

of rubble limestone laid in 1 to 3 Portland cement mortar and was faced with granite. The granite blocks were laid in 3-foot courses, and care was taken to make the upstream face of the dam thoroughly impervious. The structure was completed in the early summer of 1893, at a cost of about \$612,000.

In view of the recent disaster it is significant that considerable trouble was experienced from flowing springs which were encountered both in the bed and banks of the river during construction; and, indeed, the history of the dam has been marked by a repetition of difficulties of this kind. Shortly after the completion of the work, the water forced its way through a fault in the underlying rock of the headgate masonry with the result that this portion of the structure was badly wrecked, necessitating the construction of a cofferdam and the execution of extensive and costly repairs. Again in the spring of last year, it was discovered that water was forcing its way through the underlying bedrock near the upstream face of the dam not far from the headgates, and again, a few months later, another leak developed in the same locality. These indications of the unreliable nature of the limestone upon which the dam was built must have shaken the faith of the engineers in the security and permanence of this great structure.

The headgate masonry referred to was located at the eastern end of the dam and extended 16 feet above its crest, its foundations being placed upon hard rock at a level 36 feet below the crest of the dam. There were eight gates which fed the water to eight penstocks, each 9 feet in diameter; four of these led to the power house, and the other four were reserved for future extensions of the plant. The power house, which was 54 feet in width by about 200 feet in length, extended parallel with the bank of the river and at right angles to the dam. It was equipped with four 50-kilowatt and two 75-kilowatt alternating current Fort Wayne generators, two 250-kilowatt three-phase General Electric generators, four 100-kilowatt Thompson-Houston 500-volt generators, four 80-light Wood arc machines, and two 4,000,000 gallon pumps. At the time of the disaster there was a heavy rainstorm, and the Colorado had risen until there was 11 feet of water passing over the crest of the dam. The resultant pressure proved too much for the structure, which gave way vertically at two points, one about 100 feet from the eastern end and another about midstream, the whole intervening 440 feet being pushed bodily downstream for a distance of 40 or 50 feet. This 400 feet, during its transition, maintained its line and vertical position. It then appears to have broken into two pieces, which remained intact for about one hour after the break. Then the western section gradually gave way to the undermining of the water, broke up, and was washed down the stream. The remaining section succumbed shortly afterward, only the small portion seen in our illustration being left to show how far downstream the massive wall of the dam was pushed. As the flood subsided the outward pressure of the water contained within the power house burst open the western wall, bringing down the roof and producing the complete wreck shown in our photographs.

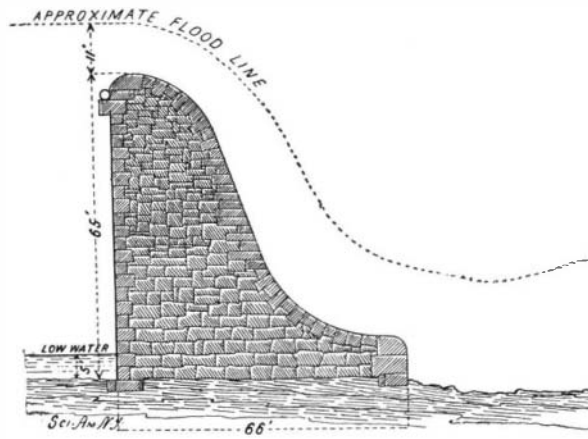
As to the cause of the disaster, it will doubtless be found that the impact of the enormous mass of falling water upon the bed of the river below the toe of the dam had washed away the limestone rock, leaving nothing but the frictional resistance between the base of the masonry and the bed of the river to oppose the downstream thrust of the water. It is stated that the section of the dam, as originally designed, provided for four cut-off trenches in the underlying bedrock, but it now seems that only two trenches were built, as shown in the accompanying section of the dam. If any washing away of the rock below the toe of the dam actually took place, the resistance offered by the downstream cut-off trench would be destroyed, and there would be nothing but the holding power of the masonry in the upstream trench coupled with the frictional resistance, to prevent the whole structure from sliding bodily down the bed of the river.

VALUE OF SEA BIRDS.

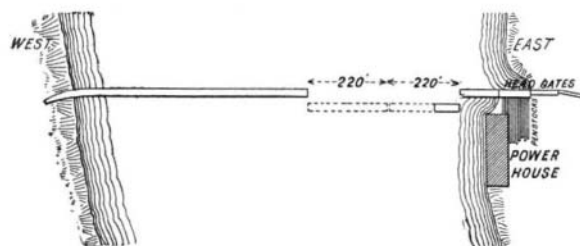
BY PROF. C. F. HOLDER.

