

inch, at 4,000 yards; the "Iowa," 14 guns, at 2,500 yards; the "Texas," 13 guns, at 2,700 yards; and the "Oregon," 12 guns, at about the same range. The "Gloucester" was using five light rapid-fire guns. All of these, except the 13-inch guns of the "Indiana," were rapid-fire weapons, and the sea was being churned into a mass of foam about the doomed vessels. This being the case, it is certain that the value of the destroyer is not determined one way or the other by their destruction in the Santiago fight.

Chained Libraries.

In a paper on the "Libraries of the Middle Ages," recently read by Mr. T. G. Jackson before the Royal Institute of British Architects, the lecturer said that buildings specially to hold their libraries were first erected by the universities and colleges. The oldest structure of the kind in England, perhaps in Europe, is the old library of the University of Oxford, which still retains many features of its original form. This structure, rarely seen by visitors and even unknown to the majority of Oxford men, is a two-storied building situated on the north side of the choir of St. Mary's Church, adjoining the tower at one end, and separated from the body of the church by a narrow courtyard. Having glanced at the way books were kept, used, and lent at Oxford prior to the erection of this building, the lecturer gave a sketch of its foundation by Cobham, Bishop of Worcester, about 1320, and some incidents in its early history, following with a description of the interior, furniture, and general arrangements. Long desks were placed at regular intervals at right angles to the walls, on which the volumes lay on their sides. A bench was fixed in front for the reader, and a window came between each pair of desks to light that pew or cell. Every volume had a metal clip riveted to the front edge of the board forming one cover, to which was attached a light iron chain of the requisite length, having at the other end a ring. This ring ran upon an iron rod which was carried along the top of the desk, and was secured at the end by a hasp and a padlock to prevent the ring being drawn off. The foundation of Bishop Cobham's library was succeeded shortly afterward by that of the library of Durham College, Oxford, by Richard de Bury, Bishop of Durham (1335-45). The books bequeathed by De Bury to the college were kept for many years in chests, under the custody of scholars deputed for the purpose. At the beginning of the fifteenth century a library was built, and regularly furnished with bookcases or settles inclosing pews or studies between them where the books were chained. When Durham College came to an end at the Dissolution, its old buildings were utilized by its successor, the present Trinity, and the old library of Durham College still serves as the library of Trinity College. William of Wykeham's New College at Oxford set the fashion for all future collegiate buildings at either university in provision being made for every department, and thenceforward every college had its library as an essential part of its plan. Though books were few, the rooms devoted to them had to be very large, the chaining of the books to the desks making it possible to have only very few on each desk. Soon, as books increased, shelves were formed behind the desks, tier by tier, until at last, in the seventeenth or eighteenth century, they reached the ceiling. The appearance of the fittings before that time could be well seen in the old library of Merton College. Of chained libraries there were at least three extant in England, that belonging to Hereford Cathedral being the most ancient and perfect. Old chains, hasps, and staples belonging to Hereford—specimens of the actual fittings of a medieval chained library—were exhibited by Mr. Jackson, and the method of fixation explained. All Saints Church, Hereford, and Wimborne Minster also possess chained libraries. But the finest in the world is that of San Lorenzo, Florence, the great hall of which was designed by Michael Angelo in 1524, to contain the collection formed by several generations of the Medici. The lecturer then touched on the difficulties of consulting books in the old chained libraries. Shelves for the ever-increasing number of books had been provided, but desk accommodation remained as before. One student occupied on a volume prevented three or four others getting access to the books. This led to the library rooms being enlarged. Chains were bought for the Bodleian Library as late as 1751; it was not

till 1757 that this method of securing the books was abolished.

Bog Iron Ore in Canada.

