. A strip unprepared, A. 2. A strip prepared with sulphate of copper, B. 3. A strip prepared with acetate, C. 4. A strip prepared with catechu, D. 5. A strip prepared with sulphate and afterwards heated, E. 6. A strip prepared with acetate and heated, F. 7. A strip prepared with cuprammonium sulphate. The results are:

	15.43 grains of wood contained of Cu, S, H ₂ , O grains.	Wood completely rotted after days.
A. Unprepared wood.....	0.0003086	30
B. Wood prepared with copper sulphate in the ordinary way....	0.0112639	67
C. Wood prepared with acetate of copper.....	0.1543	95
D. Wood prepared with sulphate of copper and catechu.....	0.20059	120
E. Wood prepared with sulphate of copper and heated afterwards.	0.1543	80
F. Wood prepared with acetate of copper and heated afterwards.	0.35489	160
G. Wood prepared with ammoniacal copper sulphate.....	0.255088	130

These results have been confirmed by repeated experiments, in some of which the prepared slips of wood were found as fresh and sound after an interment of 200 days as when first consigned to the ground.

Of the several methods above described, one only, the employment of ammoniacal copper salts, appears of any practical utility. Acetate of copper and indigo are each of them too expensive; catechu is too restricted in its action. On the other hand, the ammoniacal salts of copper are adapted for general use, and are, comparatively speaking, cheap; and the slightly increased outlay necessitated by their adoption would be more than compensated by the assurance of greater durability in the timber so prepared.

The French International Exhibition of 1878.—Regulations for Foreign Exhibitors.

The Commissioner General of the French International Exposition of 1878, to be held in Paris, has published the regulations for exhibitors. We extract the following from the articles relating to foreign contributions:

Article 5. Packages from abroad containing products destined for the Exposition must bear as distinctive marks the letters E. U., surrounded by a circle and traced by a brush. They are to be addressed to the commissioner of the exhibitor's country. Such packages will also bear the following indications, namely, the colors or emblems of their national flag. Foreign commissioners are expressly requested to inform the Commissioner General, at as early a date as possible, as to the form of address and special signs for recognition which each may adopt.

Article 6. Both French and foreign products will be admitted within the Exposition from January 1, 1878, to March 30, inclusive. These dates are subject to the revision of the Commissioner General.

Article 7. The Exposition is constituted a custom house depot. Foreign products entering under customs laws may do so up to March 15.

Articles 8 and 9. These relate to the building of structures for heavy machinery, etc., under the direction of the Commissioner General. Work thereon may begin by December 1, 1877, and must be finished by February 15, 1878.

Article 10. Everything must be in place and in order by April 15. This provision will be rigidly enforced, and the Commissioner General will dispose of all allotted space either not occupied or incompletely occupied on that date.

Articles 11 and 12. Packing boxes must be emptied at once, and removed. If the exhibitor does not do this, the Commissioner General will have it done. Exhibitors must also take care of their own boxes, no place for storing them being provided.

Article 14. All exhibits must be removed by December 15, 1878. After that date they will be stored at the exhibitor's expense; and if not then removed before June 30, 1879, they will be sold for the public benefit.

NEW BOOKS AND PUBLICATIONS.

THE USE AND ABUSE OF THE STEAM BOILER. By Stephen Roper, Engineer. Philadelphia, Pa.: Claxton, Remsen, & Haffelfinger, Publishers, 624 Market street.

The author says in his preface that "the great mistake of many writers on the steam boiler and steam engine is that they write too much." This is peculiarly his own error, and the unnecessary existence of the present book proves the fact. It appears to be devoted to advertising a well known boiler insurance company, several boilers in common use, and some of the author's inventions. Such practical information as is given is useful, but is obtainable in much more condensed form in other works. The book, however, serves one good purpose in reminding us that we have not received that amended copy of Mr. Roper's previous production, in which he promised to give credit to the *SCIENTIFIC AMERICAN* for extensive extracts taken from our columns without a word of recognition; nor has he yet explained why he publishes a notice which we wrote of one of his works, garbled with self-flattering interpolations of his own.

DAVID AND ANNA MATSON. By Abigail Scott Duniway. Price \$2.00. New York city: S. R. Wells & Co., Broadway.

This is claimed to be a poem, and the author informs us that she has "sniffed the bland breeze of the broad Mississippi" and "listened all rapt to Niagara's groan." She now has an opportunity to "sniff," and listen to the groan of the public.

HOW TO SING. By W. H. Daniell. Price 50 cents. New York city: S. R. Wells & Co., Broadway.