Remarkable as it may seem, it appears to be a more or less prevalent belief among certain people that sea birds possess absolutely no value as economic factors in the realm of nature. Certain individuals consider it sport to shoot gulls and similar birds as practice; others assume that gulls are a nuisance and should be killed off without mercy. An interesting illustration of this was recently developed in Southern California where a few citizens had the temerity to take a stand for the birds. The writer noticed that gulls were being employed as targets and slaughtered to afford practice to pseudo-sportsmen; and, finally, it was discovered that there was an unusual demand from

taxidermists and curiosity dealers for feathers of almost every kind. Not only was there a price upon the head of every humming bird, bluebird, condor or heron, but the tame gulls and pelicans, so attractive a feature of the seashore, were also in demand and evidently doomed. Investigation showed that Chicago dealers had found that the feather supply of the Eastern market was short, and were turning their attention to the Pacific coast. One man had an order for all the pelican breasts he could obtain. Another de-



CROSS-SECTION THROUGH THE AUSTIN DAM.



PLAN OF DAM AND POWER HOUSE, SHOWING APPROXIMATE LOCATION OF BREAK.

sired gull wings galore; and as a result, a war of extermination was begun.

San Pedro and Santa Catalina Island, Cal., seemed to be the objective points of the bird killers, as here the birds were numerous, and every day boats went out with gunners, one boat bringing in on one occasion over twenty pelicans. An appeal to the public was made through a Los Angeles journal, and public interest was at once aroused and a demand made for a local law which would afford protection to the unprotected birds.

The defense took the ground that the gulls were scavengers and of prime value to the State; of greater value, in fact, to the citizens along shore than to the dealers in feathers in Chicago, and other centers where



VALUE OF SEA BIRDS AS SCAVENGERS.

feathers are in demand. The writer prepared as elaborate a statement as possible bearing on this point, presenting facts which were intended to show that the gulls on the Atlantic coast, on the Gulf of Mexico and on the Pacific, in fact wherever observed, were of great benefit. An appeal was made for the birds as a natural ornament to the localities in which they were found. Many people, ornithologists and laymen, testified along these lines. Residents of the town of Redondo, Santa Monica, San Pedro and Avalon testified to the fact that the birds are the natural beach scavengers, and that some of these places would be unhealthy if birds were removed.

The accompanying illustration taken from a photograph at Santa Catalina Island, a famous fishing resort, tell the story of the value of birds as scavengers. Here hundreds of gulls are seen riding the waves on the beach after a storm, feeding on dead fish that have

washed in. The majority are on the water, rising over the heavy breakers in scores as they come in, to alight again and feed upon the fishes that are rolled over and over by the waves. Others are patrolling the beach, picking up the objects cast ashore; and so perfectly is this work done that in a short time no remains of the dead fish, that might become a nuisance, are found there. The birds at this time present a most attractive spectacle, and many people collect to watch their movements.

In Avalon Bay a number of professional fishermen follow their calling, and when the fish are cleaned every morning it is an interesting sight to observe these scavengers perform their duties. With them in winter are many brown pelicans, and all are so tame that they gather about the head fisherman, a Venetian, and take the rejectamenta from his hand, some of the old gulls even allowing him to take them up. It is not necessary to carry the refuse out into the channel; these birds remove it all; in fact, fight for it. This is true of the gulls all along shore, and this place is mentioned especially as the birds are perhaps tamer here than elsewhere; but everywhere they are the natural health guardians of the coast, performing their duty so well that from San Francisco to San Pedro, in the observation of the writer, there is not a spot that becomes offensive by the accumulation of fetid matter.

It would seem that the standing of the gulls in this respect was beyond dispute, but the attempts of dealers and their representatives in their efforts to prevent any bird-protecting law from passing at San Pedro, demonstrated that there are many who affect to believe that the gulls are not scavengers and should not be protected. The most remarkable testimony was introduced. Men testified that gulls were a detriment to the harbor and a menace to public health. One man stated that the killing of gulls was necessary to enable him to obtain a living, and evidence showed the extraordinary fact that he had been killing the birds to use, not the plumage, but the bodies as baits to his lobster and fish traps, and as bait for certain fish. Some of the testimony even at this time is almost past belief and well illustrates that a deep and soggy ignorance still holds in the civilized parts of the country.