Bog iron ore is worked in the province of Quebec, and arrangements are being made to extract manganese from bog ore deposits in the province of New Brunswick. The ore is a soft, wet stuff, containing 50 per cent of water, and is covered by a thin coating of vegetable earth. The depth of ore varies from 5 feet to 30 feet. When dried the residuum is a fine black powder, too fine to be treated in the blast furnace, and this has therefore to be made into briquettes, as is done with the fine dust from blast furnaces and the finely divided iron produced from low grade ores by the Edison elec-



THRASHING AND WINNOWING GRAIN AT JELENOVKA, RUSSIAN ARMENIA.

trical process. The cementing material used is kept secret. An analysis of the dried ore at 212° F. is given as follows:

Metallic manganese.....	48.240 per cent.
Metallic iron.....	5.700 "
Sulphur.....	0.096 "
Phosphorus, trace.	
Silica.....	1.88 "

A Flemish "Smoker."

According to L'illustration, the nineteenth century citizens of Bruges amuse themselves much after the fashion of the contemporaries of Van Maerlant and Van Artevelde, those great drinkers and smokers of the thirteenth and fourteenth centuries. In this quaint old Flemish city there exists the "Brugsche Rokersclub" or Smoking Club of Bruges, the members of which assemble to enjoy one another's society, to smoke their long clay pipes, and to drink their flagons of beer.

Every evening, it seems, the Rokersclub has a smoking contest, each member endeavoring to consume not the greatest quantity of tobacco in a given time, but



A BREAD BAKERY IN RUSSIAN ARMENIA.

to smoke the least quantity in the longest possible time. Before the contest begins, the vice-president and steward of the club seat themselves before a table on which are placed a balance, a tobacco box, and a number of long-stemmed pipes, not forgetting sundry indispensable tankards. The steward carefully weighs out two grammes and a half of tobacco, and methodically the vice-president stuffs each pipe with its allotted quantity. The pipes are then distributed among the contesting members. At a given signal, each contestant lights his pipe and begins to smoke, very slowly and very deliberately, endeavoring to keep alive the fire in his bowl as long as possible and to consume the smallest possible amount of tobacco. A member whose pipe goes out drops out from the contest, and only his

more fortunate or more skillful rivals are allowed to continue. When pipe after pipe goes out, or the tobacco is consumed, the contest becomes more and more interesting; and when only two contestants are left, the most intense excitement is aroused.

So expert have the members of the Rokersclub become, that they have been known to keep alive the flame in three grammes of tobacco for a period of an hour and a half.

W. B. K.

PRIMITIVE METHODS OF RAISING WHEAT AND BAKING BREAD IN TRANSCAUCASIA AND ARMENIA.

BY E. O. HOVEY.

As soon as the average traveler passes from European Russia over the Caucasus Mountains into the provinces of Georgia and Armenia, which have been parts of the Russian empire for only a comparatively short time, he feels that he has entered a strange part of the world, the manners and customs are so different from those which prevail in western Europe and America. Nowhere is this more clearly brought out than in the methods pertaining to agriculture and bread making. The farmer still uses the implements which his ancestors used and he handles them in the same manner. In the spring the ground is scratched up by means of a clumsy wooden plow drawn by buffaloes or oxen, very rarely by horses, and the grain is scattered over it by hand. The writer was in Transcaucasia and Russian Armenia during the harvest season last year, and had the opportunity of making the photographs accompanying this article, which illustrate the methods of thrashing

and drying grain. At the little hamlet of Parakai, near Erivan, the capital of Russian Armenia, we saw the wheat spread out two or three feet deep over a small area of specially prepared ground. Cattle, both oxen and buffaloes, were driven around and around on the grain until the kernels were all broken out of the heads. The biblical injunction is not obeyed here, for the photograph shows that the driver has "muzzled the ox which is treading out the grain."