The author, an experienced music teacher, has condensed into this little manual a great many useful suggestions on the development of the voice. The work is written in colloquial style, is pleasantly readable, and can be commended to vocalists of all grades.

Recent American and Foreign Patents.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED STONE-DRESSING MACHINE.

John C. Miller, Bridgewater, Va.—This has reference to a machine for grinding or dressing the ends or heads of grave and other stones into any required shape in rapid and convenient manner, without danger of injuring the slabs by cutting or otherwise. The invention consists of adjustable supporting pieces and holding planks, between which the stones are secured head downward, to be ground or dressed by a reciprocating trough with a metallic shaping plate containing sand and water.

IMPROVED LOCOMOTIVE.

William Holdsworth, Traverse City, Mich.—This is an improvement in the class of locomotives provided with wheels mounted on vertical axes and adapted to work in contact with a rail laid equidistant between the parallel rails, upon which the locomotive is supported in the usual way. The improvement relates particularly to parts for varying the pressure of the driving wheels upon the central friction rail, and for guiding and supporting said wheels while permitting their lateral and vertical adjustment.

IMPROVED SHIP'S WINDLASS.

Joseph L. Dickenson, Hempstead, N. Y.—This inventor makes the plug, which connects the chain wheel of a windlass (which reverses loosely on the shaft) with a fixed wheel, in sections. The object is to enable the movable wheel to be readily disconnected from the fixed wheel, so that the anchor may be easily let go, if need be, during the process of weighing.

IMPROVED ANTI-FRICTION BEARING.

James Warren and George Wilkes, Monroe, Iowa.—This consists of an arrangement of rollers of peculiar form, and bearing plates adapted to the rollers in such a way that the journals of the shaft to which they are applied will be relieved from end thrust, the object being to relieve the journals and steps, of vertical and other shafts that are subjected to end pressure, from strain and friction.

IMPROVED VALVE GEAR FOR STEAM ENGINES.

George E. Tower, Annapolis, Md.—This invention is designed for marine engines, but is applicable to others as well. It relates to a means for adjusting and working the main valves of an engine, whether the same be applied to the side or head of a cylinder. The chief feature of the invention is a shifting lever mounted on a rotating eccentric or crank, and connected with a rocking frame or equivalent device, which is capable of vibrating or remaining stationary while the engine is running. When the rocker is station-

ary the movement of the lever is least eccentric or irregular, and the valves cut off at about seven tenths of the stroke. But when the lever attains its greatest eccentricity, the valves cut off at about two tenths of the stroke. Between these limits the movement of the valves may be regulated at will. The variation in the position and movement of the lever is, in this instance, effected by an irregular cam, whose adjustment with the rocking frame shifts the point of connection between it and the lever, such point being stationary, or vibrating in the arc of a circle, correspondingly.

IMPROVED FEEDER FOR HORSESHOE MACHINES.

John W. Chewing, Jr., Shadwell Depot, Va.—This invention relates to certain improvements upon the horseshoe machine for which letters patent were granted the same inventor, August 29, 1876, and it consists in the construction and arrangement of a device for feeding the bar, from which the shoe is made, to the machine, whereby the operation of the same is rendered automatic.

IMPROVED LOCOMOTIVE.

John Westcott, Tocol, Fla.—This invention relates to a novel construction of a locomotive for drawing cars which are supported upon swiveling pedals that slide in lubricated channeled rails, and it consists in pivoting the supporting pedals in laterally adjustable bars, whereby they are made to adapt themselves to the channeled rails so as to obviate binding, and whereby also they are adapted to roads of different gage.

IMPROVED HORSE POWER.

Isaac Joyner, Jonesborough, Miss.—This invention consists of a wheel with spider frames that support an interior drum or cylinder, of sufficient size for the horse to walk in, the power being transmitted by a friction wheel, in contact therewith. One of the radial frames supports an outermost circle that forms, with suitable levers and friction shoe, an effective brake mechanism.

NEW HOUSEHOLD INVENTIONS.

IMPROVED SAD IRON.

H. B. Evans, St. Charles City, Mo.—This invention consists in a self-heating sad iron, having a removable fire box or drawer, a detachable top, and an inner partition for throwing the heat in a downward direction, the main object of the invention being to heat the bottom of the iron and keep the top comparatively cool.

IMPROVED CARPET CLEANER.

Sarah B. Stearns, Duluth, Minn.—This consists of a number of alternately working spring arms, with beaters or whips fastened to the ends, which are operated jointly with revolving dusting brushes at the ends of radial arms. The dusting brushes may be detached and replaced by scouring brushes to be used in connection with a suds trough.

IMPROVED VENTILATOR.