The sea birds of the Pacific coast are not alone scavengers, but they constitute one of the charms of the country. An appreciation of this is termed sentiment by some. The long lines of slugs flying by the outer islands, the flocks of brown pelicans which swim into the little bays, the scores of grebes and divers which lurk about the wharves, the long-winged albatross and frigate bird which occasionally reach these shores, and many more, have been the delight of many a voyager and traveler, who have made the trips to the California islands to view them. At present the sea birds, including the brown pelican, are protected, though doubtless there are poachers, and in a few years the increase of birds will be readily noticed as the killing has been going on for ten or more years on the Pacific.

If it were possible to reach the women of America through their multitudes of clubs, and arouse them to the fact that with them rests the responsibility of aiding in the extinction of birds, much could be accomplished. A few months ago a "feather manufactory" was burned on Long Island, and the newspapers gave accounts of the losses which were marvelous, showing that men were employed to do nothing else than shoot birds; the orders were in all probability, to kill everything in sight. Artificial feathers could easily be made so that the most critical person could not detect them.

Some dealers in feathers and their friends claim that birds are not decreasing, but the writer knows localities in Florida, where in 1860, birds were seen in thousands, that are now deserted. The great marsh by the sea, in Southern California, which twelve years ago was the winter home of innumerable white herons knows them no more. England alone uses thirty million birds for decorative purposes, and to provide all Europe one hundred and fifty million are annually destroyed; and when we add America it brings the sum total up to three hundred million. London also takes four hundred thousand humming birds every year from this continent, and three hundred thousand would, in all probability, not meet the demands for America. England imports six thousand birds of paradise yearly, and these birds are doomed; while four hundred thousands miscellaneous birds are used. Some bird lover had the curiosity to watch the auction rooms of a London house four months, and it was found that during that time eight hundred thousand East and West Indian bird skins were sold here. One Chicago dealer received thirty two thousand humming birds in one consignment; the same number of aquatic birds (gulls), and three hundred thousand wings. These figures are significant, but the secretary of the Audubon Society, of Massachusetts, to whom the writer is indebted, for the figures given, could doubtless give a

darker page, and an accurate statement of the birds destroyed in a single year to provide the women of the world with feathers could be made, it would astonish those who affect that the question is one of mere sentiment. Unless something is done many birds, valuable as scavengers, as insect eaters and as objects of beauty, will be wiped out of existence.

Hypo in the Developing Bath.

It has been the general rule that the presence of hypo in the developing bath should be carefully avoided as causing fog or destroying the image; however, certain developers, such as metol, orthol and others, permit the addition of a small proportion of hypo, this giving greater clearness to the negative. This proportion should not exceed a certain limit, the only developer to which hypo may be added in any considerable quantity being pyrocatechine, and with this developer a combined developing and fixing bath may be made. Dr. E. Vogel, now deceased, made a number of experiments in this direction, and was successful in preparing a bath of this kind. He found that, as pyrocatechine is a rapid and powerful developer, an excess of caustic potash is not necessary, but only the proper proportion to carry on the reaction. He recommended the following formula for a combined developing and fixing bath. It is in concentrated form and should be diluted with water for use:

Pyrocatechine, 7 grammes; caustic potash, 7 grammes; sodium sulphite, 30 grammes; water, 75 c. c.

This developer gave excellent results when used as the base of a combined bath. The proportion of hypo varies with different makes of plate, as some of these require a much longer time for fixing than others. The combined bath may be also used for positives and for bromide prints.

The Earthquake at San Jacinto Mountain.

It has been discovered that a part of the San Jacinto Mountain, San Jacinto, Cal., has slipped into a subterranean cavern. The territory covering 600 acres at an elevation of 4,000 feet, was dislodged by the Christmas earthquake and slipped 150 feet lower down than it had previously been, and the face of the new valley is thickly traversed with fissures and cracks. The earthquake has been succeeded by a dozen of light shocks and though they are becoming infrequent, the residents are still much alarmed.

Correspondence.

One More Word Concerning Superposed Turrets.

To the Editor of the SCIENTIFIC AMERICAN: Having carefully read all the articles, concerning superposed turrets, that have come to my notice, I find, as stated in the SCIENTIFIC AMERICAN of April 14, that the opposition to the adoption of this type of turret can be said to be of two classes, structural and military. The structural question having been successfully disposed of, the military still remains, and probably will remain until the actual service for which the ships were designed, on which these turrets are placed, shall have decided the question.

It is my purpose in writing this letter to put forth a point of view which I have not seen taken as yet.