A more common manner of thrashing is that shown in the picture from Jelenovka, on the shores of beautiful Lake Goktchai. Here there was a very large thrashing floor and an instrument like one of our stone sledges was dragged about over the grain by means of a team of horses. The bottom of the sledge was armed with numerous small pieces of rock, set so as to present a sharp edge for the cutting and mangling of the grain heads and straw as the sledge was driven about. The use of horses for this work, however, is not common, buffaloes and oxen being much more often employed. When the grain has been broken out of the heads, the straw is shaken up with two-tined wooden forks to permit the kernels to fall to the ground. Then the straw is removed, to be mixed with cow dung and dried to form the national fuel, and the winnowing process begins. A day with a gentle breeze is chosen, and the grain and chaff are thrown up into the air by means of long-handled wooden paddles. The wind blows away the chaff, while the wheat falls back to the ground. In Sémenovka, as is shown in our engraving, we saw the grain spread out on skins kept for the purpose, where it is stirred and turned until it is well dried. There seem to be no steam engines in Armenia and windmills are unknown, but the scanty water power is well utilized for the grinding of the grain, and there are numerous mills at Tiflis, Erivan, and elsewhere. Those at Tiflis are an interesting feature of the view from the principal bridge over the swift Koorā. They are worked by means of great under-shot wheels, and the whole mill is moored out in the stream at the best place for getting the full effect of the current with safety.

The baking of the bread furnishes another point of wide difference from the methods in use in America. The oven is usually (at least outside of the cities) a hole in the ground three or four feet deep and as many in diameter, narrowing toward the opening in the top. It is lined with pottery or even with nothing but hardened clay, and a wood or charcoal fire is built in the bottom to heat it. The dough is mixed in a trough, formed then into balls with the hands and afterward rolled out on a circular or oval stone or board, until it becomes a sheet about three feet long, fifteen inches wide, and one-eighth of an inch thick. This sheet is carefully spread out over a form like a pillow of the proper shape. The pillow is dexterously seized underneath by the baker, who then bends down into the oven and spats the dough against the wall,

where it sticks and is baked in a very few minutes. The sheet is then pulled out by means of a hook and is hung on the wall of the shop to cool and dry. At several places in the city of Erivan these thin sheets are baked on beds of hot pebbles. This literally "whole wheat" bread contains no salt and resembles pieces of brown paper in appearance, but it tastes better than it looks and is inexpensive, the price in Erivan being only six kopecks (about 3 cents) per kilo (2½ pounds). The customer receives it without wrapping paper and carries it off in a roll under his arm or in his hand. Another form of loaf is put into the same kind of an oven as a cake, ten or twelve inches in diameter and two inches thick in the middle. This comes out as a curiously distorted affair, on account of the sagging which takes place before the loaf gets hard and which thickens one side while it thins the other, making it look somewhat like a lady's hand bag. The foreigner will prefer to eat this or any other kind of bread without butter, because that which is indigenous to the country has been churned in a goat skin with the hair turned in, and is anything but attractive in appearance or odor. A peculiar substitute for butter is the cream from buffalo milk. This, too, would never find favor in western eyes, because it is too much like tallow in appearance and consistency.



GRIST MILLS IN THE KOORA RIVER AT TIFLIS, TRANSCAUCASIA.

Mall Service "Mysteries."

Less care is used by the people in America than by those in European countries in the preparation of mail matter, and as a result the United States government is losing money, while foreign governments get paid for service they do not perform, says The Boston Transcript. Short-paid matter in large quantities is sent abroad every week, and when it arrives at the point of delivery it is rated up to double the deficiency. About two hundred souvenir postal cards, for instance, addressed to people in Germany, were mailed recently, and there was only a two-cent stamp on each card. If they were regular government cards, they would go for two cents each, but since they are printed by a private concern and are written upon, the postage is five cents, the same as for a letter. Had the sender been known to the post office men, he would have been notified, but in this case each card had to be stamped with a "T" to indicate that postage was not fully paid, and then forwarded, because the sender, a Cambridge person, had signed his initials only, and could therefore not be found. When these cards arrived in Germany the equivalent for six cents, just double the deficiency, will be collected for each card. Thus the German government will receive three cents on each card for nothing.