Henry A. Buzzell, St. Johnsbury, Vt.—This consists of a drum attached to the stove pipe, the drum being connected by pipes and funnels with the story below and with the upper and lower part of the room, to draw off the air to the chimney.

IMPROVED CLOTHES DRYER.

John F. Jaques, Moline, Ill., assignor to himself and John W. Bartlett, of same place.—This is a folding frame of peculiar construction, provided with cords for supporting clothes, forming a convenient clothes rack, and which is capable of being folded into a small compass.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED CISTERN.

James Kennon, Jamestown, Ohio, assignor to Mary E. Kennon, of same place.—This is a walling for wells and cisterns, made of sections, or in one continuous piece of burned clay, with top covering, the upper edge or seat of the sections being made wider than the lower to support thereon the next, and form a kind of shoulder for the surrounding earth.

IMPROVED DOOR LOCK.

Gustav Winter, Denver, Colorado.—This consists of a door lock with two or more bolts and tumblers, which are so arranged in connection with the key hole guard plates, pivoted to the casing of the lock and operated by the bolts and key, that the key hole is closed at the side opposite to that from which the key is introduced.

IMPROVED CARRIAGE TOP.

George F. Knight, Carroll, Ohio.—This invention consists in making the top of a buggy or other vehicle of sheet metal, the same being fastened to an internal frame and braced by bolts, six in number, while the top is connected with the seat frame by front and rear braces, the latter being jointed and the former rigid. This construction is found to greatly facilitate the trimming of the top, as that can be done before the frame is bolted on, and therefore at much less cost than in the usual way.

NEW AGRICULTURAL INVENTIONS.

IMPROVED TOBACCO SUCKER GERM DESTROYER.

Joseph H. Knaus, John R. Harford, Walter C. Knaus, and Andrew J. Furr, Boonsborough, Mo.—The object of this invention is to improve the construction of the tobacco sucker germ destroyer for which letters patent were granted to Joseph H. Knaus and John R. Harford, January 11, 1876. In using the instrument, the handle is grasped in the hand, with the fingers beneath the cross bar, and the cavity between the arms is placed against the tobacco stalk, directly over the sucker germ, and is pressed against said stalk with sufficient force to cause a cutter to project against said germ. The cutter is then rotated, and cuts out and destroys the germ, so that it will not grow again.

IMPROVED FARM GATE.

William H. Richardson, Sheboygan Falls, Wis.—This is an improvement in that class of gates which slide open and shut over rollers, so that they may be operated with more facility, in less space, and not be so liable to get out of order. The invention consists in clamping two rim-grooved wheels to a gate bar so that each will revolve upon a rigid hollow bearing, through which the clamping bolt passes.

IMPROVED REIN HOLDER.

George W. Waters, Center, Mo.—This consists of a bar of wood having straps adjustably attached, for strapping the bar to the shoulders, and for connecting the reins to the bar, the object being to provide a device for guiding teams while plowing, or doing other similar work, which will permit of the free use of the hands and arms.

IMPROVED GARDEN RAKE.

Anna Maria Suydam, Waterloo, N. Y.—A blade of segment shape, with sharp edge, is bent in one piece with the tines, and forms a stiffening back for the same. It is made in line with the handle, and at about a right angle to the tines, and serves to clean and cut away the small patches of grass and bits of weed that are left in hoeing in the garden paths.

IMPROVED NOSE RING FOR SWINE.

Edmund S. Richards, Tripoli, Iowa.—The sharpened ends of a piece of wire are passed through the gristle of the hog's nose, bringing a roller on the wire just in front of said nose. Small leather washers are then placed upon the sharpened ends of the wire, and the said ends are bent down upon the outer sides of the said washers, securely fastening the ring to the hog's nose. When a hog with this device attempts to root, the roller turns upon the wire, and the hog can make no impression upon the ground.

IMPROVED HAY LOADER.

Joseph Richter, Laketown, Minn.—This invention relates to certain improvements in that class of devices which are designed for loading wagons with hay, straw, or grain. It belongs to that type of loaders in which an adjustable rake gathers up the hay and delivers it to an endless revolving apron provided with teeth, which apron is operated by a band and pulley connection with one of the driving wheels, and delivers the hay to the top of the wagon. The improvement consists in the particular construction, arrangement, and adjustments of the loading devices.

IMPROVED METHOD OF CHECKROWING CORN.

Charles B. Maclay, Delavan, Ill.—The convexity of the ground, passed over by a planter or seeder, necessarily modifies the distance between the hills planted. The gain or loss in this respect is noted, and may be corrected in this machine by means of an expandable wheel. A chain passes around this wheel and also a collar on the axle of the machine, so that the rotation of the wheel may cause the reciprocation of the seed slide. The wheel is expanded, more or less, to cause the slide to work more or less quickly, and thus drop the seed in hills a greater or less distance apart.