One of the disadvantages claimed for the double-deck turret system is that the 8-inch and 13-inch guns cannot be respectively trained on the lightly and heavily armored portions of a ship at the same time, should it be so desired. This, it seems to me, can be done since the 8-inch guns can be elevated independently of the 13-inch guns. Thus, while the 13-inch are trained on the heavily armored portion of a ship—which will most likely be near the water-line amidships, where the most damage could be done by a successful shot—the 8-inch could be trained upon the vertical side-armor directly over the point of attack of the 13-inch guns, which is also a harvest for shells; for it does not necessarily follow that because the four guns have to be revolved simultaneously they have to be elevated and depressed in unison.

But why train the guns on the differently armored portions of a ship when the most effective results can be obtained by training them on a common mark? What armor can resist the instantaneous impact of four large caliber projectiles? The desire to train the 8-inch guns upon the lightly armored portions of a ship arises from the fact that they are not designed to attack the heaviest armor. But, in the double-decked system, do not the 13-inch shells "pave the way" for the 8-inch shells, provided the proper charge of powder be used? Do not the 8-inch shells reach their mark before it has recovered from the shock of the heavier projectiles, and thus have easier access to the ship? It appears that four shots planted at the same place almost instantaneously would do far more damage to a ship, if not enough to sink her, than if the guns were trained independently.

In your calculations of the apparent number of shots that would have to be fired before a turret would be struck, you have overlooked the fact that the turrets of the "Kearsarge" and "Kentucky" present a great deal larger target than did those of the Spanish ships. Yet, on the other hand, the increased weight which the superposed turret and guns gives to the turret as a whole, greatly increases its power of resisting any projectile that might strike it.

Believing that these points of view might be of interest to your readers, I take pleasure in submitting them.

CARLOS DE ZAFRA.

New York, April 14, 1900.

The Current Supplement.

The current SUPPLEMENT, No. 1269, is filled with interesting matter. "The Famine in India" is the subject of the first article, which is accompanied by engravings showing the terrible condition of these people. "The Cruise of the 'Albatross'" is concluded in this issue. "The Assumed Inconstancy in the Level of Lake Nicaragua; A Question of the Permanency of the Nicaragua Canal" is by C. Willard Hayes, of the United States Geological Survey. "Modern Field Artillery" describes, in great detail, the way in which mountain guns are transported. "The Standardization of Automobile Batteries" is by James K. Pumphelly. "The Roman Forum" is a most interesting article by Richard Norton, and is accompanied by excellent engravings of new finds. "Shipping and Shipbuilding in the United States" is by James W. Ross. "Telepathy and Trance Phenomena" is by James H. Hyslop, Ph.D. "The Training of Dogs" is an illustrated article. "Review of the Traffic Questions in France" is by C. Colson. "New Cellulose Industries" is by A. D. Little.

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RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

ROLLER-HARROW.—CHARLES WEHRENBURG, Mound City, Ill. The rollers of this harrow can be adjusted so that sufficient space can be obtained between them to accommodate a row of corn, or so that two rollers can be brought so closely together that they will act as a single long roller. Cleaners are provided for the harrow-teeth, which can be adjusted to correspond with the rollers or drums. The supporting wheels can be quickly brought into engagement with the ground and caused to act through the medium of attached levers to raise the rollers or drums from the ground. The harrow can be built with or without supporting-wheels.

Bicycle and Automobile Appliances.

BICYCLE-PUMP.—JOHN H. ROBINSON, Washington, D. C. The ordinary hand or foot pump necessitates the use of a flexible tube and lacks both power and efficiency. The inventor has devised a pump which requires no rubber connecting-tube, and which is directly attached to the tire-nipple, so that money, time, and labor are saved. Less force is required to operate the pump, and a greater efficiency is obtained.

ANTI-FRICTION-BEARING FOR WHEELS.—HARLAN P. COLBY, Grand Rapids, Mich. The purpose of the invention is to provide a bearing of simple construction by means of which friction will be reduced to a minimum. The bearing can be readily adjusted when worn. A housing carried on the axle contains a roller engaging the spindle and having tapered necks engaging tapered bearing-rollers. The outer ends of the rollers engage adjustable thrust-rings. Guide-rollers engage the lower portion of the spindle.

Engineering-Improvements.