This kind of mail is a good deal larger than is generally supposed, as is shown by the fact that \$100 may be collected at the Boston office on one single mail from Europe, and the United States sends about fifty times as much as it receives. Most of the unpaid or short-paid matter comes from Armenia and Turkey, although England and Ireland contribute a fair portion of it. Just before St.

not collect as much on foreign mail as the foreign governments collect on United States mail.

There is such a wide difference in the amount collected by the various nations that years ago it led to negotiations for new regulations, resulting in the adoption in this country of the "due stamp," and now each government keeps the money it collects for due postage. Those due stamps serve, in reality, merely to show how much is collected, as they are put on and canceled in the post office, and no person connected with the service can by honorable means obtain one that has not been canceled. In spite of the law, such stamps have come into circulation, probably through burglars who have broken into post offices or through dishonest postmasters; but it matters little to a private citizen how he has obtained such a stamp, whether he has paid for it or not, for the stamp is not acceptable as postage. If an attempt were made to use it, post office inspectors would be at once put on the trail of the

varied an experience as it is possible to obtain in the postal service, but when the mail from "La Champagne" arrived at the Union Station the other day the three men that were sent down to receive it saw a sight that had not presented itself before in Boston postal experience—a conglomeration of foreign mail sacks containing mail made up for places that were almost unheard of here, as the general foreign mail for the West and South is not sent to Boston, but goes to New York.

Concerning Giraffes.

The young male giraffe from Senegal lately acquired by the Zoological Society of London, and now domiciled in its garden, is of special interest, says Nature, "as representing the northern form of this animal in contrast to the southern female which arrived in February, 1895; but the differences between them will be much more apparent when both specimens have fully reached adulthood."

Although the northern giraffe has, by various authors, been considered to differ considerably from the southern form, and several technical titles have been proposed for, or given to, each, the subject for the first time has been placed on sound zoological basis by Mr. W. E. De Winton, in a paper read before the Zoological Society, in February of last year, entitled: "On Existing Forms of Giraffe." Mr. Winton conclusively demonstrated that the northern form is distinguished from its southern relative by several characteristics, especially by the great prominence of the third frontal horn, which is barely existent in the latter. He proposes to restrict the title "Giraffa camelopardalis" to the northern giraffe, bestowing upon the southern variety the specific designation of "capiensis." The Cape giraffe seems to be met with in suitable localities all up the east coast into British East Africa, where it also meets the



BUFFALOES AND OXEN TREADING OUT GRAIN AT PARAKAI, NEAR ERIVAN, RUSSIAN ARMENIA.

Patrick's Day the mails are flooded with packages of shamrocks from Ireland, picked and mailed by people who know little about the postal regulations, and who frequently neglect to find out how much postage is required. Anxious to have the precious

offender. It is a matter of principle with some individuals to refuse underpaid matter, says one who is in a position where he sees refused letters when they return. A letter may be sent to some foreign country without any postage on it; the addressee may refuse it, and in

northern form; and the latter appears to range all across the Sahara into Northeastern Africa.

WHEN the planet Mars is nearest the earth, it is 36,000,000 miles away.

An Exhibit of the History of Medicine.

The seventeenth Congress of German Men of Science and Physicians is to be held at Düsseldorf, September 19 to 24. In connection with this congress, there will be several exhibits, one of scientific apparatus, one of scientific photography, and one illustrating the history of medicine and science.

works, among the latter especially such as are of older date than 1580 (receipt books, books about animals, anatomy, distillation, alchemy, astrology, magic, etc.) The exhibitors are not put to any expense, the exhibition committee undertaking to pay all freights and the cost of fire assurance.

Duodecaplex Telegraphy.

Experiments are at present being conducted on the Paris-Bordeaux line with some very interesting machines, which the inventor, M. Mercadier, has been working on for many years. With these instruments, called duodecaplex, twelve Morse transmitters can work simultaneously on a single wire, each sending its signals to the proper receiver at the end of the line.