NEW TEXTILE MACHINERY.

IMPROVED PICKER CHECK.

Robert Davidson and John Richardson, Fall River, Mass.—This is an improvement in the class of friction devices designed for gradually arresting the picker staffs of power looms, in place of suddenly stopping them, as commonly practised. It relates to the means of attaching the friction strips to the shuttle boxes, and of adjusting the angle of the strips to each other, for varying the friction exerted on the picker staff. By means of adjustable brackets, the binders may be set nearer or farther from each other, and thereby the binding force of the check device increased or decreased.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED CROQUET Mallet.

Harry Malin, Pleasantville, Pa.—This is an improved croquet mallet that will not bruise the balls, and makes them last much longer, while it requires a lighter stroke in playing. It has rubber caps or facings at the ends.

IMPROVED PORTABLE FIRE ESCAPE.

Herbert R. Houghton, New York city.—This fire escape consists of a wire rope having a series of cross bars or rests interlaced and lashed thereto, the said rope having a loop formed at its upper end, with an extension end, for convenience of escape upon the main rope. The whole is suspended by a snap hook caught in an eye, which is screwed to the floor of a room. As its weight is only about five lbs., it is suitable for the use of travelers and residents in hotels, for whom it is especially designed.

IMPROVED MACHINE FOR MOUNTING PHOTOGRAPHS.

Robert Sheane, Listowell, Ontario, Canada.—This invention consists of a box of two parts hinged together so as to open and close together with uniform action. In the lower part is a glass plate resting on a rubber or other elastic cushion, and in the upper part is a follower with an adjusting screw. The cards on which the photographs are to be mounted are put in the upper part, and pressed down one after another on the pasted pictures lying back upon the glass, which are thus pasted to and mounted on the cards by closing down one part of the machine on the other.

IMPROVED POCKET BOOK FASTENER.

Daniel M. Read, New York city.—This invention is an improvement upon that for which the same inventor has already received letters patent, and relates chiefly to the construction of the fastening attached to the strap encircling the pocket book, which is composed of a flat sheet metal top plate and a channeled bottom plate. The top plate is provided with an end extension, which is bent back over the end of the flap of the pocket book, to cover, protect, and confine said end, and the bottom plate has a lengthwise depression or channel forming a corresponding raised portion, in which are formed three holes to receive the pin fixed in the base plate.

IMPROVED CIGAR HOLDER.

John Hutton, New York city.—This is a skeleton holder consisting of the mouth piece in combination with the spring arms and semicircular clips which grasp the cigar. It is made in one piece from hard rubber.

IMPROVED PROCESS OF LITHOGRAPHING TRANSFERS.

Charles R. Biedermann, St. Louis, Mo.—This invention consists mainly in dispensing with the preliminary treatment of the stone for causing it to absorb fluid matter beneath its surface, which is effected by hardening the copy on paper into a solid type by the application of nitric acid, and transferring, and fixing the hardened copy upon the stone by heating the same to blood heat, without chemical treatment of the stone.

IMPROVED COMBINED GAS METER AND CARBURETER.

John M. Cayce, Franklin, Tenn.—Mr. Cayce's present invention relates, first, to an improved gas-measuring apparatus, adapted for use, like other meters, in dwellings and other buildings, and also for performing the function of a secondary motor for operating an air-carbureting apparatus. The chief element of the apparatus is a bi-chambered wheel or cylinder, of what may be termed annular segmental form, which is partially immersed in water or other liquid, suitable for sealing its open ends, and is oscillated upon its axis by the passing current of gas required to be measured, each reciprocating movement thereof causing the vibration of a weighted lever, and thereby the reversal of a four-way cock, by which the gas current is caused to enter one chamber of the wheel while the other is discharging its contents, and vice versa.

IMPROVED DRESS CLASP.

Alexander L. Fyfe, London, England.—This clasp is adapted to be attached to a chain provided with a hook for attachment to the waistband. The dress is held in a clip, which consists of a pair of jaws, cupped or hollowed, and having on one a spring pad or cushion which fits in the hollow of the other, and thus securely retains the dress. The pad consists of a disk of metal, cupped or hollowed, with a spiral spring behind it, and is fitted in the hollow of one of the jaws. The jaws are provided with a runner, so formed as to embrace and compress them firmly together at the point where the dress is held. The runner may be of any desired form, and the back of the jaws may be corrugated or roughened transversely to ornament them, and at the same time retain the runner more securely in position.