PUMP-VALVE.—FRANK B. ECULESTON, WILLIAM F. MILLER, and JOHN A. NELSON, Nebraska City, Neb. To the valve-seat a stem is secured having a head. A plate mounted above the seat moves on the stem and has a beveled annular flange. A spring bears between the head of the stem and the plate to throw the plate toward the seat. A housing having an enlarged annularly-recessed lower end, incloses the stem and spring. The lower portion of the housing incloses and is secured to the plate. A valve-ring is held between the beveled flange of the plate and the annularly-recessed lower end of the housing. The valve-ring is thus protected from corrosion, and is easily placed in position.

ROTARY ENGINE.—CARROLL M. BELL and GEORGE E. BLAKE, Greencastle, Ind. The rotary engine has a concentric piston working with shiftable abutments, so that the piston can be driven continuously, the abutments moving in and out of the path of the piston to permit the passage of the piston past the abutments.

VALVE.—JOHN C. WOOD, Raton, New Mexico. The invention is concerned with improvements in valves and means for actuating these valves to control the entrance and exhaust of the motive agent for actuating the piston. The valve is mounted to oscillate on a parallel plane with the face of the piston. A connection between

the valve and the piston extends axially into the valve, whereby the valve is moved as the piston reaches the ends of its strokes.

Mechanical Devices.

TYPE-WRITER.—MANUEL S. CARMONA, Mexico. The machine is of the five-key type previously devised by the same inventor. In the present invention the type is carried by flexible bands which wind on spring-rollers and are moved lengthwise by the keys, the extent of the movement depending on the keys struck. The machine automatically varies the spacing, so that, for example, the feed will be greater for capitals than for small letters. The type-writer differs from that previously patented by the inventor, chiefly in details of construction.

WEIGHING AND BAGGING MACHINE.—ALONZO C. BOSWORTH, Putnam, Conn. This machine is especially adapted for weighing and bagging grain. The machine can be used in connection with any platform scale, and so adjusted as to shut off the supply of grain as soon as a certain weight of material is obtained and indicated by the scale-beam properly balanced. A grain-receiving hopper is mounted on the scale-beam and provided with means for holding the bag. The support for the bottom of the bag is capable of adjustment to hold bags of different lengths.

LATHE-ATTACHMENT.—HARRY T. SHEARER, Scotland, Penn. The purpose of this invention is to provide means whereby the carriage on an engine-lathe can be independently adjusted of the driving mechanism, thus permitting the tool to be accurately engaged with the work at all periods during the operation of the lathe. Should it become necessary in cutting a screw, for example, to remove the tool temporarily from the lathe, the tool, when replaced, can be easily adjusted to the work without the usual inconveniences.

BORING IMPLEMENT.—WILLIAM T. MAXWELL and GEORGE J. SPAHN, 943 W. Lombard Street, Baltimore, Md. The implement is used for boring through joists or in corners, or at angles where the ordinary brace or bit cannot be used. The implement comprises a threaded shaft with a back bearing, having a flaring front end, and a tapered nut made in halves. A disk is provided, having slots and screws passing therethrough and entering the respective halves of the nut. The disk serves to hold the parts of the nut connected, so that one half is exactly opposite the other. The tool is particularly useful in boring through joists in electric light work.

Miscellaneous Inventions.

VEHICLE RUB-IRON.—ELISHA W. PALMER, Fullerton, Cal. The rub-iron is composed of a roller which can be made very short and from which the wheel cannot slip rearwardly. The iron effectually prevents the front wheels from wearing away the body or the running gear of the wagon, or from unduly wearing itself away when the wheels are cramped. The device likewise serves to prevent the front wheels' catching under the body of the vehicle.

HOT-AIR REGISTER.—EDWARD J. MALLEN, Manhattan, New York city. The slats of sheet-metal are arranged to overlap, so as to produce a smoke-light con-

nection. The frame is also made of metal, the braces for the frame constituting means for the attachment of a cover. The trunnions of the slats are integral with the body of the slats; and the bearings of the shifting devices for the slats are also integral with the slats. The several parts of the sheet-metal body are so braced that it will have practically the rigidity of a cast-metal body.

FILE.—CHARLES V. HENKEL and EDWARD M. ANDERSON, Manhattan, New York city. This file is in the form of a temporary binder for holding letters and the like. It embodies clamping-sections provided with prongs for piercing the letters and actuated by springs, so that when the restraining-catch is released, the clamping-sections will ordinarily open, the restraining-clamp serving to hold the clamping-sections against the springs in locked position. The clamping-sections are mounted to move in precisely the same time, so as to throw the prongs in and out in like manner.