Each transmitter receives its current through a tuning fork having a special note, its vibrations being electrically maintained. These vibrations furnish a current of the proper period to cause resonance at each application in the proper receiving circuit, which has its self-induction and capacity adjusted for this result.

The Current Supplement.

The current SUPPLEMENT, No. 1181, contains a number of articles of interest. "The Town of Tsimo, in Shantung," is the subject of an article profusely illustrated with interesting engravings, taken from photographs which were taken on the spot.

paper, by Mr. Charles H. Coe. "Improved Radiographic Apparatus" describes some of the latest forms of apparatus in use in Germany. There are a number of articles devoted to machinery, including shaping and polishing machines, forging presses, and engines, taper hole widening machines, and other devices.

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RECENTLY PATENTED INVENTIONS.

Electrical Appliances.

BATTERY-ELECTRODE.—HENRY E. WILKINSON, Mount Vernon, O. This invention is an improvement in grids or battery electrodes. The improvement provides a main or central plate and a pocket-plate secured thereto, having pockets formed with front sides which slope inwardly toward its bottom, and with ends arranged at angles to these front sides and converging downwardly.

TELEPHONE-TRANSMITTER ARM AND ATTACHMENT.—WILLIAM J. BARR, Ashtabula, O. Hitherto, telephone transmitter-arms have been pivoted or hinged to a base adapted to be secured to a wall or other fixed support. In the present improved attachment, a base is provided with one or more integral trunnions. The transmitter-arm is detachably secured to the trunnions by means which insure a firm joint at all times and yet permit easy disconnection of the arm when required.

Bicycle Improvements.

BICYCLE-SUPPORT.—ABRAHAM W. LEWIS, Asbury Park, N. J. In this improved bicycle-wheel holder a curved bar is provided, vertically arranged and pivoted to a fixed support at the middle of its length, so as to rock and be capable of adjustment. A pair of clamping rings is arranged at the middle. At the end of the bar, bifurcated lugs embrace and hold the wheel rim.

BICYCLE CRANK-SHAFT.—SAMUEL A. DONNELLY, Chicago, Ill. The drive shaft provided by this inventor has integral with it opposite end cranks, and also has seats for the cones and a back-stop between the cones of greater width or thickness than the cone-seats. Cones there are, with one or more recesses or wings, such recesses or wings permitting the cones to pass from their seats over the wide back-stop and all exterior parts. The purpose of the enlarged, flattened ends of the cranks is to reinforce these ends, so that they will not spread by reason of the strains to which the pedals are subjected.

BICYCLE STEADYING DEVICE.—FRANK BARTO, New York city. The purpose of this invention is the provision of a new and improved bicycle-steadying device, arranged for convenient attachment to a bicycle and adapted to hold the front or steering wheel normally in proper alignment with the rear or driving wheel. The rider may turn the front wheel in any position and return the wheel to its aligned position whenever he releases the pressure on the handle-bars, after steering the bicycle in the proper direction.

Mechanical Devices.

WINDOW RAISING AND LOCKING DEVICE.—FRANS BRUNO, New York city. The purpose of this invention is the provision of a simple mechanism, comprising a spring-motor that will be automatically wound up or set by a downward movement of the sash. This mechanism dispenses with the usual weights. The device comprises a rack on a window-sash, a spring-operated gear-wheel to engage with this rack, a frame in which the wheel is mounted, and a pivot extended across a mortise in the window casing. This pivot passes through a bore in the upper portion of the casing arranged in the mortise, whereby the lower portion of the frame may be swung wholly out of the mortise.

ILLUSION APPARATUS.—ATTILIO PUSTERLA, New York city. This invention provides an apparatus which produces on spectators the impression of traveling on land or water. In this apparatus, moving scenery is provided which comprises a number of sections or strips, supporting pulleys or disks of different diameters over which the strips pass, intermediate supports for the strips having individual supporting devices for the central portions of the strips, and means for moving the strips. The distance between the strips gradually increases from the center toward the disks, thus obtaining a better effect of objects receding into the distance.

FLOOR-CLAMP.—EDWIN C. INGERSOLL, Philadelphia, Pa. The floor-clamp provided by this inventor is more especially designed for the use of carpenters to force a loose floor board conveniently in engagement with the one already fastened to the joist, so as to facilitate nailing the board in place. The clamp has a frame with a downwardly-extending flange, toothed at one face and adapted to engage one side of a joist or like support. A lever is fulcrumed on the frame and carries a depending jaw at one end adapted to engage the opposite side of the joist, at a point opposite the forward end of the toothed flange. Near the other end, the lever carries a spring pawl. A segment forms an integral lateral extension of the frame, and is provided with teeth on its upper face to engage the pawl. The lever is further provided on its under surface with a guide engaging a segmental recess on the under side of the toothed segment, whereby the lever is held against up-and-down movement. The frame has a guideway and a bar carrying a presser foot, adapted to slide in the guideway. This guideway is located at the outer side of the toothed flange and parallel therewith, whereby the presser-foot engages the board to be nailed at one side of the joist.

CORN HARVESTER AND HUSKER.—JOHN TROSEM, Paulina, Ia. The object of this invention is to provide a machine so constructed that it will remove the ears from the standing corn, husk the ears, and convey the ears to an elevator, whence they are delivered to a wagon traveling alongside of the machine. In this machine a supporting frame is connected with inclined snapping and husking rollers mounted in the frame and having spirally grooved forward ends. Converging shields extend over the forward ends of the rollers. Feed-belts travel along the inner faces of the shields and a trough is carried on each side of the feed-rollers. In the bottom

of the troughs conveyer belts are located. One of the troughs empties into a hopper from which an elevator leads. In operation the standing corn is received between the shields and by them is directed so as to pass between the snapping and husking rollers, the feed belts assisting the corn in its passage to the rollers and giving the corn a rearward inclination before it meets the rollers. The inclined position of the rollers serves to draw the stalks downwardly and rearwardly, thus snapping the ears from the stalks. The husks being caught between the rollers will be stripped from the ears, and the cleaned ears are delivered by the rollers to either trough and from thence to the elevator, from which the corn may be dropped into a near-by wagon.

PUNCHING MACHINE.—CHARLES SEYMOUR, Delaware, O. In this invention novel means are provided for punching D-shaped openings in handles for shovels, forks, and the like, the arrangement permitting the opening to be formed by one operation in a very simple and effective manner. The punching tool is carried on a frame. On this frame a bracket-shaped slide is mounted to move vertically, and is provided with a horizontal portion having an opening. A chute is attached to the bottom of the horizontal portion of the slide and surrounds the opening to conduct the chips therefrom. A U-shaped projection straddles the chute and is attached to the horizontal portion of the slide. There are means in connection with the projection by which to impart reciprocal movement to the slide. A holder is mounted on the horizontal portion of the slide and has a central opening registering with the slide opening. The holder also has a horizontal guideway in its top face. Plates are mounted to slide toward and from each other in this guideway. Clamping jaws attached to the plates hold the work between them. Means are provided for moving the plates toward and from each other to grasp and release the work.

LOCK FOR FLUSHING-VALVES.—CHARLES H. SHEPHERD, New York city. By means of the lock patented by this inventor, a raised flushing-valve lever may be set to lock in position until the tank is empty and the lever is released by the float-lever unlocking the lock. The lock comprises a lever-arm arranged to connect with a flushing-valve lever, a shaft carrying the arm, a toothed wheel on the shaft, and a spring-pressed lever-pawl to engage the wheel and lock the latter in position against rotation in one direction, the lever-pawl being adapted to be actuated from the float-lever of the tank to unlock the wheel and lever-arm.