COAL-SCREEN.—CHARLES GESKE and CHRISTIAN MILLER, Seattle, Wash. The bars of this screen can be easily adjusted to regulate the size of the mesh. The bars are so constructed that, when in position, they will cause the coal or other material to be effectually screened.

SPEED-CONTROLLER AND TIME-INDICATOR FOR SELF-PLAYING PIANOS OR ORGANS.—CHARLES H. FREYER, Marietta, Ga. The invention provides an improved speed-controller and time-indicator for self-playing pianos and organs, which is arranged to enable the performer to control the speed of the instrument accurately according to the correct time stated on the notation of the music to be played.

PROTRACTOR.—JOHN E. EVANS, Wilkes-Barre, Penn. This protractor is to be used for plotting charts, maps, and the like. By its means any number of degrees and minutes at either side of a meridian or other starting line can be marked off without mental calculation. The protractor is of sufficient weight to retain its position on the work, and therefore does not require clamps or extra weights, such as are usually found necessary.

PROCESS OF MAKING STRONTIA.—SPENCER B. NEWBERRY, Sandusky, Ohio. Strontium sulfate mixed with other materials can be decomposed by heat; but the process is slow and uncertain, owing to the fusibility of the sulfate at high temperatures. The inventor has found that the decomposition is greatly facilitated and the fusion prevented by adding to the sulfate a quantity of difficultly-fusible basic material, such as magnesia, lime, carbonate of magnesia, or carbonate of lime.

CUSHION DEVICE FOR DOORS.—WILLIAM F. DAVIS, Lake Charles, La. The invention provides a pneumatic cushion for the doors of ice-boxes or other structures, which cushion is automatically inflated through the act of opening the door. The air supply being cut off from the cushion while the door is closed. Should the cushion be overcharged, the surplus air automatically escapes. If it be so desired, the cushion can be inflated by means of a pump.

ADJUSTABLE CUTTING-STICK.—JOSEPH M. COZZA, Manhattan, New York city. Cutting-sticks are

used in cutting stock for the manufacture of neckties or similar goods in which the edges are parallel. The stock is cut in different widths; and at present it is necessary to have a cutting-stick for each width. To overcome this objection, the inventor has devised a stick which can be quickly and readily adjusted to any desired width, thus making one stick answer for all purposes for which several sticks are now employed.

NUT-LOCK.—ZACHAREAH W. WELCH and EUGENE H. BLACKSHEAR, McComb, Miss. The bolt has an end recess; and the nut is formed with a number of diametrically-opposite grooves extending from its central opening over one face and in its sides. A spring-yoke has a cross-bar and side-bars fitting accurately in the recess, registering face grooves, and side grooves. There are no projecting parts; for the spring-yoke, when in place, is exactly flush with the outer face and sides of the nut. The number of grooves provided renders the nut easy of adjustment.

ARTIFICIAL DENTURE.—DR. ARTHUR T. GLEW, Germantown, Ohio. When only the lower, anterior, natural teeth, are standing, and the gums preclude the insertion of a partial lower denture, all the mastication is done on the anterior teeth; and it is only in exceptional cases that the suction of the upper plate is sufficient to overcome the leverage of the lower on the upper incisors. Dr. Glew has not only overcome this difficulty, but even added to the security of the upper plate by providing such teeth with a rear projection or ledge against which the lower incisors bite, and thus apply a leverage tending to force the upper plate rearward and upward, so that the suction is increased rather than diminished, and the plate held more firmly in place. The attachment of the upper incisors to the plate proper is, moreover, not weakened, as in the ordinary construction.

Designs.

FRUIT-PICKER.—MARQUIS D. L. HARTLEY, Dehesa, Cal. The fruit-picker comprises a shield or guard which is slipped over the thumb, and which is provided on its under surface with a cutting blade whereby the fruit-stem is severed.

TWINE-HOLDER.—JOHN A. THOMSON, Seattle, Wash. The twine is contained in a casing in the form of a truncated cone. The twine is first passed upwardly through an eye in a cross-bar, then through the guides formed by various corrugations below the cross-bar, and finally through a corner-eye in the cross-bar.

UPPER INCISOR TEETH.—DR. ARTHUR T. GLEW, Germantown, Ohio. This design relates to a new form of upper incisor teeth, essentially such as form part of the improved denture for which Dr. Glew has obtained a mechanical patent of same date, referred to in a foregoing notice. The teeth have a straight transverse groove of uniform depth extending across their lower edges, practically parallel to their front and rear sides. The projection forming the rear side of the groove is shorter than the front one, so that it is not visible from the front.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.