BELT-REGULATOR.—OSCAR K. SLETTO, Fergus Falls, Minn. This belt-regulator is adapted for use upon threshing machines and their driving engines, and is so constructed that the guide-pulley or idler may be vertically and laterally adjusted relative to the driver pulley. The device is furthermore designed to prevent the belt vibrating in the wind, thus avoiding side-wear, and causing the belt to run true and without undue friction. The belt-regulator comprises a hanger provided with a tubular section having exterior teeth, a frame mounted to revolve upon the tubular section of the hanger, a pawl carried by the frame and arranged for engagement with the teeth of the hanger, a guide-pulley mounted on the frame and adjusted by means of a latch carried by the guide-pulley support and adapted for engagement with the teeth of the hanger.

APPARATUS FOR DRAWING LIQUIDS.—ALEX. RITZER, Basle, Switzerland. This new and improved apparatus is designed to draw wine, ale, or liquids likely to foam or leave sediments, without disturbing the sedi-

ment and rendering the liquid cloudy. The apparatus has a receptacle with a valved inlet for connection with a barrel containing the liquid to be drawn. An air-pressure inlet-pipe opens into the valved inlet to close the valve therein, to interrupt the communication between the barrel and the receptacle and to permit the air to flow into the receptacle and force the liquid to the faucet. This faucet has a connection with an air-pressure supply, with the air-pressure pipe and with the lower end of the receptacle to connect the air-pressure supply with the air-inlet pipe at the time the faucet is open, so that the air-pressure forces the liquid from the receptacle to and through the faucet.

MACHINE FOR WORKING BALLS.—HEINRICH MELTZER, Ratibor, Prussia, Germany. For working roughly-prepared balls, the latter were hitherto kept in circular grooves and in describing always the same circular line, they were worked either upon a flat grinding-disk or this working was effected by the walls of the finely toothed guide-grooves or in such a manner that the balls were ground in oil and emery between the smooth walls of the groove. The result was that the disks grooved themselves or the disks inclosing the grooved guide-plates were moved in opposite directions, rendering it necessary that the grooves corresponded to the size of the ball. In the present invention, a frame is provided with which a bowl is connected. A stamp acts with the bowl. A spindle attached to the stamp is slidable and revoluble and is connected with a lever engaged by a cam. An arm is pivoted to the lever and is capable of holding the lever raised out of engagement with the cam. The balls introduced into the machine are rapidly and uniformly distributed around the revolving stamp, and it is not necessary to place them as formerly—circularly into the grooves. Not only a single row, but several rows of balls may be worked simultaneously.

Miscellaneous Inventions.

FASTENER.—CHARLES V. WALTER, New York city. This fastener is particularly adapted for use in securing gloves and similar articles, but adapted as well to secure any article having overlapping flaps. The fastener consists of stud and socket members. The socket member comprises a plate having its edges flanged or curved inward and under, and a plate having a series of rectangular apertures disposed along the line of strain and projections on the body at opposite side edges of the apertures. These projections are bent over so as to clasp and hold the stock and the inwardly flanged members of the other plate. The stud member having a side projection adapted to enter the apertures.

FOLDING UMBRELLA.—FRANK G. GROVE and FRANK E. STOVER, Luray, Va. The folding umbrella of these inventors is considerably simplified in its framework. Its telescopic ribs are so constructed that when drawn out to their full length and the runner carried upwardly on the stick, the action of the contracting portions of the two ribs will be such as to hold the ribs immovable and render the telescopic or sectional ribs as strong as a one-piece rib. The folding stick is provided with a spring at its lower section, which is adapted to hold the runner when the umbrella is closed and which may be conveniently placed therein. This spring serves to limit the movement of the lower section of the stick and lock this lower section either when drawn from the upper section of the stick or when carried to an engagement with that section.

COMPUTING SCALE.—CLARK CORBIN, Carbon Cliff, Ill. This computing scale is designed to indicate both